We affirm the resolution: In the United States, the benefits of the use of generative artificial intelligence in education outweigh the harms.

C1: innovation

Research at universities is the catalyst for innovation

Bajraktari from the MIT Technology Review in **2024** [Ylli Bajraktari, Tom Mitchell, and Daniela Rus, "Three ways the US could help universities compete with tech companies on AI innovation", 04/19/2024, MIT Technology Review, https://www.technologyreview.com/2024/04/19/1091488/three-ways-the-us-could-help-universities-compete-with-tech-companies-on-ai-innovation/, Accessed 03/04/2025] Ylli Bajraktari is the **President and CEO of the Special Competitive Studies Project**. Prior to launching SCSP, Ylli served as the Executive Director of the National Security Commission on Artificial Intelligence.

The ongoing revolution in artificial intelligence has the potential to dramatically improve our lives—from the way we work to what we do to stay healthy. Yet ensuring that America and other democracies can help shape **the trajectory of this technology requires** going beyond the tech development taking place at private companies. **Research at universities drove the AI advances** that laid the groundwork for the commercial boom we are experiencing today.

AI is the newest frontier for this research in over 14 universities

OpenAI 25 [OpenAI, "Introducing NextGenAI: A consortium to advance research and education with AI", 03/04/2025, OpenAI, https://openai.com/index/introducing-nextgenai/, Accessed 03/04/2025 Open AI

Today, we're launching NextGenAI, a first-of-its-kind consortium with 15 leading research institutions dedicated to using AI **to accelerate** research **breakthroughs and transform education.** AI has the power to drive progress in research and education—but only when people have the right tools to harness it. That's why **OpenAI is committing $50M** in research grants, compute funding, and API access to support students, educators, and researchers advancing the frontiers of knowledge. Uniting institutions across the U.S. and abroad, NextGenAI aims to catalyze progress at a rate faster than any one institution would alone. This initiative is built not only to fuel the next generation of discoveries, but also to prepare the next generation to shape AI's future.

The Next Generation of AI Leaders NextGenAI's founding partners are **Caltech,** the California State University system, **Duke University, the University of Georgia, Harvard University, Howard University, Massachusetts Institute of Technology, the University of Michigan, the University of Mississippi, The Ohio State University, the University of Oxford, Sciences Po, Texas A&M University, as well as Boston Children's Hospital, the Boston Public Library, and OpenAI.** Each institution is **using AI to tackle high-impact challenges, from revolutionizing healthcare to reimagining education**. Here are just a few examples of their groundbreaking work: Accelerating the next generation of research breakthroughs **The Ohio State University is leveraging AI to accelerate the fields of digital health, advanced therapeutics, manufacturing, energy, mobility, and agriculture, while educators are using AI to create advanced learning models. Harvard University and Boston Children's Hospital researchers are using OpenAI tools and NextGenAI funding to reduce the time it takes patients to find the right diagnosis, especially for rare orphan diseases, and improve AI alignment with human values in medical decision-making. Duke University scientists are using AI to pioneer metascience research, identifying the fields of science where AI can have the greatest benefit.** "Ohio State is at the forefront of a multidisciplinary approach to the benefits of AI, significantly impacting both research and education. We are excited to join Open AI and this elite research partnership, which **will enable us to drive even more groundbreaking discoveries and advancements in medicine, manufacturing,**

computing, and beyond." —Peter J. Mohler, Executive Vice President for Research, Innovation, and Knowledge, The Ohio State University Empowering the next generation to be AI-fluent **Texas A&M is using NextGenAI resources to fuel their Generative AI Literacy Initiative, providing hands-on training to enhance the responsible use of AI in academic settings.** MIT students and faculty will be able to use OpenAI's API and compute funding to train and fine-tune their own AI models and develop new applications. **Howard will use AI to develop curricula, experiment with new teaching methods, improve university operations, and give students hands-on AI experience to prepare them as future leaders.** "We look forward to collaborating with OpenAI, whose support will enable us to empower our students, researchers, and the broader academic community with cutting-edge knowledge and skills in the rapidly evolving field of generative artificial intelligence." —Dr. Robert H. Bishop, Vice Chancellor and Dean of the College of Engineering, Texas A&M University Imagining the future of AI-powered universities and libraries University of Oxford is leveraging AI for a broad research agenda, education, and university operations—its renowned Bodleian Library is digitizing rare texts and using OpenAI's API to transcribe them, **making centuries-old knowledge newly searchable by scholars worldwide.** University of Mississippi is exploring new ways to integrate AI into their core mission of education, research, and service, and **to advance AI-driven solutions that benefit their students, faculty, and the broader community.** Boston Public Library, America's first large free municipal public library, is digitizing public domain materials and using AI to make their information more accessible to patrons from all walks of life. "This new collaboration marks an exciting step forward, offering fresh opportunities to enrich our research, expand our AI capabilities, and foster skill development. By working together, we can learn from one another, advancing the frontiers of artificial intelligence, understanding its impact on education and unlocking its vast potential for the benefit of our university community and beyond."
—Anne Trefethen, Pro-Vice-Chancellor, Digital, University of Oxford Strengthening the Connection Between Academia & Industry NextGenAI reinforces the vital partnership between academia and industry, ensuring that AI's benefits extend to laboratories, libraries, hospitals, and classrooms worldwide. "The field of AI wouldn't be where it is today without decades of work in the academic community. Continued collaboration is essential to build AI that benefits everyone. NextGenAI will accelerate research progress and catalyze a new generation of institutions equipped to harness the transformative power of AI." —Brad Lightcap, Chief Operating Officer, OpenAI This initiative expands OpenAI's commitment to education, following the launch of ChatGPT Edu in May 2024, which enabled university-wide access to ChatGPT. NextGenAI complements this effort by providing institutions OpenAI's APIs and funding to drive critical innovation. NextGenAI is designed to support the scientist searching for a cure, the scholar uncovering new insights, and the student mastering AI for the world ahead. As we learn from this initiative, we'll explore opportunities to expand its reach and impact. We look forward to sharing updates as our partners drive progress—one breakthrough at a time.

It's specific to genAI

Amazon in 2024 [Amazon in 2024, "Amazon invests $110 million to support AI research at universities using Trainium chips", 11/12/2024, US About Amazon, https://www.aboutamazon.com/news/aws/amazon-trainium-investment-university-ai-research, Accessed 03/04/2025]

Amazon is announcing a $110 million investment for university-led research in generative AI. The program, known as **Build on Trainium, will provide compute hours that allow researchers the opportunity to build** new **AI architectures, machine learning (ML) libraries, and performance optimization**s for large-scale distributed AWS Trainium UltraClusters (collections of of AI accelerators that work together on complex computational tasks). AWS Trainium is the ML chip that AWS built for the purposes of deep learning training and inference. AI advances created through the Build on Trainium initiative will be open-sourced, so researchers and developers can continue to advance their innovations. 4 ways AWS is engineering infrastructure to power generative AI From networking innovations to changes in data center design, **AWS continues to optimize its infrastructure to support generative AI at scale. The program caters to a wide range of AI research,**

from algorithmic advancements to increase AI accelerator performance, all the way up to large distributed systems research. As part of Build on Trainium, AWS created a Trainium research ltraCluster with up to 40,000 Trainium chips, which are optimally designed for the unique workloads and computational structures of AI. As part of Build on Trainium, **AWS andleading AI student education.** In addition, Amazon will conduct multiple rounds of Amazon Research Awards calls for proposals, with selected proposals receiving AWS Trainium credits, and access to the large Trainium UltraClusters for their research. A boost to computing power Developing frontier AI models and applications requires a lot of computing power, and many universities have had to slow down AI research due to budgetary constraints. A researcher might invent a new model architecture or a new performance optimization technique, but they may not be able to afford the high-performance computing resources required for a large-scale experiment. The Catalyst research group at Carnegie Mellon University (CMU) in Pittsburgh, Pennsylvania, is one of the research institutions participating in Build on Trainium. There, a large group of faculty and students are conducting research on ML systems, including developing new compiler optimizations for AI. "AWS's Build on Trainium initiative enables our faculty and students large-scale access to modern accelerators, like AWS Trainium, with an open programming model. It allows us to greatly expand our research on tensor program compilation, ML parallelization, and language model serving and tuning," said Todd C. Mowry, a professor of computer science at CMU. Funding to support AI experts of the future Since launching the AWS Inferentia chips in 2019, AWS has been a pioneer in building and

scaling AI chips in the cloud. By opening those capabilities to academics, Build on Trainium will not only help broaden the pool of ideas, but also support the training of future AI experts. What you need to know about the AWS AI chips powering Amazon's partnership with Anthropic Anthropic will use our powerful, purpose-built AI chips to accelerate generative AI for our customers. "Trainium is beyond programmable—not only can you run a program, you get low-level
access to tune features of the hardware itself," said Christopher Fletcher, an associate professor of computer science research at the University of California at Berkeley, and a participant in Build on Trainium. "The knobs of flexibility built into the architecture at every step make it a dream platform from a research perspective." These advancements are possible, in part, thanks to a new programming interface for AWS Trainium and Inferentia called the Neuron Kernel Interface (NKI). This interface gives direct access to the chip's instruction-set and allows researchers to build optimized compute kernels (core computational units) for new model operations, performance optimizations, and science innovations. "**AWS is really enabling unexpected innovation**," said Fletcher. "I walk across the lab and every project needs compute cluster resources for something different. The Build on Trainium resources will be immensely useful—from day-to-day work, to the deep research we do in the lab." Additional resources for grant recipients As part of the Build on Trainium program, researchers will be able to connect with others within the field to bring ideas to life. Grant recipients have access to AWS's extended technical education and enablement programs for Trainium. This is done in partnership with the growing Neuron Data Science community, a virtual organization led by Amazon's chip developer Annapurna, which bridges the AWS Technical Field Community (TFC), specialist teams, startups, AWS's Generative AI Innovation Center, and more. Your guide to free and low-cost AWS courses that can help you use generative AI More than 100 AWS trainings on AI/ML are available to everyone, with all levels of experience. AI advancements are moving quickly because developers anywhere in the world are able to access and deploy the software. **Researchers involved in Build on Trainium will publish papers on their work and will be asked to bring the code into the public sphere** via open-source machine learning software libraries. This collaborative research will become the foundation for the next round of advancements in AI.

This helps **agriculture.**

GenAI developed by universities allows farmers to adapt to climate challenges.

Saldana from Texas A&M in **2025** **Gabe Saldana** **Director of Communications at Cross-Border Threat Screening and Supply Chain Defense**, **"Generative AI for decision-making in agricultural and natural resources production, management", 02/07/2025, Phys, https://phys.org/news/2025-02-generative-ai-decision-agricultural-natural.html#google_vignette, Accessed 03/04/2025**

An innovative resource designed to streamline and improve decision-making in agricultural and natural resources production and management is now available to a wide range of users—including policymakers, land and water managers, farmers, researchers and extension agents across the nation. **The Soil and Water Assessment Tool released was Virtual Extension Assistant, or SWAT VEXA, in late 2024 by Texas A&M AgriLife Research and IBM. It is a free, interactive, generative artificial intelligence, AI, assistant that provides custom, user-friendly insights**. By **addressing critical areas such as soil erosion, pollution control and disaster risk mitigation among many other scenarios, SWAT VEXA empowers users to make informed decisions across a host of scenarios. Decades of research and development Outputs from SWAT VEXA are based on big data sets of the Soil and Water Assessment Tool, SWAT. This advanced computer modeling system was developed over more than four decades by scientists at the Texas A&M** AgriLife Blackland Research Center at Temple along with the U.S. Department of Agriculture's Agricultural Research Service, USDA-ARS. Over the years, SWAT has become the international and U.S. standard for agriculture and natural resources decision-making at all geographical scales. "VEXA accelerates research, enhances reproducibility and empowers users to design innovative solutions for complex agricultural and hydrological challenges," said Raghavan Srinivasan, Ph.D., AgriLife Research distinguished professor and director of the Blackland Research Center at Temple. "With its ability to democratize knowledge and fast-track decision-making, VEXA is set to drive significant advancements in SWAT model research, ultimately promoting ecosystem sustainability and effective resource management worldwide," Srinivasan said. Merging AI with proven technology The SWAT system was integrated with AI as part of a continuing collaboration between AgriLife Research and IBM through the technology company's IBM Sustainability Accelerator. SWAT VEXA also incorporates IBM's Deep Search AI, watsonx.ai and Granite model. Researchers say **the tool can advance agricultural and natural resource productivity and sustainability by enabling faster decision-making** for users worldwide. "Today, smallholder farmers need more than traditional advice," said Justina Nixon-Saintil, vice president and chief impact officer at IBM. "They need scientifically precise, data-driven insights. Solutions such as SWAT VEXA democratize access to critical environmental insights, enabling faster, more informed decision-making for communities facing agricultural challenges."

Driving global impact In addition to advancing agricultural and resource productivity, SWAT VEXA is expected to amplify the global impact of the IBM Sustainability Accelerator. To date, this program has **supported approximately 65,300 direct beneficiaries through efforts in sustainable agriculture initiatives.** By offering accessible, AI-powered insights, SWAT VEXA enables users to make data-informed decisions, ultimately promoting sustainability and resilience in agricultural systems worldwide.

Issues that SWAT VEXA Solve plague farmers

USDA. (2022). ***USDA ERS - Farmers Report Soil-Related Resource Concerns on About Half of Soybean, Wheat, Cotton, and Oat Fields.*** **Usda.gov. https://ers.usda.gov/amber-waves/2022/may/farmers-report-soil-related-resource-concerns-on-about-half-of-soybean-wheat-cotton-and-oat-fields The USDA is a government agency**

The percentages of fields with at least one self-reported resource concern varied across crops, with farmers growing soybeans reporting concerns most frequently (about 51 percent had at least one concern). This was followed by spring wheat (about 48 percent of fields), winter wheat (44 percent), cotton (43 percent), oats (42 percent) and durum wheat (about 40 percent). Differences in the way crops are managed and differences in their production environments may account for some of the differences in the frequency of concerns across crops. Farmers may choose to grow a crop based on factors such as certain soil properties that also influence the likelihood of having resource concerns.

Farmers in the Midwest and West were most likely to report at least one resource concern. In the Midwest—the region with the greatest number of fields for the represented crops—farmers reported at least one resource concern on 54 percent of their fields, and multiple concerns on 29 percent of their fields. In the West, 52

percent of represented fields had at least one concern, and 30 percent had multiple concerns. In the Plains—the second largest region by the number of fields—farmers reported that 45 percent of the represented fields had at least one concern, and 23 percent had multiple concerns. Farmers in the South identified resource concerns for 25 percent of their fields, and they reported multiple concerns on 13 percent of fields. The lower rates of resource concerns in the South align with other studies. For example, USDA's Soil and Water Resources Conservation Act (RCA) Appraisal found lower rates of water-driven erosion in the South.

Gen ai is strengthening research development

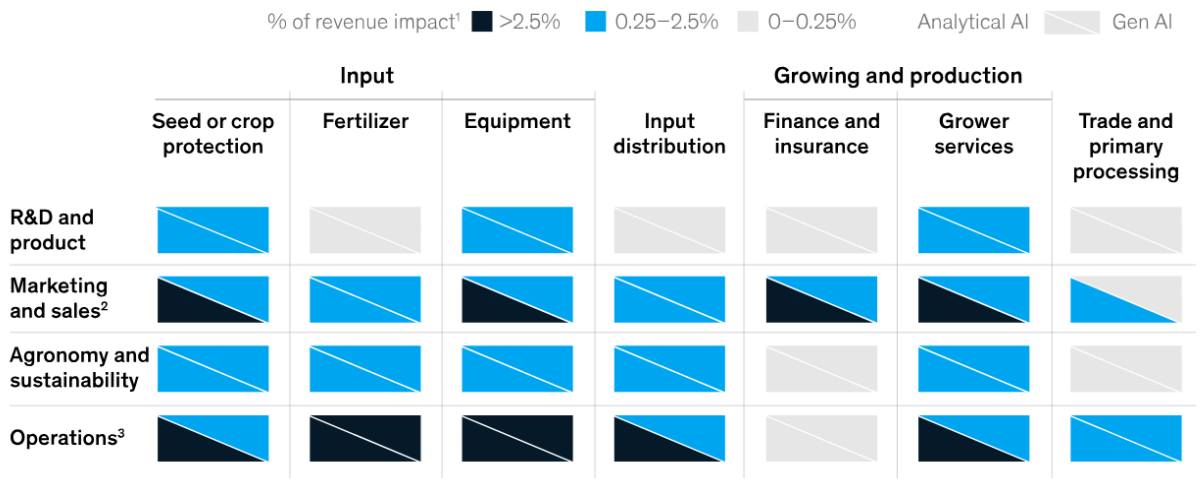
Nuscheler et. al 24 Nuscheler, D. (2024). Daniela Nuscheler has a Ph.D in Entreprenuerial Development *How generative AI in agriculture could shape the industry | McKinsey*. Www.mckinsey.com. https://www.mckinsey.com/industries/agriculture/our-insights/from-bytes-to-bushels-how-gen-ai-can-shape-the-future-of-agriculture

Many **seed and crop protection players rely heavily on** innovation, and analytical AI and **gen AI can be used to enhance the full R&D life cycle, from research and discovery to development and product launch**. In research and discovery, **gen AI can help generate initial hypotheses** by conducting a natural language scan of patents and scientific research, or screen large sets of genomic data to propose target sequences for crop innovation. **Foundation models trained on specific modalities such as genomic, proteomic, or small-molecule data** can help prioritize hypotheses based on end-state properties such as drought or pest resistance for genetically modified crops or improved efficacy and sustainability of pesticides (Exhibit 3). These tools are then built in an active learning loop in which models recommend hypotheses for testing in the lab,

and the resulting data accelerates self-improvement. **And in product launch, gen AI can accelerate product registration by automating data collection and analysis,** generating documents, and providing insights into the regulatory landscape (for example, by monitoring changing regulatory procedure requirements).

Generative AI can add significant value in R&D, marketing and sales, agronomy and sustainability, and operations.

Incremental value from AI and generative AI (gen AI) for a typical company in the agriculture value chain



U.S. agricultural innovation is how we feed the future.

Fain '23 [Irving; February 10; B.A. from Brown University, former analyst at Citi, founder and CEO of Bowery; Fortune, "A new agricultural revolution has started. Congress must invest now to secure the future of U.S. food,"

At a certain point, we have to wonder how much more the global food system can take. Historic flooding in Pakistan. Droughts across the American West. Russia's invasion of Ukraine. **The global food system and the supply chains** that have long allowed us to move food from where it is grown to where it **is needed have rarely been stretched so thin,** or so far. The consequences can be seen in the cost and availability of food in most parts of the world,
including in the United States. Americans' growing demand for fresh produce will only accelerate our reliance on an increasingly fragile food system. However, the story of this decade doesn't have to be one of scarcity and strain. A different future is within reach: one of abundance, affordability, and sustainability. The U.S. has a Historic opportunity to shorten supply chains, safeguard long-term food security, and decrease the environmental costs of agriculture. Innovation can make this possible–but only if America invests in new farming technologies. Not only to feed ourselves but to reaffirm our role as the world's greatest exporter of both food and innovation. Unless you're in the industry, you might not know that agriculture is undergoing a quiet technological revolution. Drones, sensors, and satellite imaging systems help farms manage crops more effectively with more information and knowledge than ever before. Amid labor shortages, **farmers are looking to robotics and automation to fill the gap. Artificial intelligence is now used to monitor soil, control pests, and improve overall yield.** These and other advances are enabling the industry to rethink its most basic assumptions: how we grow, what we grow, and how we transport what we grow. For example, recent breakthroughs in artificial intelligence, computer vision, and sensor and control systems have allowed our company, Bowery, to grow fresh, local, pesticide-free in large-scale, smart indoor environments with crops stacked from floor to ceiling. This approach, powered by renewable energy, uses significantly less land and water. **It's a sustainable model that works irrespective of changing climate**

conditions or severe weather events. Vertical farms can be built just about anywhere. But by putting them near the markets we serve, we can radically shorten the supply chain–decreasing disruptions and the environmental costs of long-haul shipping, and increasing the resilience of the food system overall. Many Americans have probably eaten vertically farmed products without realizing how differently they're grown. But vertical farming is only part of the broader transformation that the world must undertake.

With the global population projected to reach nearly 10 billion by 2050, and with the climate crisis worsening, we need to produce more food, more sustainably. This will require collective effort–and collective investment. Much like crops on a farm, a business requires the right inputs to grow. Great ideas, upfront capital, and a commitment at the state and local levels enable businesses to thrive. But for a cutting-edge industry to flourish and have a national and even global impact, the federal government has a key role to play as an accelerator of innovation.

Think of solar energy in the 1990s or electric vehicles in the early 2000s. The promise was evident. But these innovations could not have become the transformative, ubiquitous technologies they are today absent national investments in research and development, infrastructure, workforce training, and manufacturing–and without appropriate tax incentives.

Agriculture is poised to become the next great success story of sustainable innovation–as foreign governments increasingly recognize. For example, the Netherlands–the world's second-largest agricultural exporter–has invested in new growing technology and cell-based meat production. Small, land-poor states like Singapore and the UAE, as well as massive countries such as Russia and China, are working to build food systems that can withstand the changing climate and reduce their reliance on tumultuous trade relationships. The U.S. must do the same. The global challenges of climate change and food insecurity will accelerate the development of new farming technologies everywhere humans live and eat. **America has an opportunity to lead this revolution and to spread the benefits around the world.** As a matter of foreign policy and economic policy, the new Congress must act.

Key to prevent poverty

Caldwell 08: Caldwell is a reporter with 13 years of journalism 5-1-2008, "Food Price Crisis 101," Center for American Progress,

https://www.americanprogress.org/article/food-price-crisis-101/, accessed: 3-13-2022

The timing could not be worse for many of the world's hot spots and the United States' long-term national security. Rising prices and low stockpiles have fueled civil strife and political instability in urban areas of vitally strategic countries such as Egypt, Indonesia, Afghanistan, Somalia, Haiti, Pakistan, and India. At the precise moment when the United States has a narrow window of opportunity to contribute toward progress on the security, political, and economic fronts in key countries such as Pakistan and Afghanistan, the streets have erupted in food riots. Dramatic **increases in food prices disproportionately affect the poor** both in the United States and abroad. The purchasing power of families, food banks, and aid agencies erodes as prices rise, and they cannot keep pace with rising costs. Food banks and soup kitchens in the United States are reporting dwindling stocks and a 20 percent increase in visitors since April of last year. And **in developing countries,** where **60 to 80 percent of** a family's **income is spent on food, every 20 percent increase in food prices will push 100 million** more people **into the ranks of the poorest of the poor living on less than one dollar a day**

Food inflation in the United States is at its highest levels in 17 years. Enrollment in the nation's food stamp and nutrition programs has grown by 1.3 million to its highest levels ever. The U.S. Department of Agriculture estimates that the price of household food purchases will rise by 4 to 5 percent this year. Poor Americans spent almost 6 percent more of their income on food in 2006 than households with incomes above $70,000. Congress must use the Farm Bill and other legislation to provide additional funding to increase the budgets of the food stamp and nutrition programs so that they can serve more Americans in need.

C2) Patient Edu

Chatbots are providing efficient sexual reproductive health education to patients in rural areas

Kandyce **Brennan** (Contact Author), 12-2-20**24,** "Feasibility and Acceptability of Sarhachat™: An Ai-Powered Chatbot for Sexual and Reproductive Health Education and Decision Support", No Publication, https://papers.ssrn.com/sol3/papers.cfm?abstract_id=5028418

With the growing integration of conversational agents in healthcare, there is increasing 3 interest in leveraging these technologies to address unmet needs, particularly in sexual 4 and reproductive health (SRH)1 . Access to SRH services remains a critical global issue, 5 with one in five women having unmet family planning needs2 . **In the United States, over 19 million low-income pregnant capable people live in "sexual and reproductive 7 healthcare deserts," or regions lacking adequate access to comprehensive SRH 8 services3 . This lack of access, exacerbated by healthcare provider shortages, particularly 9 in rural and underserved communities, leads to significant SRH disparities**. **30% of 10 Americans lack a primary care provider, and a projected shortage of over 100,000 primary 11 care providers by 2034 further compounds the issue4 . This shortage leads to heavy 12 patient loads and short, transactional, patient visits with providers spending more time on 13 administrative tasks than face-to-face care**4 . The **limited time affects the provision of 14 contraception counseling, where providers are often unable to address competing 15 medical priorities adequately5,6 . 16 As a result, many individuals face challenges in accessing sexual and reproductive 17 healthcare, often turning to online resources where misinformation and disinformation are 18 common7** This gap in care highlights the urgent need for technology-driven solutions to 19 improve access to evidence-based care and information7 . The World Health Organization 20 (WHO) recommends digital interventions to enhance care efficiency and quality8 . With 21 increased broadband coverage, **digital health interventions can significantly improve 22 access to health information, particularly in rural areas**9 . These interventions provide cost23 effective methods to deliver health services and information, addressing social 4 determinants of health (SDOH) by offering accurate, automated, and anonymous health 25 information in a patient-centered, empathetic way that respects patients lived 26 experiences10. **SARHAchat™, an AI-powered chatbot for SRH, offers personalized 27 education and support on a range of SRH topics, and assistance with contraceptive 28 decision-making**. This study examines the feasibility and acceptability of integrating 29 SARHAchat™ into the U.S. healthcare landscape. 30 1.2 Background: 31 **Chatbots, a type of conversational artificial intelligence, have emerged as a promising 32 technology in healthcare, offering the potential to enhance patient care, improve access 33 to healthcare services, and streamline medical workflows**. **These AI-powered assistants 34 engage in natural language interactions with users, providing personalized information, 35 guidance, and clinical support.** The growing popularity and adoption of chatbots in 36 healthcare is attributed to the rapid advancements in natural language processing, 37 machine learning, and the ubiquity of mobile devices and digital platforms. 38 The conceptual origin of chatbots originates with the pioneering work of computer 39 scientists and artificial intelligence researchers in the mid-twentieth century, who laid the 40 foundation for the development of conversational interfaces and intelligent systems 41 capable of natural language interaction11. ELIZA, a computer program developed in the 42 1960s, was designed to mimic a Rogerian psychotherapist, demonstrating the potential 43 of computers to engage in human-like dialogues11. Since their inception, conversational 44 AI systems have rapidly evolved, leading to the development of increasingly sophisticated 45 chatbots capable of understanding and responding to natural language inputs with greater 46 accuracy and nuance. **This evolution has paved the way for their integration into various sectors, including healthcare, where they can transform patient engagement, provide 48 tailored health information, and support clinical decision-making.** Initially utilized in patient 49 education, chronic disease management, and mental health support, chatbots are 50 valuable in addressing critical challenges within the healthcare system, such as improving 51 access to care, closing information gaps, and optimizing clinical workflows1,12 . 52 As natural language processing and machine learning continue to advance, 53 chatbots are more adept at handling the complex and sensitive nature of SRH. This 54 provides an opportunity to develop specialized tools like SARHAchatTM, an AI-powered 55 conversational decision aid explicitly designed for SRH education, counseling, and 56 contraceptive decision-making. By leveraging advanced AI capabilities and a user57 centered algorithm and design approach, SARHAchatTM meets immediate informational 58 user needs and aligns with best practices in patient-centered care. The integration of 59 cutting-edge AI technology in SRH chatbots holds significant promise for addressing the 60 unique challenges of sexual and reproductive health, like the need for privacy, culturally 61 sensitive communication, accurate and personalized care—ultimately contributing to 62 more equitable and effective healthcare. 63 64 **The integration of chatbots into healthcare was driven by their ability to enhance 65 patient engagement, facilitate access to health information, and support clinical decision66 making11 By providing personalized and accessible healthcare services, Chatbots 67 address critical challenges in the healthcare system (e.g., limited access to care, patient 68 information gaps, misinformation, and more efficient clinical workflows)**12. As technology 69 advances, particularly in their ability to understand and respond to natural language inputs, **chatbots hold significant promise for addressing the unique challenges and 71 sensitivities associated with sexual and reproductive health** .72 A recent meta-analysis **suggests that conversational agents are effective for 73 promoting positive sexual health outcomes, including increased contraceptive use and 74 STI testing rates** However, experts and users remained concerned about data privacy 75 and algorithm bias, complicating user trust and acceptance13, 14. As the adoption of 76 chatbots in healthcare grows, it is crucial to understand their history, technical capabilities, 77 and the evolving role they play in delivering healthcare services.

And, it's unique in solvency

Mills et al. 23 [Rhiana Mills 1,,#, Emily Rose Mangone 2,#, Neal Lesh 3,#, Diwakar Mohan 4,#, Paula Baraitser 1, Chatbots to Improve Sexual and Reproductive Health: Realist Synthesis, National Library of Medicine, https://pmc.ncbi.nlm.nih.gov/articles/PMC10448286/#:~:text=This%20is%20because%20chatbots%20offer,social%20networks%2C%20provide%20immediate%20support, 8.9.23] doa: 3.5.25 //av

Through database searches in June 2022, 163 sources were identified (Figure 2). References were imported into Mendeley, and duplicate sources were removed (n=39). Abstracts were screened in accordance with the inclusion and exclusion criteria (Textbox 2). After this process, 28 sources remained; the full text of these documents was rescreened, and 19 sources from database searches were included in the review. Gray literature searches identified 33 sources that were screened for eligibility, with 16 gray literature sources included in the review. Four additional sources were found in a database search carried out in December 2022. Theory-driven searches aimed at developing the program theory identified 19 sources outside of SRH. Figure 2. Figure 2 Open in a new tab PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) 2020 flow diagram for new systematic reviews, which included searches of databases and other sources (adapted from Page et al [26]). SRH: sexual and reproductive health. Characteristics of Included Papers We identified 39 SRH sources through database and gray literature searches. This included 19 peer-reviewed original research papers, 3 peer-reviewed narrative reviews, 11 website articles, 2 technical reports published on the internet, 4 other types of gray literature, a letter, 2 theses, and a short report. Where sources reported on the geographical context where chatbots were implemented, 15 were implemented in high-income countries, with the majority in the United States (n=9) and United Kingdom (n=4) and 2 implemented in Japan. In low-income countries, 22 chatbots were implemented, the majority in African countries (n=15), including Kenya (n=7), South Africa (n=2), the Democratic Republic of the Congo (n=1), Uganda (n=2), and Nigeria (n=1). Chatbots were implemented in other low-income countries, including India (n=5), Bangladesh (n=1), and Mongolia (n=1). To inform the development of the program theory, 19 papers from other disciplines were also included. Three papers examine user disclosure of information to chatbots; 3 seek to understand the conversational aspects of chatbots; and 5 explore chatbots, emotionality, empathy, and human-bot relational behavior. Four papers explore social networks or nondyadic chatbots and their interactions with communities. Three papers report on chatbots and their relationship to wider service networks. One paper explores chatbot design and development. Multimedia Appendix 2 describes all included papers (n=58) with author, date, title, country of research, and source type, and summarizes data on study design and the reviewer's assessment of rigor, relevance, and plausibility. Realist Synthesis: Mapping Evidence Into the Initial Program Theory The realist synthesis seeks to map the evidence base onto the initial program theory to interrogate the assumptions it makes and add depth and detail to the theory. The following subheadings are taken from the "Possible Chatbot Response" section of the initial program theory (see Figure 1). **Chatbots Could Provide Anonymous and Nonjudgmental SRH Information and Services The literature on chatbots for SRH suggests that people value the anonymous and nonjudgmental space that chatbots offer for SRH discussions, particularly in contexts where SRH is stigmatized, or perceived as stigmatized, and for groups that**

face or perceive SRH stigma [17,18,27-38]. The literature that supports stigma as a barrier, across many contexts, and the evidence on chatbots as a response to this, included high-income countries (n=5) and low-income countries (n=7). **The value of chatbots as a strategy to offer nonstigmatizing services is supported by substantial evidence from outside SRH settings, mainly from mental health care, which shows that people are more likely to disclose sensitive information to chatbots than to humans [39-42]. It seems that both perceived anonymity [43] and reduced fear of negative or judgmental responses are important for disclosure** [40]. The SRH literature suggests that the anonymity or confidentiality of chatbot use requires access to a private digital device, and those without this access will be excluded from this benefit [37,38] (Table 1). Where people experience conversations about SRH as taboo, this may also apply to conversations with chatbots [35,37]. Adolescent girls in India were much less likely to engage with a chatbot aimed at adolescents of all genders than boys; it is suggested that this may be because female users in India face gender disparities in mobile device ownership and low digital media literacy [37]. Adolescent girls in this context may also be less comfortable about openly discussing SRH and may hold higher levels of privacy concerns due to taboos concerning SRH for girls [37]. Table 1. Context, mechanism, outcome configurations (CMOCs) regarding chatbot delivery of anonymous and nonjudgmental SRH information and services. CMOCs Studies In contexts where conversations about SRHa generate stigma and embarrassment (C), people may engage with chatbots (O) because chatbots are nonjudgmental and anonymous (M) [17,18,27-33,35-38,44-48] In contexts where conversations about SRH are taboo (C), some populations may not engage with SRH chatbots (O), because discussing SRH even through an anonymous medium remains stigmatizing (M) [35,37] Where chatbots assure users that their information will be kept anonymous and their privacy will be maintained (C), users may engage with the chatbot (O), because their concerns have been addressed (M) [33,49-51] Where users do not have access to a private digital device (C), users are not afforded anonymity with chatbot use (O), because they cannot assure that their interaction with the chatbot will not be seen by other users of the device (M) [37,38,52,53] Open in a new tab aSRH: sexual and reproductive health. **Chatbots Could Provide Complex Information in a Responsive and Conversational Way** **Maintaining SRH requires access to and understanding of complex information including information on the different contraceptive methods and how to use them, sexually transmitted diseases and how to test for them, and HIV prevention such as the use of pre-exposure prophylaxis. Complex information may be better understood if delivered in a conversational format.** We found the definition of "conversation" proposed by Zamani et al [8], in their monograph on conversational information seeking, useful; "a sequence of interactions between 2 or more participants including humans and machines as a form of interactional communication with the goal of information exchange" [8]. Key features of conversational information are that it is delivered in short segments, there is an opportunity to check understanding or ask clarification questions and the tone of voice is engaging [54]. **There is also evidence that information presented in a conversational form is easier to understand and more engaging, particularly for those with low health literacy [54,55]. A dialogical structure allows complex information to be conveyed in segments or "chunks" rather than long passages of text, making complex information more digestible to users and easier to understand [56].** Sharing information in this way may be valued over using search engines as users do not have to search, appraise sources, or pick out answers from longer passages of text [17,18,29,30,35,49,57]. Chatbots may also check user understanding and well-being at various points in the conversation [18,30,35,38,50,58]. This allows users to evaluate whether their needs are being met by the chatbot and may feel like a more authentic conversational flow. The extent to which the conversations generated feel "human" is important. SRH chatbots vary widely in their conversational ability, from those that offer menus of questions that are chosen by typing a number, to chatbots that interpret free text questions and generate personalized responses. Evidence from chatbots both in SRH and other areas of health care shows that engaging chatbots use conversational strategies such as a friendly tone, demonstrating active listening (eg, paraphrasing), showing empathy, and using familiar language [3,7,9,35,37,57] validating feelings [30,52,58] prompting further questions and checking understanding [18,30,35,50,55,58]. When the language used makes chatbots feel uncanny (not quite human), like replying too quickly, misunderstanding questions, or using overly formal language, then this makes interactions less conversational and potentially distracts from understanding complex information [18,31,58]. Conversational breakdowns between humans and chatbots are common and effective repair strategies are important, for example, chatbots that acknowledge that there has been a conversational breakdown and show initiative from the chatbot to recover are preferred [7]. There are also concerns about chatbots, particularly artificial intelligence chatbots that do not rely on prewritten responses and may engage in conversation but misinterpret questions or provide inaccurate information [59] (Table 2). Incorrect answers could generate health risks where users act on inappropriate clinical advice or signposting [59,60]. Table 2. Context, mechanism, outcome configurations (CMOCs) regarding chatbot provision of complex information. CMOCs Studies When chatbots provide access to accurate information in digestible form (C), chatbots may be preferred to search engines (O), as the chatbot can eliminate steps to search and filter web-based health information (M) [17,18,29,30,35,48,49,57,61] When the language cues used, make chatbots feel uncanny (not quite human), like replying too quickly, misunderstanding, or overly formal language (C), then users can disengage from connecting with the Chatbot (O), as humans are sensitive to language cues that do not "feel right" (M) [18,31,58,62] When chatbots interact with users by prompting further questions and checking in with them (C), users engage for longer with the chatbot (C), because interaction drives the "conversation" between the user and chatbot forward and feels more human (M) [18,30,35,38,50,53,58] Where chatbots repeat information, either during a single session over repeated sessions (C), users may engage with the information provided (O), because repetition reinforces understanding (M) [28,30] Where chatbots use language that validates users' feelings and needs (C), this may engage users in chatbot use (O), because the chatbot offers a feeling of being understood (M) [30,52,58] Where chatbots give complex information on SRH topics (C), users may be able to understand the information more easily (O), because the information is given in a dialogical structure that shares information in short segments of "chunks" (O) [54,56,62,63] Open in a new tab Chatbots May Mimic

And, gender disparities in medical education kills

UN United Nations, "Integrating the Gender Perspective in Medical and Health Education and Research", United Nations, https://www.un.org/womenwatch/daw/csw/integrate.htm

The preceding account showed how women's health and ill-health have been reduced to a matter of their biology, and how ka**disregard for women has permeated throughout medical practice and the health services.** It is reported that **in the United States, such views were institutionalised within scientific medicine and the new public health by the first few decades of the 20th century. T**hus, biologically deterministic views of sex/gender differences have since become a natural and integral part of the curriculum and research agenda in medical and public health practices [Krieger & Fee, 1994, p15]. Although the Hippocratic Oath, with its explicit clause of not giving women "pessary to produce abortion", can be said to be generally outdated and not quite held up as the exemplary standard to emulate, the 1983 amended Declaration of Geneva adopted by 35th World Medical Assembly still refers to "colleagues as my brothers" [British Medical Association, 1988]. **Although the proportion of female students admitted to medical schools has been increasing** from about 5 percent in the mid-1970s to 40 percent in the 1990s in America, **the medical curriculum, however, does not "speak to women's health concerns". Moreover, both lectures and clinical skills are more often than not taught by white men, about white men and for white men.** Gender bias is apparent even in the teaching of basic science and biomedical subjects, such as normal human body and its functions. For example, lectures on male genitalia could be spread over three days but none on women's sexual organs, because "men and women are basically the same". **Medical textbooks still consider the male as the norm or reference point for all courses and regard women as exceptions to the male** [E. Nechas & D. Foley, 1994, p 41]. **The disregard for women's health in the medical curriculum is best reflected in the teaching of basic clinical skills, such as physical examinations.** Medical students are taught how to examine the entire body, the head, neck, abdominal areas, the cardiovascular and neuromuscular systems, except the breast and pelvis. Instead, students have to resort to learning such basic skills vital to women's health care by practising on poor patients with breast illness who are already in pain. Alternatively, it has been alleged that students have been taught to do pelvic exams on anaesthetised patients who were undergoing a surgical procedure [E. Nechas & D. Foley, 1994, p.43]. These **medical teaching practices have at least two serious implications that are adverse for women's health care. When statistics reveal that breast and cervical cancers are one of the top causes of death for women, such teaching methods of clinical examinations of women's breast and pelvis certainly would not contribute to the treatment or prevention of these top killers of women. The other more long-term insidious effect is that the habit of examining a woman in pain has come to be the basis of medical students' learning experience of women's health in particular**. Thus, until very recently when and where the use of teaching associates is practised, teaching medical students how to do competent, sensitive and painless breast and internal examinations for women have not been an integral part of the medical teaching practice. This explains why **women expect and experience pain during what should be routine internal examinations**, one of the many examples of unnecessary suffering which women endure when undergoing medical examination or treatment.

AMR is an existential risk multiplier

Maxine **Builder 14**, Research Associate for the Council on Foreign Relations' Global Health Program, "Antimicrobial Resistance as an Emerging Threat to National Security," The Atlantic Council, December 2014, https://www.atlanticcouncil.org/images/files/Antimicrobial_Resistance_as_an_Emerging_Threat_to_National_Security.pdf

At this point, AMR does not pose an immediate and direct threat to national security, but without an **effective and swift response** to the growing problem of AMR, the situation will continue to **deteriorate on a global scale**. This is a **creeping national security crisis**, and underestimates of the problem now may lead to **disaster in the near future**. If current trends continue, the drugs will lose effectiveness. The gains made in fighting infectious diseases **will be reversed,** and a wide range of routine surgeries and easily treatable infections will become much more dangerous and deadly. This will cause the **health of the world's working population** to **deteriorate** and the **economic productivity** and social cohesion of the globe **to decline**. At any time**, a "black swan**" event, triggered by an outbreak of drug-resistant tuberculosis, cholera, or pneumonia, for example, could **prove catastrophic**, endangering the **fabric of societies** and our **globalized economy**, **forcing a halt to international trade** and travel to prevent further spread.As demonstrated by the rapid spread of NDM-1, current trends of international trade and travel are **exacerbating the spread of resistance**, and conflict and displacement of populations only hasten the process. The current conflict in Syria has caused the displacement of millions of people, and preventable communicable diseases, such as cholera and even polio, have run rampant in these populations, crossing borders quickly and often unnoticed. These diseases are neither being treated nor prevented because of a lack of resources and access to proper drugs, in spite of the technical ability to prevent and effectively treat these diseases. If the diseases circulating in these refugee communities become drug-resistant, it could lead to even **higher mortality rates** among this **already vulnerable population**, and it is more than likely that these resistant genes and strains will appear **in the broader population**, at which point the issue becomes more than one of public health, but **also one of development and foreign affairs.**Concern about the threat of AMR to US national security has lead the US Department of Health and Human Services (HHS) to fund development of a new drug to address two antibiotic-resistant infections linked to **bioterrorism threats**. HHS announced in February 2014 that a publicprivate partnership will advance the development of Carbavance, a new option to treat bioterrorism threats and antibiotic-resistant infections. Carbavance will address melioidosis, also known as Whitmore's disease, and glanders–both of which are bacterial infections and can therefore become resistant to existing antibiotics. Already, approximately **40 percent** of people who contract these bacteria **will die**, and **up to 90 percent** of those infected **will die if not treated.** "Antibiotic resistance **adversely impacts** our nation's ability to **respond effectively to a bioterrorism attack** and to everyday public health threats," said Dr. Robin Robinson, director of the Office of the Assistant for Preparedness and Response's Biomedical Advanced Research Development Authority, which will oversee the project. "By partnering with industry to develop novel antimicrobial drugs against biothreats that also treat drug-resistant bacteria, we can address health security and public health needs efficiently."67

FW:

My criterion is mitigating structural violence.

Prefer because we divide people into in-groups and out-groups.

Winter & Leighton '99 [Deborah DuNann Winter and Dana C. Leighton, Winter is a Professor at Whitman College and Leighton is a Professor at Texas A&M University, "Peace, Conflict, and Violence: Peace Psychology for the 21st Century" 1999, http://sites.saumag.edu/danaleighton/wp-content/uploads/sites/11/2015/09/SVintro-2.pdf

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 that our 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 that structural 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.

Structural violence occurs when people are systematically excluded and harmed for arbitrary factors.

Opotow ‘01 [Susan Opotow, Opotow is a social psychologist and researcher at the City University of New York (CUNY). Additionally, Opotow has written/edited for *Peace & Conflict: Journal of Peace Psychology* and Past President of the Society for the Psychological Study of Social Issues, Peace, Conflict, and Violence: Peace Psychology for the 21st Centuryl Englewood Cliffs, New Jersey: Prentice-Hall, 2001, https://cpb-us-w2.wpmucdn.com/u.osu.edu/dist/b/7538/files/2014/10/Chapter-8-Social-Injustice-Opotow-1jaya7m.pdf

Both structural and direct violence result from moral justifications and rationalizations. Morals are the norms, rights, entitlements, obligations, responsibilities, and duties that shape our sense of justice and guide our behavior with others (Deutsch, 1985). Morals operationalize our sense of justice by identifying what we owe to whom, whose needs, views, and well-being count, and whose do not. Our morals apply to people we value, which define who is inside our scope of justice (or “moral community”), such as family members, friends, compatriots, and coreligionists (Deutsch, 1974, 1985; Opotow, 1990; Staub, 1989). We extend considerations of fairness to them, share community resources with them, and make sacrifices for them that foster their well-being (Opotow, 1987, 1993). We see other kinds of people such as enemies or strangers outside our scope of justice; they are morally excluded. Gender, ethnicity, religious identity, age, mental capacity, sexual orientation, and political affiliation are some criteria used to define moral exclusion. Excluded people can be hated and viewed as “vermin” or “plague” or they can be seen as expendable non-entities. In either case, disadvantage, hardship, and exploitation inflicted on them seems normal, acceptable, and just—as “the way things are” or the way they “ought to be.” Fairness and deserving seem irrelevant when applied to them and harm befalling them elicits neither remorse, outrage, nor demands for restitution; instead, harm inflicted on them can inspire celebration. Many social issues and controversies, such as aid to school drop-outs, illegal immigrants, “welfare moms,” people who are homeless, substance abusers, and those infected with HIV are essentially moral debates about who deserves public resources, and thus, ultimately, about moral inclusion. When we see other people’s circumstances to be a result of their moral failings, moral exclusion seems warranted. But when we see others’ circumstances as a result of structural violence, moral exclusion seems unwarranted and unjust. While it is psychologically more comfortable to perceive harm-doers to be evil or demented, we each have boundaries for justice. Our moral obligations are stronger toward those close to us and weaker toward those who are distant. When the media reports suffering and death in Cambodia, El Salvador, Nicaragua, the former Yugoslavia, and Rwanda, we often fail—as a nation, as com- munities, and as individuals—to protest or to provide aid. Rationalizations include insufficient knowledge of the political dynamics, the futility of doing much of use, and not knowing where to begin. Our tendency to exclude people is fostered by a number of normal perceptual tendencies: 1. Social categorization. Our tendency to group and classify objects, including social categories, is ordinarily innocuous, facilitating acquisition of information and memory (Tajfel & Wilkes, 1963). Social categorizations can become invidious, however, when they serve as a basis for rationalizing structural inequality and social injustice. For example, race is a neutral physical characteristic, but it often becomes a value-loaded label, which generates unequal treatment and outcomes (Archer, 1985; Tajfel, 1978). 2. Evaluative judgments. Our tendency to make simple, evaluative, dichotomous judgments (e.g., good and bad, like and dislike) is a fundamental feature of human perception. Evaluative judgments have cognitive, affective, and moral components. From a behavioral, evolutionary, and social learning perspective, evaluative judgments have positive adaptive value because they provide feedback that protects our well-being (Edwards & von Hippel, 1995; Osgood, Suci, & Tannenbaum, 1957). Evaluative judgments can support structural violence and exclusionary thinking, however, when they lend a negative slant to perceived difference. In-group-out-group and we-them thinking can result from social comparisons made on dimensions that maximize a positive social identity for oneself or one’s group at the expense of others (Tajfel, 1982).

Prefer because this acknowledges systemic barriers that go beyond settler colonialism.

rebuttal

Framing settler colonialism through a totalizing lens makes indigenous liberation impossible by setting the terms of victory as all-or-nothing—pessimism actively reifies settler dominance

Busbridge 18 Research Fellow at the Centre for Dialogue, La Trobe University (Rachel, "Israel-Palestine and the Settler Colonial 'Turn': From Interpretation to Decolonization," Theory, Culture & Society Vol 35, Issue 1, 2018)

The prescription for decolonisation—that is, a normative project committed to the **liberation of the colonised** and the **overturning of colonial relationships of power** (Kohn & McBride, 2011: 3)—is indeed one of the **most counterhegemonic implications** of the settler colonial paradigm as applied to IsraelPalestine, potentially shifting it from a diagnostic frame to a prognostic one which offers a 'proposed solution to the problem, or at least a plan of attack' (Benford & Snow, 2000: 616). What, however, does the settler colonial paradigm offer by way of **envisioning decolonisation**? As Veracini (2007) notes, while settler colonial studies scholars have sought to address the lack of attention paid to the experiences of Indigenous peoples in conventional historiographical accounts of decolonisation (which have mostly focused on settler independence and the loosening of ties to the 'motherland'), there is nevertheless a **'narrative deficit'** when it comes to **imagining settler decolonisation**. While Veracini (2007) relates this deficit to a matter of conceptualisation, it is apparent that the **structural perspective** of the paradigm in many ways **closes down possibilities** of **imagining the type of social** and **political transformation** to which the **notion of decolonisation aspires**. In this regard, there is a **worrying tendency** (if not **tautological discrepancy**) in settler colonial studies, where the **only solution to settler colonialism is decolonisation**—which a faithful adherence to the paradigm **renders largely unachievable**, if not **impossible**. To understand why this is the case, it is necessary to return to Wolfe's (2013a: 257) account of settler colonialism as guided by a 'zero-sum logic whereby settler societies, for all their internal complexities, uniformly require the elimination of Native alternatives'. The structuralism of this account has **immense power** as a means of mapping forms of injustice and indignity as well as strategies of resistance and refusal, and Wolfe is careful to show how transmutations of the logic of elimination are complex, variable, discontinuous and uneven. Yet, in seeking to **elucidate the logic of elimination** as the **overarching historical force** guiding settler-native relations there is an **operational weakness** in the theory, whereby such a logic is **simply there**, **omnipresent** and **manifest** even when (and perhaps especially when) it **appears not to be**; the settler colonial studies scholar need only **read it into a situation** or **context**. It thus **hurtles from the past** to the **present** into the **future**, never to be fully extinguished until the native is, or until history itself ends. There is thus a **powerful ontological** (if not metaphysical) **dimension** to Wolfe's account, where there is such thing as a **'settler will'** that **inherently desires the elimination of the native** and the distinction between the settler and native **can only ever be categorical**, founded as it is on the 'primal binarism of the frontier' (2013a: 258). It is here that the differences between earlier settler colonial scholarship on Israel-Palestine and the recent settler colonial turn come into clearest view. While Jamal Hilal's (1976) Marxist account of the conflict, for instance, engaged Palestinians and Jewish Israelis in terms of their relations to the means of production, Wolfe's account brings its own ontology: the bourgeoisie/proletariat distinction becomes that of settler/native, and the class struggle the struggle between settler, who seeks to **destroy** and **replace the native**, and native, who **can only ever push back**. Indeed, if the settler colonial paradigm views history in similar teleological terms to the Marxist framework, it **does not offer** the same hopeful vision of a liberated future. After all, settler colonialism has **only one story to tell**—'either **total victory** or **total failure**' (Veracini, 2007). Veracini's attempt to disaggregate different forms of settler decolonisation is revealing of the difficulties that come along with this zero-sum perspective. It is significant to note that beyond settler evacuation (which may decolonise territory, he cautions, but not necessarily relationships) the picture he paints is a relatively bleak one. For Veracini (2011: 5), claims for decolonisation from Indigenous peoples in settler societies can take two broad forms: an 'anticolonial rhetoric expressing a demand for indigenous sovereign independence and self-determination… and an "ultra"-colonial one that seeks a reconstituted partnership with the [settler state] and advocates a return to a relatively more respectful middle ground and "treaty" conditions'. While both, he suggests, are tempting strategies in the struggle for change, though 'ultimately ineffective against settler colonial structures of domination' (2011: 5), it is the latter strategy that invites Veracini's most scathing assessment. As he writes, under settler colonial conditions the independent polity is the settler polity and sanctioning the equal rights of indigenous peoples has historically been used as a powerful weapon in the denial of indigenous entitlement and in the enactment of various forms of coercive assimilation. This decolonisation actually enhances the subjection of indigenous peoples… it is at best irrelevant

and at worst detrimental to indigenous peoples in settler societies (2011: 6-7). The 'primal binarism of the frontier' plays a particularly ambivalent role in Veracini's (2011: 6) formulation, where the **categorical distinction** between settler and native **obstructs** the 'possibility of a genuinely decolonised relationship' (by virtue of its lopsidedness) yet is a **necessary political strategy** to **guard against the absorption** of Indigenous people into the settler fold, which would **represent settler colonialism's final victory**. The battle here is between a 'settler colonialism [that] is designed to produce a fundamental discontinuity as its "logic of elimination" runs its course until it actually extinguishes the settler colonial relation' and an anti-colonial struggle that '**must aim to keep the settler-indigenous relationship going**' (2011: 7). In other words, the categorical distinction produced by the frontier **must be maintained in order to struggle against its effects**. Given the lack of options presented to Indigenous peoples by Veracini (2014: 315), his conclusion that settler decolonisation demands a 'radical, post-settler colonial passage' is perhaps not surprising – although he has 'no suggestion as to how this may be achieved and [is] pessimistic about its feasibility'. Scholars have long reckoned with the ambivalence of the settler colonial situation, which is simultaneously colonial and postcolonial, colonising and decolonising (Curthoys, 1999: 288). Given the generally dreadful Fourth World circumstances facing many Indigenous peoples in settler societies, it **could be argued** that there is good reason for such **pessimism**. The settler colonial paradigm, in this sense, offers an important caution against celebratory narratives of progress. Wolfe (1994), it must be recalled, wrote the original articulation of his thesis precisely against the idea of 'historical rupture' that dominated in Australia post-Mabo, and was thus as much a scholarly intervention as it was a political challenge to the idea of Australia having broken with its colonial past. **Nonetheless**, the **fatalism** of the settler colonial paradigm—whereby decolonisation is by and large put beyond the realms of possibility—has seen it come under **considerable critique** for **reifying settler colonialism** as a transhistorical meta-structure where colonial relations of domination are **inevitable** (Macoun & Strakosch, 2013: 435; Snelgrove et al., 2014: 9). Not only does Wolfe's ontology **erase contingency**, **heterogeneity** and (crucially) **agency** (Merlan, 1997; Rowse, 2014), but its polarised framework effectively '**puts politics to death**' (Svirsky, 2014: 327). In response to such critiques, Wolfe (2013a: 213) suggests that 'the repudiation of binarism' may just represent a 'settler perspective'. However, as Elizabeth Povinelli (1997: 22) has astutely shown, it is in this regard that the **totalising logic** of Wolfe's structure of invasion **rests on a disciplinary gesture** where '**any discussion** which **does not insist** on the polarity of the [settler] colonial project' is **assimilationist**, worse still, **genocidal** in effect if not intent. **Any attempt** to 'explore the **dialogical** or **hybrid nature** of colonial subjectivity'—which would entail **working beyond the bounds of absolute polarity**—is **disciplined as complicit** in the settler colonial project itself, leaving 'the **only nonassimilationist position** one that **adheres strictly** and **solely** to a **critique** of [settler] state discourse'. This gesture not only **disallows the possibility of counter-publics** and **strategic alliances** (even limited ones), but also **comes dangerously close** to '**resistance as acquiescence**' insofar as the settler colonial studies scholar may **malign the structures set in play** by settler colonialism, but **only from a safe distance unsullied by the messiness** of ambivalences and contradictions of settler and Native subjectivities and relations. **Opposition** is thus left as our **only option**, but, as we know from critical anti-colonial and postcolonial scholarship, opposition in itself **is not decolonisation**.

Saying like "gay" and "black" people can be settler still fits within SV. Cole makes SV a binary when it isn't. It's complex and breaking out groups.

Set col uses pessimism. But through SV, your goal is uplifting. Thus that's action. Imperative in debate where we look for solutions.

Regilme 25

This doesn't mention anything about Gen AI or education.

Colonialism is more than language from ChatGPT. Trump isn't in school and he's expanding colonialism. This is non-unique. It's primarily rhetoric we absorb.
Genocide is so much more.

This may be the root cause.

Lack of food is also a root cause.

Women & non-binary individuals are often tasked with service work, seen as menial and hindering career advancement

Mella et al 24 Jon Mella, Sarah Frampton, Anna Cox, 09-2024, "Unseen Work: Leveraging Generative AI for Invisible Academic Labour", Mensch und Computer, https://dl.gi.de/server/api/core/bitstreams/11fa6287-c5ff-4725-824f-f86b8639f832/content //doa: 02/12/24 sr

Academic Work Pressures and Gendered Division of Labor Academia is becoming increasingly target-driven and economically oriented, leaving those within the profession under pressure to work longer hours and in an intensified fashion [34]. **As hybrid working becomes more commonplace and boundaries between home- and work-life are increasingly eroded, these changes to the length and intensity of the working day have been further exacerbated** [23, 33]. For some, these pressures represent a near-existential threat to the academic field, with the time and freedom for reflective thinking that is necessary for successful research and teaching being cannibalised in favour of other demands [17, 24, 45]. Indeed, academics report experiencing unmanageable workloads, working an average of two additional unpaid days per week [43]. Much of this increased workload can be attributed to increased responsibilities related to teaching and administration. In a traditional academic workload model, academics will spend 40% of their time on research, 40% on teaching and 20% on administration and service, this 40:40:20 ratio is a fallacy for most. **Whilst this ratio is often used to set expectations of outputs, research suggests that teaching (40%) and administration and service (35%) dominate academics' time, with only one-quarter of their workload dedicated to research [20], leaving academics with no choice but to work long hours to meet expectations related to research.** The workload pressures experienced by academics are not evenly distributed across those working in the field. Namely, there is evidence to suggest that **experiences of academic workloads and pressures differ along gendered lines, with women (and likely nonbinary individuals) at a disadvantage.** Notably, **female academic staff members are asked to deliver more than their male counterparts**. Compared to male academics, women receive more requests for new pieces of work [27], greater demands from students [8] and supervise more students than men [22]. As well as the amount of academic work women are expected to complete relative to men, the nature of the work also differs between genders. For instance, female members of staff have strikingly different interactions with students. They are typically expected to provide more favours (e.g., marking the re-submission of an assignment to enable a student to earn a better grade) and friendship behaviours (e.g., discussing personal problems with students) [8]. Female academics are expected to perform these forms of additional support and accommodation more frequently than their male counterparts as they are perceived by students to be more caring and obliging [7]. Moreover, it is a well-established finding that academic service work (such as committee membership, mentoring and curriculum development) is more commonly completed by women than men [2, 13, 19, 27]. There are several reasons why this difference is thought to arise. For one, female academics are more likely to volunteer and be asked to volunteer, for tasks that have less impact on their promotion prospects; a category into which service work often falls [2]. Furthermore, female and male academics differ in how they frame service work. Where women typically conceptualise this work in terms of its community aspects, men tend to see it as a problem which interferes with their ability to conduct research [26]. As a consequence, males tend to avoid service work, whereas women are more willing to do this work without expecting a reward or for the potential of receiving a future reward [16]. Much of the academic work completed disproportionately by women is defined by its hidden nature. For instance, service work, though typically both time-consuming and emotionally challenging, receives little recognition and offers limited opportunities for career advancement [7, 22]. In fact, this type of work have been termed as "non-promotable tasks" (NPTs) given their minimal impact on the career prospects of academics [1]. However, even within the domain of service work, men tend to take on more visible activities such as writing recommendation letters, leaving less visible alternatives like mentoring to female academics [14]. This leaves female academics with less time for more visible and well-recognised research-related activities than men [26]. Female academics' time for research work can also be impacted by hidden pressures from outside of the workplace, as they are frequently forced to sacrifice academic work in favour of childcare and household responsibilities [21, 47]. Thus, women in academia find themselves working harder on tasks, both inside and outside the workplace, that receive less recognition and as a consequence have fewer opportunities to engage in research-related activities. The gendered division of the academic workload has significant consequences. Although promotions frameworks recognise the importance of teaching and service, the culture of universities typically places greater emphasis on producing publications and obtaining grant funding as a metric for success [46]. Academics are incentivised to publish research to share the results of their work and in return for promotions and pay rises [3]. Thus, any barriers to producing research experienced by female academics; are in effect a barrier to their career advancement. Indeed, there exists a "leaky pipeline" phenomenon whereby there is a progressive loss of female academics as they advance in their careers, leaving disproportionately few women in senior positions [12]. This phenomenon has been attributed to women having insufficient time to conduct research activities, which are key for promotion prospects, due to their service responsibilities [28]. Relatedly, women make fewer and smaller grant applications than their male equivalents [9]. Again, female academics report that being overburdened by service and teaching commitments is a barrier to making grant applications [10].

Gen AI solves

But - Large language models reduce workload pressure

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1 Introduction To understand how Generative AI might be integrated into the academic research cycle, one must first consider the unique set of pressures experienced by those working in the field. **Academics work increasingly long hours [34] which are becoming more skewed towards teaching- and service-related work, leaving less time for research activities [20]. Therefore, one potential use of Generative AI to support research is by easing the burden of teaching and service demands.** Notably**, many of these non-research forms of work, which are less visible and contribute minimally to career advancement, tend to be disproportionately completed by female academics** e.g., [7]. In this position paper, **we draw upon theories of mental load in the domain of parenting** [32] **to better understand the nature of the invisible labour completed by female and non-binary academics.** We also argue that **there is the potential to use Generative AI to support this hidden work**, citing examples of these tools being used to field questions from student applicants and conduct administrative tasks. In doing so, we hope to encourage research into the current and future practices around LLM use for invisible academic work. We believe that **using LLMs for this purpose could reduce workload pressures in academia and create a more equitable environment for the women and non-binary academics who disproportionately complete this type of work.** 2 Positionality Statement Our research is driven by a belief that gender is largely a social construct, one that has a role in shaping and is shaped by technology. We acknowledge the potential limitations and biases introduced by our own experiences of work, family, oppression, and our academic focus. 3

Generative AI can fill automate the “invisible” labor, allowing gender minorities to focus more on academic research. This breaks the singularity of current research.

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5 LLMs and the Invisible Mental Labour of Academia Given the pressures experienced by academics (both in a gendered and ungendered sense), it is little surprise that there has been interest in the use of Generative AI models to address workload issues [44]. For instance, **researchers have explored the use of LLMs for a variety of academic work tasks, including idea generation [31], qualitative data analysis [5, 37] and peer review** [15, 36]. In addition, guidelines have been developed to support academics with using Chat GPT for research, student engagement, administration and teaching and assessment [38–41]. Whilst reservations have been expressed about the impact of LLMs upon academia, e.g., [18, 30], the research being conducted in this space suggests that Generative AI has the potential to support academic work tasks. Notably, **the majority of studies into the use of Generative AI to support academic work focus on research- or teaching-related activities with highly visible outcomes.** However, there has been comparatively little investigation into how Generative AI can support academics with their invisible labour. At first glance, one might attribute this to LLMs being suitable for tasks with concrete and tangible outputs, such as synthesising literature or analysing data. However, we would challenge this idea, pointing towards examples of **innovative research which have explored the use of LLMs to support some of the less visible demands that tend to be met by female academics. For example, Park and Kulkarni [29] used an LLM tool to answer questions from graduate school applicants, essentially acting in lieu of the mentorship opportunities typically offered by academic staff. Furthermore, in domains outside of academia, the use of LLMs to automate administrative tasks is being explored. For instance, Gebreab and colleagues [11] developed a LLM designed to automatically complete administrative tasks in a healthcare context, namely the retrieval of medical records and health information.** These **examples demonstrate the ability of LLMs to support precisely the kind of low visibility work completed by female, and likely non-binary, academics which prevents them from engaging in research-related activities.** 6 Limitations In this paper, we discuss research related to the gendered division of academic work. The literature cited primarily treats gender as binary, comparing the experiences of men and women. Only a minority of studies in this area acknowledge the existence of nonbinary academics [14, 19, 47]. However, to our knowledge, there are no papers that explicitly examine the experiences of academic workload for non-binary persons and further work is required to investigate the experiences of these academics. 7 Research Agenda We believe that **LLMs have the potential to have an indirect, but vital, impact on the conduct of research in academia. Namely, we suggest that using LLMs might ease the burden of academics’ invisible labour, freeing up more time to focus on research-related activities.** While invisible labour is performed by individuals of all genders, our research questions are designed to address the broader academic context. By improving the overall efficiency and reducing the burden of invisible labour for all academics, we can particularly benefit the female and non-binary individuals who are disproportionately affected. To this end, we propose a research agenda which seeks to answer the following questions: (1) What is the nature of the invisible labour carried out by academics? (2) What are the current practices of academics using LLMs to support their invisible labour? (3) How might future tools based on LLMs be designed to support academics with their invisible labour? These research questions address the broader academic context, given that invisible labour is performed by individuals of all genders. However, in addressing these questions, the gendered division of academic workload must be acknowledged. **Researchers should seek to**

understand how invisible labour differs between academics of different genders and consider the specific perspectives of female and non-binary academics. Doing so will allow LLM-based tools to support academics' invisible workload to be tailored to the needs of those who disproportionately complete this work. We have started a program of research that aims to answer these questions. However, we call on other researchers with an interest in the use of LLMs to support academic labour to respond to this call to action and address these issues too. Not only does investigating this topic have the potential to identify means by which academics can spend more time on research but also contributes to making academia a more equitable field by alleviating the burdens of invisible labour that are disproportionately completed by women. Crucially, we by no means advocate the use of LLMs as a "sticking plaster" for the wider issues that disadvantage female and non-binary individuals in academia, which must be addressed with long-term, systematic change. However, we do think that LLMs can play a role in the immediate present to mitigate against some of the disadvantages experienced by female and non-binary academics.