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## Off

### 1

#### The standard is maximizing expected well being – Prefer

#### [1] Pleasure and pain are intrinsic value and disvalue – everything else regresses. Evolutionary knowledge is reliable – broad consensus and robust neuroscience prove.

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**Pleasure** is not only one of the three primary reward functions but it also **defines reward.** As homeostasis explains the functions of only a limited number of rewards, the principal reason why particular stimuli, objects, events, situations, and activities are rewarding may be due to pleasure. This applies first of all to sex and to the primary homeostatic rewards of food and liquid and extends to money, taste, beauty, social encounters and nonmaterial, internally set, and intrinsic rewards. Pleasure, as the primary effect of rewards, drives the prime reward functions of learning, approach behavior, and decision making and provides the **basis for hedonic theories** of reward function. We are attracted by most rewards and exert intense efforts to obtain them, just because they are enjoyable [10]. Pleasure is a passive reaction that derives from the experience or prediction of reward and may lead to a long-lasting state of happiness. The word happiness is difficult to define. In fact, just obtaining physical pleasure may not be enough. One key to happiness involves a network of good friends. However, it is not obvious how the higher forms of satisfaction and pleasure are related to an ice cream cone, or to your team winning a sporting event. Recent multidisciplinary research, using both humans and detailed invasive brain analysis of animals has discovered some critical ways that the brain processes pleasure [14]. Pleasure as a hallmark of reward is sufficient for defining a reward, but it may not be necessary. A reward may generate positive learning and approach behavior simply because it contains substances that are essential for body function. When we are hungry, we may eat bad and unpleasant meals. A monkey who receives hundreds of small drops of water every morning in the laboratory is unlikely to feel a rush of pleasure every time it gets the 0.1 ml. Nevertheless, with these precautions in mind, we may define any stimulus, object, event, activity, or situation that has the potential to produce pleasure as a reward. In the context of reward deficiency or for disorders of addiction, homeostasis pursues pharmacological treatments: drugs to treat drug addiction, obesity, and other compulsive behaviors. The theory of allostasis suggests broader approaches - such as re-expanding the range of possible pleasures and providing opportunities to expend effort in their pursuit. [15]. It is noteworthy, the first animal studies eliciting approach behavior by electrical brain stimulation interpreted their findings as a discovery of the brain’s pleasure centers [16] which were later partly associated with midbrain dopamine neurons [17–19] despite the notorious difficulties of identifying emotions in animals. Evolutionary theories of pleasure: The love connection BO:D Charles Darwin and other biological scientists that have examined the biological evolution and its basic principles found various mechanisms that steer behavior and biological development. Besides their theory on natural selection, it was particularly the sexual selection process that gained significance in the latter context over the last century, especially when it comes to the question of what makes us “what we are,” i.e., human. However, the capacity to sexually select and evolve is not at all a human accomplishment alone or a sign of our uniqueness; yet, we humans, as it seems, are ingenious in fooling ourselves and others–when we are in love or desperately search for it. It is well established that modern biological theory conjectures that **organisms are** the **result of evolutionary competition.** In fact, Richard Dawkins stresses gene survival and propagation as the basic mechanism of life [20]. Only genes that lead to the fittest phenotype will make it. It is noteworthy that the phenotype is selected based on behavior that maximizes gene propagation. To do so, the phenotype must survive and generate offspring, and be better at it than its competitors. Thus, the ultimate, distal function of rewards is to increase evolutionary fitness by ensuring the survival of the organism and reproduction. It is agreed that learning, approach, economic decisions, and positive emotions are the proximal functions through which phenotypes obtain other necessary nutrients for survival, mating, and care for offspring. Behavioral reward functions have evolved to help individuals to survive and propagate their genes. Apparently, people need to live well and long enough to reproduce. Most would agree that homo-sapiens do so by ingesting the substances that make their bodies function properly. For this reason, foods and drinks are rewards. Additional rewards, including those used for economic exchanges, ensure sufficient palatable food and drink supply. Mating and gene propagation is supported by powerful sexual attraction. Additional properties, like body form, augment the chance to mate and nourish and defend offspring and are therefore also rewards. Care for offspring until they can reproduce themselves helps gene propagation and is rewarding; otherwise, many believe mating is useless. According to David E Comings, as any small edge will ultimately result in evolutionary advantage [21], additional reward mechanisms like novelty seeking and exploration widen the spectrum of available rewards and thus enhance the chance for survival, reproduction, and ultimate gene propagation. These functions may help us to obtain the benefits of distant rewards that are determined by our own interests and not immediately available in the environment. Thus the distal reward function in gene propagation and evolutionary fitness defines the proximal reward functions that we see in everyday behavior. That is why foods, drinks, mates, and offspring are rewarding. There have been theories linking pleasure as a required component of health benefits salutogenesis, (salugenesis). In essence, under these terms, pleasure is described as a state or feeling of happiness and satisfaction resulting from an experience that one enjoys. Regarding pleasure, it is a double-edged sword, on the one hand, it promotes positive feelings (like mindfulness) and even better cognition, possibly through the release of dopamine [22]. But on the other hand, pleasure simultaneously encourages addiction and other negative behaviors, i.e., motivational toxicity. It is a complex neurobiological phenomenon, relying on reward circuitry or limbic activity. It is important to realize that through the “Brain Reward Cascade” (BRC) endorphin and endogenous morphinergic mechanisms may play a role [23]. While natural rewards are essential for survival and appetitive motivation leading to beneficial biological behaviors like eating, sex, and reproduction, crucial social interactions seem to further facilitate the positive effects exerted by pleasurable experiences. Indeed, experimentation with addictive drugs is capable of directly acting on reward pathways and causing deterioration of these systems promoting hypodopaminergia [24]. Most would agree that pleasurable activities can stimulate personal growth and may help to induce healthy behavioral changes, including stress management [25]. The work of Esch and Stefano [26] concerning the link between compassion and love implicate the brain reward system, and pleasure induction suggests that social contact in general, i.e., love, attachment, and compassion, can be highly effective in stress reduction, survival, and overall health. Understanding the role of neurotransmission and pleasurable states both positive and negative have been adequately studied over many decades [26–37], but comparative anatomical and neurobiological function between animals and homo sapiens appear to be required and seem to be in an infancy stage. Finding happiness is different between apes and humans As stated earlier in this expert opinion one key to happiness involves a network of good friends [38]. However, it is not entirely clear exactly how the higher forms of satisfaction and pleasure are related to a sugar rush, winning a sports event or even sky diving, all of which augment dopamine release at the reward brain site. Recent multidisciplinary research, using both humans and detailed invasive brain analysis of animals has discovered some critical ways that the brain processes pleasure. Remarkably, there are pathways for ordinary liking and pleasure, which are limited in scope as described above in this commentary. However, there are **many brain regions**, often termed hot and cold spots, that significantly **modulate** (increase or decrease) our **pleasure or** even **produce the opposite** of pleasure— that is disgust and fear [39]. One specific region of the nucleus accumbens is organized like a computer keyboard, with particular stimulus triggers in rows— producing an increase and decrease of pleasure and disgust. Moreover, the cortex has unique roles in the cognitive evaluation of our feelings of pleasure [40]. Importantly, the interplay of these multiple triggers and the higher brain centers in the prefrontal cortex are very intricate and are just being uncovered. Desire and reward centers It is surprising that many different sources of pleasure activate the same circuits between the mesocorticolimbic regions (Figure 1). Reward and desire are two aspects pleasure induction and have a very widespread, large circuit. Some part of this circuit distinguishes between desire and dread. The so-called pleasure circuitry called “REWARD” involves a well-known dopamine pathway in the mesolimbic system that can influence both pleasure and motivation. In simplest terms, the well-established mesolimbic system is a dopamine circuit for reward. It starts in the ventral tegmental area (VTA) of the midbrain and travels to the nucleus accumbens (Figure 2). It is the cornerstone target to all addictions. The VTA is encompassed with neurons using glutamate, GABA, and dopamine. The nucleus accumbens (NAc) is located within the ventral striatum and is divided into two sub-regions—the motor and limbic regions associated with its core and shell, respectively. The NAc has spiny neurons that receive dopamine from the VTA and glutamate (a dopamine driver) from the hippocampus, amygdala and medial prefrontal cortex. Subsequently, the NAc projects GABA signals to an area termed the ventral pallidum (VP). The region is a relay station in the limbic loop of the basal ganglia, critical for motivation, behavior, emotions and the “Feel Good” response. This defined system of the brain is involved in all addictions –substance, and non –substance related. In 1995, our laboratory coined the term “Reward Deficiency Syndrome” (RDS) to describe genetic and epigenetic induced hypodopaminergia in the “Brain Reward Cascade” that contribute to addiction and compulsive behaviors [3,6,41]. Furthermore, ordinary “liking” of something, or pure pleasure, is represented by small regions mainly in the limbic system (old reptilian part of the brain). These may be part of larger neural circuits. In Latin, hedus is the term for “sweet”; and in Greek, hodone is the term for “pleasure.” Thus, the word Hedonic is now referring to various subcomponents of pleasure: some associated with purely sensory and others with more complex emotions involving morals, aesthetics, and social interactions. The capacity to have pleasure is part of being healthy and may even extend life, especially if linked to optimism as a dopaminergic response [42]. Psychiatric illness often includes symptoms of an abnormal inability to experience pleasure, referred to as anhedonia. A negative feeling state is called dysphoria, which can consist of many emotions such as pain, depression, anxiety, fear, and disgust. Previously many scientists used animal research to uncover the complex mechanisms of pleasure, liking, motivation and even emotions like panic and fear, as discussed above [43]. However, as a significant amount of related research about the specific brain regions of pleasure/reward circuitry has been derived from invasive studies of animals, these cannot be directly compared with subjective states experienced by humans. In an attempt to resolve the controversy regarding the causal contributions of mesolimbic dopamine systems to reward, we have previously evaluated the three-main competing explanatory categories: “liking,” “learning,” and “wanting” [3]. That is, dopamine may mediate (a) liking: the hedonic impact of reward, (b) learning: learned predictions about rewarding effects, or (c) wanting: the pursuit of rewards by attributing incentive salience to reward-related stimuli [44]. We have evaluated these hypotheses, especially as they relate to the RDS, and we find that the incentive salience or “wanting” hypothesis of dopaminergic functioning is supported by a majority of the scientific evidence. Various neuroimaging studies have shown that anticipated behaviors such as sex and gaming, delicious foods and drugs of abuse all affect brain regions associated with reward networks, and may not be unidirectional. Drugs of abuse enhance dopamine signaling which sensitizes mesolimbic brain mechanisms that apparently evolved explicitly to attribute incentive salience to various rewards [45]. Addictive substances are voluntarily self-administered, and they enhance (directly or indirectly) dopaminergic synaptic function in the NAc. This activation of the brain reward networks (producing the ecstatic “high” that users seek). Although these circuits were initially thought to encode a set point of hedonic tone, it is now being considered to be far more complicated in function, also encoding attention, reward expectancy, disconfirmation of reward expectancy, and incentive motivation [46]. The argument about addiction as a disease may be confused with a predisposition to substance and nonsubstance rewards relative to the extreme effect of drugs of abuse on brain neurochemistry. The former sets up an individual to be at high risk through both genetic polymorphisms in reward genes as well as harmful epigenetic insult. Some Psychologists, even with all the data, still infer that addiction is not a disease [47]. Elevated stress levels, together with polymorphisms (genetic variations) of various dopaminergic genes and the genes related to other neurotransmitters (and their genetic variants), and may have an additive effect on vulnerability to various addictions [48]. In this regard, Vanyukov, et al. [48] suggested based on review that whereas the gateway hypothesis does not specify mechanistic connections between “stages,” and does not extend to the risks for addictions the concept of common liability to addictions may be more parsimonious. The latter theory is grounded in genetic theory and supported by data identifying common sources of variation in the risk for specific addictions (e.g., RDS). This commonality has identifiable neurobiological substrate and plausible evolutionary explanations. Over many years the controversy of dopamine involvement in especially “pleasure” has led to confusion concerning separating motivation from actual pleasure (wanting versus liking) [49]. We take the position that animal studies cannot provide real clinical information as described by self-reports in humans. As mentioned earlier and in the abstract, on November 23rd, 2017, evidence for our concerns was discovered [50] In essence, although nonhuman primate brains are similar to our own, the disparity between other primates and those of human cognitive abilities tells us that surface similarity is not the whole story. Sousa et al. [50] small case found various differentially expressed genes, to associate with pleasure related systems. Furthermore, the dopaminergic interneurons located in the human neocortex were absent from the neocortex of nonhuman African apes. Such differences in neuronal transcriptional programs may underlie a variety of neurodevelopmental disorders. In simpler terms, the system controls the production of dopamine, a chemical messenger that plays a significant role in pleasure and rewards. The senior author, Dr. Nenad Sestan from Yale, stated: “Humans have evolved a dopamine system that is different than the one in chimpanzees.” This may explain why the behavior of humans is so unique from that of non-human primates, even though our brains are so surprisingly similar, Sestan said: “It might also shed light on why people are vulnerable to mental disorders such as autism (possibly even addiction).” Remarkably, this research finding emerged from an extensive, multicenter collaboration to compare the brains across several species. These researchers examined 247 specimens of neural tissue from six humans, five chimpanzees, and five macaque monkeys. Moreover, these investigators analyzed which genes were turned on or off in 16 regions of the brain. While the differences among species were subtle, **there was** a **remarkable contrast in** the **neocortices**, specifically in an area of the brain that is much more developed in humans than in chimpanzees. In fact, these researchers found that a gene called tyrosine hydroxylase (TH) for the enzyme, responsible for the production of dopamine, was expressed in the neocortex of humans, but not chimpanzees. As discussed earlier, dopamine is best known for its essential role within the brain’s reward system; the very system that responds to everything from sex, to gambling, to food, and to addictive drugs. However, dopamine also assists in regulating emotional responses, memory, and movement. Notably, abnormal dopamine levels have been linked to disorders including Parkinson’s, schizophrenia and spectrum disorders such as autism and addiction or RDS. Nora Volkow, the director of NIDA, pointed out that one alluring possibility is that the neurotransmitter dopamine plays a substantial role in humans’ ability to pursue various rewards that are perhaps months or even years away in the future. This same idea has been suggested by Dr. Robert Sapolsky, a professor of biology and neurology at Stanford University. Dr. Sapolsky cited evidence that dopamine levels rise dramatically in humans when we anticipate potential rewards that are uncertain and even far off in our futures, such as retirement or even the possible alterlife. This may explain what often motivates people to work for things that have no apparent short-term benefit [51]. In similar work, Volkow and Bale [52] proposed a model in which dopamine can favor NOW processes through phasic signaling in reward circuits or LATER processes through tonic signaling in control circuits. Specifically, they suggest that through its modulation of the orbitofrontal cortex, which processes salience attribution, dopamine also enables shilting from NOW to LATER, while its modulation of the insula, which processes interoceptive information, influences the probability of selecting NOW versus LATER actions based on an individual’s physiological state. This hypothesis further supports the concept that disruptions along these circuits contribute to diverse pathologies, including obesity and addiction or RDS.

#### [2] Actor specificity – state actors can only use util – outweighs since different actors have different obligations.

#### A – Aggregation – all policies benefit some and hurts others – only util can resolve these cuz it gives a clear weighing mechanism

#### B – Collectivism – States are composed of many actors who inevitably disagree about intent means they can only use consequentialism because they don’t have to agree

#### C – Bureaucrats aren’t philosophers – policymakers do not have experience with dense frameworks so they don’t understand how to apply them to specific instances but they do understand that pain is bad and pleasure is good because it’s intrinsic to existing.

#### [3] Extinction first –

#### a. Wager – if there is any chance of goodness existing, we ought to preserve our existence to maximize it.

#### b. Sequencing – if their framework is true, people dying is bad because it means those people can’t use their framework

#### c. Repugnance – if their framework cannot explain why people dying is bad – you should reject it because it cannot disavow of atrocities. You shouldn’t vote for a framework that can’t say the holocaust was a bad thing.

#### d. Performativity – us having a moral debate proves moral uncertainty because it means we are not certain about which framework is true - means we should preserve our ability to find the true framework

#### [4] TJFs

#### Weighability – only util allows for equal weighing and more accessible weighing, novices are taught magnitude and probability not perfect vs imperfect duties.

#### Resolvability – only util allows for easy resolution between two equal arguments – a DA and an advantage can be weighed but two equal Kant offense can’t be weighed.

#### Topic Literature – authors assume pain and pleasure because it’s the most intuitive which means most if not all of the authors in the literature are writing under util

### 2

#### The COVID epidemic has exposed massive flaws in biosecurity, lack of public health compliance, anti-vaxxers, and PPE shortages have shown unique vulnerabilities – the US is specifically exposed

Lyon 21 (Regan Lyon; 7/1/21; Military Medicine, Volume 186, Issue7-8, July-August 2021, Pages 193-196; *“The COVID-19 Response Has Uncovered and Increased Our Vulnerability to Biological Warfare”*; accessed 8/13/21; <https://academic.oup.com/milmed/article/186/7-8/193/6135020>; Department of Defense Analysis at the Naval Postgraduate School) HB \*We do not endorse the ableist language of the card\*

INTRODUCTION Biological warfare has been an unlikely, but serious, concern for military operations and national security. The 2018 National Biodefense Strategy (NBS) articulated a collaborative plan to prevent, detect, and respond to biological threats to the USA.1 The NBS highlights recent, isolated outbreaks of Systemic Acute Respiratory Syndrome (SARS), Ebola, and Zika viruses as warnings to nation states and justification for enhanced biological threat responses. Although these events are not considered deliberate threats, clandestine bioweapon programs and terrorist groups seeking such programs are known to exist and capitalize on such natural outbreaks.1 The NBS’s emphasis on prevention and response drives the requirement to enhance biological weapon deterrence and defense strategies to avert the employment of biological weapons on U.S. civilians or military personnel.1 The public health crisis that ensued with SARS-associated coronavirus-2 (SARS-CoV-2) has highlighted our nation’s bioweapon vulnerabilities on the international stage and has the potential for disastrous effects on national security. Previous questions regarding how the USA would respond to a large biological outbreak (or biological weapon) have now been answered for potential adversaries across the world. The ambiguity of both our capabilities and weaknesses, which provided deterrence to adversarial employment of biological weapons before the pandemic, no longer exists. This article will provide an overview on biological weapons and the concepts of deterrence and defense in the context of bioterrorism. Then, it will analyze how the national personal protective equipment (PPE) shortage, public resistance to public health measures, the anti-vaccination movement, and USNS (United States Navy Ship) Comfort deployment to New York City have increased our vulnerability to bioterror attack by impacting our deterrence and defense measures. Finally, it will offer recommendations to restore our bioterrorism security after the detrimental effects from the events unfolding in the USA. BIOLOGICAL WEAPONS REGULATIONS, DETERRENCE, AND DEFENSE Even though biological warfare is considered a “weapon of mass destruction” and is prohibited by a treaty drafted by the 1972 United Nations Biological Weapons Convention (BWC), not all adversaries adhere to these standards. Terrorist groups and covert operations have utilized biological weapons for small operations because the actors, by nature, are either non-eligible to ratify the treaty or would not do so if they could. Although there have been no intentional large-scale attacks, especially by adversarial nation states, this is not guaranteed to be the case in the future.2 The BWC does not prohibit ratified nations from having pathogens or toxins for peaceful purposes, such as the development of vaccines. After the natural outbreak of smallpox and its subsequent eradication accomplished by the World Health Organization in 1980, less virulent poxviruses have continued to be used in a variety of laboratories for research and development of vaccines for a variety of diseases.3 The original, more deadly strain of smallpox has been retained at two facilities in Russia and Atlanta.4 Because smallpox’s virology makes it an ideal biological weapon, the samples in Atlanta and Russia offer defense through researching countermeasures should an attack occur and simultaneously provide a repository from which a biological weapon can be acquired. “Deterrence” and “defense” are two concepts which are typically described in terms of nuclear warfare, but they can also be applied to national security from a biological attack.5 Deterrence is the ability to prevent an adversary from taking some action during peacetime.5 For biological warfare deterrence, vaccines and preventative medicine measures prevent susceptibility to a microbe. For a largely vaccinated and/or health-conscious population, the costs of production, storage, and dissemination of a bioweapon greatly outweighs the rare chance of the target contracting the disease. New Zealand’s robust public health measures, citizen compliance, and continued efforts to sustain a caseload under 20 since April is a strong deterrent for biological attack.6 Defense mechanisms decrease the effectiveness of the attack, putting a high cost-to-benefit burden on the adversary.5 A defense measure for bioterrorism would be an adequate medical treatment response to casualties of the bioweapon, decreasing mortality and the overall effectiveness of the weapon. COVID-19 PANDEMIC ANALYSIS The novel SARS-CoV-2 has several characteristics of an ideal biological weapon, including high transmission rate, long incubation period, airborne transmission, and significant morbidity/mortality.7 In fact, early in the pandemic, suspicion was cast that the virus was being developed as a biological weapon by a laboratory in Wuhan, China.8 Although these allegations have been deemed conspiracy theories as a result of misinformation operations, the resulting pandemic and the panicked public share similarities to a bioterror attack. The events occurring within the USA during the coronavirus disease 2019 (COVID-19) pandemic create a global narrative on how we respond to a biological crisis. The 2018 NBS emphasized the continued threat of biological weapons to national security and identified the need to deter and defend against bioterrorism acts.1 This section will analyze events in the USA during the pandemic, how they bolstered or negated our current bioterrorism deterrence or defense strategies, and offer areas for improvement to restore our bioterror security. Personal Protective Equipment Shortage The 2018 NBS mandates having a robust mobilization of PPE for frontline healthcare workers and an adequate communication plan on preventative health measures for the general public in the event of an attack.1 The ability to provide sufficient quantities of PPE for medical personnel is a vital defense tactic as it increases the efficiency of the healthcare system to treat casualties in response to a biological outbreak. Having the ability to mobilize these resources to hospitals strengthens bioterror deterrence by demonstrating to a potential adversary that a bioterror attack would have a limited effect on a population given the healthcare preparedness. As conflicting information was published across multiple media platforms from January to March, panic spread that the virus was more dangerous than originally believed. Citizens flooded stores in town and online, buying “essential items” in preparation for a lockdown. Items such as masks, gloves, and sanitizers were out of stock everywhere, including healthcare supply chains. More importantly, citizens heard N95 masks could prevent contracting the virus, suddenly increasing N95 demand.9 Demand exceeded supply quickly, and healthcare workers began complaining of the nation-wide shortage of appropriate PPE required to care for infected patients.10 The inability to acquire necessary PPE supplies due to crippled supply chains and general public hoarding caused a ripple effect within the healthcare system. As a result, hospitals began to institute resource conservation measures, attempting to extend the life of supplies intended for one-time use. These PPE conservation measures, however, were interpreted by some healthcare workers as putting their lives in jeopardy and instigated lobbying and campaigning for government involvement. News reports flourished of disgruntled healthcare workers who were at risk of infection due to a lack of PPE. Such reports of general public hoarding, inadequate PPE logistical chains, and inappropriate PPE conservation measures by hospitals demonstrate the USA’s poor public health response. The NBS calls for an extensive mobilization of adequate PPE in response to a biological outbreak to decrease the pathogen spread, minimize its effects, and improve our resiliency.1 The capability to decrease the pathogen’s effects increases an attacker’s “sunk costs” should they choose to release a biological weapon. An impaired, or presumably impaired, capability adversely affects our defense strategy. In addition, the decrease in cost-to-risk ratio impairs our deterrence measures by showing worsened biological denial. The rapid healthcare PPE disappearance secondary to pandemic panic demonstrated a critical vulnerability in one of the most important defense strategies for a bioterror attack. To improve our defense capability, our healthcare workers must have an adequate supply of PPE, which can be mobilized expeditiously. Bioweapons have a high transmission rate and are easily disseminated, which make airborne and droplet transmission favorable. Public health experts should retrospectively analyze the types and amounts of PPE utilized in areas highly impacted by SARS-CoV-2. With these data, models can be created to make recommendations for phase-based mobilization of PPE and to determine the size of stockpile needed for immediate release. Government agencies need to establish agreements with PPE manufacturers to prioritize production in declared biological emergencies. Anti-Vaccination Movements Non-compliance with recommended public health and protective measures, including vaccines, also cripples our nation’s biodefense. Public health measures such as social distancing, aggressive sanitation, and mask mandates are examples of defense tactics for the COVID-19 pandemic. The individualistic U.S. culture fueled widespread non-compliance with these measures and has had significant effect on our ability to “flatten the curve” compared to other countries.11 The preference for “freedom…without interference from the state” is present in 58% of U.S. citizens, compared to 30-38% of European countries.11 The USA’s inability to uniformly employ these measures and decrease the virus spread compared to other countries signals to adversaries a weakness in our defense to decrease the effects of a biological outbreak. Furthermore, the speculation and conspiracy theories surrounding COVID-19 vaccines suggest an inevitable resistance to receiving the vaccine when available. Resistance to vaccinations is nothing new and caused challenges for vaccination against smallpox in the 19th-century U.K. epidemic.12 Then in 2019, the U.S. measles outbreak was amplified by anti-vaxxer campaigns.13 Since early in the COVID-19 pandemic, social media posts have warned that future coronavirus vaccines contain either tracking devices for the U.S. government or toxic chemicals.13,14 This unopposed and contagious anti-vax movement directly affects future biological deterrence because our adversaries know that the population will not be universally compliant with vaccination and will be susceptible to certain pathogens. Recent polls indicate that one-third of U.S. citizens,14 compared to 14% of U.K. citizens,12 would avoid receiving a SARS-CoV-2 vaccine, even if available and affordable. A poor vaccination rate increases a population’s disease susceptibility and decreases biological weapon deterrence by denial. The anti-vaccination movement has caught traction from massive information operations and propaganda on multiple media platforms. Since May 2020, anti-vaxxers have been propagating lies about the side effects of the coronavirus vaccine, but as of June, the Centers for Disease Control, which is responsible for vaccine education, had only a “plan” to counter such anti-vaccine campaigns.14 When the first vaccines were being administered to healthcare workers in the USA in December 2020, multiple social media efforts were started to promote the vaccine.15 Hashtags such as #vaxup, #IGotTheShot, #vaccineswork, and many more were used with social media posts of doctors, nurses, and other medical personnel receiving their vaccine.16 Some posts continued with threads of updates on any side effects encountered to quell public concerns. Information operations such as these may be more effective to counter the anti-vaccination propaganda than government-sponsored campaigns and require further research by public health officials.

#### **Patents are the key to preventing bioweapon development – they prevent technology from being accessible to hostile state and non-state actors**

Finlay 10 (Brian Finlay; Summer 2010; The Fletcher Forum of World Affairs, *“The Bioterror Pipeline: Big Pharma, Patent Expirations, and New Challenges to Global Security”*; accessed 8/13/21; Brian Finlay is a senior associate at the Stimson Center in Washington, DC, where he directs the Managing Across Boundaries Program. He has worked at the Brookings Institution, the Century Foundation, and Canadas Laboratory Center for Disease Control/Health Canada; pages 54-58; ask me for the pdf) HB

NEW CHALLENGES: THE BIOTECH REVOLUTION AND THE ROLE OF THE PRIVATE SECTOR Myriad private sector actors, ranging from single-employee enterprises to major multinational pharmaceutical giants dominate today's biopharmaceutical marketplace. Privately owned companies not only develop, produce, and operate the lion's share of biological industrial equipment, but carry out the greatest share of the scientific research and development for the relevant technologies, goods, and methods of application. University and other non-profit research is often commercially-funded, and many governments around the globe have built public-private partnerships, even in some of the most sensitive areas of biotechnology, to capitalize on cost reductions and innovation. According to a recent Ernest and Young study of the industry, today more than 80 percent of biotechnology firms-and, thus, the technologies they innovate-are in the hands of the private sector." In the United States, the industry's compound annual growth rate has historically hovered around 15 percent, yielding aggregate revenues of more than $70 billion in 2008.18 With fortunes to be made, unprecedented new applications to be discovered, and practically unlimited possibilities for growth, the biopharmaceutical industry has swelled dramatically over the past decade. It is estimated that the biotech sector supports about 3.2 million jobs across the U.S. economy-a little more than one job for every 100 Americans.' 9 In Europe, publicly traded biotech companies' revenues increased 17 percent in one year, from f9.6 billion in 2007 to £11.2 billion in 2008. And although the recent global financial crisis had a negative impact, the product pipelines of European industry are growing across all phases of clinical development.20 By virtually any measure, the United States and Europe remain unmatched global hubs for biotechnological investment and innovation. For national security analysts, this reality has long provided some measure of comfort. Although the system of security assurances mandated by technologically advanced (principally Western) governments is far from a panacea against biothreats, the absence of similarly robust legal barriers in many countries raises serious international security concerns. 2' For instance, although the United States, Canada, the United Kingdom, Germany, and Singapore have all introduced strict regulations on pathogenic agents that may be of interest to committed bioterrorists, most countries have not. Similarly, export controls and enforcement over many sensitive technologies are often extremely lax, particularly in countries of the Global South.22 And because terrorists and proliferant states may shop for pathogens and dual-use production technologies where controls are the weakest, this uneven patchwork of regulations leaves open a significant gap in global biosecurity standards.23 It was in this porous regulatory environment that President Obama released his National Strategy for Countering Biological Threats in November 2009. His plan cited both unparalleled innovations in the life sciences and imperfections in existing control regimes as the principle motivations for a new strategy that seeks to prevent biotechnology products from being used for harmful purposes.24 However, while the President's plan presented a more forward-leaning agenda to counter the rising risk of proliferation by explicitly leveraging public health in support of international security, at its root, the strategy extends the traditional state-centric approaches to a problem that is increasingly one of the private sector. A proper approach to the issue-and its solution set-must place industry at its epicenter. In short, the Obama strategy exemplifies the continued mismatch between governments' near singular focus on regulation of the industry on the one hand, and the elusive nature of privately-driven biotech innovation on the other. Beyond encouraging the industry to adopt more stringent security standards in the public interest, governments have generally proven bereft of innovative ideas that more directly link these measures to the private sector's enlightened self-interest. This mismatch is aggravated by the reality that the biotech and pharmaceutical community stands on the brink of yet another grand transformation that will render traditional control efforts, however effective they may have proven in the past, even more anachronistic. Over the course of the coming decade, the traditional drug development strategies employed so successfully by Western biopharmaceutical companies in the past will run headlong into two realities that will fundamentally alter biopharmaceuticals' business model: continued and rampant globalization of the life sciences and big pharma's patent expiration challenges. These forces will have profound implications on the future of drug development and the internationalization of intellectual property. Further, it threatens to open a new era of biological weapons proliferation by pushing bio-innovation into regions that are ill-prepared to manage the leakage of sensitive knowledge and equipment to those intent on developing biological weapons. Accelerating Globalization of the Life Sciences As globalization began to take firm root in the 1980s, virtually every industrial sector across the Western world sought to capitalize upon its underlying forces to promote efficiency and financial gain. Conceptions of tightly integrated firms whose product development was bound by national borders gave way to an internationalization of R&D, production, and supply chains. Expedited global trade, hastened by advances in everything from information to transportation technologies, allowed profit and efficiency to be maximized through outsourcing, off-shoring, supply-chaining, and other activities that drove intellectual and manufacturing capacity far beyond Western shores. The corresponding transfer of information, processes, and technology generated new local enterprises, including subsidiary operations that collaborated with or competed for global market share. This dynamic, in turn, created a virtuous cycle that accelerated the biotechnological competencies of these new markets. Soon, states that were seen to have lacked the indigenous expertise to perform complex R&D and manufacturing operations began to develop advanced, competitive industrial sectors.25 By the late 1990s, the spread of biotechnological knowledge and equipment allowed even more companies, universities, and research institutes around the world to benefit from advances in the life sciences. Today, developing countries nurture competitive industrial sectors that challenge traditional suppliers in Western Europe. According to the United Nations, many developing countries, including Argentina, Brazil, China, Cuba, Egypt, India, Mexico, and South Africa are already approaching the leading edge of biotechnological applications and have "significant" research capacity in the biosciences.26 In aggregate, this can only be seen as a significant boon to global development. As in the North, the developing South is putting these biotech capacities to work for peaceful purposes. Recent technological breakthroughs are indicative of this new geographic diversity of biological talent: the first vaccine against meningitis B was developed in Cuba; South Africa was the first country involved in HIV-C strain preventive treatment; India is the world's largest producer of the hepatitis B vaccine; and China was the first country to license gene therapy.27 Meanwhile, biotechnology is providing an infusion of high-skilled, stable, and lucrative jobs, and endowing struggling economies with critical growth and diversification. For the security conscious, however, the globalization of biotechnology has also expanded the locus of the bioproliferation challenge from technologically advanced countries of the North into far-flung places around the globe.28 Thus, even as humankind reaps the benefits of the biotech revolution, governments around the world are increasingly challenged by the confluence of rapidly advancing science and technology and by globalization itself. High technical hurdles to isolation and weaponization of dangerous pathogens once confined fears about the development and use of biological weapons to advanced industrial states. But now, the spread of dual-use biotechnologies means that a growing number of countries-and even terrorist groups-may gain access to the capacities necessary to develop a bioweapon.

#### **Bioweapons destroy biodiversity – targeting, interspecies spread, and fungal adaptation**

Abboud 18 (Nura Abboud; 9/22/18; EcoMENA; *“Catastrophic Impacts of Biological Warfare on Biodiversity”*; accessed 8/15/21; <https://www.ecomena.org/impacts-of-biological-warfare-on-biodiversity/>; Nura A. Abboud is an environmental activist and Founder of the Jordanian Society for Microbial Biodiversity (JMB), the only NGO in the Middle East concerning the microbial biodiversity. Nura specializes in molecular biology, biological sciences, microbial biodiversity, genetic fingerprinting and medical technologies. Her vision is to establish an eco-research center in the astonishing desert south of Jordan. She has received several scholarships and awards including honorary doctorate in Environmental leadership) HB

Biological weapons are considered the most dangerous of all known weapons of mass destruction. They are used to deliberately cause epidemics among humans; destroy the environmental components, including water, air, and soil; and target crops and livestock. Examples of diseases used in biological warfare include anthrax, smallpox, plague, cholera, and avian flu. In addition to the catastrophic effects of biological warfare on the biodiversity and the environment, their danger lies in their low cost and rapid spread, as well as their easy preparation, transport, and use. Unlike nuclear and chemical bombs, biological bombs are without odor or color and therefore cannot be detected. Additionally, bioweapons are dangerous because of their effects on untargeted organisms in a military attack, and the clinical symptoms they create may be difficult to distinguish from normal diseases. Bioweapon pathogens remain in nature for several years and are able to survive in harsh environmental conditions. Threat to Natural Resources Bioweapons spread germs that contaminate air, food, water, and the environment, causing epidemiological diseases for different living organisms. Air: A wide variety of germs can contaminate air and are used in biological warfare. Fungi are the most common, and they travel by air over long distances to infect healthy plants. Food: Food contamination is also one of the most powerful methods used to carry out biological warfare attacks. Disease is transmitted either directly to humans through contaminated food or drink or indirectly by hosts. Water: Water can spread a number of lethal infectious agents as well. For example, one gram of Clostridium tetani poison is able to kill eight million people within six hours. Threats to Biodiversity Diseases are one of the main drivers of extinction in endangered species; therefore, disease control is fundamental to preserve biodiversity. Despite the presence of vaccines and drugs for most bioweapons, they may not be available in adequate quantities to cope with an epidemiological disease outbreak. Biological attacks pose a threat to naturally rare wild plants and animals and to species whose natural habitats have been degraded by human activities. Furthermore, diseases that humans, domestic animals, and domestic plants have been able to develop immunity to can be fatal in wild animals and plants. Bioweapons are not only having direct effects on the genetic biodiversity of indigenous species but also are having direct and indirect catastrophic effects on vital plant and animal communities. Threats to Animal Biodiversity Conservation of livestock breeds is essential to maintaining genetic diversity, which in turn is vital to increasing the ability of living organisms to adapt to environmental changes. The danger of bioweapons regarding animal biodiversity is summarized in three main points: The direct impact of diseases on wild species Some deadly diseases in humans or domestic animals can infect wild animals. For instance, an epidemic destructive impact on endangered species is reflected in the effects of Canine distemper, a natural viral disease that infects wild dogs and wild animals belonging to the same group. Canine distemper was also developed in bioweapon laboratories. Over the past decade, the spread of this disease has resulted in habitat loss and in the extinction of a large number of wild species in North America. Additionally, it led to the elimination of about one-third of the lion population in Tanzania and had serious impacts on the endangered leopard population. Invasive species The history of rinderpest in Africa provides a model for predicting the potential effects of lethal diseases on wild species and livestock. In 1887, European colonial armies introduced the rinderpest virus to Africa through imported cattle, which led to a rinderpest outbreak among domestic cattle breeds and wild species, killing an estimated 90–95% of African cattle and buffaloes within three years. To control the epidemic, African herds and buffaloes have been destroyed in most parts of Africa. Despite efforts to combat rinderpest over the past century, the disease is still strong, and its outbreak in the region occurs frequently. Elimination of animal species, hosts, and vectors Threatened species may be destroyed in areas that have been subjected to biological attacks with the aim of eradicating the disease. For example, in the United States, programs to control brucellosis in livestock have resulted in killing large numbers of wild animals, including the Bison and the white tailed deer. Threats to Plant Biodiversity Microbes can be used in crop destruction. For instance, “Rice blast” is a disease affecting rice and therefore leads to crop destruction and genetic changes in the plant. Conclusion and Recommendations The discussion about controlling destructive bioweapons is growing, as they pose a vast danger to both humanity and the environment alike. Any failure to prevent biological attacks can lead to the deterioration of genetic diversity in animals and plants, the extinction of endangered species, and the destruction of human livelihoods and traditional cultures. Biotechnology has increased the economical value of genetic diversity of living organisms; hence, it has increased the risk of eliminating genetic diversity through the use of GMO bioweapons. Most of all, the environment will be the silent victim of this war.

#### Biodiversity loss causes extinction—turns and outweighs everything

Torres 16 (Phil Biologist, conservationist, science advocate & educator. 2 years based in Amazon rainforest, now exploring science around the world. “[Biodiversity Loss: An Existential Risk Comparable to Climate Change](http://futureoflife.org/2016/05/20/biodiversity-loss/)” http://futureoflife.org/2016/05/20/biodiversity-loss/)

The repercussions of biodiversity loss are potentially as severe as those anticipated from climate change, or even a nuclear conflict. For example, according to a 2015 [study](http://www.ncbi.nlm.nih.gov/pubmed/26601195) published in Science Advances, the best available evidence reveals “an exceptionally rapid loss of biodiversity over the last few centuries, indicating that a sixth mass extinction is already under way.” This conclusion holds, even on the most optimistic assumptions about the background rate of species losses and the current rate of vertebrate extinctions. The group classified as “vertebrates” includes mammals, birds, reptiles, fish, and all other creatures with a backbone. The article argues that, using its conservative figures, the average loss of vertebrate species was 100 times higher in the past century relative to the background rate of extinction. (Other scientists have suggested that the current extinction rate could be as much as 10,000 times higher than normal.) As the authors write, “The evidence is incontrovertible that recent extinction rates are unprecedented in human history and highly unusual in Earth’s history.” Perhaps the term “Big Six” should enter the popular lexicon—to add the current extinction to the previous “Big Five,” the last of which wiped out the dinosaurs 66 million years ago. But the concept of biodiversity encompasses more than just the total number of species on the planet. It also refers to the size of different populations of species. With respect to this phenomenon, multiple studies have confirmed that wild populations around the world are dwindling and disappearing at an alarming rate. For example, the 2010 [Global Biodiversity Outlook](https://www.cbd.int/gbo3) report found that the population of wild vertebrates living in the tropics dropped by 59 percent between 1970 and 2006. The report also found that the population of farmland birds in Europe has dropped by 50 percent since 1980; bird populations in the grasslands of North America declined by almost 40 percent between 1968 and 2003; and the population of birds in North American arid lands has fallen by almost 30 percent since the 1960s. Similarly, 42 percent of all amphibian species (a type of vertebrate that is sometimes called an “ecological indicator”) are undergoing population declines, and 23 percent of all plant species “are estimated to be threatened with extinction.” [Other studies](http://commondreams.org/views/2016/02/10/biodiversity-loss-and-doomsday-clock-invisible-disaster-almost-no-one-talking-about) have found that some 20 percent of all reptile species, 48 percent of the world’s primates, and 50 percent of freshwater turtles are threatened. Underwater, about 10 percent of all coral reefs are now dead, and another 60 percent are in danger of dying. Consistent with these data, the 2014 [Living Planet Report](http://bit.ly/1ssxx5m) shows that the global population of wild vertebrates dropped by 52 percent in only four decades—from 1970 to 2010. While biologists often avoid projecting historical trends into the future because of the complexity of ecological systems, it’s tempting to extrapolate this figure to, say, the year 2050, which is four decades from 2010. As it happens, a 2006[study](http://science.sciencemag.org/content/314/5800/787) published in Science does precisely this: It projects past trends of marine biodiversity loss into the 21st century, concluding that, unless significant changes are made to patterns of human activity, there will be virtually no more wild-caught seafood by 2048. 48% of the world’s primates are threatened with extinction. Catastrophic consequences for civilization. The consequences of this rapid pruning of the evolutionary tree of life extend beyond the obvious. There could be surprising effects of biodiversity loss that scientists are unable to fully anticipate in advance. For example, prior research has shown that localized ecosystems can undergo abrupt and irreversible shifts when they reach a tipping point. According to a 2012 [paper](http://www.nature.com/nature/journal/v486/n7401/full/nature11018.html) published in Nature, there are reasons for thinking that we may be approaching a tipping point of this sort in the global ecosystem, beyond which the consequences could be catastrophic for civilization. As the authors write, a planetary-scale transition could precipitate “substantial losses of ecosystem services required to sustain the human population.” An ecosystem service is any ecological process that benefits humanity, such as food production and crop pollination. If the global ecosystem were to cross a tipping point and substantial ecosystem services were lost, the results could be *“*widespread social unrest, economic instability, and loss of human life.” According to Missouri Botanical Garden ecologist Adam Smith, one of the paper’s co-authors, this could occur in a matter of decades—far more quickly than most of the expected consequences of climate change,yet equally destructive. Biodiversity loss is a “threat multiplier” that, by pushing societies to the brink of collapse, will exacerbate existing conflicts and introduce entirely new struggles between state and non-state actors. Indeed, it could even fuel the rise of terrorism. (After all, climate change has been [linked](http://thebulletin.org/climate-change-and-syrian-uprising) to the emergence of ISIS in Syria, and multiple high-ranking US officials, such as former US Defense Secretary [Chuck Hagel](http://www.defense.gov/News-Article-View/Article/603441)and CIA director [John Brennan](http://www.cnsnews.com/news/article/cnsnewscom-staff/cia-director-cites-impact-climate-change-deeper-cause-global), have affirmed that climate change and terrorism are connected.) The reality is that we are entering the sixth mass extinction in the 3.8-billion-year history of life on Earth, and the impact of this event could be felt by civilization “in as little as three human lifetimes,” as the aforementioned 2012 Nature paper notes. Furthermore, the widespread decline of biological populations could plausibly initiate a dramatic transformation of the global ecosystem on an even faster timescale: perhaps a single human lifetime. The unavoidable conclusion is that biodiversity loss constitutes an existential threat in its own right. As such, it ought to be considered alongside climate change and nuclear weapons as one of the most significant contemporary risks to human prosperity and survival.

### 3

#### Interpretation: Debaters must disclose frameworks and advocacy texts to their opponents through any means at least thirty minutes before round.

**Violation: they didn’t – – check the doc**

proof 🡪

<https://i.imgur.com/5TKPIlG.png>

1. **Engagement – disclosure allows in-depth preparation before the round which checks back against unpredictable positions and allows debaters to effectively write case negs and blocks—allows for reciprocal engagement where each side has an equal opportunity to prepare. Engagement outweighs on uniqueness – only it shifts debate from a monologue to dialogue, without engagement debate becomes Original Oratory.**
2. **Small School Inclusion – Big schools will always get your docs through having a lot of judges, competitors, and coaches with connections to other judges only disclosure allows small schools equal access.**
3. **Reciprocity - They have infinite prep before round to make the perfect aff – only disclosure allows us to have a crumb of the amount of time they had. Reciprocity outweighs because it controls the internal link to fairness – irreciprocal burdens create inherent advantages.**
4. **Academic Ethics—disclosure deters mis-cutting, power-tagging, abuse of brackets and ellipses, and plagiarism – makes it harder to beat evidence because I can’t find all the issues in-round—independent voter for academic honesty—it’s a real-world norm and debate loses all educational value if we can just make up cards. I cannot go through all their cards in four minutes and still manage to craft an NC and answers. I cannot check in round. Academic Ethics outweighs because it controls entry to universities and higher learning – biggest internal link to education, universities will kick you out if you are academically dishonest.**

#### Fairness is a voter because debate is a game with a winner and loser which demands competitive equity

#### Education is a voter because it’s a core part of the activity – without it, debate loses funding since schools would see no value in it

#### Competing interps over Reasonability 1- Disclosure is a yes/no question, there’s no such thing as disclosing half a plan text 2- Reasonability forces judge intervention to determine what is reasonable 3- Collapses to competing interps anyway since we have to compare bright lines

#### No RVIs – 1- Baiting – it incentivizes abuse so debaters can win on the RVI 2- Causes substance crowd out since every debate becomes a theory debate, debaters go for the RVI every time for the strategic value 3- Resource Disparities – debaters with giant backfiles can prewrite every theory argument every and always get away with abuse

#### Drop the debater – 1- it deters future abuse since debaters don’t want to lose future rounds 2- drop the argument is incoherent for disclosure because it affected the entire 1AC

## Case

### UV

#### 1 - Only evaluate consequences

#### Verifiability – you can verify consequences with empirical data but you can’t verify someone’s intent since they could be lying

#### Intrinsicness – Only consequences have a direct effect on agents

#### Degrees of wrongness – breaking a promise to take a dying person to the hospital is worse than breaking a promise to show up to a birthday party – that difference can only be explained through the consequences

#### Evaluate consequences through Hedonism

#### Accessibility – everyone feels pleasure or pain but not everyone has access to a priori information or specific information important for deontological theories

#### Everything else collapses – i.e freedom is good because it allows agents to choose actions that give them the most pleasure

#### No 1AR Theory—-

#### 1~ Responses to my counter interp will be new which means 1ar theory necessitates intervention—-outweighs because it makes the decision arbitrary

#### 2~ Deters the 1NC from checking abuse out of fear for 1AR meta-theory, which destroys me since it's also preclusive. Turns their infinite abuse args.

#### 3~ Resolvability double bind—either you automatically accept 2AR responses to 2NR counter-standards which means they always win since I can't answer those responses, or you have to intervene to determine the credence you give those 2AR responses, which makes it irresolvable and unfair. Also turns infinite abuse since intervention allows the judge to be infinitely abusive to either side if they want to be.

#### Permissibility and presumption negate

#### 1] Obligations- the resolution indicates the affirmative has to prove an obligation, and permissibility would deny the existence of an obligation

#### 2] Falsity- Statements are more often false than true because proving one part of the statement false disproves the entire statement. Presuming all statements are true creates contradictions which would be ethically bankrupt.

#### 3] Negating is harder – A] Aff gets first and last speech which control the direction of the debate