

I. The scientific case for diversity in nuclear weapons policymaking

by Louis Reitmann¹

1. Introduction

There is a lack of diversity in the nuclear weapons space. This is especially pronounced among the officials involved in the strategic military aspects of nuclear weapons policy – including arsenal development, nuclear posture and deterrence strategy – in nuclear-armed countries.² This lack of diversity has contributed to the reproduction of traditional nuclear weapons thinking in nuclear-armed states, with little innovation, despite significant criticism that such thinking is ineffective at reducing nuclear risk and incentivizing arms control and disarmament.

While the conversation around the importance of diversity in the nuclear weapons space has grown, there has been little development in the arguments commonly made for addressing this lack of diversity. Arguments based on the moral and social justice elements of boosting the participation of women, people of colour, especially Indigenous Peoples, and others in decision-making on nuclear weapons may be quickly dismissed by sceptics as liberal-progressive politics.

In an attempt to demonstrate diversity's value irrespective of political conviction, advocates have relied heavily on the "business case", which simply claims that greater diversity leads to better performance. Upon closer examination, however, this simple logic neither accurately describes the mechanics of diversity nor incentivizes the measures necessary to activate diversity's benefits for nuclear weapons policymaking.

Instead, this paper proposes a scientific case for diversity, based on strong empirical findings from psychology and behavioural science about diversity's complex positive and negative effects on how group members think and collaborate, demonstrating how diversity can contribute to more effective, more innovative nuclear weapons policy.

This paper begins by addressing the lack of diversity among the officials controlling arsenal development, deterrence and nuclear strategy in the United States, as an illustration of common issues affecting

¹ The author is grateful to the officials whose detailed, nuanced and candid insights enriched the findings presented in this paper. The author gives special thanks to the reviewers Sarah Erickson, Dr Renata Hessmann Dalaqua, Paula Jou Fuster and Dr Marion Messmer, who helped this paper deliver key learnings for the nuclear field more effectively.

² Where not specified otherwise, this paper defines diversity as demographic diversity, meaning the presence of visible or noticeable differences – gender expression, skin colour, age, demeanour, speech, etc. – within a group. Speech is included as a communicator of differences such as nationality, education, class or age. This understanding of diversity builds on research that demonstrates that how we think and interact with others is shaped significantly by outer differences, not only by differences in skills, opinions or experiences.

nuclear-armed states³ The paper explains the deficits in effectiveness and innovation from which these homogeneous groups suffer, how this homogeneity reproduces traditional nuclear weapons thinking, and how it limits leaders' horizons for policy innovation. The paper concludes that the lack of diversity within this so-called nuclear priesthood⁴ ultimately contributes to growing nuclear risk.

Given the need for enhanced demographic diversity in nuclear weapons policymaking, the paper finds that a line of reasoning based on morality, social justice or the business case for diversity is insufficient for building accurate, nuanced and persuasive arguments for change. To fill this gap, the scientific case presented in this paper explains why diverse teams tend to better understand tasks, make fewer errors and be more innovative. It also examines how the social friction that comes with diversity can have detrimental effects on collaboration. The paper presents management strategies for maximizing diversity's positive effects while minimizing social friction and offers a short guide on making persuasive pro-diversity arguments in the nuclear weapons field.

These are important issues for the nuclear weapons field, which has seen growing interest in measures to increase the share of women, people of colour and other previously excluded groups in the nuclear weapons space. The paper criticizes the corporate feminist approach of the nuclear weapons complex, which follows the business case logic of diversifying staff without addressing structural inequities, reforming working methods and transforming workplace cultures. Not only are superficial diversity programmes like this unlikely to activate diversity's potential for more effective or innovative policymaking, they may actually be used to uphold traditional nuclear weapons thinking and eliminate the critical potential of alternative perspectives.

Given the limitations of publicly available material, this paper focuses mostly on Western states, which also tend to adopt a transparent approach to policymaking. In addition to studies and documents, this paper relies on the openly available testimonies of deterrence officials, as well as on key interviews carried out by the author.⁵ These interviews helped illustrate the status quo of demographic diversity in the government structures that make nuclear weapons policy. They also helped examine whether the effects of demographic diversity found in psychological and behavioural studies match the real-life experiences of those working on nuclear weapons policy.

³ This paper focuses exclusively on national policymaking processes. For a study on the role diversity can play in multilateral diplomacy on nuclear weapons issues, see John Borrie and Ashley Thornton, *The Value of Diversity in Multilateral Disarmament Work* (Geneva: UNIDIR, 2008), <https://www.unidir.org/publication/value-diversity-multilateral-disarmament-work>.

⁴ The term "nuclear priesthood" has emerged as a synonym for the policy community in charge of the strategic military aspects of nuclear weapons policy in the United States. While it has no connection to any religious community, it is a metaphor to describe that this policy community is similarly closed-off, hierarchical and regulated by traditions and conventions as those in holy orders.

⁵ As part of this research, the author conducted interviews with experts and practitioners involved in nuclear weapons policy. In total, eight people were interviewed – six women and two men – from Italy, Mexico, South Africa, the United Kingdom of Great Britain and Northern Ireland and the United States of America.

2. Who makes nuclear weapons policy?

2.1 How a lack of diversity leads to greater nuclear risk

The need for greater diversity in nuclear weapons policymaking is best illustrated by the continued prevalence of nuclear orthodoxy among the officials who control the strategic military aspects of nuclear weapons policy. But today's expansion of arsenals and the growing threat of nuclear use call for innovative approaches that improve on or transcend traditional theories on deterrence, crisis stability and mutually assured destruction.⁶ These theories have well-documented critical weaknesses, such as gaps in what we know about the human decision-making processes they are based on and the theories' disregard for severe risks of accidental and unintended nuclear use.⁷

Experts have proposed options for updating deterrence thinking, for example retiring the idea that an adversary's nuclear capabilities and deployment must be matched like for like,⁸ reducing launch readiness levels,⁹ and promoting minimal deterrence and (limited) no-first-use policies.¹⁰ Yet nuclear orthodoxy has been perpetuated by the policy community in charge of nuclear posture, arsenal development and deterrence strategy. In other words,

politicians and analysts fall back on the old standby of nuclear deterrence – “deterrence will hold”. But the world has changed dramatically since the Cold War... A confluence of changes to technological, domestic and strategic landscapes has destabilized nuclear deterrence, and it would be dangerous to maintain a continued, unquestioning reliance on it.¹¹

In an interview for this paper, Laura Holgate, a former Pentagon official with the Cooperative Threat Reduction Program, said,

This community has settled on nuclear deterrence theory as if it were not an unproven theory but rather an evidence-based principle. You have to suspend a lot of your natural thought process to comprehend what deterrence means. The priesthood's insistence on nuclear deterrence being indispensable for national security sidelines the reality that many of today's acute nuclear threats are related to the safety and security of nuclear material and facilities. I think there is an insecurity at the heart of this insistence that prevents re-examining the assumptions underpinning traditional deterrence theory.¹²

⁶ Peter Rudolf, “US Nuclear Deterrence Policy and Its Problems”, Stiftung Wissenschaft und Politik, 6 November 2018, <https://www.swp-berlin.org/publikation/us-nuclear-deterrence-policy-and-its-problems>; Michael Krepon, “Donald Trump's Challenge to Nuclear Orthodoxy”, Stimson Center, 15 August 2016, <https://www.stimson.org/2016/donald-trumps-challenge-nuclear-orthodoxy>.

⁷ Ward Wilson, “Reconsidering Nuclear Deterrence”, European Leadership Network, 1 March 2022, <https://www.european-leadershipnetwork.org/commentary/reconsidering-nuclear-deterrence>.

⁸ John Gower, “The Dangerous Illogic of Twenty-First-Century Deterrence Through Planning for Nuclear Warfighting”, Carnegie Endowment for International Peace, 6 March 2018, <https://carnegieendowment.org/2018/03/06/dangerous-illogic-of-twenty-first-century-deterrence-through-planning-for-nuclear-warfighting-pub-75717>.

⁹ Sico van der Meer, “Reducing Nuclear Weapons Risks: A Menu of 11 Policy Options”, Clingendael, June 2018, https://www.clingendael.org/sites/default/files/2018-06/PB_Reducing_nuclear_weapons_risks.pdf.

¹⁰ Tytti Erästö, “Revisiting ‘Minimal Nuclear Deterrence’: Laying the Groundwork for Multilateral Nuclear Disarmament”, SIPRI, June 2022, https://www.sipri.org/sites/default/files/2022-06/sipriinsight2206_minimal_nuclear_deterrence_1.pdf.

¹¹ Maria Rost Rublee, “Nuclear Deterrence Destabilized”, in *Perspectives on Nuclear Deterrence in the 21st Century* (London: Chatham House, 2020), 14–18, <https://www.chathamhouse.org/sites/default/files/2020-04-20-nuclear-deterrence-unal-et-al.pdf>.

¹² Interview with the author, 24 October 2023.

This community's lack of diversity – meaning the under-representation and marginalization of women, people of colour, especially Indigenous Peoples, and others – makes it vulnerable to groupthink, inhibits innovation and prevents the critical questioning of baseline assumptions. Considering the stakes of nuclear weapons policy, this community's inability to develop innovative strategies to reduce nuclear risk and make progress towards arms control and disarmament is concerning.¹³ In this way, the lack of diversity in nuclear weapons policymaking may contribute to greater nuclear risk.

2.2 Inside the nuclear “priesthood”: Dynamics of a homogeneous group

Indicators from the wider nuclear field show that white men still make up the vast majority of officials and experts in this space. UNIDIR has measured the average proportion of women participating in meetings under the Treaty on the Non-Proliferation of Nuclear Weapons at 32% between 2017 and 2022.¹⁴ The share of women among heads of delegation was only 24% in 2019.¹⁵ A mere 25% of staff in the nuclear sector are women; the share is even lower in scientific and leadership roles.¹⁶ A similar trend can be observed within the International Atomic Energy Agency (IAEA), where women are over-represented in administrative roles and make up only 35.4%, on average, of nuclear engineers, safeguards inspectors and physicists.

While the data are even sparser than on the inclusion of women, people of colour are under-represented too; for example, only 34.6% of the IAEA's professional and higher staff are from non-white-majority regions (i.e., Africa, Asia and Latin America).¹⁷ Both findings are echoed in countless testimonies by women and people of colour at all levels and in all areas of the nuclear field.

Combining these data with insights about women's representation in military structures – for example, women occupied only about 30% of positions at assistant secretary level or higher at the US Department of Defense between 2009 and 2018 – we can draw conclusions about the lack of diversity in the nuclear priesthood.¹⁸ Laura Holgate, who continues to work with members of this community, and other senior officials from the nuclear field confirmed its drastic lack of demographic diversity.¹⁹

¹³ Heather Hurlburt et al., “The ‘Consensual Straitjacket’: Four Decades of Women in Nuclear Security”, *New America*, 5 March 2019, <https://www.newamerica.org/political-reform/reports/the-consensual-straitjacket-four-decades-of-women-in-nuclear-security>.

¹⁴ UNIDIR, “Gender and Disarmament Hub”, <https://unidir.org/tools/gender-disarmament-hub>.

¹⁵ Renata Hessmann Dalaqua, “How Can We Achieve Gender Break-Throughs in Nuclear Negotiations and Technical Cooperation?” *IAEA Bulletin* 62-4 (December 2021), <https://www.iaea.org/bulletin/how-can-we-achieve-gender-break-throughs-in-nuclear-negotiations-and-technical-cooperation>.

¹⁶ This percentage is based on a study by the Organisation for Economic Co-operation and Development's Nuclear Energy Agency, conducted across its 34 Member States; see World Nuclear News, “Getting More Women in Nuclear ‘Crucial to Hitting Climate Targets’”, 8 March 2023, <https://world-nuclear-news.org/Articles/Getting-more-women-in-nuclear-%E2%80%98crucial-to-hitting>.

¹⁷ This excludes the approximately 1,100 general service staff that carry out administrative, technical and scientific support duties. For more, see IAEA, *Personnel: Staffing the Agency's Secretariat* (Vienna: IAEA, 2023), 5, <https://www.iaea.org/sites/default/files/gc/gc67-18.pdf>.

¹⁸ Heather Hurlburt, Elizabeth Weingarten and Elena Souris, *National Security: What We Talk About When We Talk About Gender* (Washington, DC: New America, 2018), 20, https://d1y8sb8igg2f8e.cloudfront.net/documents/National_Security_What_We_Talk_About_When_We_Talk_About_Gender_2018-12-10_214208.pdf.

¹⁹ Interview with the author, 24 October 2023.

The most detailed account of the state of diversity in nuclear weapons policymaking is Hurlburt et al.'s milestone study, which found that the community of US officials working on nuclear posture and deterrence policy is “closed-off and highly hierarchical, tending to value long experience and insider knowledge over innovation”.²⁰ Insiders describe it as “male-dominated, and unwelcoming, with a small group of long-time insiders controlling what new ideas and individuals would be considered”.²¹

As further explained in Section 4 of this paper, empirical findings show that homogeneous groups like the priesthood are more prone to misunderstanding problems and tasks, make mistakes more frequently, and discourage the exchange and serious consideration of new perspectives. They are less likely to re-examine working methods and assumptions, which increases the risk of systemic fallacies, meaning ineffective or counterproductive strategies based on false assumptions.

According to senior US officials, policy processes controlled by the priesthood are determined by established scripts among individuals with similar backgrounds and views.²² Proposals to reconsider underlying assumptions or past experience tend to be dismissed as naive or unprofessional. As elaborated later in this paper, even if the priesthood was more demographically diverse, restrictive working methods and innovation-averse cultures like this prevent teams from accessing diversity's benefits for collaboration.

Joining or having influence within the priesthood depends on alignment with nuclear orthodoxy, rather than on what change or outside expertise an individual can bring.²³ The premium attached to deep technical knowledge, subscription to certain theories, and long-term niche experience continues the dominance of the same norms and ideas in this policy space. This makes entering and having an impact in this community difficult. As former US Under Secretary of Defense for Policy Michèle Flournoy put it, “You had to master the technical details before you could have an opinion.”²⁴ Other US officials confirm that “the high demand for technical knowledge was...used to exclude people from the nuclear elite”.²⁵

Personal connections are crucial for professional success in the nuclear weapons space. Due to confirmation bias, by which people are more attentive to others similar to them, those who have traditionally been under-represented in the priesthood – young people, women, people of colour, and simply those with experience in other areas – are less likely to be identified as desirable talent. Senior women in US nuclear policy report that their experience working for NGOs, especially on arms control and non-proliferation matters, was used to question their seriousness about the military side of nuclear weapons policy.²⁶

These implicit and explicit restrictions on who is included or has influence in nuclear weapons policy-making reproduce the reality and image of nuclear weapons policy as a white, male space, illustrated

²⁰ Hurlburt et al., “The ‘Consensual Straitjacket’”, 9.

²¹ Ibid.

²² Ibid., 30.

²³ Carol Giacomo, “The Nuclear Weapons Sisterhood”, *New York Times*, 15 May 2019, <https://www.nytimes.com/2019/05/15/opinion/women-national-security.html>.

²⁴ Hurlburt et al., “The ‘Consensual Straitjacket’”, 10.

²⁵ Ibid., 18.

²⁶ Carol Giacomo, “The Nuclear Weapons Sisterhood”, *New York Times*, 15 May 2019, <https://www.nytimes.com/2019/05/15/opinion/women-national-security.html>.

by gender-coded language describing experts as “graybeards”²⁷ or “silverbacks”.²⁸ It also cements a separation of people and perspectives between the fields of deterrence and of arms control and disarmament, the latter of which has seen a remarkable rise of women in leadership positions.²⁹ Eirini Lemos-Maniati, Deputy Director of the Arms Control, Disarmament, and WMD Non-Proliferation Centre at NATO, has observed the growing divide between these two communities over the last 20 years: “If you look back at the late 1990s or early 2000s, including the negotiations towards the INF Treaty [Treaty on Intermediate-range Nuclear Forces] and New START [new Strategic Arms Reduction Treaty], the deterrence and arms control communities used to work together very closely.”³⁰

All this puts the priesthood at a disadvantage; the over-emphasis on technical accuracy comes at the expense of skills like diplomacy and empathy.³¹ These are critical weaknesses for a policy community that needs to understand adversaries’ perceptions and interests to be effective. Richard Johnson, Deputy Assistant Secretary of Defense for Nuclear and Countering Weapons of Mass Destruction Policy, stressed the importance of understanding the full range of perspectives present in the nuclear weapons space for making sound policy.³² This is ever more crucial, as new challenges arise, such as effectively responding to the impacts of climate change and extreme weather and of emerging and disruptive technologies on the safety and security of nuclear deterrence. Eirini Lemos-Maniati also underlined the importance of diversifying the expertise in order to be able to address the complex security landscape.³³

Another downside of the homogeneity in the priesthood may be a reduced capacity for effective participation in cross-governmental decision-making. Where working methods and cultures differ significantly between homogeneous and diverse teams, collaboration may be difficult. This impediment was noted by a South African official, reflecting on collaboration between foreign policy and military officials on international security issues.³⁴

2.3 Impact on human capital

Despite their negative effects on decision-making, the problematic standards and exclusivity set by the priesthood create an undeserved attraction. There is a sense of having to “make it” in a hyper-competitive environment like the priesthood. As former US Deputy Assistant Secretary of Defense for Nuclear and Missile Defense Policy Elaine Bunn described, “[A mentor said to me] if you’re going to stay in the Defense Department, you need to do the nuclear, the targeting, the hard side of this, not just the arms control side or you’re not going to be taken seriously.”³⁵

²⁷ Nathan Hodge, “World Without Nukes? Not So Fast, Graybeards Say”, *Wired*, 6 May 2009, <https://www.wired.com/2009/05/world-without-nukes-not-so-fast-graybeards-say>.

²⁸ Arms Control Association, “New Risks and New Arms Control Solutions”, 15 April 2019, <https://www.armscontrol.org/armscontrol2019>.

²⁹ Isabel Martinez and Anna Schumann, “Who Runs the Nukes? Women!” *Nukes of Hazard* (blog), Center for Arms Control and Non-Proliferation, 19 February 2021, <https://armscontrolcenter.org/who-runs-the-nukes-women>.

³⁰ Interview with the author, 21 November 2023.

³¹ Hurlburt et al., “The ‘Consensual Straitjacket’”, 11.

³² Interview with the author, 9 November 2023.

³³ Interview with the author, 21 November 2023.

³⁴ Interview with the author, 31 October 2023.

³⁵ Hurlburt et al., “The ‘Consensual Straitjacket’”, 10.

For women and people of colour, working in such environments can be taxing.³⁶ Explicit and implicit expectations of how they should act in a majority-men and majority-white space can cause significant stress. Senior US women in the nuclear space describe having to perform the “constant mental and emotional calculus that comes with implicit sexism...and gendered expectations” and report that “adopting stereotypically masculine traits [firm demeanour and assertiveness] was crucial to success”.³⁷ Stereotypically feminine qualities, such as “being a team player, and being able to get buy-in from all relevant stakeholders”, were discounted.³⁸ However, exhibiting masculine traits against expectations of femininity also led to discrimination.

Women and people of colour expend significant time and energy walking this tightrope and experience imposter syndrome and self-censorship as a result. Attempts to drown out prejudiced expectations and discrimination by working extreme hours and being over-competent lead many to feel dissatisfied and burnt out and, eventually, to leave the field.³⁹ Additionally, the lack of peers and role models for women and people of colour considering a career in strategic defence may lead them to pursue other opportunities, which reinforces homogeneity within the priesthood. Laura Holgate explained that the “conservative way of thinking” and the “very little intellectual risk-taking”, the lack of women role models in this space, and the priesthood’s requirement for in-depth, niche knowledge of deterrence theory by way of a military background or PhD all contributed to her transitioning to other nuclear policy issues.⁴⁰

2.4 Limiting leaders’ horizons

Ultimately, the disproportionate agenda-setting power and long-standing privileged access to the highest levels of government accorded to the priesthood can prevent alternative proposals from reaching senior decision makers. This, in turn, shapes political leaders’ expectations of what constitutes sound nuclear weapons policy and limits what they consider possible, thus reinforcing nuclear orthodoxy.

An example that illustrates this horizon-limiting effect is the refusal by several nuclear-armed countries to consider a no-first-use policy to advance risk reduction. Opposition to a no-first-use policy is rooted in the idea that ruling out a first strike invites aggression with conventional weapons, based on outdated deterrence concepts that are inconsistent with historical evidence, most recently, the Russian Federation’s invasion of Ukraine.⁴¹

Lack of diversity among the officials making nuclear weapons policy reduces innovation and problem-solving potential; it excludes and diminishes the qualities and expertise offered by traditionally under-represented actors, which is crucial for sound decision-making. The structural problems of the

³⁶ Renata Dwan, “Women in Arms Control: Time for a Gender Turn?”, *Arms Control Today* 49, no. 8 (2019): 6–11, <https://www.jstor.org/stable/26823065>.

³⁷ Hurlburt et al., “The ‘Consensual Straitjacket’”, 19.

³⁸ Ibid.

³⁹ Colleen Walsh, “Closing the Gender Gap in Nuclear Security”, *Harvard Gazette*, 3 November 2021, <https://news.harvard.edu/gazette/story/2021/11/closing-the-gender-gap-in-the-field-of-nuclear-security>.

⁴⁰ Interview with the author, 24 October 2023.

⁴¹ Nina Tannenwald, “It’s Time for a U.S. No-First-Use Nuclear Policy”, *Texas National Security Review* 2, no. 3 (2019): 131–137, <https://tnsr.org/roundtable/its-time-for-a-u-s-no-first-use-nuclear-policy>; Andrew Fetter, “Five Nuclear Reflections on the Ukraine War”, European Leadership Network, 19 June 2023, <https://www.europeanleadershipnetwork.org/commentary/five-nuclear-reflections-on-the-ukraine-war>.

priesthood and the resulting vulnerabilities serve as an example to leaders that increasing diversity is a legitimate policy tool for addressing contemporary security challenges, such as nuclear risk – not just a “nice to have” human resources policy.

3. Why the business case is ineffective and inaccurate

To raise awareness of diversity’s transformative potential for nuclear weapons policy, advocates should employ arguments that build on diversity’s studied effects on human behaviour and collaboration. With the premium that the priesthood attaches to technical detail, a scientific case for diversity promises to be more persuasive to this key audience.

The argument already commonly used is the business case for diversity. It claims that simply having more diverse staff leads to better performance. Popularized by a 2015 McKinsey study, which indicated a positive relationship between diverse corporate leadership and financial profit, this idea has been adopted across many sectors.⁴² It is repeated in numerous statements, policies and research papers in the nuclear field.⁴³

The business case, however, is reductive. It says little about how behaviour and collaboration are different in diverse versus homogeneous teams. It leaves a “black box” around the socio-psychological dynamics that purportedly translate demographic diversity into performance gains. Ultimately, it suggests that governments and organizations can benefit from diversity by merely adding more staff from under-represented groups. This idea has been disproven.

The McKinsey study, for example, was found to be irreplicable. Its findings did not hold up when linking diversity with other performance metrics, like sales growth or shareholder returns. When adjusting for other variables, like company size, the relationship between boardroom diversity and profits disappeared.⁴⁴ Similar issues were found with successor studies.

It has become clear that diversifying staff alone leads to neither higher profits nor better teamwork nor more effective decision-making.⁴⁵ In fact, diversity messaging that emphasizes performance benefits – like the business case – has been shown to increase concerns about tokenization among people

⁴² Vivian Hunt, Dennis Layton and Sara Prince, “Why Diversity Matters”, McKinsey & Company, 1 January 2015, <https://www.mckinsey.com/capabilities/people-and-organizational-performance/our-insights/why-diversity-matters>.

⁴³ Sarah Bidgood at “Pipelines and Ceilings: The Gender Gap in Nuclear Policy”, Belfer Center for Science and International Affairs, 29 October 2021, <https://www.belfercenter.org/event/pipelines-and-ceilings-gender-gap-nuclear-policy>; “Joint Statement on Gender, Diversity and Inclusion at the 10th NPT Review Conference”, Reaching Critical Will, August 2022, https://reachingcriticalwill.org/images/documents/Disarmament-fora/npt/revcon2022/statements/4Aug_Gender.pdf; Nuclear Threat Initiative, “Our Commitment to Diversity, Equity, and Inclusion”, <https://www.nti.org/about/diversity-equity-and-inclusion-at-nti>; Gender Champions for Nuclear Policy, “Why Gender Equity?”, <https://gcnuclearpolicy.org/about/about>.

⁴⁴ Alex Edmans, “Is There Really a Business Case for Diversity?”, Medium, 30 October 2021, <https://medium.com/@alex.edmans/is-there-really-a-business-case-for-diversity-c58ef67ebffa>.

⁴⁵ Robin Ely and David Thomas, “Getting Serious about Diversity: Enough Already with the Business Case”, *Harvard Business Review*, November/December 2020, <https://hbr.org/2020/11/getting-serious-about-diversity-enough-already-with-the-business-case>.

from under-represented groups, reducing their sense of belonging to the workplace and raising doubts about the authenticity of the organization's interest in diversity.⁴⁶ Defining diversity by performance gains neither accurately captures how diversity changes the way people think and interact nor attracts talent from under-represented groups.

Moreover, it is important to acknowledge that introducing greater diversity into teams is not without risks. Diversity is a complex phenomenon that requires structural change and skilled management to have a positive effect. Only by better understanding the psychology behind it can we develop accurate, evidence-based, persuasive arguments for diversity and maximize its benefits for nuclear weapons policymaking.

4. What is the scientific case for diversity?

The scientific case complements arguments resting on the moral and restitutive benefits of including marginalized groups in decisions about nuclear weapons. These arguments focus on women, who have been denied access to what is seen as a masculine policy domain, and people of colour, especially Indigenous Peoples, who are disproportionately affected by nuclear weapons production and testing but whose voices are seldom heard in nuclear weapons policymaking. However, as values-based arguments, they may be easily written off by sceptics as liberal-progressive politics.

Instead, the scientific case demonstrates the value of diversity beyond ideas of what is “right”. By incorporating consistent empirical findings from studies in psychology and behavioural science, it opens the black box that the business case leaves shut. It highlights the processes by which demographic diversity shapes human thinking and interaction, but it also exposes the negative effects diversity can have through social friction.

Though an awareness of the different objectives that diversity efforts may serve is important, the scientific case is agnostic about the outcomes of the policymaking processes it seeks to diversify. Whereas moral arguments often state or imply that nuclear disarmament is their ultimate ambition or consequence, the scientific case does not prescribe a policy goal. Instead, it focuses on how diversity can make decision-making processes more immune to superficial assumptions and systemic fallacies and more open to innovation, in turn producing more effective solutions to policy challenges. This makes the scientific case accessible and persuasive to deterrence traditionalists and disarmament advocates alike, providing an opportunity to find common ground and incentivize enhancing diversity across the nuclear weapons space.

The scientific case incorporates the following findings:

- Diverse teams are less likely to misunderstand tasks because they discuss them more extensively, developing a shared task interpretation.
- Diverse teams make fewer mistakes because they frequently re-examine assumptions and evidence due to team members' increased accountability.⁴⁷

⁴⁶ Oriance Georgeac and Aneeta Rattan, “Stop Making the Business Case for Diversity”, *Harvard Business Review*, 15 June 2022, <https://hbr.org/2022/06/stop-making-the-business-case-for-diversity>.

⁴⁷ David Rock and Heidi Grant, “Why Diverse Teams Are Smarter”, *Harvard Business Review*, 4 November 2016, <https://hbr.org/2016/11/why-diverse-teams-are-smarter>.

- Where errors happen, they are more likely to be addressed in discussion. Diverse teams are better problem solvers too.
- Diverse teams have been shown to identify the correct solutions to puzzles more consistently than homogeneous teams.⁴⁸

These effects have common origins. We assume that colleagues who look and act differently to us also hold different knowledge than we do, causing us to evaluate our own arguments more carefully.⁴⁹ In an interview for this paper, Laura Rockwood, long-time senior legal affairs official at the IAEA, said, “Working in a diverse environment taught me not to assume that others share my assumptions, think in the same way, or come to the same conclusions.”⁵⁰

We are also more likely to expect people who are different to disagree with us.⁵¹ This makes us consider dissent from someone of a different gender, age or race more seriously than from someone close to us, and it makes us put greater effort into defending our own view in response.⁵² By encouraging critical thinking and discussion, diversity helps teams avoid task misunderstanding and mistakes. As one US official put it: “I have to think harder and communicate better in a diverse environment.... When I share my thoughts, I must reflect and provide support for my positions.”⁵³

Diversity increases the exchange of unique information and new ideas. Members of homogeneous teams are more likely to assume that the information they hold is already known to their colleagues. The opposite is true in diverse teams.⁵⁴ Another important dynamic is social cohesion. Homogeneous teams have stronger social cohesion. To avoid exclusion, their members are incentivized not to challenge what they expect or know to be the consensus. Diverse teams have weaker social cohesion. This lowers the barriers to sharing new or dissenting views for all team members, including those from the majority.⁵⁵ In short, the research demonstrates that for innovative proposals to be made, heard and considered, it is important to have capable individuals who can contribute smart ideas, but it is even more important that these individuals are grouped in diverse teams.

However, interviews for this paper highlighted that individuals tend to be unaware of the specific effects of outer differences. Whereas interviewees confirmed that their awareness of others’ backgrounds, opinions and preferences shapes how they approach and interact with them, they generally did not report an awareness of outer differences having a discernible influence. Laura Holgate, recalling her time working at the US Department of Defense, said,

⁴⁸ Katherine Phillips, “How Diversity Makes Us Smarter”, University of California, Berkeley, 18 September 2017, https://greatergood.berkeley.edu/article/item/how_diversity_makes_us_smarter.

⁴⁹ Katherine Phillips, Gregory Northcraft and Margaret Neale, “Surface-Level Diversity and Decision-Making in Groups: When Does Deep-Level Similarity Help?”, *Group Processes and Intergroup Relations* 9, no. 4 (2006): 467–482, <https://doi.org/10.1177/1368430206067557>.

⁵⁰ Interview with the author, 13 October 2023.

⁵¹ Phillips, “How Diversity Makes Us Smarter”.

⁵² Ibid.

⁵³ Jay Porter, “Diversity: Not Just a Cause for the Underrepresented”, *Foreign Service Journal*, September 2018, <https://afsa.org/diversity-not-just-cause-underrepresented>.

⁵⁴ Phillips, Northcraft, and Neale, “Surface-Level Diversity”, 468.

⁵⁵ Ibid.

It's difficult to pinpoint whether I was sometimes undermined specifically because I was the only woman in the room or because I was civilian and not military or because I was a political appointee. All of these may have played a role but it is difficult to isolate the effects of gender from other factors.⁵⁶

Further, it should be recognized that many of the findings about the advantages of diverse teams were reached in experiments under controlled conditions. To translate them into real-life environments, it is important to account for the social friction that diversity can cause.⁵⁷

Studies consistently show that individuals prefer to work with others who are like them and tend to distrust those who are different.⁵⁸ We tend to categorize individuals into subgroups by outer differences, such as skin colour, gender expression and speech. If team members become set in their perception of colleagues in subgroups, the same presence of outer differences that helps diverse teams avoid mistakes and generate innovative ideas can create distrust, conflict, poor communication and low morale.⁵⁹ Subgroup formation can lead to stereotyping and an “us–them” mentality.⁶⁰ This situation removes the incentives for exchanging diverging or new ideas and shrinks diverse teams’ innovation potential.

The sociopolitical context of different identities adds a layer to this friction. A senior US national security official recalled instances where policy discussions between men and women staff deteriorated because of underlying societal tensions around gender.⁶¹ This highlights that demographically diverse teams can suffer from “othering” not only based on outer differences but also based on the sociopolitical meaning that these differences carry, (e.g., contested ideas of what is typically masculine or feminine behaviour).

Increasing demographic diversity in a team can have other negative effects too: A greater diversity of views, leading to more critical examination of evidence and assumptions, can reduce a group’s confidence in joint decisions and work outcomes because they may not align with the preferences and experiences of some team members. In short, diverse teams may make more accurate decisions, but they may feel less certain that their decisions are correct. This can have negative implications for the implementation of agreed decisions. Since consistent shared understanding within an administration and clear, coherent signalling to others are vital for reducing the likelihood of unintended nuclear weapons use, this is a particularly relevant risk of diversity in relation to nuclear weapons policy.

Finally, diversity measures can alienate those traditionally in the majority: Experiments suggest that white men are likely to expect unfair treatment at organizations that emphasize diversity, regardless of their personal politics or views on diversity.⁶² A zero-sum mentality, believing equitable access to opportunities to come at the expense of those who have been enjoying privileged access to the same, seems to be commonplace. If left unaddressed, this can lead to pushback against diversity measures.

⁵⁶ Interview with the author, 24 October 2023.

⁵⁷ Phillips, “How Diversity Makes Us Smarter”.

⁵⁸ Catarina Fernandes and Jeffrey Polzer, “Diversity in Groups”, in *Emerging Trends in the Social and Behavioral Sciences*, ed. Robert Scott and Stephan Kosslyn (Hoboken: Wiley, 2015), 2.

⁵⁹ Ibid.

⁶⁰ Astrid Homan and Lindred Greer, “Considering Diversity: The Positive Effects of Considerate Leadership in Diverse Teams”, *Group Processes & Intergroup Relations* 16, no. 1 (2013): 105–121, <https://doi.org/10.1177/1368430212437798>.

⁶¹ Interview with the author.

⁶² Porter, “Diversity”.

A former senior Pentagon official, who had been involved in developing the most recent Nuclear Posture Review, noted an example for such pushback from the nuclear priesthood. Some officials in national and multilateral settings questioned the utility of promoting policy innovation through the inclusion of diverse officials in the Review, expressing concern over whether a Review with “too much innovation” would be effectively implemented by traditionalist elements of the nuclear policy community.⁶³

5. A guide to talking diversity

Diversity advocates may consider the following tips on making more evidence-based, nuanced and persuasive arguments for greater demographic diversity in the nuclear weapons space.

► Diversity is more than the “business case”

A simplistic framing of diversity, as in the business case, is counterproductive. Its suggestion that simply adding more diverse staff to an organization produces performance gains is not only wrong, it promotes the tokenization of those belonging to under-represented groups. Diversity advocates should retire this line of reasoning.

Instead, advocacy should present a holistic picture of diversity as a long-term strategy that has opportunities and risks and requires skilled implementation to be successful, like any other strategy. With this approach, diversity advocates can help leaders differentiate between effective and ineffective diversity programmes that take into account risks and potential pushback, using the added insights into how diversity shapes human thought and collaboration. This can help make diversity efforts more realistic, sustainable and effective.

► Demographic diversity matters

Those opposing an emphasis on demographic diversity often argue that only a person’s skills and credentials should decide whether they enter or rise within the structures that control nuclear weapons; their gender, race, and so on, should not matter. Ironically, this ignores the reality that women, people of colour, and others have long been denied access to nuclear weapons policymaking precisely *because* of their outer characteristics or structural disadvantages (e.g. a lack of mentorship or personal connections). It is not by coincidence that, in Western nuclear-armed states, leadership in strategic defence has consistently been staffed with white men.

The scientific case adds another counterargument by pointing to evidence that shows the importance of diversity for effective policymaking. Studies show that, without diversity in outer differences, critical questions that help eliminate false assumptions and errors are less likely to be raised and innovative proposals are less likely to be made, heard and enacted. Having capable people on a team is only the first step; for more effective and innovative policymaking, those capable people should be demographically diverse.

⁶³ Interview with the author, 17 November 2023.

► Connecting the dots is crucial

Sometimes, pro-diversity arguments can lack a sense of direction. Promoting diversity for diversity's sake has inherent value; it supports equitable participation in high-stakes decisions about nuclear weapons.

However, connecting the dots between the benefits of diversity and the positive outcomes they can help achieve, or between the lack of diversity and the negative consequences thereof, strengthens the argument that diversity is an effective solution to security challenges and not just a “nice to have” human resources policy.

Eirni Lemos-Maniati, a senior NATO official, stressed, “We need to get better at communicating to what end we want to increase diversity in the nuclear weapons field. We need to be clear about what we want to achieve through diversity rather than focusing on diversity as an end in itself.”⁶⁴ Being specific about the change that diversity is intended to effect underlines that it is a policy tool that leaders should use, like others, to achieve their strategic objectives.

► Testimonies from the field are a vital data source

There is still very little information available about the state of diversity in the nuclear weapons establishment and how this affects nuclear weapons policy. Comprehensive studies involving officials will likely not be possible due to the degree of secrecy involved. This makes personal testimonies from those who work, or have worked, on nuclear weapons policy essential for diversity advocacy, especially where direct lines between the diverse composition of a team and the outcomes of policy processes can be drawn. Not only do these accounts lend credibility to the case for diversity, they help make the more abstract findings from the studies cited in this paper more graspable for practitioners.

Eirini Lemos-Maniati recalled the update of NATO's Chemical, Biological, Radiological and Nuclear Defence Policy in 2022 as one such example.⁶⁵ The demographic diversity among headquarters staff in 2022 ensured that this policy included gender considerations for the first time. By recognizing and addressing gender-based differences in requirements for equipment, medical management, protection and capacity-building, the policy makes an important contribution to increasing military readiness and supporting national resilience against chemical, biological, radiological and nuclear threats.

⁶⁴ Interview with the author, 21 November 2023.

⁶⁵ Interview with the author, 21 November 2023.

6. Walking the talk: Harnessing the benefits of diversity

To reap the benefits of diversity, leaders have to create conditions that release its positive effects on behaviour and collaboration and reduce stereotyping and conflict. How can they do this? This section offers five concrete good practices, the effectiveness of which has been shown in psychological and behavioural research and in the experiences of senior officials in the nuclear weapons space.

► Investigate bias and activate social accountability

The benefits of diversity become accessible when all team members are able to openly discuss hierarchies and work processes, shape the agenda, influence strategy and policy, exercise leadership, and receive recognition and reward.⁶⁶

Emphasizing that equality in numbers is not sufficient for a work environment that thrives on diversity, Mexico's Coordinator for Disarmament and Non-Proliferation, Maria Antonieta Jaquez, added that, while the number of women in nuclear weapons policymaking has grown, less palpable limits to inclusion remain: "It's not just about being able to speak up or contribute, but also about the weight or authority your contributions carry. The work of most women in the field, even in senior positions, is often subject to review or approval by men at the same seniority level." This structural inequity limits the innovation potential of gender-diverse teams.⁶⁷

A key step in improving the conditions for diversity to have a positive effect is investigating how the allocation of opportunities, influence and rewards in a team may be biased.⁶⁸ As referenced earlier, this bias arises because leaders recognize and remember talented staff more quickly when they can identify with them. Especially in high-pressure situations, leaders tend to rely on staff who are like them. This leads others to be denied the experience they need to be promoted and leaves significant leadership and innovation potential untapped.

Because of this, the successful de-activation of bias depends to a large extent on changes in decision makers' personal behaviour. This is why their deep involvement in the change process, especially if they belong to the majority group of white men, is crucial. Having analysed structural inequities, leadership should communicate a clear vision for change, motivate and guide its implementation, and ensure continual monitoring and adjustments.

An emphasis on data and transparency is especially important for successful change as they activate social accountability. Once people know that their decisions may be compared against objective data, they tend to base those decisions more closely on an evidentiary basis. In a case from the legal services industry, a task force was created to gather data about the career progress of women. Once managers

⁶⁶ Sylvia Ann Hewlett, Melinda Marshall and Laura Sherbin, "How Diversity Can Drive Innovation", *Harvard Business Review*, December 2013, <https://hbr.org/2013/12/how-diversity-can-drive-innovation>.

⁶⁷ Interview with the author, 23 October 2023.

⁶⁸ Ely and Thomas, "Getting Serious about Diversity".

knew that their promotion decisions would be transparent, the share of senior women staff tripled over a few years because of the incentive to base decisions on clear reasoning and trackable evidence.⁶⁹

► Promote a community workplace culture

Diversity is more likely to increase effectiveness in teams with a culture that emphasizes shared objectives, equity between interests, and commonalities among members, instead of individuals' traits and achievements.⁷⁰ This helps colleagues base their sense of belonging on being members of the team rather than being members of a particular subgroup within the team (e.g., men, women), helping prevent the us–them thinking that inhibits collaboration and innovation. This community workplace culture increases creativity, reduces conflict and makes debate productive and results-oriented rather than obstructive.⁷¹

From his experience as a mediator between different perspectives within the US government, especially between the deterrence and the arms control and non-proliferation communities, Richard Johnson highlighted that a participatory culture that promotes open discussion can enhance the procedural justice of policymaking and ensure that decisions are more widely accepted because they were reached through an inclusive process.⁷² This may also help remedy the reduced confidence in decision-making outcomes that diverse teams may have a higher risk of experiencing.

Interviews for this paper also highlighted the essential role that effective leadership plays in creating a culture that activates diversity's benefits. "Leadership makes a key difference in group identity formation. An effective leader makes all team members feel that they are pulling in the same direction", Laura Rockwood concluded from her 28 years serving at the IAEA.⁷³

A South African government official reflected on their experience working in a demographically diverse team, saying, "With the right culture, you might have intense discussions, but there is a trust factor. We are aware that we are a cohesive unit and when we disagree, we disagree on positions, not personality."⁷⁴ These experiences match findings about collaboration and the team identity of diverse groups, in which the initial friction caused by the presence of differences is either ameliorated or exacerbated, largely depending on interventions by leadership.⁷⁵

⁶⁹ Frank Dobbin and Alexandra Kalev, "Why Diversity Programs Fail", *Harvard Business Review*, July/August 2016, <https://hbr.org/2016/07/why-diversity-programs-fail>.

⁷⁰ Fernandes and Polzer, "Diversity in Groups", 3.

⁷¹ Jennifer Chatman et al., "Being Different Yet Feeling Similar: The Influence of Demographic Composition and Organizational Culture and Work Processes and Outcomes", *Administrative Science Quarterly* 43, no. 4 (1998): 749–780, <https://web.mit.edu/cortiz/www/Diversity/PDFs/Chatman%20et%20al,%201998.pdf>.

⁷² Interview with the author, 9 November 2023.

⁷³ Interview with the author, 13 October 2023.

⁷⁴ Interview with the author, 31 October 2023.

⁷⁵ Frederick Herbert and Paris Will, "The Effects of Diversity on Teams Change over Time", *LSE Business Review*, 23 November 2021, <https://blogs.lse.ac.uk/businessreview/2021/11/23/the-effects-of-diversity-on-teams-change-over-time>.

► Count on integration and learning, not equality

An emphasis on equality risks penalizing the distinctive skills and approaches that diverse team members bring to the table.⁷⁶ For example, competitive work cultures that reward assertiveness can disadvantage women, who tend to favour collaboration, for not conforming to expectations based on masculine stereotypes.⁷⁷ When those differences are valued as a learning resource, work processes and outcomes are more closely examined and improved, and staff become more effective because they are more confident in bringing the full breadth of their qualities to bear, including those that differentiate them from the majority. Psychological safety (the freedom to be oneself without reprisal) and interpersonal congruence (the alignment of self-perception with the perception by others) are high.⁷⁸

A crucial finding is that learning across diverse identities within a team is inherently positive for performance and morale, even when learnings do not relate to specific tasks.⁷⁹ When people with different backgrounds show vulnerability by asking for help and are met with support, this strengthens relationships, increases team resilience and improves problem-solving. Creating workplace cultures that promote learning and openness to change has attractive pay-offs for collaboration in high-pressure, high-stakes situations.⁸⁰

The benefits of integration and learning have already been demonstrated in the nuclear weapons space. Michèle Flournoy reports that performance improved significantly once a human capital strategy, which invested in staff by providing mentoring, training and constructive feedback, was implemented.⁸¹ The positive impact of such measures was echoed by a South African official, who attributed the positive work culture of their team to a leadership style that prioritized openness to new proposals, active mentorship, and constructive rather than dismissive feedback.⁸²

Other senior US officials from the nuclear weapons space corroborate that greater diversity broadened the range of perspectives and challenged previously unquestioned assumptions. This outside-the-box thinking led to better-informed policy decisions *when* leadership encouraged unconventional and innovative ideas.⁸³

► Accept and plan for resistance to diversity measures

As stated above, studies have found that white men, who constitute the majority in the nuclear weapons field, tend to feel threatened by diversity measures. Studies show that resisting challenges to our biases is natural. Biases are cognitive rules that help us make decisions more quickly and confidently; as default reactions they are, by their nature, resistant to change.⁸⁴

⁷⁶ Ely and Thomas, “Getting Serious about Diversity”.

⁷⁷ Ibid.

⁷⁸ Jeffrey Polzer, Laurie Milton and William Swann, Jr., “Capitalizing on Diversity: Interpersonal Congruence in Small Work Groups”, *Administrative Science Quarterly* 47, no. 2 (2002): 296–324, <http://www.jstor.org/stable/3094807>.

⁷⁹ Ely and Thomas, “Getting Serious about Diversity”.

⁸⁰ Ashley Groggins and Ann Marie Ryan, “Embracing Uniqueness: The Underpinnings of a Positive Climate for Diversity”, *Journal of Occupational and Organizational Psychology* 86, no. 2 (2013): 264–282, <https://doi.org/10.1111/joop.12008>.

⁸¹ Hurlburt et al., “The ‘Consensual Straitjacket’”, 32.

⁸² Interview with the author, 31 October 2023.

⁸³ Hurlburt et al., “The ‘Consensual Straitjacket’”, 32.

⁸⁴ Christine Wiggins-Romesburg and Rod Githens, “The Psychology of Diversity Resistance and Integration”, *Human*

However, they can be unlearned if challenged correctly. Accepting resistance enables openness and engagement with the change process. Stigmatizing resistance, instead, allows the resistor to perceive the change process, rather than their own bias, as the problem. Leaders should address resisters' psychological needs for acceptance, positive self-image and inclusion in the change process. Participation in diversity programmes helps resisters shift the source of their validation from acting in line with their bias to acting in line with a new diversity culture.

► Avoid boilerplate diversity measures

Traditional measures like compulsory training and complaint procedures are not effective at creating diverse and inclusive workplaces. “Outlawing” bias does not work. Instead, it often fuels resistance to change and disadvantages women and people of colour; for example, managers are more likely to dismiss allegations of discrimination when an organization prescribes diversity training.⁸⁵ A long-term study of over 700 US companies demonstrated that traditional diversity training had little to no positive effect on demographic diversity.⁸⁶ Instead, leaders should define an organization's lack of diversity and equity as a problem and invite staff to help find effective solutions, just as they would for other challenges facing their organization.

In doing so, they can use cognitive dissonance: When sensing a disconnect between their beliefs and actions, people tend to correct either. Evidence shows that, if prompted to actively participate in diversity measures, even sceptical staff start to think of themselves as diversity champions. Effective measures are those that promote individuals' responsibility for solving an organization's diversity challenges, for example by implementing diversity-focused recruitment, mentoring programmes and task forces.⁸⁷

7. Reflections on the risk of co-optation

While focusing on diversity's effect on policymaking, this paper is also mindful of the different goals that diversity efforts can serve. There is a growing awareness in the field that diversity efforts by the nuclear weapons establishment regularly fail to achieve structural change beyond simply raising the share of staff from under-represented groups and that they often undermine the critical approaches to nuclear weapons that women, people of colour and others have been championing.⁸⁸

Resources Development Review 17, no. 2 (2018): 179–198, <https://doi.org/10.1177/1534484318765843>.

⁸⁵ Dobbin and Kalev, “Why Diversity Programs Fail”.

⁸⁶ Tessa Dover, Brenda Major and Cheryl Kaiser, “Diversity Policies Rarely Make Companies Fairer, and They Feel Threatening to White Men”, *Harvard Business Review*, 4 January 2016, <https://hbr.org/2016/01/diversity-policies-dont-help-women-or-minorities-and-they-make-white-men-feel-threatened>.

⁸⁷ Dobbin and Kalev, “Why Diversity Programs Fail”.

⁸⁸ Kjølv Egeland and Hebatalla Taha, “Experts, Activists, and Girl Bosses of the Nuclear Apocalypse: Feminisms in Security Discourse”, *Zeitschrift für Friedens- und Konfliktforschung*, 12 May 2023, <https://doi.org/10.1007/s42597-023-00100-3>; Senem Kaptan, “Feminist Perspectives Towards ‘Excessive Military Spending’: An Intimate Dialogue With Cynthia Enloe”, Women's International League of Peace and Freedom, 17 October 2019, <https://www.peacewomen.org/node/103744>; Ray Acheson, “Notes on Nuclear Weapons & Intersectionality in Theory and Practice: A Working Paper”, Princeton University, June 2022, <https://sgs.princeton.edu/sites/default/files/2022-06/acheson-2022.pdf>.

Diversity, particularly women's representation and empowerment, is becoming a consensus objective in Western nuclear weapons establishments. The nuclear weapons industry and state institutions like the UK Atomic Weapons Establishment⁸⁹ and US national nuclear laboratories advertise their commitment to diverse workforces and have created staff resource groups for women and people of colour.⁹⁰ They organize promotional events on International Women's Day and run programmes to recruit women and advertise their career paths to girls; for example, Lockheed Martin, Raytheon and others have funded and cooperated with the Girl Scouts of the USA and Girl Security.⁹¹

Why is this problematic? To be sure, there is inherent value in a greater diversity of people being included in decision-making on nuclear weapons, given their indiscriminate nature. Increasing diversity in the nuclear weapons complex is the necessary condition for activating diversity's positive potential for nuclear weapons policymaking.

However, a simplistic understanding of diversity's effects on human behaviour and collaboration, akin to the business case, is inadequate to address the systemic fallacies in traditional nuclear weapons thinking. Current diversity efforts in the nuclear weapons complex are limited to adding diverse staff into existing hierarchies, working methods and thinking. Continuing top-down control and intellectual orthodoxy leaves little room for diverse staff to introduce alternative approaches.

These corporate feminist practices may actually uphold traditional nuclear weapons thinking.⁹² They help "future-proof" the nuclear weapons enterprise by dressing up existing power structures to fit modern expectations about progressiveness. Whereas critical feminism aims to highlight injustices in traditional nuclear weapons policy and erode nuclear weapons' legitimacy as "guarantors of security", the corporate feminist efforts of the nuclear weapons complex appropriate ideas like gender equality to aid recruitment and legitimize nuclear armament.

There is a risk that the nuclear weapons space as a whole will conflate corporate feminism with the critical academic and activist feminism that has informed 60 years of disarmament advocacy. Given the resources and reach of state and industry actors, the nuclear field's understanding of feminism could be reduced to an equal share of men and women carrying out an unchanged set of policies.

Critical feminism is an effective tool for promoting policy change by analysing the conceptual errors in traditional deterrence thinking and making visible how the production, maintenance, testing and use of nuclear weapons have harmed people.⁹³ Corporate feminism, however, is unlikely to trigger policy change.

⁸⁹ Atomic Weapons Establishment, "Diversity and Inclusion", <https://www.awe.co.uk/responsible-business/our-people/diversity-and-inclusion>; Atomic Weapons Establishment, "Celebrating the Women of AWE", 8 March 2018, <https://www.awe.co.uk/2018/03/celebrating-the-women-of-awe>.

⁹⁰ C.J. Bacino, "The Diversity Issue", Los Alamos National Laboratory, 28 November 2022, <https://discover.lanl.gov/publications/national-security-science/2022-winter/the-diversity-issue>.

⁹¹ Egeland and Taha, "Experts, Activists, and Girl Bosses", 10.

⁹² Egeland and Taha, "Experts, Activists, and Girl Bosses", 3–4.

⁹³ Feminism is a form of critical theory. It investigates structures of power, "common sense" narratives, and the ways in which they relate to ideas of masculinity and femininity. A feminist perspective on nuclear weapons questions the validity of

8. Conclusions

The scientific case represents key changes in how the nuclear weapons field should understand diversity. It demonstrates that diversity shapes how group members think and interact in complex ways that can create more effective and innovative outcomes but also disrupt collaboration through social friction. This approach moves the field beyond the logic of the business case that adding more diverse staff automatically produces performance gains. It retires the simplistic idea of diversity as a one-dimensional scale on which more always equals better.

The scientific case creates an awareness that the presence of diversity is necessary but not sufficient for activating its positive potential. It shows that leaders must adapt hierarchies, working methods and organizational cultures to create the conditions in which diversity's benefits can be accessed. In this way, the scientific case enables leaders to differentiate between effective and ineffective diversity measures and provides them with good practices for implementing diversity, based on empirical evidence.

Crucially, the scientific case demonstrates that demographic diversity matters. It uses consistent empirical evidence about human thought processes and social dynamics to underline that a group's diverse composition plays at least as important a role as the individual capabilities of its members in creating efficacy and innovation in policymaking. This emphasis on empirical evidence also makes the scientific case a more accessible argument for the nuclear priesthood, a key audience for diversity advocacy.

In these ways, the scientific case provides an effective, nuanced, evidence-based and more persuasive line of reasoning that diversity advocates should employ to complement arguments based on ethics and social justice.

Further research should focus on tracing the effects of diversity on collaboration and work outcomes identified in psychological and behavioural studies in the real-life experiences of those working, or having worked, in the nuclear priesthood to reinforce the learnings presented in this paper. Likewise, identifying more case studies of (in)effective diversity measures in the nuclear weapons space would help leaders implement diversity more successfully and sustainably.

As important as increasing demographic diversity in nuclear weapons policymaking is raising awareness of the purposes that different diversity efforts serve. While there is inherent value in expanding access to work in the nuclear weapons complex, this is unlikely to enable policy innovation if not accompanied by structural change in hierarchies, working methods and intellectual orthodoxy. Those committed to reducing the influence of traditional nuclear weapons thinking should be diligent in assessing if and how corporate diversity programmes may serve to legitimize the status quo.

traditional deterrence thinking and the association of power and status in the international system with the masculinized capacity to inflict mass violence. It highlights the harms nuclear weapons have inflicted on marginalized groups. Focusing on human security, it prioritizes the rights and well-being of people over the abstract idea of national security. It perceives nuclear weapons as contributors to global insecurity rather than as a source of security. For more, see Ray Acheson, "Mobilizing Feminist Action for Nuclear Abolition", *Arms Control Today*, March 2023, <https://www.armscontrol.org/act/2023-03/features/mobilizing-feminist-action-nuclear-abolition-0>.