



Center for Ethics
and the Rule of Law
UNIVERSITY of PENNSYLVANIA



Annenberg
PUBLIC POLICY CENTER
UNIVERSITY of PENNSYLVANIA

**THE ETHICAL AND LEGAL
SIGNIFICANCE OF SUPER SOLDIERS
CONFERENCE REPORT**



PRESENTED BY:

**CENTER FOR ETHICS AND THE RULE OF LAW
ANNENBERG PUBLIC POLICY CENTER
UNIVERSITY OF MASSACHUSETTS LOWELL**

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Introduction

State militaries have long sought to enhance and maintain the performance of their personnel. At the outer limits of these attempts are interventions and technologies designed to push warfighters beyond their, or arguably anyone's, natural limits. Warfighters might be enhanced using pharmacological or surgical interventions, sophisticated behavioral modification, or wearable technologies such as exoskeletons. For over half a century, the enhanced warfighter has captured the attention of policy makers and the public alike, with the latter coming to understand "super soldiers" through works such as Heinlein's *Starship Troopers*, Herbert's *Dune*, Robson's *Keeping It Real*, and a panoply of Marvel superheroes from Captain America to Iron Man and beyond.

For approximately 40 years, the U.S. Department of Defense (DoD) has sought to clarify policy, legal, and ethical issues arising from the creation, deployment, and long-term future of super soldiers. A 1988 report by the National Academies, commissioned by the U.S. Army, considered the possibility of enhanced "warrior monks," a class of fighter enhanced by psychological and even paranormal means, but concluded that human enhancement in the military did not have a promising future. However, the use of super soldiers has survived and even flourished. The Army's now-defunct Future Combat Systems program (2003-2009) aimed to modernize the force through pharmaceutical performance enhancement technologies as well as exogenous enhancements like exoskeletons, with the latter continuing into the present. Since 2008, the Air Force's 711th Human Performance Wing has sought to enhance the combat effectiveness of personnel through medical, educational, and technological means. And since the 1970s the Defense Advanced Research Projects Agency (DARPA) has committed extraordinary funds to conduct research on human enhancement through cybernetic, pharmacological, and neuroscientific means.

Nonetheless, the legal and ethical landscape around super soldiers remains fraught. Subjecting warfighters to advanced and risky medical procedures is a live civil rights debate. The boom-and-bust cycle of hype around technologies—of which artificial intelligence is only the latest—raises concerns about wasted resources. And the changing landscape of war raises

questions about what kinds of enhancements really serve the nation, and its allies, in maintaining global security in a rapidly changing world.

Responding to these issues, the Center for Ethics and the Rule of Law, in collaboration with the Annenberg Public Policy Center and the University of Massachusetts Lowell, convened a conference in April 2023 entitled “The Ethical and Legal Significance of Super Soldiers.” The conference—comprising one public keynote panel and seven closed-door working group sessions—brought together applied and interdisciplinary experts at the intersection of national security, law, and ethics. Drawing upon premier scholarship on the ethical, legal, and social significance of super soldiers, as well as current and near-future technological innovations designed to make super soldiers possible, the two-day gathering addressed the following questions:

1. What are super soldiers?
2. How do different cultures view human military enhancements?
3. Which enhancement technologies are imminent, or at least feasible?
4. How should super soldier research be conducted?
5. When, and for what purposes, is it permissible to use super soldiers?
6. What ethical, legal, and practical complications attend the disenchantment of soldiers?
7. How can society best provide long-term care for super soldiers?

This report summarizes the key takeaways from that conference, arranged around the seven themes outlined above. As a work, it serves to clarify some of these issues and provides the groundwork for future research in legal, social scientific, and philosophical domains.

The conference was supported by funds from the U.S. Air Force Office of Scientific Research Award, “The Ethics of Warfighter Participation in the Development and Testing of AI-Driven Performance Enhancements” (FA9550-21-1-0142). The contents of this report, and other outcomes from the conference, do not represent the views of the funder, the Department of

Defense, or the United States Government. This conference was conducted under the Chatham House Rule, such that no attribution is given to the interactions described within.¹

¹ This report was prepared by Major Kyle Brown. Gratitude is owed to Captain David Glinbizzi, Joshua Ovadia, Beatrice Wilson, and Bernard Liu for their excellent conference notes.

Session I: What are super soldiers?

***Session Background:** This session explored foundational and conceptual questions about the nature of super soldiers, including what beings or entities qualify as super soldiers and whether super soldiers already exist, and pivotal ethical questions about the existence of these warfighters. The session also examined whether the common conception of super soldiers requires a distinction between medical and non-medical enhancement interventions.*

Narrative Summary:

The session began with introductory remarks discussing the possible avenues for making a soldier “super.” Pharmaceuticals, brain-computer interfaces, and biomechanical modifications could augment cognitive or physiological abilities. Humans could also employ machine learning to enhance their existing capabilities. The question arose of how to define the term “super soldier.” Participants offered legal regimes such as international humanitarian law, the laws of armed conflict, and human rights law to develop different definitions.

The floor then opened for comments on the following questions: How do we balance disparate demands of international law that were not meant to be wedded together but do converge on super soldiers? What does the word “super” mean in this context? What capabilities define a super soldier? What is the role of super soldiers on the battlefield and in society?

The participants first dealt with the question of what a super soldier is, or could be, under international law. There was general agreement that a lack of data on specific enhancement techniques inhibits the development of a definition. In addition, the scope of such definitions, in terms of the kinds and degrees of capabilities that uniquely identify super soldiers, was difficult to establish. For example, one proposed definition—that a super soldier is “someone who is differently abled and differently vulnerabilized by way of technological intervention”—is broad enough to include many disabled people, not just soldiers. Another proposed definition—that a super soldier is “[a person] with enhancements that elevate their abilities above the baseline”—had the problem of vague terminology.

Participants discussed the differences between types of enhancements (e.g., pharmacological, mechanical, etc.) and the degree to which they elevate the abilities of the people receiving them. A super soldier might just be a normal soldier operating at the highest level of biologically possible human performance for a short period of time. Participants did agree that nontherapeutic enhancements, like night vision goggles and body armor, did not render a traditional soldier “super” in any meaningful sense.

The session closed with discussion on hypothetical legal frameworks for the development, regulation, and deployment of super soldiers. Participants discussed whether international humanitarian law/the law of armed conflict was the best model. One participant suggested that weapons regulations might be a good template for developing law around super soldiers. Another countered that if human beings are viewed as weapons, this already operates outside of longstanding international legal precedent. Another considered whether drones and robots count as super soldiers, as they could represent a mechanical extension of their “enhanced” operator.

Participants discussed how international humanitarian law/the law of armed conflict already addresses the issue of super soldiers. Under the Martens Clause, which establishes the upper bound for what certain states are willing to consider and seeks to prevent the development and use of weapons that shock the public conscience, super soldiers could come under consideration. What is permissible should define what different actors are willing to consider. Super soldiers are not, by definition, impermissible. Rather, debate tends to center around the degree of enhancement. The participants then briefly turned to the role of super soldiers in modern warfare. They posited that mental enhancements would be more important than physical ones given the relative tactical and strategic advantages of cognitive asymmetry.

Session II: Cross-cultural views of enhancement

***Session Background:** This session considered how super soldiers have been understood at various points in history within and across cultures. Participants considered why some cultures encourage and others discourage the creation of super soldiers and how super soldiers fit within different societies. Participants also discussed the issues of perceived inequities within military organizations and the impact of enhancing technologies on previously asymmetric international military relationships. Discussion uncovered the ethical and legal complexities of super soldiers transitioning to civilian life.*

Narrative Summary:

This session endeavored to gain clarity on the questions of how different cultures view human enhancements and why they may hold disparate views on such enhancements. Participants investigated how cultural perspectives could help unpack the role or viability of super soldiers in different societies.

In response to these questions, participants discussed four primary issues: (1) historical cultural perspectives, (2) fairness, justice, and laws of war, (3) accessibility of technology in military vs. civilian life, (4) social acceptability. Another question that arose as a subset of the third theme was whether accessibility of enhancements would remove traditional boundaries between highly trained and resourced organizations, such as special operations forces, and mainstream conventional troops which comprise many militaries. This question also included the idea of whether troops view enhancement as a form of cheating and how enhancement would affect individual and unit morale.

Present in the context of modern enhancement acceptability and implementation are traditional Native American norms and practices. Participants discussed one specific Native American practice of integrating enemies into their own forces during wartime. Of interest to the group was the context in which discussion of exceptionalism entered into depictions of Native American warfighting: first, the contemporary Eurocentric colonial view that Native Americans displayed super soldier-like qualities during colonial-era conflicts counterbalanced with the importance of recognizing the extreme circumstances in which Native Americans displayed such

qualities as they increasingly faced existential threats. An example of non-enhanced Native American practices raised was the deployment of separate wartime and peacetime leaders. A participant suggested that this concept could be useful in organizing during wartime versus during peacetime. These non-enhancement-related discussions served to illuminate potential Native American practices with modern practical significance, and how they bore on advanced military capabilities.

Participants transitioned to discussion of fairness and justice, with some highlighting how values of fairness and justice may be viewed differently across economic barriers. Several participants cited concerns that other nations may not have the same ethical constraints around the use and deployment of super soldiers. They felt that the United States approaches these issues with a particular degree of caution. Some were concerned that varying degrees of ethics standards could influence the speed at which these technologies develop across the globe.

Another concern was whether these enhancements would effectively “level the playing field” for countries with smaller or less advanced military forces. The conversation also turned to the risk of the enemy's perception of enhanced soldiers. If super soldiers were seen as machines or monsters, that would seem to threaten the existing rules-based law of war paradigm by blurring the traditional boundaries surrounding humanity and invoking problems raised by the dehumanization of combatants. Participants stipulated that cross-cultural understanding was crucial, yet some acknowledged that current cultural consensus could not provide all answers to this challenge given possible unanticipated responses to enhancement. Supplementing this question, some participants asked whether this technology posed potential risks if made accessible in civilian hands and how regulation might mitigate these risks.

Regarding civilian versus military use, some participants questioned how enhancement technologies would be regulated either to prevent civilian use or to remove technology from super soldiers once they leave the military. This concept of enhanced civilians raises novel concerns about how such civilians might be treated under current or new laws. The ethical considerations of whether to remove enhancing technologies from someone who has adapted to their presence are also significant. The discussion also broached the issue of consent. Participants

understood consent as a crucial issue to address when considering whether enhanced soldiers could someday return to civilian life.

Finally, the panelists discussed the issue of social acceptability and whether it was a relevant metric for assessing the moral acceptability of enhancements. Some participants expressed concern that social acceptability may not be a reliable measure of acceptance and that it may not reflect the varied perspectives of different cultures.

Ultimately, participants agreed that it was essential to consider cultural perspectives, fairness, accessibility, and consent when considering enhancements for soldiers or the creation of super soldiers. However, they diverged around how a cross-cultural account could be best formulated and used across particular policy and legal forums. This issue remains unresolved and bears further exploration.

Session III: Current and future enhancement technologies

***Session Background:** This session reviewed current and near-future enhancement technologies; evaluated their potential uses, risks, and benefits; and discussed current civilian enhancement research. These technologies range from futuristic brain chips that integrate AI into human cognition to pharmacological interventions that dull physical pain or block traumatic memories. Participants discussed which enhancement technologies are feasible and which are merely fanciful. Discussion also explored whether enhancement technologies should be developed by the state only or also by private contractors and companies. Participants addressed how the United States should respond to emerging enhancement research in foreign states with different ethical regimes.*

Narrative Summary:

This session focused on present and possible super soldier enhancements, including pharmacological, nanorobotic, macro robotic, and others. The guiding question for participants concerned the feasibility, descriptive and normative, of these technologies over two separate intervals, the next 15 and 25 years, respectively. Participants' comments focused on three broad

dimensions of the debate: technological, legal, and moral. There was broad disagreement about the present state of enhancement technology: some participants noted recent advances by DARPA and a lab at MIT in creating nanorobotic systems for the delivery of drugs, while others highlighted the current limited capability of brain-computer interface technology. However, there was a consensus that all should be cautious about buying into the hype surrounding emerging technologies in this space due to past setbacks in making these technologies operative. A crucial distinction was drawn between therapeutic enhancements and nontherapeutic enhancements, which was taken to be relevant for determining the normative feasibility of specific enhancements.

Drawing from the Cyborg Soldier 2050 Report, participants identified five primary loci of enhancement for soldiers either in development or projected in the coming decades: Brain-computer interfaces, sensory enhancement, exoskeleton research, nanorobotics, and pharmaceutical enhancement.

Brain-computer Interface (BCI): Examples include minimally invasive and noninvasive interfaces that allow for selective reprogramming of neurons or stimulate neural activity. Some project that bidirectional interfaces will be possible in the near future. Closed-loop BCIs—that is, systems that allow for two-way communication—could selectively monitor and enhance brain states to accelerate learning and increase memory. It was postulated that at their most advanced, BCIs could be used to operate drones or other military technologies, though disagreement between participants emerged over the strategic merits of these applications.

Sensory enhancement: Possible sensory enhancement includes modifications to visual systems to allow soldiers to see more spectra, like UV and infrared, or to allow for a direct link between a camera and the visual cortex. Similarly, enhancements to the auditory system could allow soldiers to hear a broader range of frequencies. Here, participants were deeply divided about the biological possibility of these advances and, even when possible, the complexity of developing an intervention that could reliably, and at low risk to the subject, generate these changes in a body.

Exoskeleton research: External robotics that are deeply integrated with the soldier's body could allow for greater strength, endurance, and reduced injury. Machine learning could be

integrated within the systems to teach new movements to soldiers and, with a BCI, could allow direct control of the exoskeleton by the soldier's brain. One participant noted that external robots presented the most immediately tractable form of enhancement due to a lack of clinical constraints on its development, while others noted that high profile cases of failure of exoskeleton programs to date should continue to lend skepticism to their plausibility.

Nanorobotics: DARPA has already launched a program to research and design a small, swallowable machine that stays in the stomach and can produce and deploy drugs and fight infection. An MIT team has also worked on a model of nanorobots that can release medicine in response to infection. Other proposed uses include nanorobots that can release drugs to fight fatigue in soldiers to optimize performance.

Pharmaceutical enhancement: Paths being explored in this domain include the creation of novel cognitive enhancers, new pathways for drug delivery, and off-label uses of existing drugs. Proposals include using psychedelics to cognitively enhance intelligence officers and using beta blockers to help prevent anxiety disorders like PTSD in active-duty soldiers and veterans. Here, definitional issues reemerged as participants questioned the degree to which preventing, rather than treating, PTSD constituted enhancement or therapy.

In the normative context, participants noted that military physicians remain bound by broader professional obligations that have complicated the potential testing and deployment of novel enhancements when there are questions of patient autonomy and the principle of nonmaleficence. Further, under existing international treaties governing chemical and biological warfare, the use of pharmacological interventions on foreign combatants would be impermissible. This tension in the dual nature of military physicians was argued to be a constraint on feasibility as such physicians play a crucial role in operationalizing present and future enhancements. Participants noted that new guidance at the level of national defense agencies would be needed to provide a formal mechanism for testing the effectiveness of enhancements as exists for other weapon types.

Finally, the discussion on the moral dimension of enhancement centered on questions of informed consent to enhancement, the risk of exposing enhanced soldiers to moral hazards, and whether other nations' decisions to research/deploy enhancement should influence the United

States' decisions on this front. Some participants argued that the nature of certain enhancement technologies is such that satisfying informed consent requirements is a pipe dream, given the inherent unknowability of what life is like post-enhancement. Others stressed that whether disenchantment is possible matters for the moral acceptability of a given enhancement. Participants were concerned about the possibility of enhanced soldiers being deployed into more dangerous situations than their non-enhanced compatriots, risking their exposure to greater moral hazard. On this note, some worried about what systems would be in place to determine which soldiers are granted enhancements, especially in cases where the enhancement(s) increase survivability. Finally, participants debated whether other nations' decisions on enhancement should have any bearing on the United States. Should a nation like China or Russia with lower ethical standards for research and testing on this front push forward with enhancement, would the United States be justified in pursuing such research and testing in response? Participants were of mixed opinions on this point, both with respect to the normative and descriptive readings of the question.

To conclude the session, participants discussed the dilemma of predicting the future trajectory of enhancement technologies for practical, legal, and moral reasons while also acknowledging deep epistemic limitations on the ability to do so.

Session IV: Researching super soldiers

Session Background: This session confronted ethical questions about the research and development of super soldiers, including questions about consent and coercion, inegalitarian worries around social stratification of humans versus super-humans, and immoral risks. Participants considered whether existing medical ethics is appropriate for enhancement research and whether soldiers can truly give informed consent for such research.

Narrative Summary:

Participants raised ethical questions about consent, especially in a hierarchical military environment, and highlighted the challenge of conducting expedient research while remaining

mindful of the long-term health and social consequences of super soldier enhancements. Some also raised the issue of inherent data bias given the predominantly young, healthy, male demographic of most modern militaries. Participants also expressed concerns regarding situations where military or government leaders would be willing to overlook established institutions that protect participants in the face of extreme emergencies.

Participants underscored that the military has compelling reasons to explore enhancement for fundamentally non-combat reasons. Increases in human performance are useful in training, logistics, and medical care environments, as well as in more traditional combat scenarios. Most research also fails to bear fruit, mirroring similar trends in civilian medical research. One area where technology does appear to be immediately ethically relevant is in the area of human-machine teaming, which some participants felt reflected a type of soldier enhancement.

Discussion then shifted to whether the medical ethics model can effectively serve the unique requirements of soldier enhancement research and care. Some participants raised just war theory concerns about imminent and existential threats, allowing for relaxation of standards in such extreme emergencies. Others focused on the practical challenges of allowing physicians who lack security clearances to participate in this research. Still others asserted that, unlike the medical ethics model of research, healthy volunteers for super soldier programs should enjoy a detailed level of information not required elsewhere. Participants also reiterated that issues of consent are complicated in the unique environment of military organizations, particularly because of the social and professional pressures that already induce soldiers to engage in risky behavior to potentially enhance their performance. Some cited the existing example of cancer patients' willingness to participate in clinical trials as a useful analogue.

Participants reminded the group that the DoD does not conduct classified research on human subjects, but other participants held that some sensitive research findings may nonetheless be withheld from the broader research community. Participants here advocated for dual-use technology as a solution to some of these problems. Some claimed that the DoD Inspector General could, with appropriate staff augmentation, process information for dual-use technologies that may (or may not) be ready for public-facing application.

Additional concerns about the vulnerability of super soldier candidates include the demonstrated global lack of success of the relatively unregulated field of gain-of-function research as well as the professional (not merely health) consequences of failed experimental enhancement for military participants. Some participants returned to the issue of advocating for emergency guidelines for classified research, but this position remained highly controversial.

Some participants focused on the intra-military social consequences of enhancement research, which could harm unit cohesion or lead to intra-service competition for super soldier technologies before they are fully refined. Many participants felt that the most appropriate test subjects would come from already selective special operations forces, but others countered that this would only further bias the research toward specific demographic groups with little potential crossover later to larger civilian populations. Some felt it may be more prudent to consider larger civilian studies first. Questions remained about the appropriate motivations for individuals participating in these studies.

Participants asserted that this research, as with any novel medical intervention, would require decades of preparation prior to fielding emergencies. Minimally, the government would need new techniques to implement these ethically complex technologies. Some participants argued that the paradigm of test pilots, who assume extreme personal risks, is more appropriate in the context of super soldier research than in other medical ethics frameworks. The session closed with many of the participants considering why consent is such a sizeable concern when society requires that soldiers regularly engage in dangerous activities without consent. Clearly, the need for consent rests on factors beyond risk.

Session V: Deploying super soldiers

***Session Background:** This session focused on ethical concerns surrounding the use of super soldiers in policing, war, and civil unrest. During this session, participants listed and discussed the policies, regulations, and principles that should be implemented when deploying super soldiers. During the first 30 minutes of the session, participants formed eight break-out groups and convened for a policy drafting exercise. In the remaining 60 minutes, one representative from each group read out the policies they drafted.*

Narrative Summary:

The narrative summary below provides an overview of the common policies that most participants found important and certain noteworthy group-specific policies.

Policies that almost every group deemed important include:

1. **Minimize harm.** All participants agreed on the fundamental principle that harm or invasiveness should be minimized. This end goal can be achieved through practices such as enhancing regulations during research and experiment stages, performing the enhancement only when absolutely necessary, and rejecting lethal enhancements, etc.
2. **Reversibility.** Participants argued that, given two enhancements with roughly equal harm, the reversible one should be preferred. However, some challenged that disenchantment will introduce complications.
3. **Military versus police.** Enhancement in military use does not automatically justify its application in police use. Some participants noted that military use and police use have distinctly different standards. Mixing them could lead to police militarization or premature commercialization of risky enhancements.
4. **Acknowledgment.** Most participants argued that securing acknowledgment at each step is important. First, it establishes a comparatively clearer chain of responsibility. Second, it allows society to reject actions/practices and interferes with personal identities. Some

participants challenged that such acknowledgment would become nominal under peer and hierarchical pressure within the military environment.

5. **Compensation.** Compensation and post-enhancement care should be taken into consideration and regulated. Some participants pointed out that the current United States military and veteran health care apparatus provides insufficient support for veterans, and there could be worries that super soldiers might also receive insufficient care.

Some of the group-specific considerations include:

1. **Moral enhancement.** Two groups argued that policies regarding moral enhancement should be established with two interpretations. In the first interpretation, the morality of super soldiers is enhanced—that is, they should be trained to have an enhanced sense of morality. Some participants argued that the definition of “enhanced sense of morality” is unclear. For example, is it deontological or consequentialist? In the second interpretation, the morality of enhancement itself is enhanced—that is, there should be a greater focus on pro-social or affiliative types of technologies.
2. **Further distinction among enhancements.** Two groups argued for the careful characterization of enhancements before drawing any policies or principles. A simple binary distinction could be: 1) mature/developed enhancements and 2) immature/experimental enhancements. Within each category, one could further divide enhancements by their mechanisms, such as 1) biological (chemical), 2) physical-internal (implants), and 3) physical-external (external gadgets).

Session VI: Disenhancement

***Session Background:** This session probed the ethics of disenchanting super soldiers into “mere” soldiers or civilians. The removal of enhanced senses, intelligence, physical prowess, and pain insensitivity are ethically fraught. Participants debated whether warfighter enhancements are the property of former super soldiers or the state. They also considered the state’s obligations to provide specialized care in situations where the loss of those capacities adversely impacts dis-enhanced warfighters. The session concluded with discussion on the consequences of enhanced soldiers transitioning to civil society, both with and without their wartime enhancements.*

Narrative Summary:

This session investigated issues regarding dis/de-enhancement of super soldiers. Discussion among participants focused on three general concerns: “internal” versus “external” views of disenchantment, questions about reversibility, and the necessity of disenchantment. Participants first attempted to define the form of harm caused by enhancement. The discussion largely relied on the assumption that the physical harm and psychological harm of enhancement and disenchantment should be discussed separately.

Participants adopting an “external” view focused on the physical changes associated with disenchantment. This cohort argued that the goal of disenchantment should be to allow super soldiers to return to their unenhanced state and normal functionality. Other participants objected to this view by arguing that the “unenhanced state” might not be an ordinary state. For example, if enhancement resolved a soldier’s previous physical injuries or disabilities, then restoration of the unenhanced state would raise ethical issues.

Discussions on the “internal” view of disenchantment centered on soldier perceptions of their perceived loss. Some participants adopted the position that disenchantment should never be performed since it must entail loss aversion, soldier disappointment in bodily/mental function, a decrease in self-confidence, etc. Other participants took a more permissive position and argued that such psychological and perceptive changes could be addressed via sufficient care. Some participants objected that suffering does not necessarily imply the presence of harm and that moderate psychological suffering is permissible.

The discussion shifted from how enhancement impacts a super soldier's self-perception into concepts of reversibility (or disenchantment) in general. Participants first identified three scenarios and discussed the possibility of reversibility in each. The physical-external case presented the most straightforward case, as enhancements could be most easily removed. In the physical-internal case, the removal of implants (such as computer chips in a super soldier's brain) would be a much more delicate case. Some participants argued that these types of enhancements are procedurally/theoretically reversible, as surgery could be performed. Others asserted that disenchantment here is morally problematic to an extent that makes it irreversible. The probability that disenchantment might cause unpredictable loss of memory or changes in personality outweighs the benefits of surgery. Similarly, chemical biological enhancements, although mostly temporary, could cause irreversible harm. Since there is no adequate solution for chemical biological enhancement, most participants argued that discretion should be taken before using these substances.

Participants then discussed whether disenchantment is ever necessary, regardless of whether it is possible. Some participants argued that disenchantment is necessary for moral or national security reasons. Participants agreed that it is somewhat intuitive to suggest that if enhancement is performed, then there should be an obligation to care for the super soldiers, and partial or complete disenchantment is a necessary component of post-enhancement care. Some argued that making disenchantment necessary may delay unwanted police militarization or premature commercialization of risky enhancements, since mandated disenchantment significantly reduces the likelihood spill that enhancement technologies will be repurposed in law enforcement and civilian contexts.

Other participants argued that disenchantment is not necessary, or at least should not be made necessary. One argument, as discussed in the physical-internal (chips in brain) example, is that disenchantment might result in unpredictable harm to the former super soldier. This possibility further complicates the accountability problem. Some participants claimed that if enhancement is so dramatic or severe that there exists an obligation to dis-enhance in the future, perhaps governments should not perform these particular enhancements in the first place.

Session VII: Long-term care for super soldiers

***Session Background:** This session outlined the ethical obligations to veteran super soldiers, including society's obligation to establish a plan of care for super soldiers prior to creating them. While the same obligation holds for super soldiers, the complex and untested nature of many enhancements complicates our ability to anticipate their long-term effects and, thus, the long-term care needs of super soldiers. Participants considered whether the state is obligated to help retired super soldiers cloak their special abilities to enable social reintegration or establish new health care regimes in the military and public realms.*

Narrative Summary:

Participants discussed current medical and social support for U.S. military veterans, known and possible complications caused by enhancement, and short-term and long-term views of enhancement for super soldiers.

Almost all participants agreed that current medical and social support for military veterans in the United States is suboptimal at best. Participants clarified the three most significant areas for possible improvement. First, existing geographical restrictions render access to care inconvenient for many veterans. Second, additional and necessary care for certain types of veterans remains elusive. Many veterans with injuries related to their occupations or experiences during military service receive the same type of support as other patients with more traditional, non-military health histories. Third, military veterans often experience a lack of “continuity of care.” Geographic relocations coupled with provider and administrative turnover prevent care teams from establishing more than a superficial understanding of complex patient complaints.

Participants considered the high likelihood that care for enhanced soldiers would require even more investment/attention than that for current veterans. Participants here split into camps of optimism and pessimism about the probability of future access to quality care for enhanced and non-enhanced veterans alike. Establishing vital benchmarks and policies would be a great start to better care for super soldiers. Conversely, some noted that current health care inadequacies are caused not by lack of funding but by the military intentionally channeling

money into other projects. This lack of awareness and acknowledgment of the additional needs of veterans might be harder to change in the short term.

Many participants also noted the possibility of enhancements exacerbating existing health problems. Certain participants adopted a direct approach by first categorizing possible complications into the physical and mental domains, and then arguing what could be done to address such additional concerns. Regarding physical problems, the military could adopt stricter qualifications and careful examination before enhancement to maximally avoid harm. Regarding mental problems, clear benchmarks should be established, and pre-enhancement records of soldiers should be kept.

Some participants argued that, given the controversial nature of enhancement and the necessity of post-enhancement care, the public will pay more attention to the issues of caring for super soldiers. This will push the military to foster a more supportive and caring environment.

At the conclusion of the session, participants discussed the short-term and long-term benefits of enhancement and super soldier care. In the short term, participants considered the benefits to individuals and argued that enhanced soldiers would enjoy gains in probable physiological or economic advantages. A comparative case was given concerning special forces training, holding clearances that make service members eligible for work in other agencies and the private sector, and specialist training for particular roles such as signals operators. It was hypothesized that in the short term at least, performance enhancements, even fairly extreme ones, were likely to be a net benefit to their possessors as long as roles beyond the service existed and medical care for maintenance of enhancement, where required, was available after separation.

In the long term, enhancement seems to increase collective military and societal benefits in terms of increased military success and national well-being. Participants noted that while there are side constraints to certain kinds of acts in war, most theories of armed conflict tend to agree that wars won quickly and decisively tend to benefit societies—including those of the loser—more than protracted conflicts with extensive spillovers. However, it was noted that these arguments were used at the advent of the widespread use of drone strikes, and that the security and well-being benefits of those technologies have not necessarily materialized. Some

participants raised more fundamental concerns such as whether it is ultimately justified to use enhancement to win wars if winning can bring vast social benefits.