# Framework: Structural Violence

**Prioritize structural violence**

**Winter and Leighton 99** (Winter, D. D., Ph.D., & Leighton, D. C. Ph.D., (1999). Structural violence. In D. J. Christie, R. V. Wagner, & D. D. Winter (Eds.), Peace, conflict, and violence: Peace psychology in the 21st century. New York: Prentice-Hall.

https://sites.saumag.edu/danaleighton/wp-content/uploads/sites/11/2015/09/SVintro-2.pdf)//DHH–MSH

**Direct violence is horrific, but its brutality** usually **gets our attention: we notice** it, **and** often **respond to it**.**Structural violence**, however, **is** almost always **invisible**, **embedded in ubiquitous social structures,** normalized by stable institutions **and** regular experience. Structural violence occurs whenever people are disadvantaged by political, legal, economic or cultural traditions.Because **they are longstanding, structural inequities usually seem[ingly] ordinary, th**e way things are and always have been. The chapters in this section teach us about some important but invisible forms of structural violence, and alert us to the powerful cultural mechanisms that create and maintain them over generations.Structured inequities produce **suffering** and **death** as often as direct violence does, though the damage is slower, **more subtle**, more common, and **more difficult to repair.** Globally, poverty is correlated with infant mortality, infectious disease, and shortened lifespans. Whenever people are denied access to societys resources, physical and psychological violence exists. Johan Galtung originally framed the term structural violence to refer to any constraint on human potential due to economic and political structures (1969). Unequal access to resources, to political power, to education, to health care, or to legal standing, are forms of structural violence. When inner city children have inadequate schools while others do not, when gays and lesbians are fired for their sexual orientation, when laborers toil in inhumane conditions, when people of color endure environmental toxins in their neighborhoods, structural violence exists. Unfortunately, even those who are victims of structural violence often do not see the systematic ways in which their plight is choreographed by unequal and unfair distribution of societys resources.**Structural violence**is problematic in and of itself, but it is also **dangerous** because it **frequently leads to direct violence**. Those who are chronically oppressed are often, for logical reasons, those who resort to direct violence. For example, cross-national studies of murder have shown a positive correlation between economic inequality and homicide rates across 40 nations (Hansmann & Quigley, 1982; Unnithan & Whitt, 1992). In the U.S., racial inequality in wealth is correlated with murder rates (Blau & Golden, 1986). Often **elites** must**use direct violence to curb the unrest produced by structural violence**. For example,during the 1980s, mean income disparity between whites and blacksin the same urban areapredicted use of deadly force by police (Jacobs & O'Brien, 1998). Structural violence often requires police states to suppress resentments and social unrest. Huge income disparities in many Latin American countries are protected by correspondingly huge military operations, which in turn drain resources away from social programs and produce even more structural violence. Organized armed conflict in various parts of the world is easily traced to structured inequalities. Northern Ireland, for example, has been marked by economic disparities between Northern Irish Catholics-- who have higher unemployment rates and less formal education--and Protestants (Cairns & Darby, 1998). In Sri Lanka, youth unemployment and underemployment exacerbates ethnic conflict (Rogers, Spencer & Uyangoda, 1998). In Rwanda, huge disparities between the Hutu and Tutsies eventually led to ethnic massacres. While structural violence often leads to direct violence, the reverse is also true, as brutality often terrorizes bystanders, who then become unwilling or unable to confront social injustice. Increasingly, civilians pay enormous costs of war through death and devastation of neighborhoods and ecosystems. Ruling elites rarely suffer from armed conflict as much as civilian populations do, who endure decades of poverty and disease in war-torn societies. When social inequities are noticed, attempts are made to rationalize and understand them. Unfortunately, one outcome of this process is to assume that victims must in some way deserve their plight. But certainly it is easy to see that young children do not deserve to be victims of structural violence. The chapters in this section help us see the often invisible effects of structural violence, and the two first chapters focus on its effects on children. In their chapter The War Close to Home: Children and Violence in the United States, Kathleen Kostelny and James Garbarino describe the chronic violence which children in Chicago and other urban areas of the United States endure, often paralleling that experienced by children who live in countries at war. The authors examine myriad environmental risk factors, including family violence, parental depression, media violence, and firearm accessibility, which produce violent environments for children. Children who endure these environments often become battle weary, numb, hopeless, and/or morally impaired. The authors describe how community and family support mechanisms must be built to mitigate these risks. For example, home visitation and early childhood education programs provide crucial community support. WInter & Leighton Structural Violence Page 2 While Kostelny and Garbarino focus on community intervention techniques, Milton Schwebel and Daniel Christie extend this discussion by examining the economic and psychological structures which impair at-risk children. In their article Children and Structural Violence, the authors explicate how children living in poverty experience diminished intellectual development because parents are too overwhelmed to be able to provide crucial linguistic experiences. In the United States in particular, but throughout the world, children who are deprived of close bonds with adults and intellectual mediation which caretakers provide, are disadvantaged for the rest of their lives. Schwebel and Christies discussion concludes that economic structures must provide parents with living wage employment, good prenatal medical care, and high quality child care, if we are to see the next generation develop into the intelligent and caring citizens needed to create a peaceful world. If children are often the invisible and innocent victims of societys structural violence, so are their mothers. Diane Mazurana and Susan McKays Women, Girls, and Structural Violence discusses the many ways in which global sexism systematically denies girls and women access to resources. From health care and food, to legal standing and political power, females get less than males in every country on the planet. Yet we often do not notice sex-based injustice because we are so accustomed to seeing males with more power, prestige, and status than women. Mazurana and McKay argue that patriarchy based structural violence will not be redressed until women are able to play more active roles making decisions about how resources are distributed. Patriarchal values also drive excessive militarism, as Deborah Winter, Marc Pilisuk, Sara Houck and Matthew Lee argue in their chapter, Understanding Militarism: Money, Masculinity, and the Search for the Mystical. The authors illuminate how socieites make soldiering a male rite of passage and proof of manhood, thereby showing the close link between militarism and masculinity. Militarization is also deeply rooted in spiritual motives, as men attempt to experience mystical sacrifice through war. Both masculinism and mysticism drive military expenditures beyond rational ends, and produce great structural violence to those (usually women and children) whose human needs for adequate food, health care, and education go unmet because arms are bought instead. In addition, market forces fuel arms production and distribution throughout the world; half the worlds countries spend more on arms than health and education combined. The global economy that drives weapons production and excessive militarization produces structural violence on a planetary scale, especially in developing countries, as Marc Pilisuk argues in his chapter Globalism and Structural Violence. As global markets grow, income disparity increases around the world. Relaxed trade regulations and increased communication networks are creating powerful multinational conglomerates that derive huge profits off under-paid laborers in developing countries. The result is WInter & Leighton Structural Violence Page 3 horrific structural violence to workers who toil under brutal conditions. Globalism also produces a mono-culture, in which people throughout the world learn that the good life consists of convenience products, western dress, and western values of individuality and consumerism. The seduction of western norms is disintegrating traditional societies which in the past provided meaning and care for its members. Pilisuk argues that nongovernmental organizations at the local level must work to reclaim workers dignity and neighborhoods. The invisibility of injustice to laborers in the global market economy parallels the invisibility of injustice to indigenous people, the focus of Brinton Lykes chapter, Human Rights Violations as Structural Violence. Here Lykes argues for the expansion of human rights beyond the traditionally conceived civic and political realms, to include social, cultural and indigenous rights, which guarantee people their traditional culture and relationship with their land. She explicates two case studies, in Guatemala and Argentina, in which indigenous people are healing and reclaiming their cultural identities. Lykes discussion helps us see the limitations of psychology as it is traditionally conceived, that is, the study of individuals and their responses to their environments. For Lykes, as well as an increasing number of post-modern psychologists, the collective meanings of human experience-- human meaning that is embedded in particular cultures, neighborhoods, and placescan no longer be ignored. The individual cannot be our only focus. Lykes call to examine and work with the collective meanings parallels the focus of this section on structural violence, in that both concepts force us to examine the political and economic institutions which psychologists typically ignore. In this respect, the thinking in both sections 2 (Structural Violence) and 4 (Peace Building) of this book go beyond traditional psychology, and force us to examine the sociological, economic, political, and spiritual dimensions of violence and peace. Finally,to recognize the operation of structural violence forces us to ask questions about how and why we tolerate it, questions which often have painful answers for the privileged elite who unconsciously support it.A final question of this section is how and why we allow ourselves to be so oblivious to structural violence. Susan Opotow offers an intriguing set of answers, in her article Social Injustice. She argues thatour normal perceptual/**cognitive processes divide people into in-groups and**

**out-groups**. **Those outside** our group **lie outside our scope of justice**. Injustice that would be instantaneously confronted if it occurred to someone we love or know is barely noticed if it occurs to strangers or those who are invisible or irrelevant. We do not seem to be able to open our minds and our hearts to everyone, so we draw conceptual lines between those who are in and out of our moral circle.Those who fall outside are morally excluded, and become either invisible, or demeaned in some way so that we do not have to acknowledge the injustice they suffer. Moral exclusion is a human failing, but Opotow argues convincingly that it is an outcome of everyday social cognition. To reduce its nefarious effects,**we must be vigilant in noticing** and listening to **oppressed, invisible, outsiders**. Inclusionary thinking can be fostered by relationships, communication, and appreciation of diversity. Like Opotow, all the authors in this section point out thatstructural violence is not inevitable if we become aware of its operation, and build systematic ways to mitigate its effects. Learning about structural violence may be discouraging, overwhelming, or maddening, but these papers encourage us to step beyond guilt and anger, and begin to think about how to reduce structural violence. All the authors in this section note that the same structures (such as global communication and normal social cognition) which feed structural violence, can also be used to empower citizens to reduce it. In the long run, reducing structural violence by reclaiming neighborhoods, demanding social justice and living wages, providing prenatal care, alleviating sexism, and celebrating local cultures, will be our most surefooted path to building lasting peace.

### Traditional risk calculus is racist and its focus on catastrophe masks real violence.

**Verchick 96** (Robert Verchick, Assistant Professor at the University of Missouri, holds a J.D., from Harvard Law School, “In a Greener Voice: Feminist Theory and Environmental Justice”. *Harvard Women's Law Journal.* 1996. https://www.researchgate.net/publication/290993657\_In\_a\_Greener\_Voice\_Feminist\_Theory\_and\_Environmental \_Justice\_19\_Harvard\_Women's\_Law\_Journal\_23\_1996)//DHH–MSH

In addition,**policymakers should look to** all perspectives, especially those of **society’s most vulnerable** members, to develop as complete a picture of the moral issues as possible. Debates about scientific risk assessment and public values often appear as a tug of war between the who would apply only value-neutral criteria to set regulatory standards, and then; who demand that psychological perceptions and contextual factors also be considered. n285 Environmental justice advocates, strongly concerned with the practical experiences of threatened communities, argue convincingly for the latter position. A feminist critique of the issue, however, suggests that the debate is much richer and more complicated than a bipolar view allows. For feminists, the notion of value neutrality simply does not exist. The debate between technicians and the public, according to feminists, is not merely a contest between science and feelings, but a broader discussion about the sets of methods, values, and attitudes to which each group subscribes. Furthermore, feminists might argue, the parties to this discussion divide into more than two categories. Because one world view is premised on many things, including personal experience, one might expect that subgroups within either category might differ in significant ways from other subgroups. Therefore, feminists would anticipate a broad spectrum of views concerning scientific risk assessment and public values. Intuitively, this makes sense. Certainly scientists disagree among themselves about the hazards of nuclear waste, ozone depletion, and global warming. Many critics have argued that scientists, despite their allegiance to rational method, are nonetheless influenced by personal and political views. Similarly, members of the public are a widely divergent group. One would not be surprised to see politicians, land developers, and blue-collar workers disagreeing about environmental standards for essentially non-scientific reasons. Politicians and bureaucrats are two sets of the non-scientific community that affect environmental standards in fundamental ways. Their adherence to vocal, though not always broadly representative, constituencies may lead them to disfavor less advantaged socioeconomic groups when addressing environmental concerns. In order to understand a diversity of risk perception and to see how attitudes and social status affect the risk assessment process, we must return to the feminist inquiry that explores the relationship between attitudes and identity. The Diversity of Risk Perception A recent national survey, conducted by James Flynn, Paul Slovic, and C.K. Mertz, measured the risk perceptions of a group of 1512 people that included numbers of men, women, whites, and non-whites proportional to their ratios in society. Respondents answered questions about the health risks of twenty-five environmental, technological, and; hazards, including such hazards as ozone depletion, chemical waste, and cigarette smoking. The researchers asked them to rate each hazard as posing almost no health risk, a slight health risk, a moderate health risk; or a high health risk. The researchers then analyzed [\*79] the responses to determine whether the randomly selected groups of white men, white women, non-white men, and non-white women differed in any way. The researchers found that perceptions of risk generally differed on the lines of gender and race. Women, for instance, perceived greater risk from most hazards than did men. n292 Furthermore, non-whites as a group perceived greater risk from most hazards than did whites. Yet the most striking results appeared when the researchers considered differences in gender and race together. They found that white males tended to differ from everyone else in their attitudes and perceptions -- on average, they perceived risks as much smaller and much more acceptable than did other people; Indeed, without exception, the pool of white men perceived each of the twenty-five hazards as less risky than did non-white men, white women, or non-white women. Wary that other factors associated with gender or race could be influencing their findings, the researchers later conducted several multiple regression analyses to correct for differences in income, education, political orientation, the presence of children in the home, and age, among others. Yet even after all corrections; gender, race, and male; [status] remained highly significant predictors; of perceptions of risk. Explaining the Diversity From a feminist **perspective**, these findings are

important because they suggest that **risk assessors** , **politicians**, and **bureaucrats** -- **the large majority of whom are white men** , may be **act**ing **on attitudes about security and risk that women and people of color do not widely share.**If this is so, white men, as the; measurers of all things; have crafted a system of environmental protection that is biased toward their subjective understandings of the world. Flynn, Slovic, and Mertz speculate that white men perceptions of risk may differ from those of others because in many ways women and people of color are more vulnerable, because they benefit less from many of [society’s] technologies and institutions, and because they have less power and control. Although Flynn, Slovic, and Mertz are careful to acknowledge that they have not yet tested this hypothesis empirically, their explanation appears consistent with the life experiences of less empowered groups and comports with previous understandings about the roles of control and risk perception. n300 Women and people of color, for instance, are more vulnerable to environmental threat in several ways. Such groups are sometimes more biologically vulnerable than are white men. n301 People of color are more likely to live near hazardous waste sites, to breathe dirty air in urban communities, and to be otherwise exposed to environmental harm. n302 Women, because of their traditional role as primary caretakers, are more likely to be aware of the vulnerabilities of their children. n303 It makes sense th;at such vulnerabilities would give rise to increased fear about risk. It is also very likely that women and people of color believe they benefit less from the technical institutions that create toxic byproducts. n304 Further, people may be more likely to discount risk if they feel somehow compensated for the activity. n305 For this reason, Americans worry relatively little about driving automobiles, an activity with enormous advantages in our large country but one that claims tens of thousands of lives per year. The researchers&#39; final hypothesis – that differences in perception can be explained by the lack of &quot;power and control&quot; exercised by women and people of color -- suggests the importance that such factors as voluntariness and control over risk play in shaping perceptions. [\*81] Risk perception research frequently emphasizes the significance of voluntariness in evaluating risk. Thus, a person may view water-skiing as less risky than breathing polluted air because the former is accepted voluntarily. n306 Voluntary risks are viewed as more acceptable in part because they are products of autonomous choice. n307 A risk accepted voluntarily is also one from which a person is more likely to derive an individual benefit and one over which a person is more likely to retain some kind of control. n308 Some studies have found that people prefer voluntary risks to involuntary risks by a factor of 1000 to 1. n309 Although environmental risks are generally viewed as involuntary risks to a certain degree, choice plays a role in assuming risks. White men are still more likely to exercise some degree of choice in assuming environmental risks than other groups. Communities of color face greater difficulty in avoiding the placement of hazardous facilities in their neighborhoods and are more likely to live in areas with polluted air and lead contamination. n310 Families of color wishing to buy their way out of such polluted neighborhoods often find their mobility limited by housing discrimination, redlining by banks, and residential segregation. n311 The workplace similarly presents workers exposed to toxic hazards (a disproportionate number of whom are minorities) n312 with impossible choices between health and work, or between sterilization and demotion. n313 Just as marginalized groups have less choice in determining the degree of risk they will assume, they may feel less control over the risks they face. &quot;Whether or not the risk is assumed voluntarily, people have greater [\*82] fear of activities with risks that appear to be outside their individual control.&quot; n314 For this reason, people often fear flying in an airplane more than driving a car, even though flying is statistically safer. n315 If white men are more complacent about public risks, it is perhaps because they are more likely to have their hands on the steering wheel when such risks are imposed. White men still control the major political and business institutions in this country. n316 They also dominate the sciences n317 and make up the vast majority of management staff at environmental agencies. n318 Women and people of color see this disparity and often lament their back-seat role in shaping environmental policy. n319 Thus, many people of color in the environmental justice movement believe that environmental laws work to their disadvantage by design. n320 [\*83] The toxic rivers of Mississippi&#39;s &quot;Cancer Alley,&quot; n321 the extensive poisoning of rural Indian land, n322 and the mismanaged cleanup of the weapons manufacturing site in Hanford, Washington n323 only promote the feeling that environmental policy in the United States(while the)[U.S] sacrifices the weak for the benefit of the strong. In addition, the catastrophic potential that groups other than white men associate with a risk may explain the perception gap between those groups and white males. Studies of risk perception show that, in general, individuals harbor particularly great fears of catastrophe. n324 For this reason, earthquakes, terrorist bombings, and other disasters in which high concentrations of people are killed or injured prove particularly disturbing to the lay public. Local environmental threats involving toxic dumps, aging smelters, or poisoned wells also produce high concentrations of localized harm that can appear catastrophic to those involved. n325 Some commentators contend that the catastrophic potential of a risk should influence risk assessment in only minimal ways. n326 Considering public **Fear of catastrophes**, they argue, will **irrationally lead policymakers to battle more dramatic but statistically less threatening hazards, while accepting more harmful but more mundane hazards.**

**Prefer our fw**

**it encompasses indigenous people and prevents a race to the bottom where people try to pick and choose specific minorities to advocate for**

# AMR

**AMR (AKA Antimicrobial Resistance) is becoming a globally pervasive issue. AI provides the only solvency**

**Liu et. al 24**, Guang-Yu Liu, Dan Yu, Mei-Mei Fan, Xu Zhang, Ze-Yu Jin, Christoph Tang & Xiao-Fen Liu, Guang-Yu Liu is an assistant director of product and solution and has a degree from the National University of Singapore, 1-22-2024, "Antimicrobial resistance crisis: could artificial intelligence be the solution?", SpringerLink,<https://link.springer.com/article/10.1186/s40779-024-00510-1#Sec26> // DOA: 2/9/2025 AT.

Conclusions and future perspectives In conclusion, despite AMR posing a serious threat to humans health and having garnered extensive attention, the development of antimicrobials has been slow. Only 18 novel antibiotics were approved from 2014 to 2021, with only 2 possessing a novel MOA. By analyzing antibiotics currently in clinical development, it has been revealed that novel antibiotic development is showing two trends: 1) from synthetic small molecules to biologicals; and 2) from broad spectrum to narrow spectrum. To meet everpressing clinical demands, AI has already been involved in the discovery of novel AMPs and EOs, drug repurposing, and resistance mechanism prediction (Table 2). In the future, AI is likely to be involved in more stages of drug development, including molecular design, prediction of dosage regimens and associated efectiveness, dynamic modeling of protein–protein interactions [203], ligand-based simulation, quantitative structure–activity relationship modeling, molecular representations and high-order feature extraction [204], drug repurposing, and reduction of toxicity. With the substantial advantages of AI, potent chemical entities can be investigated at an unprecedentedly rapid pace compared to traditional methods, ultimately reducing drug development costs for research and development. This has the promise of increasing the success rate of clinical trials. The rapid advances of AI, combined with the current big data era (large datasets from high-throughput technologies, genomic/expression databases), should accelerate the emergence of new chemical entities possessing novel MOAs. As a result, more antibiotics or antibacterial biologicals are expected to make it through the drug development pipeline and enter the market. With the hope of combining new drugs and antibiotic stewardship, the fght against resistant bacteria should signifcantly benefit from the slower development of antibiotic resistance.

**Gen AI is key to creating billions of cost-effective antibiotics**

**University 24** [Mcmaster University (McMaster University is a public research university), "Researchers Invent AI Model to Design New Superbug-Fighting Antibiotics", 03/25/2024, Lab Manager, https://www.labmanager.com/researchers-invent-ai-model-to-design-new-superbug-fighting-antibiotics-31979, Accessed 03/20/2025] //ejs squad

**Researchers at** McMaster University and **Stanford** University have **invented a** new **gen**erative **a**rtificial **i**ntelligence model **that can design billions of new antibiotic molecules that are inexpensive and easy to build** in the laboratory. The worldwide spread of drug-resistant bacteria has created **an urgent need for new antibiotics,** but even **modern AI methods are limited at isolating promising chemical compounds,** especially when researchers must also find ways to manufacture these new AI-guided drugs and test them in the lab. In a new study, recently published in the journal Nature Machine Intelligence, researchers report they have **developed a new generative AI model called SyntheMol, which can design new antibiotics to stop the spread of Acinetobacter baumannii, which the World Health Organization has identified as one of the world’s most dangerous antibiotic-resistant bacteria.** Notoriously difficult to eradicate, A. baumannii can cause pneumonia, meningitis, and infect wounds, all of which can lead to death. Researchers say few treatment options remain. “Antibiotics are a unique medicine. As soon as we begin to employ them in the clinic, we're starting a timer before the drugs become ineffective, because bacteria evolve quickly to resist them,” says Jonathan Stokes, lead author on the paper and an assistant professor in McMaster’s Department of Biomedicine & Biochemistry, who conducted the work with James Zou, an associate professor of biomedical data science at Stanford University. “**We need a robust pipeline of antibiotics, and we need to discover them quickly and inexpensively.** That's where the artificial intelligence plays a crucial role,” he says. **Researchers developed the generative model to access tens of billions of promising molecules quickly and cheaply.**

**It's faster and more efficient**

**Turner 3/16** [Ben Turner (Ben Turner is a U.K. based staff writer at Live Science. He covers physics and astronomy, among other topics like tech and climate change. He graduated from University College London with a degree in particle physics before training as a journalist.), "Scientists spent 10 years cracking superbug problem. It took Google's 'co-scientist' a lot less.", 03/16/2025, Live Science, <https://www.livescience.com/technology/artificial-intelligence/googles-ai-co-scientist-cracked-10-year-superbug-problem-in-just-2-days> #, Accessed 03/16/2025] //ejs squad

**Google's new artificial intelligence (AI) tool has cracked a problem that took scientists a decade to solve in just two days.** José Penadés and his colleagues at Imperial College London **spent 10 years figuring out how** some **superbugs gain resistance** to antibiotics — **a growing threat that claims millions of lives each year.** But when the team gave Google's "co-scientist" — an AI tool designed to collaborate with researchers — this question in a short prompt, the **AI**'s response **produced** the same **answer** as their then-unpublished findings **in** just **two days.** Astonished, Penadés emailed Google to check if they had access to his research. The company responded that it didn't. The researchers published their findings Feb. 19 on the preprint server bioRxiv, so they have not been peer reviewed yet. "What our findings show is that **AI has the potential to synthesise all the available evidence and direct us to the most important questions and experimental designs,"** co-author Tiago Dias da Costa, a lecturer in bacterial pathogenesis at Imperial College London, said in a statement. "**If the system works as well as we hope it could, this could be game-changing; ruling out 'dead ends' and effectively enabling us to progress at an extraordinary pace."**

**In universities, gen AI preemptively anticipates mutations.**

**Pasquini ‘24**

Pasquini, Nina (Nina Pasquini is a metro intern for The News & Observer. She is a graduate of Harvard University). “Using Generative AI to Predict Viral Mutations and Develop Vaccines | Harvard Magazine.” *Harvard Magazine*, 8 Oct. 2024, www.harvardmagazine.com/2024/11/ai-medicine-predicting-viral-evolution-vaccines. Accessed 26 Feb. 2025.//sandy

In medicine, “There’s a **quiet revolution happening at the moment,”** says professor of systems biology Debora Marks. Most **people** have become **familiar** **with** **artificial** **intelligence** through chatbots such as ChatGPT, which function by predicting the next word in a sequence based on patterns learned from vast amounts of Internet text. But **researchers at Harvard Medical School** are **applying generative** **AI’s** predictive capabilities **to bio**logical **and evolutionary data, creating models that** can **predict viral evolution, design never-before-seen proteins, and anticipate the effects of genetic mutations.** “The **coming** **together** of these **new** **AI** methods with the **power** of **evolutionary** **information** and **biological** **data**,” Marks says, “is giving us an opportunity to do things that were really closed doors before.” Researchers in Marks’s lab made a breakthrough in the use of AI to study biological data in 2021, when they developed EVE, short for Evolutionary model of Variant Effect. They **trained EVE to detect** **patterns** of genetic **variation across** the **genomes** of **hundreds of thousands of nonhuman species—**then to **predict**, **based** on **that data**, whether similar **human genetic mutations** would **cause disease**. This addressed a longstanding challenge in biological research: though scientists have developed increasingly advanced technology for sequencing human genomes, they have struggled to discern the significance of many of the genetic variations they identified. Which are benign, and which are disease-causing? In a 2021 paper, Marks and colleagues found that EVE could make that distinction in genes related to conditions such as cancer and heart rhythm disorders. During the COVID pandemic, Marks and her lab colleagues realized this technology could also help them respond to the quickly evolving virus. They adapted EVE to create EVEscape, a tool designed to predict viral variants before they emerge. EVEscape consists of two parts: an AI model trained on evolutionary sequences—which reveal how similar viruses have evolved in the past—and biological and structural information about the current virus. Had EVEscape been used at the beginning of the pandemic, lab members reported in a 2023 paper, it would have **anticipated** the **most frequent** **mutations** and the most **consequential variants** of the **COVID virus** that **actually** **developed** and **spread**. **This** work **is a major break from traditional vaccine and therapeutic design, which relies on** either **costly and slow experiments** based on animal testing, or data generated during a **disease** **outbreak** in **humans**. The limitations of the traditional approach became evident during the pandemic, says Noor Youssef, a researcher who works with Marks. “We’ve **had to resort to these annual boosters**, where **every** **year** we’re **getting** a **new** **vaccine** that **matches the current strain**,” she says. “What **these** **generative models allow us** **to do is see ahead of time where the virus is going to evolve, so you can make a vaccine that is** **future-proof”**—**responsive to** both **current and** **potential** **future variants**. Marks and her colleagues have modified EVEscape to create EVEvax, which designs vaccines tailored to predicted mutations, and are **using** this **technology** to **develop** a **vaccine** for **sarbecovirus**, the subgenus that includes SARS-Cov-2. The new vaccine would be effective against COVID and other commonly circulating coronaviruses that cause the common cold. **They** have also **received funding** from Project CEPI (the Coalition for Epidemic Preparedness Innovations) **to develop a long-lasting vaccine for bird flu.** That disease hasn’t yet spread widely in humans—but **when it does, it will likely evolve rapidly to overcome human immunity**. The scientists aim to develop a vaccine responsive to those **future changes as early as next spring.** “There are already FDA-approved vaccines in the freezer, **based on the strains from a few years ago,”** Youssef says. But with the help of EVEscape, “You can have something in the freezer that’s going to work for the strains that are around now—but also **work against things that might arise in the future.” Generative AI has also enabled researchers to design new proteins, such as antibodies that attack certain viral mutations.** Using the AI technology from EVE and EVEscape, the Marks lab **developed** **AI models** that are **trained** on **protein** **sequences**. These models **generate new sequences tailored to designated** goals—**and** also **assess whether those predicted sequences will result in functional proteins**. Similarly, when ChatGPT is trained on text data, it not only **learns what words are associated with each other, but** also the **structure** of **language**: how grammar rules constrain the shape of its outputs. Like large language models, **AI protein design models are “going to try to understand the biochemical constraints that underpin the function of those proteins**,” says Pascal Notin, a machine-learning specialist in the Marks lab. In addition to creating new virus-specific antibodies, these protein-design models can be used to combat genetic diseases that cause a loss or malfunction of enzymes, proteins that catalyze biochemical reactions and enable the body to break down biological waste. Patients with such conditions are typically treated with enzyme replacement therapy (ERT); the AI tools can help design more stable, **effective** **enzymes** for such **treatment**. Marks says these models signal a fundamental shift in how research is conducted because, for the first time, “we’ve been **able** to make **predictions** **without [the** **preliminary experimentation]** process”—predictions that can then be **tested and refined by more focused experiments.** Researchers have long had access to the data on which such models are trained: the billions of DNA and RNA sequences that make up the genomes of hundreds of thousands of species and viral strains. But this trove of data was simply too large for individuals to fully parse. By detecting patterns and making predictions, **generative AI has enabled scientists to unlock that data’s valu**e. “Evolutionary information, **human population** **sequencing**, and **viral** **sequencing**,” Marks emphasizes, “are much more powerful than anybody thought they would be.”

**New treatment is key to stop AMR**

**WHO 23** [WHO, "Vaccines could avert half a million deaths associated with anti-microbial resistance a year", July 28, 2023, WHO, https://www.who.int/news/item/28-07-2023-vaccines-could-avert-half-a-million-deaths-associated-with-anti-microbial-resistance-a-year?, Accessed March 25, 2025] //ejs squad

Globally there are 4.95 million deaths per year associated with antimicrobial resistance (AMR). Low- and middle-income countries bear the burden of drug-resistant infections. AMR, which occurs when bacteria, virus, fungi and parasites change over time and no longer respond to existing treatments, was described by WHO in 2019 as one of the top ten global threats to public health – a threat to which science is playing catch-up in its efforts to mitigate. A new study published in the BMJ Global Health has found that over half a million lives could be saved each year with the effective use of existing vaccines and the continued development of new vaccines to tackle priority pathogens. The study highlights the importance of preventive measures including vaccination in slowing and containing the spread of AMR. The study was carried out by the World Health Organization (WHO), the International Vaccine Institute, Korea (IVI) and the London School of Hygiene & Tropical Medicine. The authors used data from 2019 to model the potential impact of 15 new and existing vaccines against pathogens in WHO’s list of bacterial priority pathogens. They found that if the vaccines are used for key populations, not only could half a million lives be saved, but 28 million disability-adjusted life-years (DALYs) would be averted, meaning the numbers of years lost to disability or reduced lifespans as a result of infection. In the scenario where seven of the vaccines were used for broader populations, an additional 1.2 million deaths and 37 million DALYs would be prevented. According to the study, the biggest reduction in burden would be felt in WHO African and South-East Asian Regions, which currently account for two-thirds of the vaccine-preventable AMR burden. Such introductions and scale-ups would be particularly impactful in reducing the AMR burden of Mycobacterium tuberculosis (TB) and Streptococcus Pneumoniae faced in these regions. In 2021, the estimated proportion of people with TB who had drug-resistant TB was 3.6% among new cases and 18% among those previously treated. **Vaccines are a valuable tool in reducing spread of AMR,** alongside other measures to prevent, diagnose and treat infections – including ensuring access to water, sanitation and hygiene, especially in health facilities; infection prevention and control programmes; and ensuring access to and appropriate use of essential diagnostic tools and medicines including antibiotics. Vaccines contribute to a decline in infections amongst vaccinated and unvaccinated populations as well as reducing the need to use anti-microbials, thereby reducing the risk of misuse. This in turn contributes to reducing the risk of emergence and spread of resistant strains. Health systems faced significant strain throughout COVID-19. Recovery of immunization systems and investment in expanding the use of new and existing vaccines to priority at risk populations is a necessary part of ongoing catch-up efforts. AMR is predicted to cost the global economy an estimated cost of USD$100 trillion between 2014 and 2050 and we have no time to waste to tap into the potential of scaled up vaccination efforts to prevent the spread of AMR.

**Otherwise AMR kills millions**

**Solly 19**

Solly, Meilan (Meilan Solly is Smithsonian magazine's senior associate digital editor, history.). “Drug-Resistant Infections Could Kill 10 Million People Annually by 2050.” Smithsonian Magazine, 1 May 2019, https://www.smithsonianmag.com/smart-news/drug-resistant-infections-could-kill-10-million-annually-2050-180972079/. Accessed 26 August 2022.

Every year, drug-resistant infections—exacerbated by antibiotic overuse in humans, livestock and agriculture—kill 700,000 people across the globe. If dramatic action isn’t taken soon, a new United Nations report warns, this number could skyrocket, reaching 10 million deaths annually by 2050 and sparking a financial crisis on par with the Great Recession of 2008. Already by 2030, antimicrobial resistance could force 24 million people into extreme poverty. According to Alex Schwartz of Popular Science, the widespread overuse of antimicrobial medications needed to combat such diseases as tuberculosis, malaria and MRSA has made these infections more resistant to traditional treatment. Examples of misuse include cold or flu sufferers taking antibiotics without realizing that such drugs are incapable of killing viruses and farmers using antibiotics to promote growth or prevent the spread of disease among animals such as chickens, pigs and cows. When microbes come into unnecessary contact with bacteria, they have more chances to adapt to specific strains, increasing the likelihood of genetic mutations that undercut medications' effectiveness. Crucially, Schwartz writes, the fact that infectious diseases are becoming progressively harder to treat means they’re also more likely to spread easily, particularly in a hospital setting. Thanks to antibiotic misuse, humans are now more susceptible to harmful bacteria transmitted during routine, unrelated medical procedures such as organ transplants, childbirth and chemotherapy. “This is a silent tsunami,” Haileyesus Getahun, director of the U.N. Interagency Coordination Group on Antimicrobial Resistance—an Ad hoc committee of public health experts, government ministers and industry officials convened in March 2017—tells The New York Times’ Andrew Jacobs. “We are not seeing the political momentum we’ve seen in other public health emergencies, but if we don’t act now, antimicrobial resistance will have a disastrous impact within a generation.” Drug-resistant infections pose an even greater threat in developing countries. As Jacobs explains, germs thrive in environments lacking clean water and adequate sewage systems. Poverty-stricken individuals are also more likely to purchase counterfeit or low-quality antibiotics from street vendors without understanding the implications of such misuse. The U.N. group outlines several key recommendations for curbing the spread of drug-resistant pathogens. Among others, these include: regulating the sale of antibiotics sold over-the-counter without a prescription, stopping the use of antibiotics for spurring farm animals’ growth, asking wealthier nations to fund public health improvements in poorer countries, and incentivizing pharmaceutical companies to develop new antibiotics. Speaking with CNN’s Susan Scutti, Melinda Pettigrew, an epidemiologist at the Yale School of Public Health who was not involved in the research, points toward the report’s emphasis on "one health," or the idea that human, animal and environmental health are all interconnected and should be treated as such. (The approach make sense given that the Centers for Disease Control estimates 6 out of every 10 infectious diseases found in humans were spread from animals.) Pettigrew concludes, “If we are going to develop successful strategies to reduce the impact and spread of antimicrobial resistance the scientists, clinicians, veterinarians, policymakers, and members of the community will have to work together to address the problem from a One Health perspective.”

**ABR targets minorities and perpetuates social inequalities**

**CDC 22**

“CDC's Priority to Address Health Equity Issues | CDC.” Centers for Disease Control and Prevention, 17 March 2022, https://www.cdc.gov/drugresistance/solutions-initiative/stories/ar-health-equity.html. Accessed 20 October 2022.

More than 2.8 million antibiotic-resistant infections occur in the United States each year, with a disproportionate number of these infections negatively impacting people who are at higher risk for health disparities and inequities. Disparities in antibiotic-resistant threats exist across all social determinants of health, including health care, the food supply, and the community. CDC is prioritizing health disparities/inequality related to antibiotic resistance through programs like Project Firstline, Antibiotic Resistant Laboratory Network, and National Healthcare Safety Network. More than 2.8 million antibiotic-resistant infections occur in the U.S. each year, and more than 35,000 people die as a result. When Clostridioides difficile—a bacterium that is not typically resistant but can cause deadly diarrhea and is associated with antibiotic use—is added to these, the U.S. toll exceeds 3 million infections and 48,000 deaths. A disproportionate number of resistant infections negatively impacts people who are at higher risk. Many risks for antibiotic-resistant infections are tied to the social determinants of health (SDoH)—conditions in the places where people live, learn, work, and play that affect a wide range of health outcomes and quality of life. Identifying and addressing these impacts is vital for improving health outcomes and reducing the burden of antibiotic resistance. Antibiotic-resistant threats cause health disparities across age, race, and gender in settings spanning the One Health spectrum—in health care, the food supply, the environment, and the community. Data pdf icon[PDF – 2 pages] on healthcare-associated infections (HAIs) show disparities particularly among people of color, pregnant women, older adults, and people with weakened immune systems or certain medical conditions, such as diabetes.

Antibiotic-resistant infections disproportionately impact young children, men who have sex with men (MSM), and groups that have historically experienced greater obstacles based on their racial or ethnic group. Disparities related to antibiotic resistance are impacted by structural inequities and socioeconomic factors such as household income, type of housing (crowding, persons experiencing homelessness), immigration, type of health insurance, access to health care, and education level.

Geography and the built environment (buildings, neighborhoods, parks, roads) also play a role in health disparities related to antibiotic resistance, leading to higher rates of infection among people experiencing homelessness or people facing housing insecurity, travelers to countries with unsafe water and inadequate sanitation, and people living in certain metropolitan cities. Print Version Health Equity and Antibiotic Resistance Fact Sheet Download a printable fact sheet highlighting information on this webpage: Health Equity and Antibiotic Resistance pdf icon[PDF – 2 pages]. We know that more research and action is needed to fully understand potential disparities related to antibiotic resistance and this is a priority for CDC. CDC is working across programs like: Project Firstline is addressing training gaps for healthcare workers from diverse educational and training backgrounds The Antibiotic Resistance Laboratory Network to analyze patient demographic data alongside laboratory test results to provide a more comprehensive picture of antibiotic resistance in certain populations The National Healthcare Safety Network (NHSN) to provide patient demographic data for future analysis and drive improvement in health care quality Through this work and more, CDC is addressing antibiotic resistance and health equity as part of CDC’s CORE Initiative, an agency-wide strategy to increase equity across public health.

# Aviation

**Pilot shortages are running rampant.**

**Tirpak 25** [John Tirpak, 1-23-2025, "New Report: Fixes to Pilot ‘Crisis’ Tied to Fleet Size, Flying Hours, Reserves," Air & Space Forces Magazine, https://www.airandspaceforces.com/new-report-combat-pilot-crisis/, DOA: 3-5-2025] shaan

Fixing the Air Force’s chronic combat pilot shortage will require more aircraft in the **fleet**, more flying hours to squadron operations, and retaining more pilots within Reserve components, according to a new paper from AFA’s Mitchell Institute for Aerospace Studies.

“If we don’t have experienced fighter pilots, we risk the outcome not just of the mission, but the entire operation, or even the war,” said Heather Penney, senior resident fellow at Mitchell and author of the report.

Experience is particularly important for the pilot shortage given the time it takes to develop a seasoned pilot and the urgency of **g**reat **p**ower **c**ompetition.

At a virtual rollout to discuss the paper, Penney noted that it takes 250 flying hours and 60 simulator sorties to “grow” a qualified F-35 flight leader, and that pilot has already had more than a year of basic flight instruction. All told, it takes five years to train a combat pilot.

“But we can’t wait five years,” she said. “We must build the ‘fight tonight’ force with enough strategic depth to successfully sustain combat operations. … We are out of time, and we must have a sense of urgency, because if we don’t, we risk losing.”

The combat pilot shortfall has persisted and grown for more than 20 years. In 2006, the Air Force was short 200 fighter pilots, Penney said. That deficit grew to 1,000 fighter pilots by 2017 and now stands at 1,150 fighter pilots.

Those missing pilots mean there are fewer instructors available in frontline squadrons to help mature new aviators, and fewer experienced combat advisors that can be detailed to the staffs of combatant commanders, further degrading the overall force’s **capability**. Many studies have shown that more experienced pilots have a far better survival rate in combat, meaning less attrition in wartime of aviators and aircraft, Penney noted.

A major part of the Air Force’s problem, she said, is that there are not enough aircraft available for combat pilots to train on. Simulators are helpful and allow rehearsals of techniques that the Air Force doesn’t want to expose in open flight, but there also aren’t enough simulators to provide the necessary experience, and they are not yet good enough to season pilots in the basics of operating around airfields, in weather, and in dealing with the unexpected.

The Air Force is seeing low numbers in its Ready Aircrew Program, which gauges whether a squadron is qualified to go to war, she said. The RAP looks at on numbers of pilots in a squadron, the ratio of experienced to inexperienced pilots, the number of simulators available, and the number of flying hours and sorties the unit can generate per month. Fewer experienced pilots and less of everything else mean delays in upgrading junior aviators.

Retired Lt. Gen. Joseph Guastella, former deputy chief of staff for operations, said he is worried that the U.S. is losing its long-standing advantages of **superior** aircraft and more experienced pilots.

**That undermines Air Force effectiveness, enhanced training is key.**

**Jenkins et al. 22** [Phillip R. Jenkins, William N. Caballero, and Raymond R. Hill, 2-xx-2022, Dr. Phillip R. Jenkins is an Assistant Professor of Operations Research in the Department of Operational Sciences at the Air Force Institute of Technology, Wright-Patterson Air Force Base, Ohio. "Predicting success in United States Air Force pilot training using machine learning techniques," No Publication, https://www.sciencedirect.com/science/article/abs/pii/S0038012121001130, DOA: 3-3-2025] shaan

\*Free link: https://sci-hub.ru/https://www.sciencedirect.com/science/article/abs/pii/S0038012121001130

\*SUPT: Specialized Undergraduate Pilot Training

United States Air Force (USAF) senior leaders have repeatedly expressed concerns about the service’s pilot shortage. In 2017, then Secretary of the Air Force (SECAF), Heather Wilson, disclosed that the military branch was 2,000 pilots below sustainable manning levels. She further stated that this shortfall was poised to “break the force” [1]. The situation has not improved in the intervening years; if anything, it has grown more dire. As of early 2020, USAF senior leaders reported the shortfall had increased to **2,100** pilots [2]. This research seeks to mitigate this shortfall by reducing pilot candidate attrition during training. The goal is to determine what, if any, factors make a pilot candidate more likely to successfully complete their training, and ultimately to use this knowledge to influence future pilot selection processes.

The genesis of the current pilot shortfall can, in part, be traced back to the sequestration-driven federal budgets of 2013–2015. Unpredictable funding levels prohibited implementation of a forward-looking personnel policy and led to the limited contemporary population of junior pilots. The USAF depends on **younger** pilots to replace senior pilots. This allows senior pilots to serve in **administrative** staff positions wherein they gain headquarters (i.e., corporate-level) experience and are generally provided a reprieve from frequent deployments. The contemporary pilot shortfall has instead forced senior pilots to remain in the cockpits, reduced the pilot presence on headquarters’ staffs, and increased fears that large numbers of senior pilots will leave the service due to the fatigue caused by their operational commitments. This has caused a **ripple effect** throughout the USAF, disrupting the operations of other career fields as they surge to fill the manning void left on headquarters’ staffs.

Correcting the pilot shortage requires a multi-faceted approach. In 2020, then United States Air Force Chief of Staff (CSAF) General David Goldfein acknowledged that there is no “silver bullet” that will solve the problem [2]. A concentrated effort on several fronts to increase recruiting, reduce training attrition, improve training timeline **efficiency**, and enhance retention are all necessary efforts to ameliorate the USAF pilot shortage. The USAF has already instigated efforts on many of these fronts. Air Combat Command is revamping fighter pilot training attempting to streamline the current 40 month pipeline [3]. The Air Force Personnel Center has offered retention bonuses to senior pilots in exchange for a multi-year service commitment [4]. The United States Air Force Academy has sent an increasing number of its graduates into the pilot training pipeline [5]. Notably, Air Education and Training Command has made a concentrated effort to improve Specialized Undergraduate Pilot Training (SUPT), the initial skills training for pilots in the USAF [6]. However, efforts to reduce training attrition without sacrificing quality standards are less well-developed. Such is the focus of this study.

Given the extensive time and monetary commitments required to train a pilot [7], a candidate failure during training represents a significant loss to the USAF and is counterproductive in the attempt to reduce the current pilot shortfall. Therefore, in this study we examine how modern **machine learning** techniques may be used to build a classifier that helps to predict candidate success in SUPT. By doing so, we present a method to reduce SUPT attrition as a component of the larger endeavor to reduce the USAF pilot shortfall.

In adopting this perspective, our research extends the application of machine learning in human resource and **education**al tasks to the military environment. In the civilian sector, machine learning has been applied to hiring practices [8], job performance prediction [9], employee retention [10], and recruitment [11]. [12,13] provide thorough literature reviews in this regard. As is the case in numerous machine learning tasks, neural networks take a prominent role in human resource applications (e.g., Refs. [14,15]. Other modern techniques such as deep learning [16] and **generative** adversarial **networks** [17] are also beginning to take hold.

Despite these advancements, machine learning for human resource management or pedagogical applications in the military is much less developed; a limited number of examples exist in these areas leveraging operations research techniques of any variety (e.g., Refs. [29–32]. The relative dearth of research is noteworthy. Although related, military personnel and training systems are significantly different from their civilian counterparts; they are insular systems wherein all training and promotion occur endogenously.

Nevertheless, the DoD is increasingly looking to artificial intelligence and machine learning to increase the efficacy and efficiency of its processes [33]. With specific regard to recruiting, practitioners have recently applied machine learning to identify promising candidates for special operations forces [34]. Our research illustrates how such an approach can be extended to USAF pilot selection, another resource and time expensive training pipeline. The methods utilized herein are not necessarily meant to supplant human expertise, but rather to supplement it. That is, the machine learning algorithms examined provide decision support to humans tasked with selecting USAF pilot candidates that have the highest probability of successfully graduating. This research also illustrates how insights from the models developed herein can be used for alternative military personnel tasks (e.g., training pipeline monitoring and human resource allocation). In so doing, our research takes initial steps towards adapting the varied insights drawn from machine learning in civilian human resource management and education to the military setting.

The remaining sections of this manuscript are structured as follows. In Section 2, we provide an overview of the USAF pilot training pipeline, the empirical basis for current application testing, and an overview of recent SUPT attrition statistics. In Section 3, we provide an empirical exploration of numerous machine learning techniques to identify which subset are most promising for the development of an effective classifier. In Section 4, we illustrate the efficacy of each technique, provide experimental results relating to hyperparameter selection, and determine the relative importance of the data features. Notably, we demonstrate counter-intuitive behavior regarding the superior performance of relatively simpler techniques over others generally considered more capable. In Section 5, we discuss the relevance of our quantitative findings to USAF senior policymakers, propose a composite pilot selection index, and enumerate potential policy recommendations. Finally, in Section 6, we provide closing remarks and directions of future inquiry.

**Luckily, the Air Force is integrating AI now.**

**Underwood 24** [Kimberly Underwood, 6-3-2024, Kimberly Underwood joined SIGNAL Magazine in August of 2017. She brings with her more than 15 years experience as a reporter, writer and analyst, mostly within the energy industry "Air Force Enables ‘Responsible’ Experimenting With Generative AI," AFCEA International, https://www.afcea.org/signal-media/defense-operations/air-force-enables-responsible-experimenting-generative-ai, DOA: 3-4-2025] shaan

U.S. airmen now can experiment with generative artificial intelligence (AI) on a larger scale, Department of the Air Force (DAF) officials announced June **10** in a statement and during a briefing with reporters at the Pentagon.

Led by the DAF Chief Information Officer (CIO), Venice Goodwine, other DAF officials and researchers from the Air Force Research Laboratory (AFRL), the Air Force is providing the so-called NIPRGPT platform “to provide Airmen, Guardians, civilian employees and contractors the ability to responsibly experiment with generative AI, with adequate safeguards in place,” the DAF announced in a statement.

The NIPRGPT platform will reside on the nonclassified Internet Protocol Router Network (NIPRNet). In addition to the NIRPNET’s protections, safeguards for the generative AI platform were also developed with the U.S. Office of Personnel Management AI guidelines in mind.

The platform will allow for the responsible use of natural language models and other generative AI tools, emphasized Lynne Graves, chief of the Artificial Intelligence Division, DAF.

The other emphasis beyond security is to allow experimentation. With the sudden rise in generative AI over the last two years, Air Force officials wanted to provide room for trial and error in a safe way, with warfighters able to play and experiment. The department can only image the scores of possible use cases that might be developed.

“I truly believe the greatest contributions that integrators can make is to create other innovators,” DAF Acting Chief Data and Artificial Intelligence Officer (CDAO), Chandra Donelson, said Monday during a briefing with reporters at the Pentagon. “And to see what the Airmen and Guardians have done here with the NIPRGPT capability is phenomenal.”

The research performed by AFRL and the DAF to develop the platform, as well as the feedback from the coming users of NIPRGPT, will help shape future DAF actions around generative AI, officials explained.

“We are not committing to any single model or technology or vendor,” Donelson stated. “It is too early in the process. However, we are leveraging this effort to inform future policy, acquisition and investment decisions.”

The officials have already conducted three-related innovation roundtables with stakeholders, and they foresee continued engagement.

“As we continue to integrate AI, we want industry, large and small businesses, and **academia** to provide us insights on model benchmarking, training, as well as future investments,” Donelson noted. “As leaders, we must be able to articulate the transformation that AI or any solutions can bring to our organization. But as technology leaders, we have a responsibility to ensure that the models are fit for the purpose. So, we aim to partner with the best minds from government, industry and academia to identify which models perform better for our specific tasks and in our domains, as well as use cases to meet the needs of tomorrow's warfighters.”

To start, the officials see the generative AI platform allowing users to query the AI tools to help complete tasks such as correspondence, background papers and coding.

To this end, the DAF will also provide training **gen**erative **AI** training. And while many warfighters can easily pick up these skills, the DAF wants to deliver intentional training that is fit for purpose and culture.

“Our recent GenAI Roundtables with industry and academia have shown us this is an actively growing field,” Goodwine, the DAF CIO, said in the statement. “And now is the time to give our Airmen and Guardians the flexibility to develop the necessary skills in parallel. There are multiple modernization efforts going on right now across the federal government and within the DAF to get tools in the hands of the workforce. This tool is another one of those efforts.”

In addition, the DAF will continue to examine appropriate generative AL solutions from industry, department officials stated. “DAF senior leaders are focused on **maximizing** competitive advantage, recognizing that Airmen and Guardians need advanced technologies at the speed of relevance.”

The genesis of NIPRGPT is from AFRL’s Dark Saber software platform developed by the lab’s Information Directorate in Rome, New York, explained AFRL’s Collen Roller.

“Dark Saber is an ecosystem of Airmen and Guardians from across the DAF that brings together innovators and developers and equips them to create next-generation software and operational capabilities deployable to the Force at a rapid pace,” the DAF stated.

"NIPRGPT is a critical bridge to ensure we get the best tools we have into our team's hands while larger commercial tools are navigating our intense security parameters and other processes,” said Alexis Bonnell, AFRL CIO. “Changing how we interact with unstructured knowledge is not instant perfection; we each must learn to use the tools, query, and get the best results. NIPRGPT will allow Airmen and Guardians to explore and build skills and familiarity as more powerful tools become available."

In February, Vice Chief of the Air Force, James Slife, spoke of the service’s great demand for artificial intelligence and data management improvements to aid its operations and future capabilities.

The allowed experimentation and the arrival of NIPRGPT is one step closer to bringing AI into operations and day-to-day tasks, officials said.

Interested parties, including civilian and uniformed Airmen and Guardians, as well as contractors who are CAC holders, can register for NIPRGPT access here: https://niprgpt.mil

**That solves.**

**1. PILOT TRAINING.**

**Pereira 24** [Flavia Camargos Pereira, 6-26-24, "How the US Air Force plans to use artificial intelligence to train pilots," No Publication, https://www.shephardmedia.com/news/training-simulation/how-the-us-air-force-plans-to-use-artificial-intelligence-to-train-pilots/, DOA: 3-4-2025] shaan

The US Air Force (USAF) plans to deepen the use of artificial intelligence (AI) to improve the training for its pilots. The service intends to deploy AI technology to provide more efficient and faster preparation, in addition to better assessing and monitoring air personnel outcomes from flying instructions.

The branch envisions that AI could provide several advantages, especially in undergraduate training, which supports the air force in selecting high-quality-rated officers.

AI will enable the USAF to better tailor the preparation of flying officers by deploying a proficiency-based model instead of a stair-step or waterfall model of training whereby the pilot must accomplish certain assignments in a row in order to graduate to the next level.

Lt. Gen. Adrian Spain, deputy chief of staff for operations for the USAF, claimed that with AI and an ecosystem that allows assessing **academics**, flying training and air personnel proficiency across each of their missions, “their progression isn’t based on which event they opted for, but how proficient they are at the tasks within those events”.

During a recent webinar conducted by the Air and Space Force Association (AFA), Spain stressed that, from an execution perspective, AI would be more value added in the flying training units “where it will have applicability in the future is in monitoring and managing training over time”.

In graduate training, for the preparation period pilots undergo before arriving in operation units, the USAF foresees the use of AI in synthetic environments to train pilots in different levels of threat awareness and reaction.

“AI can help just generate that without us having to programme every single digital entity to do something at 20 miles, 25 miles, 10 miles or [simply] turn around and go home, which takes time and is frankly inefficient,” Spain noted.

“I can really determine the proficiency of the student in a way that might allow me to move faster through a programme or, at a minimum, to tailor the programme to that particular individual’s strengths and weaknesses.”

In addition to improving the training for air personnel, the USAF has also been increasing the use of AI in other domains. In 2019, the service announced a cooperative agreement with the Massachusetts Institute of Technology (**MIT**) to jointly create an AI accelerator.

Under the initiative, the branch has conducted research to enable **rapid** prototyping, scaling and ethical application of AI algorithms and systems.

In January 2020, the AI accelerator launched 10 interdisciplinary projects. The three-year projects involved 15 research workstreams and advanced **AI research** in various areas, including weather modelling and visualisation, optimisation of training schedules, and autonomy for augmenting and amplifying human decision-making.

Another USAF line-of-action involving AI has been in advancing the use of autonomous capabilities to remotely fly its aircraft fleet. As part of the Viper Experimentation and Next-gen Operations Model – Autonomy Flying Testbed (VENOM-AFT) programme, the service plans to conduct the first flight of a pilotless F-16 Fighting Falcon in 2025.

The USAF has been also advancing with the Variable In-flight Simulation Test Aircraft (VISTA) effort. In April, Frank Kendall, secretary of the air force, flew in the front seat of a X-62A VISTA aircraft at Edwards Air Force Base in California.

Moreover, the service ordered Reliable Robotics to carry out a study to evaluate the integration of the company’s aircraft-agnostic autonomous flight system into large multi-engine aircraft such as the KC-135 Stratotanker.

Early this month, as part of the service’s modernisation efforts, the branch also established a new initiative to deepen the use of generative AI (**GenAI**).

Named NIPRGPT, the project intends to accelerate initiatives to enable guardians, air personnel, civilian employees and contractors to access GenAI technology while maintaining adequate safeguards. An AI chatbot has been designed to allow users to have human-like conversations to complete various tasks such as correspondence, background papers and code.

NIPRGPT will work as an experimental bridge to leverage GenAI on the Non-classified Internet Protocol Router Network while the branch continues to explore maturing industry solutions.

**2. OFFICER TRAINING---reduced senior deployments and alleviated workloads enable on the ground support.**

**Biery 22** [Colin Biery, 2-11-2022, Capt. Colin Biery is a U.S. Air Force civil engineer officer who has provided support to operations both home-station and deployed, as well as trained officers and enlisted airmen. He recently completed a tour overseeing all mission support for a remote Space Force location. "The Weak Link in the Air Force Is Me," War on the Rocks, https://warontherocks.com/2022/02/the-weak-link-in-the-air-force-is-me/, DOA: 3-3-2025] shaan

An organization under strain will fail at its weakest link. As the U.S. Air Force faces possible wars with China and Russia, I have a bad feeling that I know where its weakest link is. If the Air Force loses its next battle, campaign, or war, it will not lose it in the air, despite some inevitable casualties, delays, and degradation. If the Air Force is truly defeated, it will be defeated on the ground. It will be defeated because the service’s combat support elements won’t be able to provide the logistics, protection, and infrastructure required while under attack. My uneasy feeling is that the Air Force’s weakest link is the tactical level leadership of its combat support units, their company-grade officers — officers like me.

At this point, the threats posed by the anti-access/area denial, cyber, and electronic warfare capabilities of America’s rivals have been discussed in great depth. For the first time in a long time, the Air Force is facing the possibility of adversaries that can hit back. The roles that potential enemies seek to target and disrupt are largely those filled by Air Force combat support. Flowing forces into theater, establishing infrastructure and networks, then sustaining and protecting it all, is my job. However, for reasons of experience, **training**, and culture, I am not ready to accomplish that job during the kind of conflict that the Air Force may very soon face. As a service, the Air Force tends to assume that its support squadrons will always be there with what it needs. It is time to take a hard look at that assumption.

Combat Support’s Competing Tasks

The opening phase of a war with China or Russia would be chaotic and generally miserable. Preparing for anything else is setting the conditions for failure, but that is what the Air Force has unintentionally done for many of its junior officers. To understand how this has happened, and what might be done to fix it, it’s first necessary to understand the competing tasks that an Air Force combat support squadron must balance.

Combat support in the Air Force is best thought of as the middle piece that connects the pointy end of the spear with the rest of the defense establishment, almost always through some form of airbase. Logistics readiness, airfield operations, security forces, civil engineering, force support, contracting, finance, maintenance and the remaining pieces of communications, constitute the Air Force’s combat support element.

A base-level combat support squadron has three main tasks. The first is preparing and presenting forces for scheduled rotational deployment. For a combat support squadron, this mainly consists of the administrative work of deployment folders, medical readiness, and commonly required computer-based training. Specialized, combat-type training (with some exceptions) is conducted just-in-time, as specified by location reporting instructions. As combat missions have ended, this training is less often required as deployment becomes more like home-station.

The second task of an Air Force combat support squadron is the day-to-day activity **required** for a military service to function, and just exist, between deployments. The maintenance of vehicles and infrastructure, law enforcement, acquisition, supply, contract oversight, housing and feeding, and everything else that goes into sustaining a large group of people, and their equipment, is a never-ending job. The task is even more consuming for mission-support groups who provide services for civilian employees, dependents, and retirees as well. The major difference between operational and support elements of the Air Force are the installation requirements. An operational squadron generally trains as a unit, deploys as a unit, and returns as a unit. A support squadron splits its forces, deploying some and retaining some in order to cover its home-station responsibilities. When a deployment rotation returns, they return to those home-station responsibilities, not preparation for future deployment. This is also the big difference in how the Air Force does combat support versus the other services, who normally separate their installation and combat support functions.

The third task that a combat support squadron must balance has gained importance as the Defense Department focuses more on great powers. Even five years ago (outside of Pacific Air Forces) training for a high-intensity conflict was a quick check-the-box exercise, if it happened at all. Now, squadrons are trying to develop airmen to fight a future great-power war. This may seem interchangeable with presenting forces for rotational deployments. However, the differences between a scheduled deployment to an aligned Persian Gulf state and a scrambling deployment into a contested environment in the Western Pacific or Eastern Europe mean that preparing for the first doesn’t cover the second. The ability to survive and operate a base under attack requires a skillset that needs to be intentionally built. Add in chemical, biological, and nuclear threats and cyber disruption, and you have a **significant** training requirement.

The possibility of high-intensity conflict has also driven the Air Force to develop new concepts to operate when contested throughout a theater. Agile combat employment, agile combat support, distributed operations, and multi-capable airmen all aim to make the flying service more flexible and resilient. All center on using smaller, distributed teams to quickly establish bases that present too many targets for an enemy to effectively suppress. All require combat support that can work independently and flexibly across large distances. The junior officers responsible for that support will have to make decisions, solve problems, and balance risks while under attack. However, the training and experience of officers like myself, and the culture we come up in, isn’t preparing us to meet that challenge. The Department of Defense talks about deployment into a future theater as a movement to contact. Unless the Air Force’s combat support communities make conscious decisions to change, failure when making that movement is a real possibility.

Efficiency Over Experience

A combination of limited budgets and the need to fund modernization has obliged the Air Force to find efficiencies in providing installation support. In practice this has meant centralization and “data driven,” decision-making. These changes may have increased efficiency, but it has been at the expense of **learning** experience for combat support company-grade officers, who have increasingly become providers of data and certifiers of compliance for decision-makers who are often not even at the same base. Lieutenants spend their time building slide decks and inputting numbers into web-based tools, rather than learning and practicing leadership. Captains wrestle with using the correct process and documentation to get base priorities taken care of, rather than working toward a solution with their teams. The contracting-out of base functions, such as information technology and utilities, has added to the problem by making junior officers monitors of someone else, instead of being responsible for executing programs themselves. Compounding everything is the natural increase of micromanagement as the Air Force returns to a peacetime footing. Even decisions that can be made at base level often turn into a morass of meetings and consensus-building. Until recently, deployment offered a more varied experience, but the move towards enduring bases in the Middle East has extended home-station bureaucracy to those locations as well. The result is that combat support company-grade officers build expertise in navigating the Air Force’s bureaucracy at the expense of other skills. It is unrealistic to expect an officer who has been tied to Microsoft Outlook his or her whole career to suddenly conduct their mission without reliable communications. Even more unrealistic is expecting a junior officer who has only ever built slide decks for decision-makers to start thinking on their feet and making quick, independent decisions under pressure.

A seemingly apparent solution to the experience problem is rolling back the burden of centralization and data-gathering, but the fully legitimate need for efficiency and auditability makes this approach unlikely and probably unworkable. The actual solution is more local. Base-level combat support squadrons should make conscious choices to maximize the time of their company-grade officers away from their computers. The goal for these officers should be working short timeline tasks that allow for actual decision-making, and then dealing with the consequences of those decisions. Programming five-year infrastructure plans, overseeing installation service contracts, and managing the civilian personnel system are all essential activities, but are poor preparation for providing agile combat support under fire. Company-grade officers, especially new lieutenants, need to be put in positions where they work directly with the enlisted force and practice their leadership skills. Although it may mean that their names aren’t attached to the high-visibility initiatives that make great performance report bullets, young officers need to be in charge where the authorities are right, and the consequences of failure are low enough, that they can actually be in charge. Last, but not least, leadership throughout the command should resist **micromanaging**, even if it means some clean-up later on.

More relevant experience is the right place to start, but the skillset for a high-intensity peer conflict is different than for home-station operations or ongoing deployments. Just like aircrew need flight hours to build and maintain proficiency with their aircraft, combat support officers need training hours to build and maintain wartime skills. Developing multi-capable airmen increases the training required by adding skills beyond their functional area for personnel to learn. In theory, training time was to be freed up by reduced rotational deployments to the Middle East and Africa. However, those reductions have been uneven and often reversed. This leaves combat support squadrons in a position where training for both their officers and their enlisted forces has to come out of time normally spent providing installation support and services. That training time is only one day per month and one exercise per year for many squadrons, and often less for individual members. While it can’t be proven short of fighting in an actual war, that time investment likely isn’t sufficient. There is also a less obvious, but equally impactful, problem. Useful training requires extensive time and effort from more **senior** company-grade officers and non-commissioned officers to plan, teach, and track it. The ongoing demands of deployments and installation support make it a struggle for squadrons to build effective training programs, because the **personnel** qualified to run them are overwhelmingly focused on other tasks.

**Training is a subset of education.**

**Brody 19** [Maureen Brody, 7-15-2019, Maureen Brody is a Curriculum and Instructional Design specialist with a background in document production, technical writing and editing, and project management. "What Is The Difference Between Training And Education?," Becht, https://becht.com/becht-blog/entry/what-is-the-difference-between-training-and-education/, DOA: 3-2-2025] shaan

Training refers to the acquisition of specific and applied knowledge and skills. Training can occur in a variety of settings, including within a **classroom**, but frequently training takes place “on the job” or “in the field.” The purpose of training is to improve performance and productivity among employees, typically with a focus on one set of skills. Training usually occurs after employment has already been secured, and is usually mandated, provided by, and funded by one’s employer. Although some training courses can last for multiple weeks, training courses are usually of a much shorter duration than educational courses due to the fact that training encompasses more specific and focused topics.

To put it simply, training is a much more specialized form of **education**. It can fall under the umbrella of education as both training and education focus on the acquisition of knowledge, but training is much more task-oriented, and skills based.

So, you may be wondering, why is continued training necessary within the workforce? Can’t employees be trained once, educated once on a particular topic, and then perform effectively?

**The Air Force is key to Humanitarian Aid, saves millions.**

**Brading 16** [Tom Brading, senior airmen for 315th air wing "701st makes humanitarian aid possible in Haiti", April 21, 2016, Air Force Reserve Command, https://www.afrc.af.mil/News/Article/742620/701st-makes-humanitarian-aid-possible-in-haiti/, Accessed March 29, 2025] ejs squad

Members from **the** 701st Airlift Squadron played a vital role bringing humanitarian aid to Port-au-Prince, Haiti, April 21, during ongoing **Denton Program** efforts. Two C-17 Globemaster III’s were filled with 32 combined pallets and d**elivered more than 170,000 pounds of humanitarian aid to Haiti**. “Our role in the Denton mission is supporting the delivery of the cargo and supplies,” said Capt. Ed Sutton, 701st AS pilot. “It’s a rewarding experience to be a part of relief efforts to areas like Haiti or anywhere else in the world that may need it.” The Denton Program creates an opportunity for private organizations to utilize space available on U.S. Military cargo aircraft to **transport goods to countries in need**. The cargo moved under the Denton Program generally includes medical supplies, education supplies, furniture, vehicles, agricultural supplies, machinery, and clothing to support ongoing relief efforts and development projects. The supplies delivered by the 701st AS will be used by nongovernmental organizations throughout Haiti. Although Haiti is a developing country, it has experienced its share of disasters. Currently, 1.5 million Haitians are threatened with malnutrition, double the estimated number last year, due to a three-year drought in the Caribbean region. “Crops are being lost, rivers have dried, and children from villages in the mountains are being left unattended in Port-au-Prince, because their parents believe the children’s survival is greater in the city alone than with them in dry rural areas,” said Pacius Gueston, Haiti Christian Developmental Project director. “**This aid will save** many lives.” Orphaned as a child, Gueston was raised by a nun in Haiti and taught the importance of education and work ethic. After attending college in the United States, he returned to Haiti to give back to the people that needed support. Today, 70 percent of the estimated crops on the Caribbean island have been lost due to an ongoing drought, creating food instability for more than **3.6 million individuals.** With farming being the primary source of income for the Haitians, the drought has created more financial instability. Kathy Cadden, president and founder of Operation Ukraine, is another face on the ground in Haiti welcoming service members, like the 701st AS, during the offload of humanitarian supplies. She has been active in humanitarian efforts in the country. Half of this Denton cargo delivery was for her charity. “We’ll make great use of the donated food and supplies,” said Cadden, who estimates she’ll oversee more than 8,500 dry meals and 3,500 cooked meals to be made for children. “We’re very thankful for everything the donor’s and the military has done.” Since 1998, **The Denton Program has overseen more than 5 million pounds of humanitarian supplies sent to more than 50 countries across the globe.**

# Rebuttal

**NSDA 25** [NSDA [NSDA is the leading governing body of high school debate; manual authors are high-ranking diamond coaches and/or NSDA administrators], "High School Unified Manual 2024-25", 2/19/2025, NSDA, https://docs.google.com/document/d/1hq7-DE6ls2ryVtOttxR4BNpRdP7xUbBr0M3SMYefek8/edit?tab=t.0#heading=h.xl2ogxg7zi2n, Accessed 03/19/2025] //ejs squad

**. Definitions of Evidence Violations**

A. “Distortion” exists when the textual evidence itself contains added and/or deleted word(s), which significantly alters the conclusion of the author (e.g., **deleting ‘not’**; **adding** the word **‘not’**). Additionally, failure to bracket added words would be considered distortion of evidence.

B. “**Non-existent evidence” means** one or more of the following:

1. **The debater citing the evidence is unable to provide the original source or copy of the relevant pages when requested by their opponent**, judge, or tournament official.

2. The original source provided does not contain the evidence cited.

3. The evidence is paraphrased but lacks an original source to verify the accuracy of the paraphrasing. If a student paraphrases from a book, study, or any other source, the specific lines or section from which the paraphrase is taken must be highlighted or otherwise formatted for identification in the round.

4. The debater is in possession of the original source, but declines to provide it to their opponent upon request in a timely fashion (as outlined in 7.4.C.).

#### **AI usage in education is key for development of the global south, it resolves all of the links, implementation is the only decolonial approach; critiquing without an alternative forecloses participation in the technological revolution by not televising the revolution**

Payal **Arora 23**,[Department of Media and Cultural Studies, Utrecht University, Utrecht, The Netherlands] "Creative data justice: a decolonial and indigenous framework to assess creativity and artificial intelligence," Taylor & Francis, https://www.tandfonline.com/doi/full/10.1080/1369118X.2024.2420041#d1e357, 10-13-2023, 3-3-2025//Bellaire AA

‘Creative learning’ encompasses a learner-centered approach that fosters critical thinking, and problem-solving skills (Davies et al., Citation2013). The rise of digital platforms, including new AI technologies, has transformed the landscape of **creative learning**. A major issue in current **educational scholarship** is its **disproportionate** focus on **formal education**, neglecting the informal and social aspects of learning with new technologies (Sefton-Green, Citation2004). This narrow focus restricts the understanding of the diverse ways in which individuals engage with digital platforms and AI technologies for creative learning beyond formal educational settings.

In the **Global South**, a significant portion of learning with new technologies occurs **outside of traditional school**settings (Bhatia et al., Citation2023). This phenomenon can be attributed to several factors, including limited access to technology in **school settings**, and unequal distribution of resources. As a result, many youths turn to alternative sources, such as cybercafés, and shared mobile devices, to access and explore new spaces to create and self-actualize. Recent studies have revealed how informal learning spaces, such as social media, online forums, and YouTube tutorials, play a vital role in **fostering Global** South youth’s digital literacies and technological skills to support their creative efforts (Anderson, Citation2017; Arora, Citation2024; Lee, Citation2022). Given that fast-paced evolution of technology often outpaces formal educational curricula, young creators seek knowledge independently to keep up with the latest developments. Therefore, focusing on Global South youths’ individual and collective informal learning with AI tools to create can reveal the spectrum of their **adaptability** and **resourcefulness** in harnessing **digital opportunities** despite **systemic challenges**, crucial to building new creative literacies and technological competences.

The **decolonial approach** is sympathetic to a **creative ‘communities** of practice’ model (Wenger, Citation2011), which refers to how groups of individuals come together to share **knowledge**, **experiences**, and **expertise**, in this case, in the **creative domain**. These communities foster collaborative learning, social interaction, and the development of a shared identity and purpose. In the context of **creative learning** in today’s AI era, this classic model remains useful as it **provides insights**into how young creators collectively engage with **AI technologies** and each other to enhance their creative processes.

#### **Regulating speech acts shuts down debate and kills decision making skills; is a disad and solvency deficit to their case**

**Butler 4** (Judith Butler, Professor in the Departments of Rhetoric and Comparative Literature at the University of California, “Precarious Life: The Power of Mourning and Violence”) //BS 1-27-2017

Dissent and debate depend upon the inclusion of those who maintain critical views of state policy and civic culture remaining part of a larger public discussion of the value of policies and politics. To charge those who voice critical views with treason, terrorist-sympathizing, anti-Semitism, moral relativism, postmodernism, juvenile behavior, collaboration, anachronistic Leftism, is to seek to destroy the credibility not of the views that are held, but of the persons who hold them. **It produces the climate of fear** in which to voice a certain view is to risk being branded and shamed with a heinous appellation. To continue to voice one's views under those conditions is not easy, since one must not only discount the truth of the appellation, but brave the stigma that seizes up from the public domain. Dissent is quelled, in part, through threatening the speaking subject with an uninhabitable identification. Because it would be heinous to identify as treasonous, as a collaborator, one fails to speak, or one speaks in throttled ways, in order to sidestep the terrorizing identification that threatens to take hold. This strategy for quelling dissent and limiting the reach of critical debate happens not only through a series of shaming tactics which have a certain psychological terrorization as their effect, but they work as well by producing what will and will not count as a viable speaking subject and a reasonable opinion within the public domain. It is precisely because one does not want to lose one's status as a viable speaking being that **one does not say what one thinks**. Under social conditions that regulate identifications and the sense of viability to this degree, **censorship operates implicitly** and forcefully. The line that circumscribes what is speakable and what is livable also functions as an instrument of censorship. To decide what views will count as reasonable within the public domain, however, is to decide what will and will not count as the public sphere of debate. And if someone holds views that are not in line with the nationalist norm, that person comes to lack credibility as a speaking person, and the media is not open to him or her (though the internet, interestingly, is). The foreclosure of critique **empties the public domain of debate** and democratic contestation itself, so that debate becomes the exchange of views among the like-minded, and criticism, which ought to be central to any democracy, becomes a fugitive and suspect activity. Public policy, including foreign policy, often seeks to restrain the public sphere from being open to certain forms of debate and the circulation of media coverage. One way a hegemonic understanding of politics is achieved is through circumscribing what will and will not be admissible as part of the public sphere itself.

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#### **“Education” is limited to only formal instruction in schools---expanding beyond that makes any experience topical**

**Kumar 17 –** Satish Kumar, Deputy Dean at the University Information Centre, et al., “MEANING, AIMS AND PROCESS OF EDUCATION”, https://sol.du.ac.in/mod/book/view.php?id=1448&chapterid=1321

Narrower and Broader Meaning of Education

Education in the Narrower Sense

In its **narrow sense**, school instruction is called education. In this process, the elders of society strive to attain predetermined aims during a specified time by providing pre-structured knowledge to children through **set methods** of teaching. The purpose is to achieve mental development of children entering school. To make of narrow meaning of education more clear, the following opinions of some other educationists are being given- · The culture which each generation purposefully gives to those who are to be its successors, in order to qualify them for at least keeping up, and if possible for raising the level of improvement which has been attained. John Stuart Mill · In narrow sense, education may be taken to mean any consciously directed effort to develop and cultivate our powers. S. S. Mackenzie · Education is a process in which and by which knowledge, character and behaviour of the young are shaped and moulded. Prof. Drever · The influence of the environment of the individual with a view to producing a permanent change in his habits of behaviour, or thought and attitude. G. H. Thompson Education, in the narrower sense, is regarded as **equivalent to instruction**. It consists of the “specific influences” **consciously designed in a school or in a college** or in an institution to bring in the development and growth of the child. The word school includes the whole machinery of education from **Kindergarten** to the **University**. The education of the child begins with his admission in the school and ends with his departure from the University. The amount of education received by the child is measured in terms of degrees and diplomas awarded to him. The school represents formal education as it imparts education directly and systematically. There is deliberate effort on the part of the educator to inculcate certain habits, skills, attitudes or influences in the learner, which are considered to be essential and useful to him. According to John Dewey: “The school exists to provide a special environment for the formative period of human life. School is a consciously designed institution, the sole concern of which is to educate the child. This special environment is essential to explain our complex society and civilization”. The influences or modes of influences in the school are deliberately planned, chosen and employed by the community for the welfare of the members of the rising generation. The purpose of these influences is to modify the behaviour of the child in such a way that he may become different from what he would have been without education. It makes possible a better adjustment of human nature to surroundings. According to Mackenzie, education, in the narrower sense, is conscious effort to develop and cultivate our innate powers. Education, in the narrow sense, is also regarded as acquisition of knowledge. According to it education is a process by which knowledge or information on a subject is acquired. But many sensible educationists have criticized this view. They argue that emphasis on the knowledge is likely to reduce all schools to mere knowledge-shops. The acquisition of knowledge is not the only or supreme aim of education, yet it is one of the important aims of education. Education in the Broader Sense In its wider sense, education is the **total development of the personality**. In this sense. Education consists of al**l those experiences**, which affect the individual from birth till death. Thus, education is that process by which an individual freely develops his self according to his nature in a free and uncontrolled environment. In this way, education is a **life long process of growth** environment.

**Their Regilme evidence says AI helps with human rights**

**Regilme 24** Regilme, Salvador Santino F (Dr. Salvador Santino F. Regilme is an Associate Professor of International Relations at the Institute for History at Leiden University.), Fall-Winter 2024, "Artificial Intelligence Colonialism: Environmental Damage, Labor Exploitation, and Human Rights Crises in the Global South." SAIS Review of International Affairs, vol. 44 no. 2, Fall-Winter 2024, p. 75-92. Project MUSE, https://dx.doi.org/10.1353/sais.2024.a950958, accessed 3/6/25, GGM - CW recut

The promise of AI technologies depends on the intended purposes and actual use by its producers and users. The AI-human rights relationship is complex and significant.103,104,105 **AI can advance human rights by saving lives and protecting the planet** through early disease detection, natural disaster prediction, and aiding vulnerable communities. Responsible AI governance, however, is crucial to prevent undermining peace and human rights.106 International efforts emphasize AI as a progress engine for Sustainable Development Goals without compromising human rights. AI offers profound opportunities but poses existential challenges requiring careful governance to prevent misuse, protect human rights, and address labor exploitation, privacy concerns, and environmental impact. To ensure AI promotes a fair and sustainable future, a comprehensive system safeguarding the dignity of current and future generations and the planet's well-being is essential. This framework should underpin responsible AI development and implementation. As with countless technological innovations within a global capitalist system steeped in socioeconomic stratifications, the promise of improving the human condition cannot rest on technology alone. Global transformation towards emancipatory and just politics demands a profound reimagining of the global order—one where human dignity and sustainable development are paramount, and the logics of oppression are rendered relics of the past. In that way, **AI might evolve** from being a tool of colonialism **to a potent instrument for just social change.**

**Their Nyaaba evidence literally wants AI to be used**

**Nyaaba et al. 24** Nyaaba, Matthew, Wright, Alison, and Choi, Gyu Lim (no in-text author quals,) 06-07-2024, "Generative AI and Digital Neocolonialism in Global Education: Towards an Equitable Framework" AI4STEM Education Center & Department of Educational Theory and Practice, University of Georgia, https://arxiv.org/abs/2406.02966, accessed 3/27/25, //recut ejs squad

While **we encourage the use of GenAI in classroom settings to promote teaching and learning,** we understand that these tools cannot be effective without educators first developing competency to facilitate them. In order to use GenAI for culturally relevant teaching, teachers need competency in GenAI prompting to retrieve culturally relevant outputs (Sanusi & Olaleye, 2022). Ladson-Billings (2014) posited that cultural competence is one of the factors for culturally relevant pedagogy. Educators are encouraged to strive to enhance their cultural competence through open discussions and implementing activities professional learnings (Sanusi & Olaleye, 2022). We further suggest that educators harness their prompting skills in using these tools by directing prompts towards specific cultural contexts, especially as these tools are generically representing western cultures.

**Their Nyaaba evidence is incredibly biased. All the examples chosen were cherry-picked and it concedes gen AI is improving**

**Nyaaba et al. 24** Nyaaba, Matthew, Wright, Alison, and Choi, Gyu Lim (no in-text author quals,) 06-07-2024, "Generative AI and Digital Neocolonialism in Global Education: Towards an Equitable Framework" AI4STEM Education Center & Department of Educational Theory and Practice, University of Georgia, https://arxiv.org/abs/2406.02966, accessed 3/27/25, //recut ejs squad

**One notable limitation** of this perspective study **is the reliance on a limited range of supporting examples. The examples** we **cited were specifically chosen to corroborate** and contextualize **the discussions presented** in the literature on GenAI. Given the rapidly evolving nature of these GenAI tools, **these examples** may **not** comprehensively **represent all possible scenarios** or future developments. **As GenA**I continues to **advance,** some of the **evidence** and examples **cited** might **become outdated or less relevant**, necessitating continuous updates and reevaluation to ensure the findings remain aligned with the latest GenAI tools and educational contexts. This limitation highlights the need for ongoing research that can adapt to and incorporate the latest advancements and existing neocolonial aspects of GenAI in education.

#### **Their own Nyaaba evidence isn’t Anti-AI, It literally states that AI is key to solve for Neocol**

**Nyaaba et al. 24** Nyaaba, Matthew, Wright, Alison, and Choi, Gyu Lim (no in-text author quals,) 06-07-2024, "Generative AI and Digital Neocolonialism in Global Education: Towards an Equitable Framework" AI4STEM Education Center & Department of Educational Theory and Practice, University of Georgia,<https://arxiv.org/abs/2406.02966>, accessed 3/27/25, //recut ejs squad

This paper critically discusses how generative artificial intelligence (GenAI) might impose Western ideologies on non-Western societies, perpetuating digital neocolonialism in education through its inherent biases. It further suggests strategies for local and global stakeholders to mitigate these effects. Our discussions demonstrated that GenAI can foster cultural imperialism by generating content that primarily incorporates cultural references and examples relevant to Western students, thereby alienating students from non-Western backgrounds. Also, the predominant use of Western languages by GenAI can marginalize non-dominant languages, making educational content less accessible to speakers of indigenous languages and potentially impacting their ability to learn in their first language. Additionally, **GenAI often generates content and curricula that reflect the perspectives of technologically dominant countries, overshadowing marginalized indigenous knowledge and practices.** Moreover, the **cost of access to GenAI intensifies educational inequality and the control of GenAI data could lead to commercial exploitation** without benefiting local students and their communities. We propose human-centric reforms to prioritize cultural diversity and equity in GenAI development; a liberatory design to empower educators and students to identify and dismantle the oppressive structures within GenAI applications; foresight by design to create an adjustable GenAI system to meet future educational needs; and finally, effective prompting skills to reduce the retrieval of neocolonial outputs.