

## ARTICLE

### Military Utopias of Mind and Machine

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#### Abstract

The central locus of my study is southern California, at the nexus of the Hollywood entertainment industry, the rapidly growing game design world, and military training medical R&D. My research focuses on the rise of military utopic visions of mind that involve the creation of virtual worlds and hyper-real simulations in military psychiatry. In this paper, I employ ethnography to examine a broader turn to the senses within military psychology and psychiatry that involve changes in the ways some are coming to understand war trauma, PTSD, and what is now being called "psychological resilience." In the article, I critique assumptions that are made when what is being called "a sense of presence" and "immersion" are given privileged attention in military therapeutic contexts, diminishing the subjectivity of soldiers and reducing meaning to biometric readings on the surface of the body. I argue that the military's recent preoccupation with that which can be described as "immersive" and possessing a sense of presence signals a concentrated effort aimed at what might be described as a colonization of the senses—a digital Manifest Destiny that envisions the mind as capital, a condition I am calling *military utopias of mind and machine*. Military utopias of mind and machine aspire to have all the warfare without the trauma by instrumentalizing the senses within a closed system. In the paper, I argue that such utopias of control and containment are fragile and

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volatile fantasies that suffer from the potential repudiation of their very aims. I turn to storytelling, listening, and conversations as avenues towards healing, allowing people to ascribe meaning to difficult life experiences, affirm social relationships, and escape containment within a closed language system.

*Imagine a world where more than 2 billion people are connected through a computer network. Imagine a world where people can immerse themselves totally in another world in the privacy of their own home. Imagine a world where millions of people connect across the globe playing video games.*

Rick,<sup>1</sup> venture capitalist and psychologist, stops clicking through his PowerPoint slides. He pauses. And then he looks up with squinted eyes. I am sitting amongst an audience of clinical psychologists at the New York Academy of Sciences (NAS) in Manhattan. We look upon an image of the galaxy. We wait for Rick to resolve the dramatic tension of his performance.

“Well, folks,” Rick audibly releases his breath, “that world is today. At Virtual Therapeutics,<sup>2</sup> we are inviting you to join today’s world. You can choose to join today’s world, or be left behind.”

At this moment, Rick’s PowerPoint presentation spins out of his control, flipping through slide after slide in rapid succession. A man sitting next to me leans over and quietly says in my ear “this is crazy bullshit” and then walks out of the room. Rick tries to regain control of the PowerPoint, to no avail. The images continue to flash in rapid succession on the large screen behind him. The audience sits quietly. Rick decides not to acknowledge the PowerPoint problem and looks back at the audience. He goes on to describe the variety of cybertechnologies that are redefining clinical psychology and our world.

One could brush off Rick’s performance as just some “crazy bullshit,” but absurdity is no stranger to the machinations of power in daily life. A clinical psychologist by training, Rick is a former president of the

American Psychological Association (APA), and the NAS lends its own prestige to its presenters. I introduced myself to Rick after his presentation and we met a week later to discuss his transformation from clinical psychologist to venture capitalist. Rick described having visions of virtual worlds at the tender age of 8, which accompanied his affinity for science fiction novels. As an adult, he read *Zen and the Art of Motorcycle Maintenance*, which inspired him to drive from New York City to California. On his American road trip, he discovered Buddhism, computers, and visions of capital expansion. He saw cybertechnologies' potential for accomplishing "inner peace." Rick envisioned computers as an interface between the human mind and its machines. Using computers, he wanted to help people calm psychological instabilities. Later, he helped establish a new kind of discipline called "cyberpsychology." Rick hopes to be a key player in widening the distribution of virtual therapies designed to treat and prevent Post Traumatic Stress Disorder (PTSD) among military personnel. To Rick's delight, I too was headed out west to Southern California via a road trip through the American heartland. As an anthropologist, I wanted to learn more about the rise of military utopic visions of mind that involve the creation of virtual worlds and "hyper-real simulations" in military psychiatry.

California dreaming marked the lives of many involved in the creation of immersive therapeutics for the US military. When I met Rick, I had already spent a year conducting ethnographic research and shooting a documentary film on virtual therapeutics for the experimental treatment of PTSD at a Veterans Affairs (VA) hospital in New York City. More specifically, I had become fascinated by the introduction of VRE (Virtual Reality Exposure) therapy at New York City VA hospitals. In VRE, a person wears a headset that projects 360-degree animation, surround sound, and smells that approximate the particular war event that haunts his or her daily life. Using VRE, clinicians aim to virtually expose and acclimate trauma sufferers to distressing scenarios within the purported safety of virtual worlds. Dr. Rainer,<sup>3</sup> who performed VRE at the VA where I had spent a year conducting anthropological research, is a New Jersey

native who ventured out west to Los Angeles in pursuit of an acting career before he returned to New York to train as a clinical psychologist at Cornell University. At Cornell, he discovered VRE. Intrigued by the technology, Rainer spearheaded the establishment of virtual therapeutics when he gained employment at the Manhattan VA medical center. With VRE, Rainer could merge his professional interests in acting, psychology, and cinematic technologies.

Research on VRE has primarily been produced by a small group of psychologists and psychiatrists, most notably Barbara Rothbaum, Joann Difide, Albert “Skip” Rizzo, and Brenda Wiederhold, who collaborate with computer scientists. In 1993, a group of researchers which included Barbara Rothbaum, began the first investigations into “using virtual environments to conduct exposure therapy of individuals with psychological disorders,” studying the effects of virtual reality exposure for the treatment of acrophobia, or the fear of heights (Hodges et al, 1995; Rothbaum et al., 1995a, 1995b). Acrophobia was chosen in particular since “systematic desensitization” (imaginal exposure) had long been effective in treating phobias (Marks & Gelder, 1965). In imaginal exposure, the therapist asks the patient to imagine the situation or object that arouses a phobic response. Likewise, *in vivo* exposure asks patients to expose themselves to feared objects in the real world until they no longer evoke irrational fear. Researchers were uncertain whether virtual reality headsets could provide enough “sense of presence” to activate the phobic response targeted for treatment, in this case the fear of heights. The researchers focused on measuring “sense of presence” since, according to emotional processing theory, “the fear structure must be activated” for the patient to elicit a response (i.e., grasping onto railing while wearing VR goggles) and exhibit symptoms (sweating, abdominal discomfort, heart palpitations, etc.). Here, a sense of presence depends upon human-computer interaction, not visceral realism (Hendrix & Barfield, 1995). Other studies followed, looking at other specific phobias like the fear of flying (Rothbaum et al., 1996; Wiederhold et al., 1998). The application of virtual reality headsets for the treatment of PTSD occurred

later. In 1999, Rothbaum published a case study about a Vietnam veteran using VRE for PTSD treatment (Rothbaum et al., 1999), reporting modest improvement of certain PTSD symptoms with VRE treatment.

Following the research trajectories of VRE researchers, I was struck that Rothbaum's initial investigations into PTSD and therapy involved a collaboration with Dr. Edna Foa on gender violence against women, more specifically rape, using a technique called Prolonged Exposure (PE). In PE, the therapist asks the patient to relive a traumatic scene in his or her imagination through storytelling. While the patient narrates the traumatic story, the therapist records it with a tape recorder and asks the patient to listen and retell the story over and over again until the story seems to lose its emotive power. If all goes well, the patient gains control over the memory and no longer experiences the cluster of symptoms described as Post Traumatic Stress Disorder (Foa, Rothbaum, Riggs, & Murdock, 1991; Foa, Steketee, & Rothbaum, 1989; Rothbaum & Foa, 1992). Foa and Rothbaum determined PE to be effective. Rape, however, is not seen as appropriate for Virtual Reality Exposure and systemized desensitization. In our conversations, Foa remarked that she viewed VRE as a departure from Prolonged Exposure. Systemized desensitization, or what was later called "habituation" to war scenarios, which engages primarily male patients, seems suitable and has become the new frontier for virtual reality psychiatric therapies.

Creators of virtual worlds and simulated enactments aim to create immersive environments that capitalize on sensorial ecology of sight, smell, sound, touch, and spatial orientation. Today, video game platforms using virtual reality and Hollywood studios to create "hyperreal" simulations have come to dominate military training, combat, and post-war rehabilitation. From drone aircraft to VRE, virtual applications and simulation techniques in the military mark a significant change in how war is defined across a spectrum of political, operational, legal, and clinical frames. Virtual technologies are transforming the temporal, aesthetic, and spatial framing of war, and are linked to changing notions of fitness and work within the military. Deployment cycles have increased while rest

periods between deployments have decreased. Institutionally, the military has become focused on psychological resilience and cognitive responsiveness as important components of military fitness. Virtual hallucinations, which might have been formerly deemed psychotic episodes, are now valued for their ability to transform situated realities into virtual ones through the senses.

These shifts in time, space, and labor are not isolated to the US context or the military, but rather reflect larger global processes and capitalist flows. As I have noted in my ethnographic writing on an amputation and rehabilitation unit in Bogotá's Central Military Hospital and the rapidly growing prosthetics industry in Colombia, phantom limbs went from being a sign of psychosis to a valued condition allowing patients to more successfully incorporate industrial prostheses into the body. Phantom limbs have gained popular and scientific appeal in Colombia and the United States for their capacity to telescope in and out of the body and incorporate an entire political and economic system into the body. Virtual technologies that enhance human sensory capacities to telescope in and out of the body, from PHANTOM® used in the Da Vinci precision surgical system to DJI Phantom camera drones and 3D Phantom diagnostic imaging, have gained ground in a capitalist world system that decentralizes and automatizes human labor (Cohen, 2012).

At conferences and in one-on-one conversations, gamers and psychiatrists frequently discussed virtual reality's capacity to immerse the user/viewer in traumatic scenes. VRE proponents explain that for patients who are not imaginative or good storytellers, the virtual platform helps fill in the gaps where imagination fails. In laboratory settings, this sense of immersion is termed "sensorial presence." VRE proponents claim that "sensorial presence" is key to VRE's success as a treatment. Albert "Skip" Rizzo invented Virtual Iraq, a VRE program tailored to combat in Iraq, at the Institute for Creative Technologies (ICT). He based it on an earlier program called Virtual Vietnam. Created in 1999 for a pilot study of VRE, Virtual Vietnam involved two scenarios: a jungle scene and a helicopter scene. Virtual Iraq also includes two primary scenes—driving a humvee

and walking through an urban marketplace (Figure 1). From the marketplace, patients may also go into Iraqi people's homes to mimic combat missions that require soldiers to enter homes and search the inhabitants. According to the ICT website video,<sup>4</sup> Virtual Iraq is a storytelling platform. However, in practice and within the scientific literature, the treatment elides narrative and privileges behaviorist and neurobiological models of the human mind.



Figure 1. Virtual Iraq/Afghanistan. Film still from *Virtual War: Memories of Abu-Ghraib* by Producer/Director Emily Cohen Ibañez.

Rizzo et al. (2009) and Rothbaum et al. (2014), among others, have published scientific articles reporting extraordinary high cure rates of PTSD among Iraq veterans in VRE clinical trials. Here, “cure” is defined as not responding physiologically to traumatic stimuli presented in the prescribed virtual scene. The latest VRE clinical trials combined the treatment with D-cycloserine, an antibiotic shown to augment psychotherapeutic anxiety and phobia treatments, to reduce the amount of therapeutic sessions to two, rather than the formerly prescribed six sessions.<sup>5</sup> VRE proponents clearly want to free soldiers of PTSD in a time-efficient manner so that they suffer less and acquire the

psychological resilience to perform military work. The trouble is that the definition of “cure” focuses on “optimization,” a term borrowed from technological work management systems (Taylor, 1998).

Rather than improve access to VA health services, the Department of Defense invests in psychiatric treatments like VRE and stress inoculation training (a form of cognitive behavioral therapy administered as prophylaxis before deployment) that are not geared towards helping patients adjust to civilian life but that further military agendas and optimize soldiers’ cognitive-sensory abilities to perform military labor, work that might include driving a humvee, surveilling homes, and walking through marketplaces without phobic responses evoked by explosions, RPG fire, and verbal insults. As prophylactics, these treatments serve as filtering systems for men and women who are deemed not cognitively “fit,” or psychologically resilient enough for combat. Here, human and virtual interactions are imagined as closed systems of stimuli and response that habituate the senses to prescribed forms of condoned violence in a timely manner.

In this article, I am centrally concerned with how Virtual Iraq and similar immersive techniques reduce the subjectivity of soldiers to biometric readings on the body's surface, creating a closed system that conceives the mind as an amalgam of physiological reflex responses. This closed system relies on a fantasy of control that I am calling military utopias of mind and machine. Military utopias of mind and machine aspire to have warfare without trauma by instrumentalizing the senses within a closed system. In the context of this closed system, I note that discussions of gender violence as a prevalent condition of war trauma is remarkably silenced while concerns about the senses are amplified. This article is not an indictment of VR and other immersive technologies as I believe there are creative and generative ways to use these technologies. This is an exploration of the current use of the senses and immersive techniques and technologies in the U.S. military, an exploration that has allowed me to think through my own experimentation with VR technologies as a documentary filmmaker and storyteller. As a feminist



anthropologist, I am tracking shifts in American rationality before what is deemed rational is so normalized it becomes too obvious to question. The stakes are no less than people's sense of their own humanity in a supposed posthuman world.

### **Re-enactment**

When I first met Rainer<sup>6</sup> at the VA, he wanted to clarify some misconceptions about VRE.

**Rainer:** Emily, I am going to explain Virtual Reality Exposure therapy to you like I explain it to my patients.

**Cohen Ibañez:** Okay. How does VRE work? Is the goal to desensitize people?

**R:** Well, not quite. VRE will help you habituate to your bad memories. "Habituation" is like desensitization, but not quite. There are important differences.

**CI:** How so?

**R:** Habituation is like jumping into cold ocean water. Does the water feel like it warms up after you spent a little time in the cold water?

**CI:** I guess...Ah, yes.

**R:** Well. The water doesn't get warmer. I mean your body doesn't heat the entire ocean. Rather your perception of the water changes. First you assess if the water poses a threat. Will this cold cause deadly hypothermia or is it just a bothersome cold that I can get used to? You realize it's a bothersome cold and not a dangerous cold, so you stay in the water. Am I right?

This encounter involved a reenactment of a VRE session in which Rainer played therapist, Terry,<sup>7</sup> his patient, played patient, and I played invisible anthropologist behind a two-way mirror while National Geographic filmed. In the VRE room, there is a desk with two computer monitors and a keyboard. To the left of the desk sits a machine that emits a palette of odors—a hundred different ones including body odor, RPG fire, and

cardamom. Next to the scent machine is a platform with a chair where the patient sits. The platform rumbles to simulate what it is like to sit in a humvee while driving and shakes to simulate the impact of an IED. The patient places a pair of goggles over his eyes and headphones over his ears. He has a choice to hold a joystick or a toy machine gun. The VRE system involves a screen where the therapist sets up a scene. There are two available backdrops—driving a humvee or walking through a marketplace which can be set with different lighting to simulate different times of day and brightness of the sun. As the therapist listens to the patient retell his traumatic memory, he can add or remove “variables,” which include different visual, sonic, and olfactory sensoria.

Rainer explains to everyone that this reenactment is not real. “Habituation needs optimal anxiety. Terry has come such a long way with the treatment, we may not get that today.” Rainer and Terry take their positions at the VRE system.

**Camera operator:** Okay. Rolling.

**Rainer:** Right now, what is your anxiety level? One to ten.

**Terry:** A one.

**R** (speaking through a headset microphone): “Can you hear me?”

**T** (holding the joy stick): Yeah, roger. Are you going to start with the convoy? All right, got a visual.

We all see what Terry is seeing on one of Rainer’s computer screens. The screen shows an image of a road through the front window of a humvee from the perspective of the humvee driver.

**R:** Can you move?

**T:** Yeah.

**R:** Is it moving 360 degrees?

**T:** Yup.

Terry’s headset includes a sensor that looks like a small box centered on top of his head. When Terry turns his head to the left, the screen displays the perspective of the driver looking out the side window toward the roadside. When he turns to the right, we see the passenger: a fellow comrade in uniform. When Terry looks up, we see another soldier

standing through the turret maneuvering a large machine gun.

**R:** Okay. Where do I put you?

**T:** I was not the driver. I was always the TC [Tactical Commander].  
Never the driver.

With a click, Terry is suddenly sitting in the passenger seat and we all see the humvee, the road, and the fellow soldiers from this perspective.

Rainer adjusts the clouds on the visuals to create dusk. Terry starts moving the vehicle forward with his game controller. Along the roadside, he passes a statue of Saddam Hussein and civilians lying on their backs, and then approaches an overpass.

**R:** We need to make it as much like Iraq as it was. Terry, we're going to drive over the overpass. Speak about the memories you have. You got the stick so go ahead and move. Tell me about the variables. Does this conjure anything for you, anything specific?

**T:** What gets me is the maneuver. You stayed center lane to prevent IEDs. We headed center mass. You scatter your maneuvers. Civilians lie on their backs and wait for combat servicemen. The procedure was to scatter. Don't exit the same lane you entered.

**R:** Go over the overpass with no variables. Then we'll go over with the variables. This is the maneuver.

**T:** The maneuver shouldn't be taken for granted. The visual has put me in a memory. Points of contact I remember. Action came right, action came left.

**R:** Anxiety rating?

**T:** Two.

They repeat the overpass again. Rainer clicks "explosion" on the computer screen. The explosion blasts from Terry's headphones. The platform he is sitting on shakes. The screen is filled with smoke.

**T:** That was a surprise.

**R:** Any change in anxiety level?

**T:** A two.

Rainer clicks on his keyboard. A person appears on the overpass and

there are sounds of small arms fire. Pra! Pra! Pra!

**T:** That was unexpected.

**R:** I'll do another two variables and then see if we can kick up the distress.

**T:** With regards to people popping up, what was difficult as a soldier was that civilians would reveal themselves as friendlies but they were not. You couldn't trust them. You would clear the bridge if someone unexpected should pop up.

Sounds of bombs go off. Again, the platform shakes. Rainer is trying to evoke sensorial presence clicking the variables and creating a distressing scene.

**T:** That was interesting.

**R:** You described superiors asking you to stop.

**T:** Wait. You don't want me to move?

**R:** Yeah. Just like your superior. Sorry, but it's therapy. Any change in anxiety?

**T:** It's a good three. My impulse right now is to call in where contacts are coming in. Aerial is not in place. These rounds are being fired. It's a strong three. Might go higher.

**R:** What will make it go higher?

**T:** The repetition. The audio is being ramped up and the seat is what's triggering. It's very, very, yeah.

Terry stops talking and swallows. Rainer allows him to silently watch and then asks:

**R:** Moving is what you want to do. But I don't want you to move. Report your memories.

**T:** I was in a scenario like this once. The elements. The fine grains of sand.

**R:** Rating?

**T:** A three or a four.

The session ends.

**R:** You've come a long way, Terry. Wow.

**Camera operator:** What were the ratings for?

**R:** It's not the number. It's looking at him.

To me, Terry looks upset.

Rainer begins the reenactment on the premise that the therapeutic session is not real. Reality within the therapeutic session is measured by “optimal anxiety”—the existence of a trigger that signals the patient is sensorially present within the VRE session and having a truly immersive experience. Without evidence of optimal anxiety and sensorial presence, the session is just play-acting for the camera. One of the reasons Rainer sees reality in this way is because his understanding of habituation relies on the notion that VRE affects the brain physiologically only when signs of bodily distress, called “biomarkers,” are present: sweaty palms, a sweaty forehead, rapid heartbeat, and tense composure. Terry’s self-evaluation, according to Rainer, is beside the point. You only need to look at him. But then, what does it mean to be cured of PTSD?

For Rainer, Terry’s ability to make meaning out of his experience is not necessary, neither are the narrative structures of his traumatic memory. The aim of the therapy is to surpass the intellect and access fear structures located in primitive regions of the brain, in the amygdala, so that they can be altered. Rizzo, the inventor of Virtual Iraq, explained to me that the goal of VRE therapy is to induce “extinction,” a process that researchers discovered when training rats to fear light through shock therapy and then habituating them to the light through repetitive exposure. Sensorial presence allowed direct access to the amygdala and the vagus nerve to affect the brain’s allostatic processes. The results were striking: the rats exhibited low heart rates when faced with what they feared most—the light. In neuroscientific literature on crime, a calm vagus nerve and subsequent low heart rate indicates psychopathology, a condition where people kill or perform other cruel acts upon others without arousal (Raine, 2014). In the military, a calm vagus nerve during combat is a desirable goal. Rizzo’s team designed Virtual Iraq to “split” emotional distress from traumatic stimuli. They argue that VRE therapy is ideal to perform before, during, in between, and after deployments since results are almost immediate—achieved in as little as six sessions, or possibly two sessions

when VRE is combined with the antibiotic D-cycloserine.

In conversation, Rizzo cited B.F. Skinner's notion of "extinction," which inspired me to visit the Film Archive and the B.F. Skinner Foundation at Harvard University (Figure 2). There, I met Skinner's granddaughter, Julie Vargas. In my conversations with her, I learned that Skinner's concept of operant conditioning does not emphasize "repetitive exposure" as a way to produce extinction. Rather, for Skinner reinforcement (delivery of food pellets to a rat inside the operant chamber) shapes desired behavior whereas the absence of reinforcement causes extinction of the conditioned response. Attempts to extinguish a behavior within the operant chamber is similar to a parent ignoring a child who is misbehaving in an attempt to not reward an undesired behavior (Skinner, 1979). In VRE, however, the shock of the scene loses its emotive response due to the realization that there is no real danger when virtually exposed to violence, so rather than extinction the patient learns that driving a humvee in a war scene *is not dangerous*—this is a conditioned response to warfare, not an elimination of one.

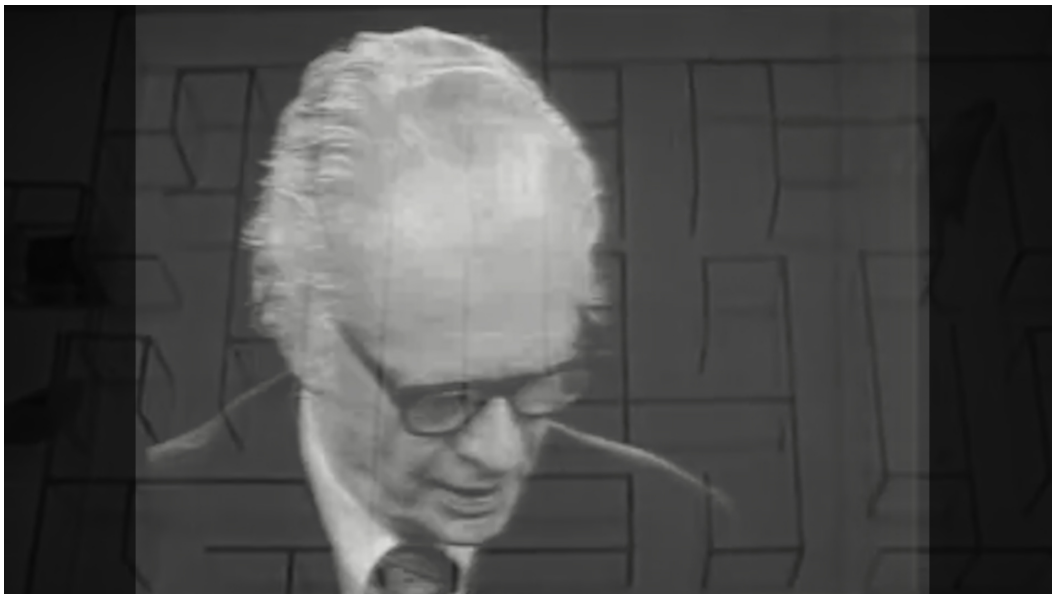


Figure 2. B.F. Skinner superimposed on maze. Film still from *Virtual War: Memories of Abu-Ghraib* by Producer/Director Emily Cohen Ibañez.

What concerns me is that the governing conception of PTSD that underlies current VRE therapies is a phobic response, rather than a complex one contingent on historical, political, and quotidian realities of war. An example would be the normalization of rape in the military or even the traumatic responses induced by the routine dehumanization process involved in military training. Rainer and Rizzo recognize the effectiveness of the therapy within a closed language system—one that objectifies emotional response and abstracts it from its original cause. The sounds, smells, and animation are refined but the system itself remains primitive, based on a further simplification of behaviorist theory.<sup>8</sup> The experimental system necessitates the assumption that trauma is solely fear-based, rather than based on a complex configuration of feelings that include entanglements of action and relationships informed by guilt, shame, integrity, and desire—complex emotional configurations that bring people into relations with each other and invite an exploration of their shared values and transgressions.

Feminist scholars have long challenged reductionist conceptualization of the mind and body, turning to phenomenological approaches that incorporate the embodiment and breakdown of politically volatile cultural systems (Grosz, 1994; Martin, 1994). Feminist science studies critiques "modernist epistemologies" that value "separation and autonomy, rather than relatedness" (Suchman, 2008). Feminist psychologists have forged more inclusive understandings of subjectivity in the psy-sciences, defying individualist assumptions and identifying "power in social structures and interactions" (Morawski, 1994). Disability scholars and queer theorists (Elman, 2014; Kafer, 2013), as well as theorists at the intersection of feminist science studies and critical race theory (Atanasoski & Vora, 2015) have pushed feminists to further trouble notions of autonomy through a reconsideration of personhood and human-technology interfaces that incorporate the recognition of bodily difference, racial and class inequities, and labor relations. In the following section, I discuss how storytelling is one means to bring meaning and relationships into embodied action.

## Story, action, and meaning

In the VRE session, Terry speaks, but he does not tell a story. Telling stories is not only the act of speaking, but “a *manner of speaking* about events” (White, 1980, emphasis in original). While I disagree with Hayden White’s point that all narratives adhere to chronological time with a clear beginning, middle, and end (White, 1980), I agree that stories have a kind of grammar that distinguishes them from other kinds of discourse. While not all stories have a well-established plot where the end is immanent in the unfolding of all events, at some level stories do bring “intelligibility of personal action” (Schafer, 1980)—a totality that helps the author find meaning in the world and their own personal experiences. As feminist anthropologist Barbara Myerhoff (1987) suggests, stories allow people to become self-aware, the protagonists of their own social dramas, and draw relationships between the world and their own actions. Narratives that employ cyclical notions of time and repetition do so in time and over time. The temporality of “rapid fire” described by Rainer does not allow for interpretation, as the quickness elides the ability to reflect; it is intentionally limited so that the patient successfully habituates to the sensory input without too much intellectual elaboration. This may be effective for treating phobias (like the fear of heights, spiders, and flying), but war trauma is a politically complex phenomenon. Killing is an act that challenges most people’s sense of morality and humanity (Grossman, 2009). Habituating to flying is different from habituating to combat. Feeling in control (lowered heart rate and maintaining full cognitive abilities while under stress) in combat situations has dire consequences for a soldier’s ability to integrate back into civilian life where the rules of combat do not apply. Habituation may be good for training, but can we call it therapeutic? Does it heal?

White (1980) has brilliantly argued that narrative requires the establishment of law—without law, the subject has no moral agency. In this sense, history and story are forms of state making and political action that follow a desire to represent reality and establish order. For White, stories are moralizing and inaccurate portrayals of reality. I see stories in



a more positive light. Stories provide a center, a continuity of self, that allows people to act in the world and draw relations of responsibility between themselves and others. In light of my ethnographic inquiry, I argue that a turn to the senses as "outside" of narrative, or privileged over narrative, can replicate colonial violence. Colonialism imposes domination by regulating labor and instrumentalizing time. Listening to stories takes time, time worth taking.

Moreover, the closed system constitutive of VRE bifurcates trauma into combat vs. gender violence. Here combat is elevated into sensorial immersion, while the realities of gender violence are ignored. The gaming and psychiatric communities I encountered during my fieldwork were remarkably silent about gender and sexual violence in the military. In stark contrast, when I listened to the stories of Gulf War, Iraq, and Afghanistan veterans, sexual violence figured prominently in their daily experiences of war; sexual intimidation and rape carried different gendered meanings for men and women. One Gulf War veteran I discussed my research with confided that it is common for women soldiers to seek sexual partnership with an "alpha male" within their troop, even when they do not desire sex with this male, to avoid being gang raped by the other male soldiers in their troop. She had engaged in such a relationship and described continuing feelings of guilt, shame, anger, and depression long after her deployment. A male veteran told me about how he survived childhood sexual violence—an experience that continues to figure into his life and relationships. He eventually escaped the abuse that led to unstable teenage years within the foster care system and joined the military to find a sense of belonging, a group of comrades that could become a kind of family. For him, the way military officers treat rape, especially against men, left him feeling betrayed. He described a tacit understanding that that if a soldier reported being raped or reported other soldiers who raped, he or she faced further stigmatization and career dissolution. These are not isolated stories. Studies show a high percentage of men who enlist also have a history of childhood sexual abuse (Zaramba, 2014a) and that the military often condones gender

violence (Castro, Kintzel, Schuyler, Lucas, & Warner, 2015; O'Brien, Keith, & Shoemaker, 2015).

VRE researchers do not discuss meaning, poetics, or expression nor do they discuss the role of sexual fantasy and exploitation; instead they elaborate on a puritanical measurement of anxiety levels, variables of stimuli, and patients' physiological responses. What has been made visible and optimized are the operational skills needed to navigate humvees while improvised explosive devices (IEDs) and rocket-propelled grenades (RPG) fire are present. Sexual violence and the everyday complex relationships of trust and betrayal within the military, however, elicit a phobic avoidance and are made invisible within the therapeutic scene.

Here, sexual exploitation is the elephant in the room, ignored through a mythic bifurcation of rape vs. combat trauma. The bifurcation of rape vs. combat is a myth that does not respond to the prevalence and normalization of rape in the daily life of combat and to its centrality in combat trauma. In this mythic tradition, rape equals feminization, a total loss of male privilege and virility. This mythology only seems rational in a rape culture that can only speak of rape against women and not men and a fraternal value system that excludes women and fears any possible 'feminization' of men. The preferred choice then is to ignore and in effect silence rape against both men and women in virtual therapeutics. If, however, VRE is construed as a "cure" for PTSD and combat trauma, the myth falls apart.

In the military, the soldier (like the colonial subject) is always already subjugated. To then remove the soldier's ability to tell his or her own story evacuates the soldier's ability for political and personal action—to author his or her own story, to find a center of meaning from which to act in the world. Stories involve "reflexivity, a past, a history" (White, 1980). Sensorial presence denies the past in the ever-present quest to habituate the nervous system to anxiety-provoking stimuli. This lends sensorial presence its temporal flexibility. Due to its focus on sensorial presence over symbolic meaning, VRE can be applied before or after the

soldier experiences combat trauma. Increasingly, VRE is being imagined by its practitioners as a form of “stress inoculation”—a psychological vaccine to be administered to soldiers before combat (Rizzo et al., 2009). “Stress inoculation” imagines an ideal world where PTSD no longer exists because people can be habituated to their traumas before they even experience them—a military utopian imaginary of having war without trauma. Rizzo et al. (2012) propose that stress inoculation is a kind of “mindfulness” training, borrowing terminology from yoga and Zen Buddhism.

### Swimming in a pool of repetitions



Figure 3. “Stress inoculation” training in San Diego, CA . Film still from *Virtual War: Memories of Abu-Ghraib* by Producer/Director Emily Cohen Ibañez.

At the time of my research, the ICT was developing STRIVE (Stress Resilience in Virtual Environments) as a “multi-episode narrative experience” with “combat situations, relational development, stress and loss, and emotional trauma...to raise the service member's threshold for the stress of combat” (Buckwalter et al., 2012). Here, ICT employs narrative as a series of scenarios that include interaction with virtual

artificial intelligence (AI) characters, simulating stress inoculation training already performed by outdoor TV studios in Southern California which use live action role players, Hollywood sets, and special effects (Figure 3). As a part of my fieldwork, I performed as an Afghan role player at a TV studio in San Diego for combat soldiers and military medics. Dressed in tradition Afghan garb, my work involved a ten-hour day of play-acting the same twenty-minute scenario over and over again (Figure 4). The scenario felt more like a video game than narrative; each reenactment involved slight variations of the same thing. Sometimes I would get shot and be tapped on the shoulder to lie down and act dead; other times I was told to confiscate weaponry from the soldiers. We were given ten-minute breaks between each scenario before we performed the scenario again. This gave some time to reflect with other Afghan role players, but as "Afghanis" we were not allowed to interact and speak with soldiers outside the scenario. We were told to taunt soldiers and yell at them.



Figure 4. Photograph of Emily Cohen Ibañez dressed as an Afghan role player.

I did not say much because I was the only role player who did not speak Farsi or Pashto. A team of coaches who were post-deployment soldiers directed us role players. One of the coaches asked me to confiscate the weapon of a “dead” soldier inside an abandoned house. As a team of combat soldiers entered the home, I was instructed to point the gun at them. The coach instructed the men to lie on top of each other in sexually demeaning positions and then taunted the soldiers, “look, a woman is pointing a gun at you.” The coach disciplined the combat soldiers in training for their carelessness, using my gender to emasculate them. I felt I had lost my moral compass, swimming in a pool of repetitions. All day we were exposed to different stressors—an IED explosion which involved smoke and a loud boom that did not actually kill or maim, RPG fire which involved soldiers shooting empty shells at us that sometimes burned and scarred the skin's surface (as Afghan role players, we were not given protective gear) but did not result in our actual death or life-threatening injury.

I felt terror playing this game. In an interview I conducted with, the studio's co-founder explained that researchers swabbed the soldiers' cheeks after each re-enactment to measure cortisol levels. These seemed to decrease with repetitive exposure, proving the effectiveness of stress inoculation. We did not discuss the literary aspects of a story, but rather surface areas of the body like cheek swabs and electrocardiogram (EKG) readings. The mind was understood as a cognitive-behavioral machine that could be optimized. The studio co-founder pointed to a graph on a cardboard poster—an arc that charted the rise and fall of cortisol levels with each exposure. A vertical line was drawn at the point of optimization for deployment when cortisol levels lowered but before the precipitous drop that signified no rise in cortisol levels at all. Everyone knew I was an anthropologist conducting research and agreed that role playing would allow me to better understand how stress inoculation works. I completed a ten-hour day of role-playing, a form of labor that Afghan role players perform daily for low wages. That night my ears rang, my head hurt, and I had no ability to write or reflect. My heart felt glum. The next

day I was able to maneuver my camera through the war zone scenario like an expert video game player, capturing scenes with a steady body and sensorial acumen.

The following day I could not help but wonder what would become of the soldiers in training who would deploy a few days later. Would their experience of warfare bear any resemblance to the games we played? In actual war, even when wearing augmented hardware, people die and they do not get back up. In the scenario, death felt undead, inconsequential, and at the same time very real because we were all involved in training for actual warfare and we knew real death was looming—real and virtual, killing and consequence were somehow split apart, making for a profoundly alienating experience. I was capable of navigating the war zone, but without much feeling.<sup>9</sup>

Stories and exposure therapy are kinds of performances; they, however, differ significantly in meaning. Rather than paying attention to narrative tone and wording when the patient tells his story (is he triumphant, masochistic, histrionic, or flat?), Rainer looks to biomarkers (is he sweating, shaking, tense, or relaxed?). The former refers to meaning and form, the latter records cognitive and bodily function. In the VRE session, Rainer supplies the variables that construct the generic memory of driving a humvee. Rainer and Terry do not co-author a story. Rather Rainer interrupts Terry in mid-description, inhibiting Terry's ability to string together events in a meaningful fashion. Rainer turns Terry's attention away from meaning toward a numerical assessment of anxiety and habituation to stress, which in the end matters little to Rainer's assessment of Terry. This is wholly different from Sigmund Freud's notions of introspection and transference (Freud, 1913). In Freudian psychoanalysis, the analyst and the analysand co-author a story, a dialogic form of authoring in which interpretation of symbolic forms take center stage. The analysand witnesses his or her own story, a kind of objectification and externalization of the story. The psychoanalytic introspective stance is a meta-narrative, not a numerical reduction that ultimately gets ignored. VRE proponents argue that virtual reality assists

patients who are less imaginative. In valuing certain patients as less imaginative and able to tell good stories, will the psychologist, clinician, and social worker forfeit his or her own abilities to a machine—the computer and its reductive virtual scenarios, variables, and binary logic?

### Concluding remarks

Why are we huddling about the campfire? Why do we tell tales, or tales about tales—why do we bear witness, true or false?...Is it because we are so organized as to take actions that prevent our dissolution into the surroundings?

—Ursula K. Le Guin (1980), “It Was a Dark and Stormy Night; or, Why are We Huddling Around the Campfire”

The survival of veterans in the United States is precarious. Rates of suicide for Iraq and Afghanistan veterans under the age of 35, especially within three years of service, are significantly higher than for the civilian population. In 2014, the *Los Angeles Times* reported that “veterans who had been enlisted in the rank-and-file committed suicide at nearly twice the rate of former officers” (Zaramba, 2014b), suggesting that war’s devastation and despair affects veterans differently and correlates with social status in the military. So why do we tell stories? People tell stories to “prevent [their] dissolution into the surroundings” (Le Guin, 1980). This draws us in relation to each other and allows us to escape containment—we can ascribe meaning imaginatively to our experiences and actions in ways that affirm social relationships and our sense of place in the world.

Contemporary ethnographers follow daily life, listen to stories by a diverse set of constituents, and assemble an analysis often from disparate places. The best ethnographies are as poetic as they are methodologically sound. In a world where data analytics and algorithms predominate as modes for understanding our world, listening to and telling stories carry more urgency than ever before. As Anna Tsing beautifully writes, “It is in listening to that cacophony of troubled stories that we might

encounter our best hopes for precarious survival” (Tsing, 2015).

Poet and Iraq veteran Jennifer Cole served in Baghdad in 2003. She was discharged in 2004 after being diagnosed with PTSD and Gulf War Syndrome. Here is an excerpt from her poem, “Veteran of War: A Poem” (2014):

I feel like my body and mind have turned against me  
They no longer work with me  
My body is a vessel that is constantly broken  
I am in constant pain all day and all night  
There is no ceasing my pain  
I can only ebb it  
Fatigue weighs on me like Kevlar gear in the hot sun  
The simplest of tasks now require more than I have to give  
I feel pathetic and incapable

I have a soul that is independent  
Trapped in a body  
And controlled by a mind  
That are dependent

Cole’s poem is a story of alienation and severe fragmentation—“my body and mind have turned against me.” She experiences her mind as controlling her sense of personhood, or soul, from the outside, leading to a kind of dependency that feels confining, an independent soul trapped in a dependent body. Some relief may be found in recognizing that all people are always already dependent in the sense that people must rely on each other to survive, and yet Cole’s extreme precarity comes from being a veteran in a post-draft culture in which less than 1% of Americans currently serve in the US armed forces.

I can imagine the reader critiquing my attention to storytelling, pointing to the works of Brian Massumi (2002), Deleuze and Guatarri (1983), and William Connolly (1999) where sensation is the basis of liberation. These scholars have invited readers to ask: Can the virtual person exist outside his or her body and outside of language? Can we



forget about intention altogether and focus our attention on an amalgam of brain waves and sensorial intensity? For scholars like Massumi and others, coherence attained through narrative represents unwelcome forms of constraint. I am arguing that the fantasy of pure sensation does not always equal desirable liberation—feminist and/or other forms of liberation. In light of my research findings, I do not see a turn to the senses as necessarily challenging to Western dominance and its binary gender system – in fact, such attention can reassert dominance in perverse ways. This is not to say that scholars should not be concerned with the senses. But this concern cannot be divorced from the political, economic, historical, technological and linguistic realities that govern the sense we make of them. I am not proposing an anti-technology or even an anti-neuroscientific stance. Nor am I proposing that theorists stop talking about the senses. I am inviting a critical examination of a current popular and academic fascination with, and even a romanticization of, the senses and the emergent technologies associated with them. Through critical inquiry, we can better think about how technologies that capitalize on the senses remake our worlds in ways that may be desirable or may not be. We can challenge ontological binaries between language and sensation and seek open perceptual fields of language and aesthetic forms that can be accessed, changed, and rescripted in ordinary ways and in everyday life.

Anthropology came to fruition within a colonial context. With early British expeditions to the Torres Straits, anthropologists compared the rationality of Europeans with their colonized subjects. They subjected Torres Straits islanders to a series of tests to measure visual and spatial perception (Rivers, 1901); they made film recordings of their body movements and rhythms (Haddon, 1898). In his essay “Vicissitudes of the Self,” Jean Rouch (2003) describes how film historically provided anthropologists the capacity to decompose embodied experience into fragments—an approach wedded to anthropology’s colonial legacy. Early ethnographic films documented the ways different peoples walked, squatted, and climbed things, breaking people down into component parts

rather than coherent subjects. Similarly, haptic experimental systems enhanced by immersive technologies and techniques involve a decomposition of embodied experience into elements like smell, sound, and spatial orientation labeled “biomarkers” whose capacities can be measured, controlled and linked to a self regulating alleostatic neurological system. To write against a colonization of the senses, I turn to Jean Rouch’s description of Dziga Vertov’s cine-eye experiments (Rouch, 2003). Vertov discovered the camera’s ability to capture reality from every angle shattering unidirectional vision into a multitude of perspectives. Rather than stasis, multiperspectivism reveals the artifice in perception revealing the open-endedness of everyday life itself. It reveals what is often concealed in science, that seeing and knowing are always framed by the very technologies and techniques at hand.

Foucault (1995) has argued that it is through the senses that the self becomes disciplined into a new way of seeing. If the advent of Freudian analysis provided a way to see the self as individual and interior, virtual therapeutics reconfigure the self as an “out of body” experience and a site for virtual exposure.<sup>10</sup> In other words, differently from psychoanalysis, VRE figures trauma as always coming from the outside and victimizing a passive subject. VRE therapy is based on American behavioral psychology and neurobiological studies on fear, which propose that one can quantify and control the invisible drives of the human self. What if instead we saw the mind, human action, and reality as whole configurations, constituted by a broad perceptual field where the subjectivity of the patient matters? Thinking through whole configurations, the aspect of the human mind known as the ‘unconscious’ cannot simply be reduced to a measurable reflex action. Instead the porous boundaries between subject and object, awareness and the unknown, and sensation and linguistic category are recognized as intersubjective and in continual relation. As Amanda Baggs has shown with her video, *In My Language*, sensation does not always have to be imagined as pre-linguistic or be based on the tired evolutionary scheme that divides our minds and brains into binary hierarchical relations of the civilized (prefrontal lobe) and the

primitive (amygdalla), or person and non-person.

If we let go of these evolutionary schemes, of our fantasized closed worlds, could we then re-design this virtual reality machine into a storytelling machine, a dream machine, a machine where the sensory apparatus opens up to subjective evaluations, humor, and differences that can be recognized as difference? Laughter, reflections and feelings of hate, rage and joy matter, as do people's desires for freedom. Is it possible to design a virtual reality machine where the content of our desired desensitization and trauma matters, where we question what we are adapting to in our repetitive enactments of trauma? Let's design a machine that shatters into a multitude of perspectives, tones and complications. Let's break down the signal system that monitors the body and open up to conversations and stories, where we can speak of sexual repression and violence as well as desires for community, camaraderie, and belonging and have those things recognized as central to the healing process.

As neurobiological explanations for human behavior and mind become dominant modes for making sense of ourselves and the dimensions of our world, my goal as a feminist anthropologist is not to become conditioned by this language but to engage with such explanations—to read against the grain and to think through multiple modes of embodiment that draw relations between words, actions, feelings, and ordinary life. My goal is to call attention to the intersubjective relations of mind and body, self and world, which both limit and open horizons of possibility. This takes time: a slow approach to science, a science steeped in cultural analysis. If behavioral scientists are metaphorically mice—a model organism widely used in scientific laboratories—that can rapidly reproduce predictive analytics and outcomes, ethnographers are elephants that see totalities developing in lived time. What happens when an elephant breaks open the mouse's cage? The mouse escapes and ventures into the daily unfolding of life—the middle of the story lost in “rapid fire.”

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## Notes

<sup>1</sup> Pseudonym.

<sup>2</sup> Pseudonym.

<sup>3</sup> Pseudonym.

<sup>4</sup> See <http://ict.usc.edu/prototypes/pts>.

<sup>5</sup> Neuroscientific research suggests that fear conditioning can be extinguished with the use of drugs that interfere with memory recall by targeting "reconsolidation," where memories are labile. These chemical interventions, however, are not compatible with life, so have not been applied to humans (Liu et al., 2012; Schiller et al., 2010). D-cycloserine, so the argument goes, has side effects that would perhaps interrupt

memory recall, however, the biological mechanisms for this are unclear.

<sup>6</sup> Pseudonym.

<sup>7</sup> Pseudonym.

<sup>8</sup> The discovery of a nervous center that controls blood pressure dates back to the late 1800s, a discovery that inspired scientists like Ivan Pavlov to study the functioning of the "animal machine," mostly in terms of digestion—the function of hunger and satiation in relation to conditional reflexes (Todes, 2014). Despite the astounding results Pavlov culled from the lab, physicians with clinical experience disputed Pavlov's lab results based on the "impossibly complex mass of interconnected phenomena in their daily practice" and their aims in trying to keep patients alive after surgery, in contrast to Pavlov's dogs which usually did not survive his surgical interventions (Todes, 2014). It was not until much later in his experimentation that Pavlov applied his work to psychiatric illness and observed "depth phobia" in one of his laboratory dogs he named "John." By observing John, Pavlov determined that phobias are "exaggerated inhibitions" that the experimenter could effectively remove and restore by inducing states of hypnosis and excitation with alternations of a metronome (a speeding up and slowing down of the rhythm). Gestalt psychologists, who dominated psychiatry in Russia at the time, challenged Pavlov's results. Pavlovians looked at how the brain "joined together individual sensations;" Gestalt psychologists opposed mechanistic reductionism that saw the mind and human action in terms of an "accumulation of small perceptions" (Todes, 2014). Rather, Gestalt psychology focused on whole configurations, "the structure of an entire perceptual field" that involved relationships between elements rather than a simple sum of them (Todes, 2014). Fascinatingly, Pavlov saw understanding the subjectivity of his dogs as essential to his experimental design and analysis of research outcomes. In VRE and contemporary neuroscientific studies on fear and conditional reflexes (LeDoux, 2002), *the subjectivity of the patient or research subject does not matter.*

<sup>9</sup> Other Afghan role players had differing perspectives on our shared experience. For example, Verda, an older Afghan woman, explained to me that she felt her work as a role player would ultimately save innocent civilians in Afghanistan because soldiers encountering her would realize that not all Afghans are bad. While she did not support the war, she felt no resentment towards Americans in particular since war had become a fact of life in Afghanistan and it did not matter whether domination came from Russia, the United States, or some other foreign power. Her niece, Sameer, on the other hand, shared the terror I felt, but was happy for the employment as it was a means for her to save money to pay for her college education when she graduated high school. And Aalem, an entrepreneur who recruited the role players, happily made a sizeable profit, boasting how the military paid his company \$1000 per day per head while the role players only made \$100 per day.

<sup>10</sup> In her book *Expose Yourself San Diego*, Executive Director of the Virtual Reality Medical Center, Brenda Wiederhold (2003) proposes “the meaning of people’s lives...[are created]... through interactions with the external world.” Her focus is phobias, since they impede people’s interaction with the external world. To lead a meaningful life, as the thinking goes, people must expose themselves to the distressing situation they fear most so that they can gain a feeling of control over the perceived dangers of their environment.

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## Bio

**Emily Cohen Ibañez** is an anthropologist and filmmaker. She is currently the Assistant Director at the Science and Justice Research Center and a Research Associate at the Center for Documentary Arts Research. Her work explores the ways science, technology, and medicine influence the ways people come to know themselves and their world. Her first book *Bodies at War: An Ethnography* is under consideration at Duke University Press. The book examines what it means to rehabilitate after landmine injury in Colombia, one of the countries with the highest incidents of landmine injuries in the world. Her debut feature film *Bodies at War/MINA* (2015) premiered at El Festival de Cine de Bogotá and is currently screening at universities nationally and internationally. Her short work has also screened at the Society for Visual Anthropology Film Festival, the Santa Fe Independent Film Festival, and is available on public access platforms. She was recently awarded the Wenner-Gren Fejos Fellowship in Ethnographic Film to complete her second feature hybrid film *Virtual War: Memories of Abu-Ghraib*. She has received grants and fellowships from the National Science Foundation, Wenner-Gren Foundation for Anthropological Research, American Council for Learned Societies, NYU Torch Prize, PSC-CUNY, the Flaherty Film Seminar, and Fulbright Colombia.