



A history of military experiments in the weaponisation of sound

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In the early hours of 5 December 2017, a US Central Intelligence Agency (CIA) officer struggled to the toilet of his Moscow hotel room. "[I felt] like I was going to both throw up and pass out...", he claims.¹ But Marc Polymeropoulos had not been drinking. Back home in Virginia, the symptoms of headache, nausea, and tinnitus returned. Polymeropoulos figured that he'd been hit with a secret weapon, albeit by accident. *GQ* magazine interviewed the agent and comments: "Polymeropoulos wondered if the Russians had inadvertently injured him while trying to collect the data in his phone remotely... [,] the kind of thing all intelligence services did, the Americans included."²

The implication is that electromagnetic (EM) energy can be used to remotely probe digital data. But one of the

potential consequences is that any human near the targeted machine can sicken from the EM waves.

Over the last couple of decades, US officials have complained to their superiors about nauseating attacks. In 1996, two National Security Agency (NSA) officers, Mike Beck and Charles Gubete were taken ill abroad while on duty. Both attributed their early-onset Parkinson's disease, which took Gubete's life in 2013, to secret weapons. Twenty years after the fact, NSA Director of Counterintelligence, Kemp Ensor, told colleagues that Beck and Gubete were likely victims of microwave weapons.³

Counterintelligence is significant because it is this precise branch that engages in psychological operations (psyops) to blame official enemies for unusual events.



Depiction of the battle of Canaan by Jean Fouquet (c. 1415–1420)

Perhaps the escalating claims of strange attacks against US personnel are part of anti-Russia psyops?

This article examines the trajectory of sonic weapons: the uses and abuses of sound throughout history, particularly in the 20th century. The weapons can be used for psychological purposes, as in the cases noted above, but also for domestic social control, as well as counterinsurgency operations abroad. Such devices are known as "non-lethal" or "less-than-lethal" weapons, though the cases of Beck and Gubete illustrate that these designations can be misnomers.

From Tribes to Tesla

Sound is power. Numerous spiritual groups, from Hindus⁴ to Freemasons⁵ believe/use as metaphor, the notion that the divine sonic vibrations of speech brought life and reason into being. Others use sound to heal.

Certain soundwaves trigger chemical releases in plant cells, from cotton and peas to spinach and tomatoes, aiding their growth and strength.⁶ Noting its healing qualities, modern psychologists studied Australian Aborigines' most popular instrument, the didgeridoo. Made from hollow eucalyptus tree trunks, the instrument produces a low, resonant drone. Researchers conclude that didgeridoo sound meditation is "more effective than silent meditation for relaxation and acute stress."⁷ Similarly, psychologists liken the effects of ancient Tibetan quartz crystal bowls to deep-breathing practices.⁸

But there is another side to the sonic coin. Human

beings have long used sound to intimidate enemies and reinforce tribal bonds. Fighters in Gaelic communities used war cries, like "Ferragh, Ferragh," in reference to Fergus, King of the Scots (430–503 CE).⁹ The Hebrew and Christian Bibles' *Book of Joshua* (*Sefer Yehoshua*) tells of the conquest of Canaan by the Israelites, who, in the story, crumbled the city walls of Jericho by marching for six days, blowing trumpets. Real or not, the point is that in the popular psyche, the concept of sonic weapons is thousands of years old.

European Enlightenment philosophers (c. 1715–89) helped to bring about the scientific age in which dreams of hi-tech social control, à la Sir Francis Bacon's *New Atlantis* (1626), could be realised.

"Buildings along with bodies... have their own particular resonant frequency," says a Massachusetts Institute of Technology thesis. "If you locate this frequency, the value of efficient excitation, and through mechanical reinforcement impart this frequency you can literally 'ring' material similar to that of a struck bell." Aligning the soundwave can create out-of-control oscillations, as discovered in 1898 by the infamous Croatia-born US inventor, Nikola Tesla.

One Tesla machine tuned to the frequency of his office building and began destroying the walls. Sympathetic resonances were detected several streets away. After quickly destroying the machine, Tesla lied to the authorities, claiming that an earthquake had caused the chaos.¹⁰

In February 1943, the British War Office convened an Acoustics Sub-Committee of the Ministry of Supply. The aim was to research potential military applications for sound. It noted that "to employ sound offensively it will be necessary to produce a beam, which demands a mirror" ten times the diameter of the soundwave. The wavelength should be little over one foot wide. Excessive absorption in moist air was estimated to occur in frequencies above 1,000 cycles, "the most favourable frequency." Phons are units of loudness that compensate for tone and complexity. "To produce discomfort or distress a sound level of above 140 phons is necessary."¹¹ It is unclear whether the British found any use for such weapons during the War.

After the War, the victors captured the Nazi archives and pored over German technical publications. The scientist Dr Richard Wallauschek reportedly invented and tested a sound gun called the Luftkanone ("air cannon"). The weapon was built at an experimental test-site: Forschungsstelle "S" Talstation Lofer in the Reichsgau of Salzburg, a Nazi-administered region in Austria.¹² Wallauschek was Assistant Director of Technical Research. The Luftkanone consisted of a 10 ft parabolic reflector. Two nozzles fed into a combustion chamber at the rear. The nozzles fed methane and oxygen into the chamber; whose explosive sonic energies were amplified by the reflector. The series of explosions created shockwaves

ranging from 800 to 1,500 per second. The intensity pattern was generated through an angled lobe. Pressure from the machine could allegedly kill a human from a distance of 200 ft. The American conquerors considered the weapon too large and cumbersome to be practical.¹³

After the War

The age of so-called "non-" or "less-than-lethal" weapons dawned after the Second World War. The creation of all-destructive nuclear weapons and, crucially, the ability to deploy them via intercontinental ballistic missiles, means that great power struggles continue to be fought at lower levels in unfortunate proxy battleground nations.¹⁴ Examples include Syria, where the US and Russia fight for political influence,¹⁵ and Vietnam in which the American military in the 1960s developed a sonic weapon called the HPS-1 sound system that could direct waves to targets for psychological warfare purposes, including disorientation (the Curdler) and to amplify messages.¹⁶

The so-called Cold War (1947–91) introduced a new era of weapons designed for covert operations, such as poison-tipped umbrellas for political assassinations and microwave projectors to destroy electronic circuits. These next-generation weapons allowed for what their producers call "plausible deniability."¹⁷ In theory, victims cannot prove that an attack emanated from a sonic weapon any more than an electrician can prove that a fried circuit board was not due to a power surge.

Depending on the decibels (db), at 20 Hz and lower, infrasound (or low-frequency sound) is too low for humans to hear, but people can suffer its effects.

In the mid-1960s, the Russia-born French scientist, Vladimir Gavreau, happened upon infrasound production during laboratory experiments. Those present experienced ear pain and witnessed their equipment trembling. The absence of anything audible led the researchers to speculate the presence of infrasound. Gavreau and the team built a whistle-type machine around 1.5 metres in size. Air was fed to the device by a compressor. At half-wavelength distances, infrasonic speakers produced a sound beam consisting of phased signals. At 7 Hz, nausea and fatigue is provoked in the operator after two hours.¹⁸

Ultrasound is too high for humans to hear. It ranges from 20 kilohertz up to multiple gigahertz. Between 1953 and 1976, intermittent, ultrasonic microwave beams in the 2.5 to 4 gigahertz ranges were aimed at the US Embassy in Moscow. On radios, they produced an effect known as "Woodpecker". Like today, the microwaves were blamed for Embassy staff sickness, but no medical evidence was ever produced.¹⁹ "Woodpecker" prompted the US to initiate an investigation into the effects of microwaves on humans under the cover of a virology research program, known as the Moscow Viral Study.²⁰ Together with the State Department, the Defense

Advanced Research Projects Agency (DARPA) initiated TUMS, later Program Plan 562 or Project Pandora²¹: the study of EM waves on humans and animals.

Around the same time, the psychologist Allan H. Frey successfully used microwave energy beams as carriers for soundwaves directly into the skulls of deaf people, allowing them to "hear."²² It is unclear when, but the US military used this or similar technology to create what they call voice-to-skull (V2K) weapons for psychological warfare. According to the Center for Army Lessons Learned, V2K is "(1) a neuro-electromagnetic device which uses microwave transmission of sound into the skull of persons or animals by way of pulse-modulated microwave radiation." The definition includes "(2) a silent sound device which can transmit sound into the skull of person or animals." It notes: "The sound modulation may be voice or audio subliminal messages."²³



In 1973, the Belfast correspondent Robert Rodwell reported that the British Army in Northern Ireland had trialed a "non-lethal" crowd-dispersal weapon called the Squawk Box. Tested on soldiers at Army HQ in Lisburn, County Antrim, the device was mounted to patrol vehicles and emitted two ultrasonic or near-ultrasonic frequencies designed to annoy and nauseate. With a low beat of 2 Hz, the sounds were reportedly broadcast in two simultaneous frequencies at 16k Hz and the very similar 16,002 Hz. The Ministry of Defence acknowledged that it "may" have been in possession of Vietnam War-era US equipment (presumably the HPS-1) but then



The Mount Carmel Center engulfed in flames on April 19, 1993, during the siege of the Branch Davidians.

added: "it's not our policy to discuss any weaponry that we haven't used."²⁴

A 1976 study by the Aerospace Medical Research Laboratory at Ohio's Wright-Patterson Air Force Base implied that infrasound would be an excellent weapon because it "penetrates walls and other such conventional sound insulation with considerably less attenuation than higher frequency sounds." Individuals could be tormented from agents operating at a distance. Ear muffs and other palliatives are of no use. Using an infrasound chamber, researchers found that at up to 50 Hz with 145 db, humans will gag and feel chest vibrations. Up to 100 Hz and 154 db choking, headache, and exhaustion are experienced. At this point, the experiments were reportedly stopped.²⁵

The War on Terror

After the Cold War, new enemies were needed. Counterinsurgency warfare, in which the above weapons were utilised, was shifted from targeting left-wing (or "communist") groups in Asia and Latin America to right-wing Muslim terror groups, many of them secretly allied with the CIA,²⁶ in Africa, the Middle East, and Central Asia. Sound bombs, LRADs, and voice of god technologies—which will be explored shortly—were turned against Afghans, Iraqis, and Somalis.

The US invaded Panama in 1989 to depose its former ally and CIA employee, General Manuel Noriega, who sought refuge in the Vatican Embassy. The US Army blasted the building with incessant rock music to force the General's surrender.²⁷ Steven R. Corman of the Center for Strategic Communication writes about a V2K, "voice of god" weapon used in Iraq, probably referring to the Gulf War a couple of years later in 1991. "[I]t was tested in a conflict situation... and pointed at one insurgent in a group, who whipped around looking in all directions, and began a heated conversation with his

compatriots, who did not hear the message."²⁸ Others report that the voice was supposed to be Allah's, generated in an effort to fool religious fighters.²⁹ Two years later, sonic weapons in the form of distressing noises (e.g., rabbits being slaughtered) were deployed on US soil in Waco, Texas, during the federal forces' massacre of more than 80 Branch Davidians, including up to 22 children.³⁰

In 1996, the US Department of Defense issued Directive 3000.3: Policy for Non-Lethal Weapons. This led to the creation of the Joint Non-Lethal Weapons Directorate, under whose auspices the other branches of the Pentagon, and later domestic law enforcement, were issued with new, hi-tech weapons.³¹

In Afghanistan, the country blamed for harbouring the alleged perpetrator of 9/11, the CIA used white noise to torture detainees in its secret prison, Cobalt. Torture-by-sound was refined under Project Kubark in the 1960s, part of the CIA's MK-ULTRA mind control experiments.³² The reason for playing culturally aversive music (like country or hip-hop) to captives, loudly and on endless repeat, is explained by the Department of the Army: "resistance to questioning is futile. This engenders a feeling of hopelessness on the part of the source."³³

Under the Joint Non-Lethal Weapons Program (JNLWP) in 2000, Woody Norris of the American Technology Corp., now Genasys, was tasked with making a sonic weapon for the Navy³⁴ that could, in his words, "knock" adversaries "on their knees."³⁵ It turned out to be the Long Range Acoustic Device (LRAD), deployed in 2003.

The specifics are classified, but in addition to making loud noises, LRAD appears to be able to project infrasound to make targets lose control of their bowels. Used in Iraq since at least 2003, US personnel describe LRAD as "the brown sound".

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Initially, LRAD was fitted to US Navy ships on the Tigris river, but in 2005 the Navy acquired LRADs for their counter-piracy (read: neo-colonial) operations near Somalia in the Horn of Africa. One study notes that it can be turned up to 150 db in volume, presumably over a range of frequencies.³⁷ In 2009, Honduran forces backed

by the US used LRAD against their democratically elected, recently overthrown President, Manuel Zelaya, whom, like Noriega, sought refuge in what he thought was the safety of a foreign embassy.³⁸

Since the 1980s, an economic ideology known as neoliberalism, which is neither new nor liberal, has been imposed on the peoples of both the third and so-called developed worlds.³⁹ The agenda generally consists of the wholesale privatisation of public assets, the financialisation of economies with equity firms and hedge funds, and the cutting back of social spending under the pretext of bringing fiscal deficits under control.⁴⁰ For workers, the effects generally include spiralling living costs, stagnant wages, and the normalisation of debt. Production shifts to services as manufacturing jobs are outsourced to cheaper labour in poor countries.⁴¹

The exploitation of the public under this model leads to potential revolution. Sound and other weapons were developed not only for Cold War psychological operations and as foreign counterinsurgency tools, but also for domestic suppression against internal protestors daring to resist the neoliberal regime.

After Somalia, it wasn't long before domestic law enforcement (read: social control) agencies were using LRAD against fellow Americans. Pittsburgh police deployed it against anti-G-20 Summit protestors in 2009, inflicting permanent hearing damage on bystander, Professor Karen Piper.⁴² After the neoliberal-triggered global crash of 2007–09, groups of dedicated protestors took over cities and towns across the world. The Occupy Movement, as it was called, was soon met with sonic force. In 2011, the New York Police Department countered Occupy Wall Street with LRADs.⁴³ Within a decade, Norris's invention was being ordered by agencies all over the world, from Azerbaijan⁴⁴ to Greece.⁴⁵ Efforts to commercialise Norris's V2K products,

e.g., to beam ads for soft drinks into people's heads, have not come to fruition, so far.⁴⁶

Meanwhile, the JNLWP is working on updated sound bombs, or flash-bang grenades, that disorientate crowds. Projects include "non-pyrotechnic derived flash-bang devices that meet or exceed the sound and light output of fielded pyrotechnical flash-bang[s]."⁴⁷ One of their latest inventions is the Laser-Induced Plasma Effect, which uses a femtosecond laser emission to create plasma which is then manipulated by nanolasers to produce audio effects that sound like human voices. David Law of the JNLW Technology Division said a few years ago: "We're *this close* to getting it to speak to us" (emphasis in original).⁴⁸ A Red Cross meeting five decades ago highlighted the dangers of laser weapons to the eyes and ears: "...laser light may give rise to several damaging effects, including heat, pressure, possible shock waves (both acoustical and ultrasonic) and protein generation in the blood..."⁴⁹

Conclusion: Sonic Attacks as Psyops?

In addition to fighting foreigners and domestic protestors, special forces have the potential to target their colleagues and blame foreign actors.

It is no secret that America's Deep State—the undemocratic military–industrial complex operating beneath the surface—hated the newly-elected President, Donald Trump.⁵⁰ No sooner had the results of the November 2016 election been reported, State Department officials at the US Embassy in Cuba were reportedly struck with an acoustic weapon, which is said to have made chirping and grinding sounds.⁵¹ Now known as Havana Syndrome, it produced symptoms similar to those experienced by CIA agent Polymeropoulos.⁵² Physicians hired by the State Department claim to have identified structural changes in the brains of 21 affected persons that are linked to no known disorders.⁵³ The FBI interviewed Dr Frey, inventor of the V2K '60s prototype, who was quick to point the finger at the Russians and their Cuban allies.⁵⁴ Perhaps the attack was a false-flag in which military intelligence secretly targeted their civilian colleagues in order to blame Russia, against which Trump was considered too soft?

In November 2020, White House staff members near the Ellipse at the south of the building, including a National Security Council official, were reportedly targeted. In April this year, the Senate Intelligence Committee met with intelligence officials in closed hearings to gather more information. Recently, CIA officers allegedly required treatment at the specialist Walter Reed National Military Medical Center.



LRAD on board a Japanese destroyer

Continued on page 84

Sonic weapons...continued from page 35

In response to these growing numbers of supposed attacks, CIA Director, William J. Burns, and his Deputy, David Cohen, have set up a new unit to identify the culprits. But Amanda J. Schoch of the Office of the Director of National Intelligence says: "As of now, we have no definitive information about the cause of these incidents, and it is premature and irresponsible to speculate."⁵⁵ Moscow has denied any involvement. But this hasn't stopped US corporate media from seeding the narrative with accusations pointing to Russia's military intelligence agency, the GRU (*Glavnoje Razvedyvatel'noje Upravlenije*, Main Intelligence Directorate, ГРУ).

Decades ago, US intelligence concluded that the Soviets were using EM energy to trigger spy devices, not to attack personnel.⁵⁶ It may be that this is again the case. It may also be that as we enter the Fourth Industrial Revolution, new budgets for military-to-civilian technologies are needed. Pointing the finger at foreign bogeymen for invisible and unverifiable attacks might be just the thing needed to justify those budgets. But, if enemy states really are to blame, we should also remember that such weapons allow for plausible deniability on their part. The fog of war thickens, albeit audibly.

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