# 2. Science as the Arbiter of Security: The Rise of Prevention and Pre-emption

How long, O Lord?
*King James Bible, Ps. 13*

While the Declaration of Independence defined the sovereign state as the guarantor of life liberty and pursuit of happiness, science became the arbiter of biological security. Medical science rose from a revolutionary movement and revolutionary ideas to an institutionalized normative power that has expanded to all aspects of life in its present and future form. The American pursuit of health was readily aligned with the God given rights promised in the Declaration of Independence as described previously. But the still nascent rise of science and medicine had not yet fully established its normative power over bodily security and life. Medical practices existed before and during the 19th century but in the United States they did not represent one professionalized field.[1] Though Cotton Mather is widely regarded as the "first significant figure in American medicine" (Shryock, "Medicine" 282) because of his study on smallpox and defense of variolation, diseases were nonetheless understood in a religious framework.[2]

1 When talking about medical practice and scientific knowledge I am referring to Western traditions. This does not mean that indigenous scientific and medical knowledge production did not exist at the time, nor should it dispute that in many areas the indigenous traditions were more advanced than the practices imported to the Americas, and had a great influence on Western medicine (Vogel). Much of these medical knowledges and practices were lost following the process of colonization. The indigenous medical traditions were largely eradicated all over the Americas, discursively reduced to the shamanistic rituals that were part of the healing practices (ibid. xi).

2 Cotton Mather performed clinical tests on smallpox inoculation in 1721 using "quantitative procedures" (Shryock "Medicine" 283) to prove that inoculation protected the individual from infection, but the findings were not further systematized. This example highlights also the cross-cultural exchange of knowledge that undermines the narrative of medicine as a purely "Western" achievement since Mather had the information of variolation from his slave Onesimus. For a discussion of the disputes over inoculation in 1721 see Shawn Buhr "To Inoculate or Not to Inoculate." For a thorough study of Mather as a Figure of Medicine see Otho T. Beall, Jr. and Richard H. Shryock *Cotton Mather: First Significant Figure in American Medicine.*

In this chapter I will illustrate the process by which medical science becomes in the Austinean sense the authoritative voice defining new narratives about biological security. Though this new authoritative voice was based on objective knowledge it also represents a movement of faith, belief, and ideology that is given shape in what I will call messianic narratives of medical salvation.[3] The security promised by medical and scientific developments becomes not a question of possibility but a question of time representing, as I will argue, a fervent belief in the "not yet" and the yet to come. I will trace the rise of science as the arbiter of security to establish the "historical ideas" (Butler, "Performative" 521) that define the understanding of biological security. With the historical overview of the rise, expansion, and militarization of (bio)medicalized security I will highlight the logics of security which form a development from prevention to pre-emption and total control.[4] Though representing a historical overview and following roughly traditional periods in U.S. American medical history (1880–1930; 1920–1980, 1980–now) these three processes do not neatly fit into closed time frames; they have at times coincided and overlapped. They represent three stages in the genealogy of the biosecurity narrative that greatly influences individual and collective identity formation today. I will argue that the revolution in medicine and science facilitated a biologically inflected "cultural imaginary" (Fluck; Iser) of security which expanded to further fields, shifting from fighting disease to securing health, life, and happiness itself. I will argue that this expansion of medical normative power incessantly relocates the horizon and thereby the understanding of biological security.

## The Rise of Medicine as Normative Power: Biological Security and the Logic of Prevention

The rise of science as the normative power over biological security marks the transition from a moral to a scientific approach to disease, as George Canguilhem (*The Normal*) and others have pointed out.[5] It thereby marks a change in the narrative of security. This change describes the establishing of a new authoritative voice claiming the legitimacy

3 With Walter Benjamin I understand the originally religious term of the messianic as socially and historically fixed. The messianic in Benjamin, as well as in Derrida's use of it in *Specters of Marx*, does not describe a transcendental hope anymore, but a hope grounded in the experiential world of acting people in their specific historic and social context. "Once the classless society had become defined as an infinite task, the empty and homogeneous time was transformed into an anteroom, so to speak, in which one could wait for the emergence of the revolutionary situation with more or less equanimity" (Benjamin, "Concept" 402). In Benjamin this messianic act, thus, describes a relation of inaccessibility. The messianic "bears witness to a lack, an incompleteness" (Khatib 2) that motivates its specific time.

4 This is not an attempt at a complete historical analysis of U.S. medical history, public health, or its policies but rather a selection of events that exemplify the rise of science as arbiter over biological security in the United States. Though a narrative of supposed continual progress toward bodily security, the narrative is fractured, full of incongruences and misguided ideas and treatments, which I will attempt to do justice to.

5 This is not an absolute transition, since still today disease are reflected in moral categories as for example the representation of AIDS shows.

to write (or prescribe?) a "new" security narrative. The medical paradigm shift represents a revolution similar to the American political revolution and is based on the same philosophical ideas of Enlightenment, which defined nature and thus the body as legible truth. The new biological security narrative was based on the understanding of the body as a machine that can be studied and described, and therefore controlled, managed, and fixed. The concept of the body as machine, as Canguilhem criticizes it in the chapter "Diseases" (*Writing)* is not an invention of modern medicine. It is derived from Descartes's dualism of body and mind (Powell 209), which modern medicine is still predominantly based on. The systematic implementation of this understanding in medical practice is commonly exemplified with the foundation of the Paris School of Medicine at the end of the 18th century and the turn to observation-based medicine (Shryock, "Significance" 85). The threats to biological security were in this "new approach" classified and distinguished as specific diseases.[6] This new understanding of diseases was facilitated by the change from "bedside medicine" to "hospital medicine." The centralized treatment of patients in hospitals facilitated the systematic study of symptoms and pathologies (through surgery and autopsy).

Hospital medicine with its famous operating theatres opened up the body to the "clinical gaze," purportedly making "truth" (Foucault, *Birth* 155) accessible in performative acts.[7] Michel Foucault asserts that this "opening up of the concrete individual, for the first time in Western history, to the language of rationality, that major event in the relationship of man to himself and of language to things – was soon taken as a simple, unconceptualized confrontation of a gaze and a face, or a glance and a silent body" (Foucault, *Birth* xiv-xv).[8] The new structure of seeing has established the understanding of a direct access to "truth," or the natural. This claim to a truth instituted the authority of medicine over biological security replacing other traditions of practice and understanding. The rise of science and the normalization of medical practices challenged the "space in which the bodies and eyes meet" (Foucault, *Birth* xi). Foucault stresses that with this "medical gaze" a stable relation between sign and knowable fact was "forged" (xii), converting the body into a readable text, a truth hidden beneath the enigmatic signs of nature.

Through this medical gaze, the idea of the body as machine was reinforced as the defining element of the security narrative redirecting the focus from individual suffering to sickness. Ivan Illich claims that "[w]ithin this mechanized framework, pain turned into a red light and sickness into mechanical trouble" (*Nemesis* 58). And the understanding of sickness as "mechanical trouble" emphasized that these "troubles" could be controlled. It further defined biological security as a natural state that can be protected and returned to if the necessary knowledge is discerned. The creation of new disease categories thus

6 Before, speculative pathology was based on the assumption that illness was caused by "impure body fluids" (Shryock, "Medicine" 284) with no real distinction between diseases.

7 The operating theatre with its clear spatial analogy to a theatrical space stages performances of security on multiple levels: it stages an increasingly crucial security practice of surgery, and it stages a security practice to an audience with a didactic purpose and the goal of multiplying the practice and providing more security.

8 Foucault describes this structure already existing for earlier autopsies, however, in the nineteenth century the practice gained in legitimacy and normative power.

represents a first performative act of security that facilitates the protection of the natural and vulnerable body.

Science started to write its own declarations of independence: every description of pathology defined and identified a further tyranny of nature's mistakes that man had the right to rebel against. Every new category of normal and pathological represented a new security narrative, establishing first and foremost a new understanding and meaning of bodily states. These new normative understandings were facilitated by the generation and accumulation of knowledge and data, as both Canguilhem and Foucault point out. These knowledge categories which circumscribe the security and threats of the body were installed as "the natural," an incorruptible "truth" that could only be discerned by medical professionals. These new diagnostic categories significantly influence how bodies are understood. However, the pathological and the normal, that are represented as truth are not determined states but rather descriptions of what "ought to be" (*Normal* 125), which is influenced by historically changing value judgments as Canguilhem emphasizes and are therefore never purely objective.[9]

In the United States the shift to hospital and evidence-based medicine as well as the development of a certified professionalized field that facilitated this transition started significantly later than in Europe (Shryock, "Significance" 86, Starr). This delay has been put down to the resistance to regulations in general, legitimized on the basis of the Declaration of Independence. The rise of the medical security narrative emphasized the possibilities of control and protection through a professionalized elite, an ideal diametrically opposed to the ideals of the Declaration of Independence and the paradigm of self-reliance: "God helps those, who help themselves," as Franklin is supposed to have put it. From the colonial era onward a form of "medical self-reliance" had been the prevalent and often the only form of medical care available (Tomes, *Remaking* 20). Still, in the 19th and early 20th century the system Nancy Tomes terms "medical democracy" favored a "do-it-yourself approach" (ibid.). Richard Shryock stresses the importance of this particularity in U.S. American medical history. He quotes a senator in 1844 supporting licenses for irregular practitioners saying, "A people accustomed to governing themselves . . . want no protection but freedom of inquiry and freedom of action" (qtd. in Shryock, "Significance" 87).

The explicit involvement of governance with the health of the nation in the U.S. is most obviously rooted in the great epidemics, such as yellow fever and cholera in the 18th and mid 19th century, especially with regard to the growing population in urban areas.[10]

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9 Canguilhem claims that the medical understanding of normal has incorporated moral metaphors in the experimental methods that produce their scientific findings and therefore influence the understanding of the disease. An example of this are the research biases that are contained in the experimental setup itself, such as the predominant study of mental illness in prisons leading to the correlation of criminality, violence, and certain conditions, or the gender and race bias that existed in clinical research up to 1993 when the Revitalization Act was passed. This Act requires "that all federally funded clinical research prioritize the inclusion of women and minorities and that research participant characteristics be disclosed in research documentation" (Oh et al. 1).

10 In the 19th century, as for instance during the cholera epidemic of 1835, responding was the responsibility of the municipals and not federal agencies such as the Center for Disease Control and

Though medical practitioners held the explanatory authority over disease and were consulted in the events of epidemics even before the rise of bacteriology, they did not represent a unified professionalized field yet. It was only in the last decades of the 19th century that medical science and its practitioners assumed the normative power over biological security in the United States as policy experts. "[T]he decades from 1880 to 1930 constituted an economic and cultural watershed for the American medical profession" (Tomes, "Merchants" 524). The change coincided with the next big paradigm shift in medical history: the turn to laboratory medicine and the rise of preventive medicine.

The shift of authoritative voice is on the grander scale of medical history assigned to the rise of bacteriology following Louis Pasteur's successful experiment immunizing animals in 1880 and Robert Koch's "discovery" of the mycobacterium tuberculosis in 1882. With the scientific evidence for the germ theory of disease the competing security narrative of miasma theory was abandoned (Shryock, "Significance" 85).[11] With the rise of bacteriology, the jurisdiction over the biological security of the people in the United States was gradually taken over by medical science as the sole arbiter of security. The security narratives concerned with the health of the people in the United States had thus a new protagonist, and a new narrator and author.

This usurpation of normative power by medical science did not involve a radical change, however, but a gradual transition of passing over authority. During the Progressive Era (ca. 1890–1920) the nominal power over biological security and epidemics was still largely held by social reformers.[12] The Sanitary Movement and the Social Hygiene Movement are seen as pivotal in the history of early public health, and the practice of preventive medicine (Pivar 1, Duffy 167). In some areas, such as the prevention of syphilis, the social reformers held the normative power and authority in policy advice until the beginning of the 20th century. While the focus on preventive medicine had existed before, within a moralized discourse, with the evidence of the germ theory it was medicalized, consolidated, normalized, and most importantly professionalized.

The germ theory established microorganisms as the cause of disease and contagion – the transmission of microbes through contact – as the reason for its spread. The new understanding of what endangered the body produced a new security narrative based on the possibilities of visualizing that rendered the invisible threat of bacteria palpable (Wald, *Contagious* 136). The possibilities of visualizing bacteria through Gram stains (developed in 1884) were yet another "opening up of the concrete individual" that Foucault has described for the study of anatomy. This turn from the organic to the microscopic further enforced the medical understanding of the body as machine and the need for experts who could "read" and interpret the (microscopic) data.

Though based on scientific discoveries, the security narrative that emerged from those findings also represented a question of faith. "Believing in the germ theory, as it was initially formulated from the experimental evidence available in the 1870s, required

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Prevention (CDC) today (Fearnley 65). However, "public health is historically and legally a responsibility of state and local government" (ibid.).

11 The miasma theory proposed that diseases were caused by "foul and polluted air" (P. Mitchell 38).

12 The end of the 19th century saw the emergence of broad social movements in the U.S., which strove for policy interventions during the Progressive Era.

a considerable leap of faith that most physicians simply could not make" (*Gospel* 34). Nancy Tomes describes the rise of bacteriology as the rise of the "gospel of germs" – the title of her book – comparing the advent of the medical authority with a movement based on faith and conviction emphasizing the religious evangelical undertones in the "conversion" to the "gospel of germs" (*Gospel* 114). The rise of the "new" understanding of security thus relied on narratives that had to convince and appeal, which they had to far beyond the medical community.

What became unquestionably visible to scientists was not immediate to a general public. The findings had to be communicated in *understandable* security narratives in order to produce the desired effect of changing people's understandings and habits based on new security scripts. The authoritative voice of the performative needs its interlocutor and thus needs to be intelligible for this interlocutor. Nancy Tomes emphasizes the importance of communicating the new risks in narratives. She shows how the medical narrative used "preventive medicine" and the discourse of the Sanitary Movements to establish its findings in public practice (Tomes, *Gospel* 46). The initial security narrative of the germ theory was therefore represented as a logic extension to the discourse of the Sanitary Movement that had identified dirt as the source of disease. Germs were simply invisible dirt.

The preventive security narrative of bacteriology established a new order by defining the threat as invisible germs on everyday objects and individuals and explaining security practices to guard against them. Priscilla Wald stresses in this context the importance of the "outbreak narrative" (*Contagious* 2). It explains the origin of an epidemic marking its routes and possible containment, offering a way to narratively contain the rupture such an outbreak represents.[13] These narratives often reiterate already familiar literary forms, such as detective fiction to give shape to the new knowledges of biological security (Wald, *Contagious* 20). The epidemiologist became a "disease detective" chasing the culprit of infections – the microbial material and the individual spreader. Furthermore, the language used to describe this new order heavily relied on militarized language that emphasized the body under siege (Wald, *Contagious* 83). The narratives represent the threat of germs as a fearful specter of insecurity coming from the outside. The militarized language used already by Koch to describe processes in bacteriology established war metaphors "within the larger discourse and practice of medicine" (Nie 3) and therefore heavily influenced the understanding of biological security. In this narrative configuration medicine and scientific knowledge, or rather its practitioners are the saving protagonists that protect the security of the individual as well as the national body.

The security narrative focused on "lurking germs" circulated widely and occupied the public for the first decades of the 20th century. The "new risks" were often publicized in sensationalized, panic-inducing reports that evolved more and more centrally around the doctor and the individual spreader of disease (Wald, *Contagious*, Lepore). The fear of contagion was further increased by the discovery of "healthy carriers" such as the example

13 Wald asserts that "[t]he outbreak narrative . . . follows a formulaic plot that begins with the identification of an emerging infection, includes discussions of the global networks throughout which it travels, and chronicles the epidemiological work that ends with its containment" (*Contagious* 2).

of "'Typhoid Mary,'" who became the infamous exemplification for the myth of the immigrant stranger infecting the healthy American body (Wald, *Contagious* 9).[14] These fearful stories of looming infection made biological security more decisively the responsibility of the individual. However, at the same time the findings of medical science and the security narratives they were embedded in shifted the body as something private into a public matter, describing a "transformation of the most intimate into the most public" ("Community" 270) as Rüdiger Kunow points out. The individual was responsible for their own health as well as for the health of others they could potentially infect. Individual biological security was based on the health of the community, the "We, the people," which made it an increasingly important part of national security concerns.

The shift in the security narrative thus decisively influenced how national security, as well as identity were understood. While epidemics always functioned as a lens on defining the self and the other as Ariane Schröder shows in *Inf(l)ections of the American Dream*, the newly consolidated and professionalized security narrative of prevention made this biologically inflected distinction between self and other crucial also *outside* of epidemic crisis events. The biologized security narrative placed insecurity more firmly on the outside and located it within the other, as something foreign and hostile to the American body (Wald, *Contagious* 9). And this influenced legislative changes. The 1891 Immigration Act made medical inspections mandatory to the immigration process, most famously conducted on Ellis Island from 1892 onward. The Immigration Act of 1907 restricted the admission of physically or mentally disabled individuals and the sick to the U.S. These people were labeled as "defective persons" (Congress 1907), expressing the medicalized understanding of biological security. This conception forged new group identities, which legitimized the exclusion of individuals from the American "We."

As the example also shows, the rise of prevention did not exclusively focus on contagious disease. It represented a more wide-ranging mindset that was also regulating the people already in the country. As a repercussion of the new authoritative voice, the public space was sanitized from those who somehow did not fit the new mold of "biological Americanness." Ordinances that came to be called the "ugly laws" prohibited persons with visible disability or disease "to expose himself [or herself] to public view" (qtd. in Schweik 2). Susan Schweik describes how these ordinances emerged first in the 1860 and were then introduced in more and more places across the United States after 1880. In a general sentiment of progress and improvement, disease and disability had become an "unsightly" presence that disrupted the imaginary of security. The ordinances exemplify the broad influences that the security narrative of prevention had on the private and the public, restricting individual freedom.

14 Mary Malone first appeared as "Typhoid Mary" in 1909 in *New York American* (June, 20). Identified as the origin of typhoid outbreaks though she herself did not show any symptoms of being sick, led first to regulating Malone's possibilities of work, banning her from positions as a cook. Her transgression of these rules led to public intervention and her ultimate "incarceration" on an island where she was isolated (Walzer Laevitt, *Typhoid Mary* 18–19). Wald asserts that "[t]he idea of a healthy human carrier of disease was one of the most publicized and transformative discoveries of bacteriology" (Wald, *Contagious* 16).

Similarly, individual responsibility for performing security practices to prevent disease was not limited to contexts of deadly infections, but also extended to cases of normal flus and colds, as a pamphlet from New York City's Department of Health from 1929 shows (qtd. in American Center for History). Pamphlets such as this circulated the knowledges and practices of prevention, making preventive logics everyday performative acts. In that sense, every news story and every health campaign represents a narrative of security that explains the proper ways of being sick and staying healthy. "Cleanliness became not only a solution but a measure of citizenship" (Wald, *Contagious* 70).

The logic of prevention and its distribution of responsibility between government and individual is most poignant in the development of vaccines as the first "magic bullets" that promised the conquest of infectious disease (Tomes, *Gospel* 45). Variolation was performed long before the evidence of the germ theory was discovered, but with the professionalization of the knowledge followed the professionalization and proliferation of the practice.[15] The scientific evidence provided by Edward Jenner solidified vaccinations as "mechanisms of security" (Foucault *Security* 16) to control populations biologically. According to Foucault the techniques of systematized medical study added an "apparatus (dispositif) of security" (Foucault, *Security* 20) that emphasizes the logic of probabilities and costs which are based on statistical assessment. In changing the perspective from individual suffering to a numerical and collective understanding, the logic of the new security narrative dissolves the "binary division between permitted and prohibited" (Foucault, *Security* 19). Statistical assessment rather "establishes an average considered as optimal on the one hand, and, on the other, a bandwidth of the acceptable that must not be exceeded" (Foucault, *Security* 20). The assessments not only establish the status of security, they emphasize the "crucial notion of risk" that arises in calculating security (Foucault, *Security* 88). In the logic of preventive medicine, events and the future are therefore increasingly represented as predictable and therefore controllable. A lack of control signifies a lack of knowledge; the question of biological security is in the logic of prevention therefore a question of knowledge production.

At the same time security relies in this context more clearly on the production of narratives. In the context of preventive medicine, the biological security of the people becomes more decisively a national security concern and object of policy intervention outside of epidemic crisis events. Foucault emphasizes that "[i]n short it will no longer be the problem of exclusion, as with leprosy, or of quarantine, as with plague, but of epidemics and the medical campaigns that try to halt epidemic or endemic phenomena" (*Security* 23). Since the security practices such as vaccination aim at the prevention of an

15 Variolation was practiced widely in the U.S. in the fight against smallpox long before the scientific proof of the germ theory. The U.S. Vaccine Agency was established in 1813, and already in 1855 Massachusetts implemented mandatory smallpox vaccination for school children. Today, all states have adopted mandatory vaccination against most childhood diseases. However, most states allow exemptions for medical as well as religious and personal reasons, which has lead to increasing outbreaks of measles for instance. These exemptions can be overruled in some states during an outbreak (CDC, "Vaccination Law").

event, narratives are crucial to circulate the necessity of the security practices. The "medical campaigns" are indispensable to inform a wider public and to facilitate vaccination programs. The campaigns are further needed to reassert the urgency of a security practice such as vaccination in the absence of the experience of outbreaks. This necessity of narratives is as pertinent today as the recent measles outbreaks and emergency declarations from regions such as New York State at the beginning of 2019 make clear (Barbot), as well as the struggles to implement preventive measures against the spread of Covid-19 in 2020. Biological security is thus explicitly a question of information and its circulation, not merely of medical knowledge and practice. This circulation is needed to raise "biological awareness" and "scientific literacy" (Rose and Novas, "Citizenship" 443) to make the professionalized biological security narrative accessible and understandable, and to make it pervasive and appealing.

The preventive logic of biological security produced the need for new institutions in the United States that would facilitate the accumulation of data to provide the knowledge as the key to security. Toward the end of the 19th century the national institutions crucial for the overseeing and production of the required accumulation of data were founded, such as the predecessor of the National Institute of Health (NIH) in 1887,[16] the Food and Drug Administration (FDA) in 1906, and the Children's Bureau in 1912, to name but a few. All of these institutions mark the ascent of vital statistics and the belief in the calculability of biological security.[17] They institutionalize biological security education[18] and reiterate the messianic narrative of medical and scientific salvation, which aimed far beyond the infectious disease medicine was waging war on.

The rise of medicine as the arbiter of security at the turn of the century and the beginning 20th century was not only defined by scientific developments – as the revolution in microbiology could suggest. Its sweeping ascent was also marked by the hope and belief in continual progress facilitated by the new authoritative voice of science. It was a time when social problems were attempted to be fixed with the help of scientific solutions:

> As assorted elites in various countries sought to make sense of a world in flux, they increasingly turned not to religion but to science, which offered authority, rationality, and incisive explanatory power. Evolutionism, physical anthropology, and bacteriology could help diagnose, ameliorate, and perhaps even perfect society. (Stern 13)

Minna Stern indicates that the security narratives produced by medical sciences did not just promise to cure diseases. Rather, its promise was extended to most social problems turning science itself into a "magic bullet." An important aspect in the advances of the

16 Founded as the Hygienic Laboratory the institution was renamed Public Health Services in 1922 and was redesigned in 1930 as the NIH with the Randsdell Act.

17 For the rise of the use of statistics in psychiatric medicine see Allan V. Horwitz's and Gerald N. Grob's study of the history of American Psychiatric Epidemiology. For a brief history of medicine and statistics see Dan Meyer's "A Brief History of Medicine and Statistics."

18 Ruth Clifford Engs enumerates the rising number of educational platforms and publications that emerged in that time. The *Sanitarian* was an early public health publication which merged into the *Popular Science Monthly* (298). Its "masthead carried the statement 'Public Health is Public Wealth'" (297).

arbiter of biological security is, thus, based on belief and affective investment rather than factual knowledge or medicine's actual ability to protect the body.

This dynamic is most clearly reflected in the rise of eugenics in the United States. Instead of actual scientific findings, ideas and theories of inheritance and evolution and "faith" (Stern 6) marked the rising security narratives of eugenic population theory. With the consistent evocation of a better future (for "all") the eugenic "movement" represented a promise of national advancement, inextricably connecting individual biological security with national security. Eugenics was understood by its followers as "the prime duty – the inescapable duty – of the good citizen" as Theodore Roosevelt put it in a letter to Charles Davenport in 1913 (Roosevelt, "Letter"). Eugenics scientists, such as Davenport argued that eugenic measures such as forced sterilization were crucial to protect and improve the body of the nation. Eugenics based itself on a forceful security narrative that warned against maintaining the status quo, which would lead society to the doom of endlessly reproducing its weakness and suffering. They "demanded political action" (Hansen and King 49)[19] and delivered hope of averting an inhumane and threatening future by eugenic population control. The belief in scientific progress and the security narrative to improve society by "better breeding" reveals that eugenics was both an enforced oppressive practice as well as a practice that garnered a wide following. At its time, eugenics were "shining brightly" dominating many areas of biological, social and moral security narratives – not much unlike its succeeding heir genetics. Eugenics had its heyday in the U.S. in the 1920s during which it influenced federal policies such as the Supreme Court case *Buck v. Bell* and the introduction of the Johnson Reed Act in 1924.[20]

This faith-like belief in science at the beginning of the 20th century, and in biological science in particular, was famously articulated in J.B.S. Haldane's speech "Daedalus, or Science and the Future: A Paper Read to the Heretics" in 1923.[21] It epitomizes the glorification and unwavering faith that represented biological science as "humanity's best hope" (Bud, *Uses* 196). Haldane's speech represents the unwavering faith in a messianic narrative of scientific salvation and the coming of the "age of biology." Haldane

19 "Indiana was the first state to pass and adopt a sterilization law in 1907. Between 1907 and 1912 seven additional states (Washington, California, Connecticut, Nevada, Iowa, New Jersey, and New York) successfully passed laws. […] Most states allowed for sterilization of institutionalized 'confirmed criminals, idiots, imbeciles, and rapists'" (Engs 111). Sterilization did not end with the condemnation of eugenics after WWII. In Oregon for instance, forced sterilization was still practices in 1983 (Stern 1). For a thorough and comprehensive discussion of the practice of sterilization in North America see Hansen and King *Sterilized by the State.*

20 The Supreme Court case *Buck v. Bell* ruled that compulsory sterilization of "unfit" individuals was not unconstitutional. The Johnson Reed Act in 1924 introduced a quota system regulating immigration to the United States based on national origin.

21 Haldane was a scientist who worked in various different fields, one of them evolutionary biology and genetics (Ronald Clark "*J.B.S.*"). Though an English scientist and a speech delivered in Cambridge, England, Haldane together with J.D. Bernal was central in publicizing and popularizing the belief in biological science in the scientific community in the U.S.. Harvard professor Bernard Davis asserts almost 60 years later in *Science Magazine* that "'Those of us who were entering biology in the 1930s were very much encouraged by the essays of J.D. Bernal and J.B.S. Haldane who predicted that the age of biology would soon emerge…'" (qtd. in Bud, *Uses* 196).

promises that science will save those who believe and prepare for its coming both technically, and ethically. His security narrative establishes biological science as the "magic bullet" against all evil and insists that "scientific knowledge is going to revolutionize human life" (20). The revolution that Haldane predicts is, however, not restricted to biological changes alone. It is ultimately linked to a social utopia as he ascribes to science the ability to eradicate inequalities (6). This messianic narrative of scientific salvation indicates that science did not just observe and describe biological matter and its security as a claim to truth but had started to describe the future with similar authority. The security narrative of prevention evolved more explicitly into a utopian tale of future securities.

And indeed, science seemed to deliver on its promises. The time between 1920 and 1960 is referred to as the "golden age" of American medicine and describes the moment when medicine rose to professional sovereignty and the United States to the leading place of medical research (Tomes, "Merchants" 524).[22] The security promise of the "mastery of disease" seemed to become more and more achievable as scientific progress proceeded with the discovery of the long anticipated "magic bullets,"[23] with the discovery of penicillin. Kaushik Sunder Rajan emphasizes the particular messianic rhetoric used to describe biomedical developments such as penicillin, which was celebrated as a "miracle drug." Similarly, when Merck released its new drug cortisone it was presented in a "structure of miracle" (*Biocapital* 187). But it is not just these "events" of discoveries that are given shape in a messianic narrative of scientific salvation. Sunder Rajan emphasizes the "structure of linear progress that is embedded and embodied in specific salvationary stories, heroic rescues of individual, extremely sick patients" (ibid.). He emphasizes the importance of individual stories that established and legitimized the provided security.

Furthermore, medical advances clearly started to affect people's lives as infant mortality decreased and life expectancy lengthened. Changes had started in 1900 but by the 1940s increased security was clearly notable. Life expectancy rose from 33 for Black Americans and 47.3 for White Americans in 1900, to 53.1 for Black Americans and 62.9 for Whites by 1940 (CDC, "Life Tables" 19). Census documents from the period also show how infectious and contagious diseases (such as measles, TB, and influenza) as the cause of death decreased because of antibiotics and more and more effective vaccines.[24] Ivan Illich asserts that in the 1930s it was "assumed that there was a strictly 'limited quantity of morbidity,' which if treated would result in a reduction of subsequent sickness rates" ("Medicalization" 73). And the rising longevity rates – the icon of medical *and* national progress – due to the mastery of infectious disease made the imaginary of biological security seem increasingly graspable. In the 1950s and 1960s it seemed that the continuous

22 The benchmark of independence from Europe as superseding it as a research power is emphasized in most accounts of American medical history, highlighting the importance of national(ist) narratives that are best studied as nationally distinct forms of security narratives despite their global points of conversion.

23 Sebastian G.B. Amyes discusses in *Magic Bullets, Lost Horizons* the rise and fall of antibiotics as magic bullets from a biochemical perspective highlighting the treacherous outcome of their widespread use in the rise of multi-resistant bacteria.

24 By the 1950s, vaccination against diphtheria, tetanus, pertussis, smallpox and polio was widely available. In the 1960s vaccines against measles, mums and rubella were developed (*History of Vaccines.org)*.

progress of science had managed to control most major contagious disease problems in the nation. The advances led to the assumption that "life can be protected, if not absolutely then statistically, from the threat of both wars and disease" (Cooper 65). The coming of science and its promised security appeared imminent.

## Changing Frames – Changing Expectations: the (Bio)Medicalization of Life and the Expansion of the Medical Security Narrative

The quest for biological security narrativized as the mastery of infectious disease did not lead to the control of mortality nor to the abolition of disease, much less to an end of ailments and suffering or a better and more just society. It did not lead to the "eradication of disease itself" as "Thurman B. Rice, a professor for sanitary science, predicted" in 1927 in "The Conquest of Disease" (Lepore 2). The advances in treating infectious diseases prolonged life and led to the rise of other diseases that are often correlated to lifestyle, consumption, and ageing, such as cardiovascular disease and cancer. As a consequence, the security of the body based on control and controllability receded, or was deferred as Derrida puts it. The sought-after security of control fails, not (necessarily) because older definitions are proven wrong, or because treatments were erroneous or even threatening, which they were.[25] It fails, because the proposed security articulated in the medical narratives does not describe an a priori existing thing, a natural state that can be protected and returned to, but rather a concept and a logic made pervasive by narratives. The messianic narrative of medical salvation temporarily fixes the moving target of security based on calculability and control. With the shifting horizon of security, however, medicine and science did not have any adequate knowledge or treatment for the rising number of patients with these "new" and often chronic diseases, which are the leading cause of death still today (CDC, "Death and Mortality"). The envisioned control of the body, which had seemed almost graspable "retreats" with every further approximation to the ideal. This shift from infectious to chronic and degenerative disease, as a deferral of biological security does not represent a disruption of the messianic narrative of medical salvation, but reinforces the temporality of "not yet," that propels the security narrative forward. It represents a changed frame of the security narrative, produced by medical and scientific progress as well as cultural changes. Increasingly, the security narrative of prevention extended its normative power from defining and treating disease to health and life.

The messianic narrative of medical salvation started to pervade the understanding of the body and life defining them increasingly in biological security terms. This process has been studied as "medicalization," which was initially defined by studies of Irv-

25 The medicalized understanding of race, gender, and sexuality for instance lead to misguided and violent forms of treatments such as isolation to treat "hysteria," electro shocks to treat "wrong" sexual orientation or the resistance to assigned social roles, or the systematic withholding of medical care and the abuse of individuals as guinea pigs for medical studies. But also other forms of treatment and medical knowledge have proved to be harmful over time, such as repeated x-ray treatment against acne, as one example among many.

ing Kenneth Zola and Ivan Illich, who both introduce "Medicine as an Institution of Social Control" (Zola). Peter Conrad defines it more broadly as "a process by which non-medical problems become defined and treated as medical problems, usually in terms of illness and disorders" (Conrad, *Medicalization* 4). This expansion of medicalized security narratives shifted the horizon of security changing frames and expectations. Already within the first three quarters of the 20th century increasingly more processes that were traditionally governed by social and cultural ritual became the object of medical security narratives. Science became the authority over life – not just disease – and the gatekeeper of its security. But it was also increasingly associated with individual possibilities to partake in the American Dream and the pursuit of happiness. This expansion from defining and curing disease to defining and securing health and life is particularly visible and profound in the changes of birthing practices in the United States. I will use the examples of pregnancy, birth, and childhood as returning thematic examples to highlight the expansion of the medical security narratives that took place in increasingly all processes of life.

Childbirth represents one of the earliest processes of life to be medicalized and marks the "passing power over the birth process from traditional female to professional male" (Mitford, *Birth* 51). Already by the turn of the 20th century birth was recognized as a pathological process, however, it was still predominantly experienced at home in the care of a midwife (Mitford, *Birth* 58). But "by 1939, 50 percent of all women and 75 percent of urban women chose hospitals for the purpose; by 1970, the figure had risen to close to 100 percent" (Mitford, *Birth* 47). In the U.S. the process of medicalization indicated in this statistic was so strong that midwifery nearly disappeared as a practice entirely.[26] This had nothing to do with the practices being more secure at that time. Instead, the wide circulation of science and medical practice as the arbiter of security had made the hospital and the obstetrician a seemingly natural authority over the birthing process. The doctor rose to "his role as a cultural hero" (Illich, "Medicalization" 73) and became the unquestionable authority in more and more life questions.

In birthing, the alleviation of pain became a central concern early on. The medical normative power over the security narratives had abolished the meaning in and of suffering as related to a higher meaning. Pain – a central part of labor – was perceived as meaningless and therefore useless and avoidable. Sedatives that had already revolutionized surgery had become more and more central in the treatment of birth. The new practices and security narrative defined women as incapable of leading the birthing process, as early practices of "twilight sleep" in the 1910s exemplify (Walzer Leavitt, "Birthing" 147). The birthing mother became a patient and was treated so she did "not remember" the labor and pains that were understood as a "birth trauma." In this preventive security practice the woman was rendered passive as the main protagonist of the new security narrative and performance is the doctor, not the laboring woman. The doctor delivered the

26 The practice recovered with the introduction of the "nurse midwife" and the midwife movement of Ina May Gaskin in the 1970s. But it is "again in jeopardy because of rising malpractice insurance costs, women's trust in technology, and, most recently, renewed efforts by physicians to once again prevent midwives from practicing" (Brodsky 48).

baby, as the saying goes.[27] Though this expansion of medical authority has often been described in a Foucauldian top-down power relation, most researchers also recognize that this transition of normative power and practice was desired. Hospital birth and routine medical interventions in the birthing process became the unquestionable and sought-after security. Mitford even describes the fast adoption as "a torrent" (*Birth*, 47). The medical practices were perceived as progress which happened in the assigned space of security: the hospital.[28]

Though medical care had become far more accessible and medical possibilities had undoubtedly improved life to a great extent as statistics stand to prove, it did not lead to people feeling more secure nor bound to one expert opinion. Medicalized security was available only to those able to pay the increasing prices of medical and hospitalized care. Treated as consumers, the patients acted early on as such, comparing treatment offers of different service providers as Tomes shows (*Remaking* 9). However, this also meant that the majority of people were "priced . . . right out" early on ("Merchants" 529) and the various health care strategies that have been implemented over the course of the century have not managed to close the medical care gap in the United States.[29] The chasm between medical possibility and accessibility of the services to the general public arose early on. Health seeking was a practice of the well-to-do center of society. But despite the exclusiveness of medical treatment, the possibilities of these practices had made a medicalized understanding of health and life a central topic in public discourse.

Over the course of the 20th century health and medical treatment had become something desirable in all contexts of life. Most researchers highlight in this context the commodification of health and medical care in the growing consumer culture of post-war America (Mitford, Shryock, Tomes, Illich, Clarke et al.). Tomes underlines the importance of advertising and pamphlets as early as the first half of the 20th century. She describes the rise of health as a consumer good, which was incremental for the wide circulation of preventive security narratives. This was possible because the "twentieth-century 'medical messiahs' could use mass media to promote themselves" (Tomes, "Merchants"

27 "In addition to forceps, physicians relied on opium, chloroform, chloral, cocaine, quinine, nitrous oxide, ergot, and ether to relieve pain, expedite labor, prevent injury" (Walzer Leavitt, "Birthing" 148). Today, pains of labor and their conscious experience are again recognized as necessary and important part of the birthing process for both child and woman. Nonetheless, "[t]echnology and obstetric interventions in normal childbirth continue, in spite of lack of evidence of their efficacy" (Brodsky 48).

28 The progress of medicine was not a utopian space of equality but structured by and perpetuating institutional racism in segregated hospitals. "[T]he new 'white palaces' of modern medicine remained white in a literal sense . . . . Segregated hospital care represented a form of medical Jim Crow common in both the South and the North well into the 1960s" (Tomes, "Merchants" 542).

29 Theodore Roosevelt's policies of the New Deal in 1934/5 instituted social security and defined its meaning in terms of "*life insurance*, generalizing its principles of mutual risk exchange to the whole nation" (Cooper 7). But neither the New Deal, nor the Second New Deal or the Wagner Act included health care programs. Medicare for the elderly (65+) and Medicaid for the unemployed was only established with Johnson's "Great Society" in the 1960s. The proposals for these programs were initially resisted by the American Medical Association because of financial considerations and the assumption that it would inflate costs for treatment (Cohen 4).

534).[30] The accelerating adoption of medical security practices which started to pervade more and more aspects of life thus relied on the growth of mass media and capitalist consumer culture. The security narrative prescribed medical interventions, in the form of medical therapy but also in the form of consumption of medical goods as well as medical information: the "health in a bottle" and "health in a book" as Tomes puts it ("Merchants" 531–38). The normative power of experts reached deep into people's private lives though a majority did not frequent doctors nor were they able to pay for expensive hospital care.

The medical security narrative did not end with biological processes such as birth but expanded also to other areas of life and the understanding of the life course, such as the care of the infant and motherhood. Already in the first half of the 20th century advertisements targeted mothers urging them to adopt what Rima Apple has termed "Scientific Motherhood." The women were advised to follow medical suggestions in their childcare and child-rearing with slogans such as "[a]dd science to love and be a perfect mother" from 1938 (qtd. in Apple 173). The ad for information material promises "a hopeful future" (ibid.) that can be obtained by scientific help and by following scientific guidelines. Scientific knowledge is represented as necessary to facilitate the best possible future of the child and was therefore seemingly unquestionably desirable. Scientific motherhood implemented scientific understandings of child development as a security practice that would benefit mother and child. The focus, however, was more decisively the future of the child. The supposedly liberating and modern scientific motherhood did not re-evaluate the oppressed role of the women but cemented the cultural categories making mothers servants to changing ideals of child-rearing (Ehrenreich and English 126). Biological security was not established by the birth of a healthy baby anymore but started to encompass a widened horizon of security.

The medicalization of life represents the expansion of the security narrative of prevention to more and more fields of life, such as childhood, adolescence, sexuality, ageing, or dying. The establishing of more and more pathological categories that went hand in hand with this expansion was represented as a continuous progress toward biological security and a good life. All fields of life became object of the medical gaze, incessantly mapped out and estimated. In every field the medical definitions of pathologies also defined norms, as Canguilhem put it. In each diagnostic definition of a pathology a norm is performatively reiterated and re-established, and security is re-imagined. The continuous progress of medical science and practice thus renegotiates the normal and desirable state of being and thereby shifts the horizon of security. The promised security therefore retreats with every approximation of security. With their all-encompassing reach deeper into the individual lives, the security narratives describe increasingly what "good life" is, what it looks and feels like. The statistically determined norm of different life processes – the averages – become the normal healthy state in which a person "ought to" (Canguilhem, *Normal* 125) progress through life to become a productive member of society.

This medicalization of life is in more recent studies analyzed as a "pathologization of deviance," which also includes "alcoholism, mental disorders, opiate addictions, eat-

30 With this assertion Tomes confronts the myth of a "pure" science that became corrupted by market interests in the 1950s and 1960s while it occupied an exceptional role within the otherwise expanding consumer culture ("Merchants" 522–524).

ing disorders, sexual and gender difference, sexual dysfunction, learning disabilities, and child and sexual abuse" (Conrad, *Medicalization* 6). The list could be extended to book length and reflects how more and more human conditions became the object of the medical gaze, diagnosis, and treatment over the turn of the 20th century.[31] Conrad describes how giving unwanted behavior a "medical meaning" is "moving it from badness to sickness" (ibid.). He describes this transformation similar to a speech act that shifts a state of being into the field of medicalized security narrative. By moving it "from one order to the other," as Burgess puts it, the state of being is medicalized and therefore becomes the object of treatment and securitization.

This biologized understanding of security turns "human difference into pathologies" (Conrad, *Medicalization* 148), such as learning disabilities, delayed adolescence, premature puberty. The establishing of these diagnostic categories represents the first performative act of security that is aimed toward re-establishing the norm, including bodily matter as much as behavior and mental states. Once a state is pathologized, a medical model of disability is applied, which means that the diagnosed lack should be medically fixed if possible. For instance, Attention Deficit Hyperactivity Disorder (ADHD) was established as a diagnostic category in the 1950s, defined as a childhood disorder. By the 1960s Ritalin, the stimulant drug methylphenidate, was used to treat the disorder initiated by studies of American psychiatrist Charles Bradley. "By the mid-1970s it had become the most common childhood psychiatric problem (Gross and Wilson, 1974), and special clinics to identify and treat the disorder were established" (Conrad *Medicalization* 49f). The security narratives thus prescribe a norm that is increasingly achievable with professional help. Deviation is prevented by early detection and intervention.

But the medical salvation of the self can quickly turn into the damnation of the other. The narrative of medical salvation also applies to conditions and communities that themselves resist the ascription of lack, such as large parts of the Deaf Community that rejects cochlear implants.[32] The security narrative of preventive medicine and preventable disease prescribes that fitting the norm biologically and behaviorally – both inside and outside – is possible and therefore expected. The rising possibilities to intervene in normal bodily processes facilitated a medicalized normal that represents not only freedom from ailments but also a "considerable force of constraint" as Conrad puts it (*Medicalization* 25). It reinforces social pressures to "fit in," extending them to the biological.

According to Ivan Illich the "medicalization of life" was driven by "the belief in unlimited progress" (Illich, *Nemesis* 73). He defines the expansion of the medical normative power as a form of "medical imperialism" that colonizes life, imposing its system of meaning and thereby destroying the "natural" systems and processes. But Conrad and Carl Elliott, among others, show that doctors and science are not the only driving force

31 An example of such a book length list is the *Diagnostic and Statistical Manual of Mental Disorders* (DSM) which lists the categories of the different mental health afflictions and their treatment. It was first published in 1952, with the 5th edition published in 2013. The numbers of diagnostic categories grew from 106 in the first edition to 374 in its current form.

32 Harlan Lane shows in "Construction of Deafness" how Deaf Culture resist the ascription as disabled, instead representing a proud culture of sign language which is threatened by the biomedical practice of cochlear implants.

in the processes of medicalization. Corporate interests as well as "social groups and interest groups" (Conrad, "Shifting Engines" 4) also play a decisive role in the expansion of biological security. "Organized efforts were made to champion a medical definition for a problem or to promote the veracity of a medical diagnosis" (ibid.) as in the case of post-traumatic stress disorder (PTSD). Patient advocacy groups contributed to the "making of security" by promoting new medical definitions which allow for treatment as well as for the acknowledgment of suffering. In this sense biomedical security becomes also a question of "collective action" (Conrad, *Medicalization* 9),[33] which reiterate the belief in the messianic narrative of scientific salvation.

Additionally to expanding the medical security narratives to life, the "medical gaze" was directed deeper into the body with the rise of "new genetics"[34] in the 1950s and the growing molecularization and digitization of biomedical research and practice since then. Genetics further increased the stronghold of medical science as the arbiter of security over life in its entirety. Life and its security became largely reimagined as genetically determined. Findings in genetics reinforced the vision of control seemingly proving that in science "a problem clearly seen is already half solved" (7) as Lawrie Tatum, one of the first Nobel Prize Laureates for gene-related discoveries put it in 1958. The birth of new genetics is commonly associated with the discovery of the double helical structure in 1953 by James Watson and Francis Crick. The genetic revolution only really started with the discovery of the recombinant DNA technique by Cohen and Boyer in 1973. The circulation of the security narratives of new genetics began, nonetheless, immediately with the image of the model of the double helix, which has become a central symbol for science and the messianic promise it represents (de Chadarivan).

Tatum's Nobel Lecture on Dec. 11th 1958 marked as much as the prize itself the growing momentum of genetics and its vision for the future.[35] His speech embarks on a clear futurologist course, promising that "we will see the complete conquering of many of man's ills" and the goal is "not only to avoid structural or metabolic errors in the developing organism, but also to produce better organisms" (n.p.). Tatum expresses the belief that genetics would correct the mistakes of nature and make the human (biology) better, representing a promise of radical self-empowerment – a science utopia. Hence, long before genetics could really fix anything and provide security, it performatively established first and foremost the imaginary of security – the mastery of nature – as within reach. It

33 The same collective action is also central in the demedicalization of formerly medicalized categories, such as homosexuality. Homosexuality was only de-medicalized and removed as diagnosis from the second edition of the DSM by the American Psychiatric Association in 1973 under immense pressure from the gay movement. Homosexuality was excluded from the DSM III published in 1980 (Drescher 570).

34 The field of new genetics had to establish itself as distinct from its predecessor eugenics, divorcing itself from its haunting presence. The field rewrote its story of origin which "no longer starts with Mendel, but now begins with the 'discovery' of DNA by Watson and Crick" (van Dijck, *Imagenation* 35).

35 The Nobel Prize in 1958 was awarded for gene-related discoveries to George Wells Beadle, Edward Lawrie Tatum and Joshua Lederberg as joint laureates. It was the first genetics related prizes in Physiology or Medicine marking a new era of a genetically inflected security narrative (NobelPrize.org).

changed the understanding of the body and spurred the production of security narratives heralding the future security that the "molecular gaze" (Clarke et al., "Biomedicalization" 164) would facilitate. However, the shifting frontiers opened up by every new biomedical development further changed the horizon of security.

This temporality of "not yet" decisively allowed for the messianic promise of medical salvation to accelerate instead of falter. The dream deferred in biomedicine does not explode as Langston Hughes suggests, but it grows. Though by the 1970s the messianic narrative of scientific salvation had already obvious cracks,[36] the "wedding" of genetics and biotechnology (Bud, *Uses* 164–187) established both fields as the most promising sources of security.

The skepticism toward genetics received a new spin in the 1970s. The discovery of the process for reDNA by Cohen and Boyer in the early 1970s (patented in 1974) once again started the wider discussion about the amazing possibilities of genetics. But its promised possibilities also produced fear, this time leading geneticists such as Rollin Hotchkiss and Paul Berg warned against the dangers of unregulated research (Bud, *Uses* 170; van Dijck, *Imagenation* 68). In 1975 Berg, a later Nobel Laureate and reDNA researcher, hosted the famous Asilomar Conference, which led to a self-imposed research moratorium[37] "until NIH guidelines were available in mid-1976" (Bud, *Uses* 175). The growing field of bioethics thus started to play a major role in the fast emerging field of biotechnology (van Dijck, *Imagenation* 80) to safeguard the security practices of biomedical research. Though highly regulated, genetic research quickly turned into a dominant research paradigm promising the key to biological security.

At the same time as life was increasingly geneticized, the understanding of health broadened. It no longer described security by the absence of disease or non-normativity but by the absence also of discontent and unhappiness. Already in 1948 the World Health Organization adopted a definition of health that broadened the concept of health to an all-encompassing state of well-being.[38] The WHO's broadened approach includes well-being as a problem to be solved by science – it medicalizes well-being and subsumes it under a biological security narrative of protection and prevention. This broader understanding is also expressed in the general climate of health consciousness in the United

36 Between 1932 and 1972 syphilis experiments were conducted at the Tuskegee Institute by Public Health Services. African Americans were lured under the disguise of free health care into being guinea pigs in tests to study the progression of untreated syphilis. Not only were they not informed, they also did not receive treatment after it became available. The study ended because of the whistleblower Peter Buxtum. In 1972 the revelations of the Tuskegee syphilis experiments on African Americans showed that the abuse of power and corruption of science was not only a problem of the past nor of evil regimes. However, the crimes were discursively contained as "well-intentioned but misguided" science (Brandt 27). The proper guidelines had "not yet" been put in place, which would guarantee medical research and practice to fulfill its true self: to be serving truth and security. The revelations triggered major changes in clinical studies introducing informed consent, communication of diagnosis, and the foundation of the Office for Human Research Protection (Brandt).

37 Similar discussions were led in 2015 about the development of CRISPR, a new gene editing tool that seemed to promise a new revolution of scientific research (Kahn).

38 "Health is a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity" (WHO, "Basic" 1).

States. Robert Crawford describes how "prevention of illness becomes a more pervasive standard by which behaviors [sic] – eating, drinking, working, leisure activities – are judged" (Crawford 370). Normal everyday activities become security performances aiming at maintaining good health, which "has become a paradigm for good living" (Crawford 380). The health practices carry the ideology, concepts, and logics of medical security into private lives and the most private living spaces. He asserts that in the late 70s "[t]he concern with personal health has become a national preoccupation" (Crawford 365).

Medical security practices, initially perceived as a threat to freedom had become fundamental to achieving the American Dream. Health becomes a modern version of "beata vita," the good life, which also represents a biologized reiteration of the "pursuit of happiness." Health has become a value that "subsumes a panoply of values: 'a sense of happiness and purpose,' 'a high level of self-esteem,' 'work satisfaction,' 'ability to engage in creative expression'" (Crawford 380). Inflected by a biologized sense of security this good life and happiness can be measured, analyzed and regulated. The good life is thus conditioned on the reiterative performance of security practices that are prescribed by the all-encompassing biological security narratives.[39]

In the U.S. the practice of choice for many it seems, was the consumption of drugs and psychiatric medication. In the 1970s Nixon describes the climate as a "culture of drugs," warning that "[w]e have produced an environment in which people come naturally to expect that they can take a pill for every problem – that they can find satisfaction and health and happiness in a handful of tablets or a few grains of powder" ("Remarks"). Other increasingly important players in the proliferation of medical categories have thus clearly been pharmaceutical companies and their interest in opening new consumer markets for medical goods. The medical fix averting the dangers of the non-normative body and behavior was provided by drugs such as Ritalin against ADHD or hormone replacement therapy for andro- and menopause (Conrad, *Medicalization* 23–31), tranquilizers like Serentil for anxiety, among many others (Metzl, "Crisis"). Security became something consumable through the purchase of medical services or goods in a much more invasive way than for instances the healthcare manuals that Tomes describes for the early 20th century. The new goods of the "medical messiahs" intervene and produce bodily processes according to a norm established in security narratives. And the use of pharmaceuticals was early on a question of both curing disease and maintaining a healthy norm as well as of enhancing performances. Elliott describes how medical interventions represented a possibility to quench the "American obsession of fitting in" and achieving the American Dream (Elliott xv).

39 In the 1970s the legitimacy and sole authorship of (bio)medical science as the arbiter of security was challenged by new health movements. However, these movements also further reiterate and reinforce the importance of health to achieve the American Dream and the self-reliance related to its origins. It finds expression in holistic health and self-care (Crawford 366) or homeopathy, movements originally geared against the security narrative that prescribed medical intervention. Crawford shows that though rejecting medical interventionism and seeing the body as a holistic entity, the movements reiterate and increase the medicalization of life. As a message from within, health becomes not only the individual's responsibility but also the individual's fault. With this moralistic perspective "blame is brought front-stage" (Crawford 378). The choice of a particular security practice becomes a profession of faith in the legitimacy of the different security narratives.

The rise of pharmaceuticals foreshadowed the "opioid overdose epidemic" (CDC, "Understanding") in the United States in 2018.[40] Already in 1971 Nixon addressed the American Medical Association House of Delegates with a warning about the dangers of legal drug abuse. He laments that "one-third of all Americans between the ages of 18 and 74 used a psychotropic drug of some sort last year" (Nixon, "Remarks" 766). But Nixon should have better addressed burgeoning pharmaceutical and biomedical companies. Because the doctor, once the hero and narrator of the biological security narrative had become rather a "storefront" for biomedical and biotechnological services, representing the "erosion of medical authority" (Starr 1982 in Conrad "Shifting Engines" 4). This development further increased with the biomedicalization and the rise of big science in the 1980s. The erosion of authoritative autonomy, however, further impelled the deepening stronghold of the messianic narrative of scientific salvation. Elliott, Conrad, as well as Clarke et al. point to the immense power privatized research and pharmaceutical companies represent in the (bio)medicalization of life. Most of these scholars also assert that the rise in diagnosed afflictions might be correlated with the rise of direct-to-consumer marketing that is still practiced in the United States. In many cases these advertisements are both promoting the medication or treatment for disease as well as marketing the disease itself, "selling sickness" as Ray Moyniham and Alan Cassels called it.[41] While Nixon criticized the abuse of the security practice of pharmaceutical medication, he did not question the general security narrative and the legitimacy of pharmaceutical medication as a solution to mental health problems. He did not question the security narrative of scientific salvation as such.

When Richard Nixon signed the Cancer Act in 1971 he proclaimed: "America has long been the wealthiest nation in the world. Now it is time we became the healthiest nation in the world" (State of the Union Address). This Act started what is commonly known as the "war on cancer." It reiterates the militaristic language introduced by bacteriology extending it to non-infectious disease contexts and making the protection from cancer officially part of the American national agenda. In this speech Nixon aligns biomedical research with two other major scientific breakthroughs: "The time has come in America when the same kind of concentrated effort that split the atom and took man to the moon should be turned toward conquering this dread disease. Let us make a total national commitment to achieve this goal" (ibid.). Both scientific accomplishments are impossible to understand without their relation to World War II and the Cold War. By aligning cancer research with the atomic bomb, the arms race and the race to the moon, it becomes an issue of national security.[42] This analogy further enforced the militarized understanding

40 In 2018 the extent of the opioid crisis in the United States became apparent as a result of the number of drug overdose deaths. It refers to both the abuse of legally prescribed opioids as well as illegally produced drugs.

41 Their study shows how conditions ranging from high cholesterol, and depression, to social anxiety disorder, or and irritable bowel syndrome became objects of medical marketing that created "potential patients" (inter alia 3) and "potential markets" (inter alia 83).

42 Biomedical research was not only symbolically aligned with national security. Similar to the race to the moon, biomedical research was supposed to guarantee economic and national security (Bud, *Uses* 166). In the "race to human health" as Tobell calls it, biomedical practices became direct object of national security concerns. They were used as foreign policy and public relations tools during the

of biological security and its practices. Not surprisingly then, Nixon describes the major funding effort as "perhaps the largest attack against a single disease in the history of man." In April 1972 Nixon institutes the Cancer Control Month as an additional measure to achieve security and "to control this brutal killer" ("Proclamation").

Nixon's speech reiterates the hope and faith in science that had already marked the beginning of the 20th century. His speech defines bodily security as an absence of suffering that can be provided by scientific research. Knowledge does "not yet" allow for the desired security but the possibility of security from suffering cancer is represented as unquestionable; it is just a question of time. Scientific research is represented as a source of hope. *The New York Times* quotes Nixon declaring "But, we can say this," he added, "that for those who have cancer, and who are looking for success in this field, they at least can have the assurance that everything that can be done by Government . . . in this great, powerful, rich country, now will be done and that will give some hope and we hope those hopes will not be disappointed" (Schmeck). Nixon declares that each afflicted American deserves the hope that everything is done to protect their from suffering. By establishing this hope as a promise to every afflicted American he elevates health to a right of every American. Nixon thus turns non-contagious disease officially into a national concern, which he also expressed in his attempts to establish universal healthcare in his 1974 address to Congress ("Special Message").[43] In the decades following the Cancer Act disease and biological security become more and more closely related to national concerns, leading to the militarization of biological security.

## Imagining Total Control: Militarization of Biological Security and the Logic of Pre-emption

While for a long time the successes of bacteriology had fostered the promise of the end of threatening epidemics in the United States, the swine flu outbreak in 1976 dismantled this narrative of security. Despite the small number of infected individuals in the U.S., the "re-emergence" of infectious disease revealed that the security narrative of the successful "'conquest' of infectious disease" (Tomes, "Merchants" 543) was precarious at best. The event produced a rupture between the imaginary of security and the material reality of the disease outbreak. It disproved the "imagined immunity" (Wald, *Contagious*)[44] provided by medical progress. The deferral of security – once again when it seemed graspable – did not lead to a reconsideration of the imaginary of security. Rather the deferral led to a further expansion and militarization of biological security narratives and the rise of catastrophic event scenarios. The "concept of the 'catastrophe risk" (Cooper 81f) was

Cold War, as biomedical practices were "exported" to countries that were geopolitically crucial in terms of containment. This initiative was called "Project HOPE" whose objectives were institutionalized with the "Health for Peace Bill" in July 1960 (Tobell 445, 448).

43 Nixon asserted that healthcare costs of Medicare and Medicaid instituted by Johnson's "War on Poverty" had to be confronted with a healthcare reform, which entailed universal healthcare. Not surprisingly, his proposals were rejected in Congress.

44 Priscilla Wald uses this term in the title of the first chapter of her book *Contagious* where she elaborates how "belonging took a biological turn" (30).

adopted from "the language of insurance institutions, capital markets, and environmental politics" (ibid.).

The "return of the microbe" (Collier and Lakoff 9) and the notion of insecurity became ever more urgent when seemingly healthy young people began to suffer and die from AIDS. The circulation of the risks of this contagious disease and the missing knowledge of how to treat it reinstated the pervasive but almost forgotten narratives of the "gospel of germs." After a delayed response, the public reacted with panic to the increasing media representation of AIDS, leading to the fear of public toilet seats and pools. The infected were officially defined as the other by the Center for Disease Control and Prevention (CDC) in the so-called "4-H-List" as " homosexuals, hemophiliacs, heroin addicts, Haitians" (Treichler 20), who were excluded socially and morally as well as being constructed as a menace to the healthy body of the nation.[45] Decades later, in 2000, HIV-AIDS would become the first disease to be declared an international security threat by the UN. The U.S. government nationally affirmed this convergence of security rhetoric and health by declaring the spread of HIV also a "national security threat" (Koblentz, "Biosecurity" 96). Infectious disease thus moved from a public "health threat" to a security threat and a question of national security.[46] In this context disease became a threat to the way of life – to the pursuit of happiness and the American Dream – and not just an obstacle to the accessibility of the American Dream for certain individuals.

In the past decades, biosecurity attained yet a new emphasis and urgency in the United States, which is increasingly focused on the possibility of bioterrorism. This represents a shift from militarized language and metaphors in narrativizing security to a conceptual conflation of biosecurity and war and a "militarization of the concept" of security (Burgess 2). In the United States, the concerns about a possible biological attack on the public had already increased in the 1990s after events such as the car bomb attack on the World Trade Center (Schoch-Spana, "Bioterrorism" 8). With the terrorist attacks of 9/11 and the anthrax letter attack thereafter, biological terrorism and natural contagious outbreaks became almost one conceptual entity in speeches and in news reports as much as in official papers. Cooper cites the 2002 "Public Health Security and Bioterrorism Preparedness and Response Act," which outlines "the same emergency procedures for bioterrorist attacks and epidemics" (Cooper 80). Another such example is the "National Security Strategy" of 2006, in which the government announced the plan "Biodefense of the 21st Century" "incorporating innovative initiatives to protect the United States against bioterrorism" (White House, "Strategy 2006" 19).

With this shift of focus from natural to bioterrorist threats, new logics were introduced to confront the uncertain probabilities posed by such a threat of emergent disease. Within the past three decades, as Andrew Lakoff and other scholars contend, the

45 The AIDS crisis is one of the most prominent cases in which medicine, science, and governance "failed" the promised security for all. The delayed response to the epidemic shows that biological security is not distributed evenly. It clearly hierarchized the need to respond and only (re)acted once the center of society was reached by the threat, which is often correlated to the wide public circulation of the disease through the publicity about Rock Hudson's infection.

46 Erin Koch argues that also the "The declaration of a Global Tuberculosis Emergency demonstrates a shift toward the framing of infectious diseases as security threats, rather than merely as threats to public health" (122).

main focus of public health has added the urge of preparedness and pre-emption to the mantra of prevention. This development became especially obvious in 2003, when the national vaccination campaign against smallpox in the U.S. was initiated (Koblentz, "Biosecurity" 128). Though in 1980 the WHO had declared the eradication of smallpox, it was predicted that it could re-emerge triggering the vaccination campaign over 20 years later. "[S]mallpox had appeared as an object of 'potentiality,' of danger in the present by virtue of a series of events and elements suggesting its possible occurrence in the future" (D. Rose 89). George W. Bush's announcement of the vaccination program impressively articulates the pre-emptive logic of security that governed the decision-making process for initiating the vaccination program, which is more commonly associated with the invasion of Iraq.[47] He said: "Our government has no information that a smallpox attack is imminent, but it is prudent to be prepared for the possibility that terrorists . . . would use this disease as weapon" (Bush, "Remarks"). This means that, though there are no known facts about potential bioterrorist attacks in the future, measures have to be taken in the present to avert this potential future. The logic of pre-emption, thus, shifts the horizon of security, this time both deeper into the body as well as forward into the future. And this logic is not only applied to the possibility of bioterrorist attacks but also to naturally occurring contagious diseases. Another articulation of this pre-emptive logic can be found in the Bush administration's response to the avian flu epidemic in 2005: "Scientists and doctors cannot tell us where and when the next pandemic will strike, or how severe it will be, but most agree: at some point we are likely to face another pandemic" (Bush, "Pandemic" 2005). This logic of pre-emption, which was well-established by 2005, legitimized the initiation of a $7.1 billion pandemic preparedness strategy (in 2001 it was "just" $294.8 million), which exemplifies the explosion of perceived risks and the force of pre-emptive logics.[48]

The broad adoption of pre-emptive logics did not replace older practices but led to the expansion of already existing surveillance techniques.[49] But the rise of catastrophic contagious disease scenarios produced the need for additional "ways" of understanding,

47 This pre-emptive logic reached its apogee with George W. Bush's speech at the West Point Military Academy and the invasion of Iraq: "If we wait for threats to fully materialize, we will have waited too long — Our security will require . . . all Americans . . . to be ready for pre-emptive action when necessary to defend our liberty and to defend our lives."

48 This fusion of public health and national security has detrimental effects on public health draining funding, time, and attention from health care infrastructures, which are equally important to provide biological security in emergency outbreaks and is inevitable to solving present public health issues.

49 The CDC was founded in 1946 as the Communicable Disease Center. In the 1970s it became the Center for Disease Control, "and Prevention" was added in 1992. Today, its scope has broadened from contagious disease to chronic diseases, mental disease, disabilities, addiction, and more. One of the national initiatives is the BioSense Platform, which is based on syndromic surveillance and has been monitoring irregularities in reported disease symptoms since the 1990s (Fearnley 62). Today, in addition to BioSense, it runs BioWatch, which is an environmental pathogen detector, and BioShield, which is a program focused on pharmaceutical and vaccine production (Fearnley 76). Both help to protect the nation as part of the National Biosurveillance Integration System (NBIS) or National Biosurveillance Integration Center (NBIC). The NBIC was established in 2007 as an amendment to the Homeland Security Act of 2002 (Title III) (qtd. in Alperen 224).

calculating, and communicating security. Preparedness and pre-emption are the predominant practices and logics employed to calculate the (unknowable) future. While prevention works on known threats, preparedness and pre-emptive measures intervene in the field of the unknown. "Prevention operates in an objectively knowable world in which uncertainty is a function of a lack of information, and in which events run a predictable, linear course from cause to effect" (Massumi, "Potential" 2). The security narratives of prevention, based on calculation and controllability, leave, as Ruth Levitas asserts, no room for an uncertain future as it is "unthinkable" ("Discourses" 201) within this framework of securitizing. And though the epistemology of pre-emption is "unabashedly one of uncertainty" (Massumi, "Potential" 3) the logics of preparedness and pre-emption offer a way of domesticating this uncertainty by making the unknown future a "future perfect" (Massumi, "Future Birth" 6). Brian Massumi and Melinda Cooper are among the leading scholars who have studied the logic of pre-emption. Cooper defines pre-emption as describing an act "to counter the unknowable, before it is even realized. In short, the very concept of the catastrophe event seems to suggest that our only possible response to the emergent crisis (of whatever kind – biomedical, environmental, economic) is one of speculative *preemption*" (83). This means that a potential future event has to be foreclosed by actions taken in the present.

In the narrative of pre-emption security is always already lost. The present might seem secure to the layperson, but it is always on "the verge of disaster" (Ben Anderson, "Anticipatory" 4). Furthermore, this "disaster is incubating within the present and can only be discerned through 'early warnings' of danger" (ibid.). Such an understanding eradicates the idea of a natural state of security that has to be protected or can be returned to. Rather it creates a perpetual state of insecurity as the breeding ground for potential threat. Preparedness and pre-emption thus establish a new relationship to the future and to security. "Rather than acting in the present to avoid an occurrence in the future, preemption brings the future into the present. It makes present the future consequences of an eventuality that may or may not occur, indifferent to its actual occurrence. The event's consequences precede it, as if it had already occurred" (Massumi, "Future Birth" 8). To facilitate this bringing "the future into the present" new methods have to be created to be able to read the warning signs and to determine a threat before it materializes.

Preparedness and pre-emptive security measures are not only based on past data (such as preventive measures) but also on "imaginative techniques" (Collier and Lakoff 13) and on storytelling. To create the security narrative, threats have to be imagined in the very literal sense of the word. "Calculation occurs through a huge range of techniques: including threat-prints, data mining, impact assessments, trend analysis, and complexity modeling of various forms" (Ben Anderson, "Anticipatory" 8). But they also occur in acts of storytelling and enactment "through which future possibilities and potentials are disclosed, objectified, communicated and rendered mobile (such as scenarios, trends, forecasts, predictions, signals, plans and roadmaps)" (Ben Anderson, "Hope" 158). Preparedness practices take on various forms – from information drives and emergency response drills to scenario and tabletop exercises.

Preparedness practices such as "scenarios, exercises, and analytical models to simulate uncertain future threats" (Collier and Lakoff 13) are used to estimate and prepare for emergent disease such as swine flu, SARS, Nile virus, or H1N1. They are institution-

alized methods in which fictive scenarios of epidemic outbreaks are practiced. To give an example, "Dark Winter" was the name of one such table-top exercise enacted in June 2001. It was based on the fictional narrative of a smallpox attack (UPMC "About"). The sequel "Atlantic Storm" was performed in January 2005 and represented a smallpox outbreak within a global context (UPMC, "Atlantic"). But these scenario games do not simply offer daunting stories of contagious catastrophe. This form of preparedness practice is an increasingly common method,[50] which uses "imaginative enactment" (Lakoff, "From Population" 36) to discern threats and prepare for them. In these practices uncertainty is appropriated and temporally displaced by the narrativization of biosecurity.

Similar to the theatricality of the operating theatres of the 19th century, these security practices are theatrical. In these exercises government officials become the actors in a "drama of security." Atlantic Storm for instance involved 16 government officials impersonating the respective national heads of state. They entered into a "what if" scenario set up on a stage performed for an audience of security experts who were seated in the audience space, as well as the audience of the recorded and animated version of the exercise accessing it via the internet (UPMC, "Atlantic"). Like "rehearsals" for a nuclear attack in the 1950s, preparedness practices such as scenario exercises make threats appear as "imaginable, manageable, and most of all, capable of being acted upon" (T. Davis, *Stages* 3). The scenario game represents a scripted performances with a detailed sequence of events. The players interact with a fictive storyline and have very limited freedom of action. The sequence of events is carefully scripted "as it is currently envisioned by biosecurity experts whose aim is to intervene in the present" (Caduff 256). Within the exercise the events are therefore fixed by stage direction.

Both scenarios indicate the unfolding of an apocalyptic disease event which is inescapable. There is no possibility for the actors to successfully intervene in the unfolding events leading to a worldwide catastrophe. Rather than offering a variety of pathways the performances "manifest the apocalyptic 'voice of prophecy,' speaking to an inconvertible future event" (Schoch-Spana, "Bioterrorism" 12). Science as the arbiter of security installs itself as both narrator and hero in its self-legitimizing tale. The only conclusion that can be drawn from the exercise is the need of preparedness and pre-emptive measures that were inscribed in the story as amiss beforehand (in Dark Winter the missing vaccine, in Atlantic Storm the lack of vaccine units and the missing global coordination). In pre-emption and preparedness measures the scientific findings are thus themselves produced by narrative practice.

Using the form of apocalyptic narratives, the exercises appropriate a deeply American genre and its use of fear and hope.[51] While fear and hope played a crucial role in the rise of the biological security narrative, it becomes paramount for preparedness and pre-emption. In the preparedness exercises "fears, hopes and anxieties" (Ben Anderson, "Anticipatory" 7) are mobilized to make the "not yet materialized" threat present and experi-

50 According to the Harvard School of Public Health Center for Public Health Preparedness thirty-eight exercises were conducted in the United States in 218 cities and towns involving 5,892 participants (Biddinger et al. 101–102).

51 For the role of the apocalyptic narrative in American cultural history see Bercovitch *The American Jeremiad*.

enceable. Lakoff asserts that one function of the scenario-based exercise is "to generate affect of urgency in the absence of the event itself" ("From Population"35). The affects facilitate the bridging of present and potential future creating a form of "transtemporality" (Massumi, "Fear" 36) – a blurring of both temporal states.

Furthermore, affective urgency replaces rationality and fact, creating what Massumi has conceptualized as "affective fact" (Massumi, "Future Birth", "Fear", "Autonomy of Affect"). Affects represent in the exercises the only "knowledge" on which decisions can be based. But these affects are not spontaneous reactions to the storyline. As the sequence of events also the affects are intentionally scripted. And like the Puritan predecessor of apocalyptic narratives, the narrative of inevitable doom spreads fear of an unchangeable future as well as formulates hope. While Jeremiads proposed societal change the preparedness practices establish pre-emptive research as the katechontic element, [52] the messiah that can stop the inevitable turmoil of the disease apocalypse. Though focused on the looming risks of imminent destruction the biosecurity narratives are optimistic tales that reinforce and reiterate hope and the belief in absolute security.[53] The narratives formulate hope for change which in turn reinforces the messianic narrative of scientific salvation that had been established in the 20th century.

Pre-emption has become the most prominent paradigm of biosecurity and its contagious apocalyptic scenarios pervade not only governmental institutions concerned with the biosecurity of the nation. The scenario games are available to the public as audience via internet streams, others involve the public as actors and spectators in exercises such as "Sooner Spring" in 2002.[54] But preparedness exercises are just one way for pre-emptive security logics to circulate. Projects such as the PrepareAthon – a virtual community for participants of preparedness activities across the nation (FEMA, "PrepareAthon") – make the logics of biosecurity a more widespread and normal way of understanding security. Also, biosecurity pamphlets, news stories, or travel advice have made fear and perpetual insecurity "now in almost every conceivable sphere of thought and life" (Ben Anderson, "Hope" 158f) a spreading sentiment that finds expression in movements such as the so-called "prepper culture."[55] The growing cultural phenomenon of biosecurity culture is a trending market which includes survival and emergency kits, specialized gear, and information. But it also manifests itself in what Nancy Tomes terms "epidemic entertainments" such as in Steve Soderbergh's thriller *Contagion*, or the growing genre of biosecurity videogames such as *Pandemic, CellCraft, Plague Inc., Infectonator,* or the *Bioshock* series.

The adoption of pre-emptive logics and the rise of a biosecurity complex have attracted a burgeoning scholarly interest in sociology and the growing subfield of Biosecurity Studies. The paradigm of contagious epidemics and their pre-emption dominates

52 'Katechon' is a biblical concept (King James Bible, 2 Thessalonians 2.6-8) referring to the retaining of the antichrist and the apocalypse, or rather the person that delays the coming of the end.

53 Bercovitch asserts this function of hope and optimism as the most fundamental element of the Puritan Jeremiad as well as of its secularized successors.

54 18,000 residents of McAlester, Oklahoma City, "attended one of seven distribution points for 'antibiotics' in the form of jellybeans and fruit punch" (Schoch-Spana "Bioterrorism" 10).

55 Prepping represent a growing movement of people in the U.S. who train and prepare "to survive a world-ending calamity" (Moses n.p.).

biosecurity practices as well as their study. Since biosecurity is predominantly understood as the governmental response to contagious disease, the study of biosecurity is largely reduced to these contexts.[56] However, the logic has been integrated in the understanding of health and security also outside of contagious diseases. The necessity and urgency to pre-empt the emergence of all forms of diseases has become the official mission of NIH in its Report to Congress:

> Our goal at NIH is to provide the scientific evidence base that will usher in an era where medicine is predictive, personalized, pre-emptive, and participatory. This will be a profound transformation from the current model of late-stage "curative" interventions, and one that this Nation must undergo in the coming decades if we are to succeed in providing access to care for all Americans at reasonable costs. (NIH "Biennial" 10)

This shows that the same logics that are applied in military defense also determine how bodily security is understood outside of contagious disease contexts. The way how pre-emptive logics are employed and anticipatory knowledge is produced are also applied to the biological security of individuals. The pre-emptive and preventive security logics enter the way the body is understood and encountered, influencing the understanding of self and identity also on a more individual level. They become the leading paradigm for understanding individual biological security, producing new relations between the individual and their body.

56 Nick Bingham and Steve Hinchcliffe, among many others, assert that biosecurity in the U.S. "has come to represent a governmental concern with the – either purposeful or inadvertent – spread of biological agents into the human population" (Bingham and Hinchliffe 173). Also Collier and Lakoff formulate the same focus on biosecurity in their attempt "to map the emerging field of 'biosecurity' interventions'" (8). They propose the field of "infectious disease" (9), "bioterrorism" (10), research on new pathogens (10), and food safety (11).