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## NEURO-COGNITIVE WARFARE: INFLICTING STRATEGIC IMPACT VIA NON-KINETIC THREAT

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### **Neuro-Cognitive Warfare: Inflicting Strategic Impact via Non-Kinetic Threat**

By R. McCreight

What is the strategic value of a covert technology that has consistently displayed a capability to disable and permanently impair basic thought, perception and inflict degrading effects on human neuro-cognitive motor skills? Is it significant but far less than strategic? Non-kinetic yet still strategic in impact? What if an adversary intent on harming US military and civilian leadership could unleash and deploy this technology without fear of detection? What if that adversary knew the US targets had no way to protect themselves from the insidious effects of this covert technology? This is neuro-cognitive warfare which has been taking place during the last decade and which allows an aggressor to attain a degree of strategic leverage and influence literally without firing a shot. US military experts in C4ISR, electronic warfare, Psychological Operations and medical science ought be aware of this and study it assiduously to gauge its genuine threat dynamics. Is that happening? The answer seems patently clear yet the issue has been subterranean in attention and falls regrettably below the threshold for assessing America's strategic risk spectrum as it evaluates the next decade. Does this make sense in terms of emerging Joint All Domain C2 developing doctrine and technology? Likely not too many.

We do know that the US government has officially devoted serious high level attention to the issue based on recent statements and testimony by senior Biden administration officials [1][2]. What is far less clear is what they actually intend to do about it including how to characterize it, detect it and defend against it let alone the idea of devising effective neutralizing countermeasures. Now the threat issue has expanded beyond its origins several years ago and it manifests itself closer to home with reported instances occurring up until the present day.

#### **Cognitive Warfare Context**

NATO members have been wrestling with the scope, scale and definition of cognitive warfare for a while, yet the issue still takes a backseat when compared with advanced weapons and the urgent calamity of the war in Ukraine. In a similar vein the US military suffers a degree of strategic distraction away from cognitive warfare instead lately transfixed on hypersonics, UAS threats, and all manner or variety of cutting edge kinetic weaponry. Surely there often are arguable differences among allies on what is a paramount threat at any given time but the key

question is whether an overarching regime threat of equivalent strategic importance is being ignored, overlooked or discounted. However, cognitive warfare appears somewhat alien and out of step when compared to the panoply of more dire cosmic threats which dominate the daily exchange and discursive analysis over national security priorities. This is despite overwhelming evidence that a sixth domain of warfare itself—the human body and brain—is being overlooked, ignored and eliminated as a strategic imperative worthy of, and equal to, any other domain. [4]

We know far less than we should about our brain, its biochemistry, its internal reciprocal systems embedded in the CNS [Central Nervous System], its plasticity, its biophysical governance of the body, our autonomic system and its overall neurobiological vulnerability. As a distinct domain of warfare deserving greater sustained attention for devising innovative doctrine and operational analysis the brain appears to be a regrettable area of strategic neglect. We already know from the voluminous combat experience of PSYOP, Intelligence, information Ops and EW that certain narratives, psychological messages and sustained influence campaigns in social media and propaganda can exert significant impact on human thought, behavior and beliefs. Cognitive warfare is best seen as a genuine covert blitzkrieg on the mind and all its associated systems.

Text drawn from the NATO study said, “The brain will be the battlefield of the 21st century, and “humans are the contested domain.” The report also said “future conflicts will likely occur amongst the people digitally first and physically thereafter in proximity to hubs of political and economic power.” What must be understood, standing in the midst of genuine cognitive warfare era where evidence of prior attacks can be readily found and examined, is the exact dimensions, innate structure and character of cognitive warfare itself. Without that any gesture to define the term will fall short of accuracy and reliability absent a deeper dive to discern the crucial and fundamental factors ingredients and dynamics involved. [5] By contrast US emphasis on this threat differs with some NATO nations who see more significant urgency should be assigned. .

### **Havana Syndrome: Context Matters**

Going back for a moment to 2016 we can begin to decode some of the recent mystery behind what the media terms “Havana Syndrome” and gauge for ourselves what it means. Back in 2016 US persons posted to embassy Havana reported a variety of neuro-cognitive ailments and brain injury which began in the summer of 2016 and continued through the Spring of 2018. Initial press reports of neurological and cognitive ill effects by US persons posted to American embassy Havana began appearing in various media outlets as soon as March 2018 and was followed by multiple news reports which captured some major elements of the incident. For example, numerous reports were published essentially containing the same basic facts such as these...

*“The health incidents — which took place between November 2016 and August 2017 at homes and two Havana hotels — were initially blamed on “sonic attacks.” The cause has perplexed the Department of State, the FBI and other U.S. agencies that have been trying to figure out just what made 24 intelligence officers, diplomats and relatives based in Havana ill. Many reported a variety of symptoms such as hearing loss, headaches, cognitive problems and other ailments that doctors said correlate with concussions. University of Miami Dr. Michael Hoffer, who led the initial team of physicians who examined the victims said: “We still do not have a cause or source of the attacks. The investigation is ongoing.” [5]*

Initial reports from Embassy Havana placed its victims in the awkward limbo state of being disbelieved or treated as emotional/mental cases. Few doctors evaluating the victims could

ascertain what led to the variety of neuro cognitive degradation symptoms observed. This additional press item reflects the same degree of reporting on the issue a year later....

*The State Department has said the employees developed what became known as “**Havana Syndrome**” – headaches, dizziness, nausea and other symptoms that arose when they heard penetrating, high-pitched sounds. MRI scans from the 23 men and 17 women showed changes in brain structure and functional connectivity between different parts of the organ compared with 48 other adults, according to the study by the University of Pennsylvania. The difference in the brains between the two groups “is pretty jaw-dropping at the moment,” lead researcher Dr. Ragini Verma, a professor of radiology at Penn, told Reuters. “Most of these patients had a particular type of symptoms and there is a clinical abnormality that is being reflected in an imaging anomaly,” she said. However, in findings published by the Journal of the American Medical Association, Verma and her team said it was unclear if the brain patterns directly translate into significant health problems. “None of these patients we have seen suffered any type of blunt head trauma, yet the symptoms they describe and evaluations demonstrate are remarkably similar to those found in persistent concussion syndrome,” said the study’s senior author, **Douglas H. Smith, MD**, the Robert A. Groff Professor and vice chair of Research and Education in the department of Neurosurgery and director of Penn’s Center for Brain Injury and Repair. “It appears that we have identified a new syndrome that may have important public health implications.” [6] [7]*

Apart from frequent claims of hallucinations, stress and malingering these were authentic cognitive injuries. A report completed by the National Academy of Sciences [NAS] in 2020 considered the expert views and testimony of neuroscience experts reviewing Havana neuro-cognitive victims and reached conclusions independently about them. The NAS report reached a conclusion similar to that of University of Pennsylvania doctors which indicates...

*“The cases of the Department of State (DOS) employees in Cuba and China have attracted much attention. Among the reasons and ramifications, the clinical features were unusual; the circumstances have led to rampant speculation about the cause(s); and numerous studies, along with the charged political setting, have had consequences for international relations. First, the committee found a constellation of acute clinical signs and symptoms with directional and location-specific features that was distinctive; to its knowledge, this constellation of clinical features is unlike any disorder in the neurological or general medical literature. From a neurologic standpoint, this combination of distinctive, acute, audio-vestibular symptoms and signs suggests localization of a disturbance to the labyrinth or the vestibule-cochlear nerve or its brainstem connections. Second, after considering the information available to it and a set of possible mechanisms, the committee felt that many of the distinctive and acute signs, symptoms, and observations reported by DOS employees are consistent with the effects of directed, pulsed radio frequency (RF) energy. Some also reported sudden onset of tinnitus, hearing loss, dizziness, unsteady gait, and visual disturbance. Chronic symptoms suffered by many of those affected suggested problems with vestibular processing and cognition, as well as insomnia and headache; these manifestations are more consistent with diffuse involvement of forebrain structures and function, such as cerebral cortex or limbic structures. Our committee felt that many of the distinctive and acute signs, symptoms, and observations reported by DOS employees are consistent with the effects of directed, pulsed radio frequency (RF) energy.[8]*

If these episodes weren't enough, and given Congressional interest in supporting medical claims made by victims of these alleged attacks, we find in 2021 the claim of additional attacks at other locations continues with no sign they will soon cease. In 2021 reported attacks of a similar nature were reported in Vienna and Berlin at several other US embassy sites and other media have claimed well over 300 diplomats, intelligence officers and some active duty military personnel are among the victims. For example a recent media report illustrates these unique events

*Austrian authorities said they are investigating reports that US diplomats in Vienna have experienced symptoms of a mystery illness known as [Havana Syndrome](#). "We take these reports very seriously and, according to our role as the host state, are working with the US authorities on a joint solution," the Federal Ministry of European and International Affairs said Sunday. "The security of diplomats dispatched to Austria and their families is of utmost priority for us," the ministry added. A US State Department spokesperson said Saturday: "In coordination with our partners across the US Government, we are vigorously investigating reports of possible unexplained health incidents among the US Embassy Vienna community or wherever they are reported." [9] [10] [11] [12]*

As a consequence, we must recognize the itemized cases of genuine neurological injury inflicted on diplomatic, intelligence and military personnel for a span of several years are symbolizing the initial skirmishes of cognitive warfare however we may eventually define it. What remains is the challenge of recognizing and calibrating the operational and strategic dimensions of cognitive warfare in terms of offensive options and technologies along with defensive countermeasures. It will also require robust and comprehensive attribution technologies to nullify future threats.

### **Non Kinetic Yet Strategic?**

What is the strategic effect of a stealth weapon which debilitates or permanently impairs the minds of military and civilian leadership? If that technology is largely covert, undetectable and pervasive even if its targets are limited in number does that pose an incipient threat deserving of serious attention as geopolitical weapons leverage is considered? Symptoms of its victims cannot be readily evaluated by physicians as no case definition or peer reviewed research exists to verify its authenticity. The technology is insidious and consistently defies detection, prevention, medical verification and scientific confirmation aside from episodic reports that an anomaly has occurred and impaired the neurological and cognitive wellbeing of its intended targets. Absent a consensus medical case definition and serious causative technology research, these attacks as reported could easily be discounted as psychotic or delusional events where the complaining individuals were shunted aside as emotionally unstable. We must discern what the exact offending technology is and take steps to reduce and mitigate its continued use in future cases elsewhere. Current cases continue to wreak neurological havoc among its victims perplexing both medial and military experts with its long lasting cognitive impact and negative effects? If this technology exists but we cannot easily identify it in operational use nor detect and deflect its harmful beams, emanations and pulse waves can we assume it will get worse?

This is the central dilemma of this novel neuro-cognitive nonkinetic weapon with indirect strategic effects in the 21<sup>st</sup> century I term it as '**NeuroStrike**'. It so far has eluded the best efforts of military, medical and intelligence experts to explain. We already know from expert medical professionals who have seen the various victims that they found acute clinical signs and symptoms with directional and location-specific features that was distinctive and unlike any

disorder in the neurological or general medical literature. As such it suggests the very nature of the Joint All Domain combat environment has changed drastically. It also provides a strategic signal warning of what lies ahead. Familiar notions such as C4ISR, situational awareness and the OODA loop are all in collective jeopardy as human thought, decision-making, judgement, analysis and perception are at risk in an unrestricted cognitive warfare environment.

The basic principle of a suggested **neurostrike weapon** is a fairly simple proposition. It entails a hand held, or platform mounted, mixture of an RF, directed energy pulse **or neurocognitive disrupter, combined with acoustic wave dynamics** which is designed to harm, disable or permanently damage a human brain. It may also adversely affect the brains of several in close proximity to the attack. Unlike future forecasts of likely, suspected or even probably designable future kinetic weapons systems which can significantly alter the battle domain and strategic calculus cognitive warfare remains speculative and theoretical despite evidence that its subtle and dynamic technology inflicts permanent or long lasting brain injury. One conclusion indicates that after 2020 all prior theories of combat or the use of non-lethal force on both civilian and military targets must now be rethought and reconsidered. Victims of **NeuroStrike** attacks have experienced sustained and persistent neuro-cognitive disruptive effects which can be medically confirmed and which vary among its victims. Under existing procedures, these casualties of cognitive warfare defy facile medical definition and categorization by persons unfamiliar with the diagnostic mechanisms experts at Penn Medicine, University of Miami and the National Academy of Sciences can confirm. If you have never seen it before you don't recognize it.

So, it is of utmost importance to assess the net strategic value of such weapons in future conflict scenarios short of an actual shooting war. We can visualize the use of **NeuroStrike** as a program or phenomenon which merits no serious sustained strategic attention regardless of its undeniable grey zone, counter insurgency, regime destabilization, regional guerilla conflict and domestic suppression value to corrupt regimes. It seems fair to assert that we are in the midst of a new era which I depict as the nebulous domain of **Perpetual NeuroCognitive Conflict [PNCC]**. As such it exists outside normal discussions of electronic warfare or exists beyond the boundaries of serious speculation about exploiting the electromagnetic spectrum for military purposes. Nevertheless it has appeal to repressive and dictatorial regimes owing to its elusive and near stealth array of qualities. It clearly lies outside the threshold of arms control discussions or agreement, and it sneers at hapless medical attempts to define or understand it. Further serious military leaders must weigh the truly unlimited offensive and defensive dimensions. Knowing that deployable and covert PNCC systems can pose a wider threat is grounded on the belief that if progressively enhanced and upgraded their wider non-kinetic effects are thereby maximized.

The potential for neurocognitive disruption and disablement of human brains via remotely positioned platforms alters our ordinary sense of strategic warning, risk, nonkinetic threats and modified information operations. The era of genuine cognitive warfare requires wholesale review of operational doctrine and military training. In a joint multi-domain conflict environment neurostrike technologies held by adversaries are game changers owing to their covert non-detectible nature resulting in zero defensive and deterrent capabilities among targeted persons. As such NeuroStrike issues add complexity and heft to gauging the nature, extent and focus of future defense threats and securing the geopolitical interests of the United States. Detection, defense, deterrence and defeat of future **Neurostrike** systems must become one of our highest defense priorities if we are to retain a competitive global strategic edge.

Whether future armed conflict at any level of complexity, from limited interventions involving SOF personnel to the more difficult array of issues associated with theatre warfare, massive logistics and complex strategy include consideration of the nuanced threat posed by PNCC is anyone's guess. Certainly the technology has demonstrated its effectiveness against largely civilian targets in embassies and elsewhere. Considered an 'unconventional electronic attack' the technology has certain appeal due to its non-lethal effects but effective defensive measures erected against PNCC forms of attack are lacking today. The scope and scale of **neurostrike** weaponry should be a matter of grave concern because evidence shows it tends to target military, diplomatic and intelligence personnel indiscriminately. Urgently the threat will likely grow and the challenge is to assess how prepared the United States and its allies are for covert, subtle and undetected instances of **NeuroStrike** PNCC technology use. Formulating better defensive, deterrent and quicker warning devices which alert potential targets to the detection of such technology nearby are essential. Efforts to identify and characterize the PNCC threat for the United States, its allies inside the NATO alliance, are a justifiable priority. Moreover we need to conduct research to establish validated protective schemes and countermeasures against wider use of this technology in the decade ahead. We also require the best forensic mechanism for pinpointing its sources and origins enabling deflection of covert PNCC activities to maximize our security in this decade or risk confronting novel non-kinetic forms of strategic surprise.

Coming to grips with the reality of a nonkinetic disabling technology which aims to specifically degrade neurological and cognitive functions requires the suspension of disbelief among those who reside in the comfortable confidence that no such weapon exists. Instead a serious inquiry among scientists, doctors and military threat experts is needed to examine the credibility and authenticity of **NeuroStrike** weaponry concluding that such technology poses a real threat. This is especially true of the urgent need to conduct collaborative military medical, electronic warfare, special operations and C4ISR experts in focused research on the threat immediately.

Without comprehensive research by medical and military experts to discern, categorize and confirm the existence of non-lethal technologies whose sole purpose is to damage and degrade targeted human brains we surely risk having no warning mechanism against future attacks. In fact those hapless victims already well known among US diplomats posted to Cuba, China and elsewhere since 2016 may never get authentic neurological confirmation of their infirmity because a common and unified treatment protocol is lacking and we still need metrics to help medical experts validate authentic attack victims. If **NeuroStrike** incidents actually occurred in the past—especially prior to 2016---how would they be proven real? Absent baseline neurological data on each victim it remains a daunting puzzle. What about the future and the shifting global threat environment featuring non-kinetic technologies? What practical and effective defensive technologies or threat detection systems are required? Should we expect the degrading **NeuroStrike** technology to mature and widen its effectiveness to disable large groups?

If and when a **NeuroStrike** incident actually occurs the burden will always be on the victim to explain and eventually confirm that permanent loss of memory, unending headaches, diminished cognitive functions and speech impairment resulted from a stealthy technology rather than a random psychological or imaginary episode. Few doctors and medical experts have even seen actual victims and confirmed actual attacks. As long as the unwitting public and media believes this is purely science fiction the possessors of this disabling technology can escape without risk of discovery. It poses a security dilemma of the first order. Until or unless we devise a system to

identify and detect when **NeuroStrike** technologies are being used—or have been recently used—we will struggle to find a plausible explanation for victim complaints. Eventually serious security and medical experts will have to face the truth and examine the threat it symbolizes. Worse, if subsequent attacks continue eluding serious scrutiny we must assume there will be many more.

So we are left with an unpleasant dilemma where something seen as non-kinetic and thereby less harmful than nuclear weapons, hypersonics and space based platforms can still inflict targeted harm on military and civilian leadership of an indirectly strategic nature. Tolerating the presence and periodic effects of cognitive warfare until or unless remedial and deterrent technologies are devised is pathetic and undesirable. Recognizing and affirming the net degradation effects of cognitive warfare technologies is a paramount security objective for this decade and its insidious destructive effects must be acknowledged and confirmed. This is especially worrisome if insufficient defensive and deterrent measures cannot be immediately invoked or developed to halt its pernicious effects. Yet it seems that is just where we are barring new evidence of a detection and protection technology deployable against any future cognitive warfare threats. Cognitive warfare draws its essence from the innate neurobiological vulnerability of the human brain found within the CNS, the otolithic and vestibular systems, and vestiges of exploitable neural networks and synapses embedded in our bodies. This is the new non-lethal battlefield in our midst and it defines the terrain of today's continuing conflict and ushers in tomorrow's wider more sophisticated non-kinetic warfare. It begs the question of what must be done in both the classified and unclassified worlds to deconstruct and dissect the offensive cognitive targeting technology and nullify its insidious stealthy effects before more victims are affected and the threats emanating from this technology are expanded and diversified.

Doing so requires more concrete research, diagnostic and comprehensive neuroscience, smarter technology, attribution mechanisms and a recognition that the era of cognitive warfare is here and real, It is here today and no longer the stuff of speculative science fiction and fantasy.

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[2] US intelligence community convenes new panel to probe 'Havana syndrome' causes amid new cases in Austria

*A new cluster of reported cases raises fresh concern.* By [Cindy Smith](#) and [Conor Finnegan](#) July 20, 2021,

[3] US Embassy Workers Complain of Sonic Attacks--Miami Herald, March 2, 2018

[4] [Countering cognitive warfare: awareness and resilience](#) <https://www.nato.int/docu/review/articles/2021/05/...> May 20, 2021

[5] Behind NATO's 'cognitive warfare': 'Battle for your brain' waged by Western militaries

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[9] [Up to 200 Americans have reported possible "Havana Syndrome..."](https://www.nbcnews.com/politics/national-security/...) <https://www.nbcnews.com/politics/national-security/...> Jul 20, 2021 ·

[10] [Havana Syndrome reported among US diplomats in Vienna - CNN](#) <https://www.cnn.com/2021/07/18/europe/austria-us-havana-syndrome-intl> Jul 18, 2021 ·

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[12] : [Senate Passes Shaheen-Backed Bill to Support .Victims of Havana Syndrome..Senators Shaheen, Collins, Rubio and Warner,](#) <https://www.shaheen.senate.gov/news/press/breaking..> Jun 07, 2021 ·

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R. McCreight has a combined professional military and civilian career in national and homeland security matters spanning 29 years and specializes in advanced dual use technology, convergent threats, biodefense issues, WMD analysis and the pursuit of building better crisis managers and leaders via the benefits of strategic wargaming. He is a consultant on geopolitical dynamics and threat analysis issues, the author of five books and 38 published articles. He periodically teaches graduate school at several universities and continues to assess enemy disinformation, propaganda and active measures.

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