

# Inner Voice, Target Tracking, and Behavioral Influence Technologies

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## ABSTRACT

Inner voice transmission development by ultrasound and microwave technique is reviewed as well as target tracking literature. References recognizing behavioral influence technologies are surveyed along with reported instances of the use of microwave and ultrasound energy forms on people. Many aspects of the considered literature directly contradict professional presumptions, particularly within the psychological and psychiatric communities.

## INTRODUCTION

People discerning remote manipulation corresponding to technology capable of such influence have formed protest organizations across the world.<sup>i ii iii iv</sup> Educated society is uninformed regarding authentic documentation of the development and existence of these technologies, and is without appreciation of the hazard. Complaint of 'hearing voices' and perception of other remote manipulation must receive appropriate scientific and legal investigation with protection. Professional awareness is virtually absent with eminent texts and opinion being presumptive, without appraisal of the evidence.

Herein is substantiated:

1. The development of remote wireless ultrasound and microwave internal voice transmission.
2. Human tracking technologies.
3. References recognizing behavioral influence capabilities and the use of such technologies against humans.

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## ULTRASOUND VOICE TRANSMISSION

Because of conducting medium non-linearity, sound can be scattered by sounds of different frequencies, which produces entirely new tones, and this was originally observed in air as the Tartini tones during the eighteenth century.<sup>v</sup> The same phenomenon occurs for ultrasound sonar systems called parametric arrays in a manner that is highly directional. Mathematical basis for such sonar effects were developed, which predicted the generation of sound waves that are of audible low frequencies.<sup>vi vii viii</sup> A subsequent more general and complete analysis predicted not only simple tones, but an ‘envelope’ of modulated low frequency sound, which could encompass voice within the hearing range.<sup>ix</sup> Despite rumors of failed classified air experiments,<sup>x</sup> abstract reports of air generated acoustic tones by parametric array ultrasound beams began appearing,<sup>xi xii xiii</sup> and then had more complete publication,<sup>xiv</sup> though unrecognized was an earlier, less extensive report.<sup>xv</sup> This ability to produce sound is utilized to construct loudspeakers for directionally projecting audio sound,<sup>xvi</sup> which have further characterization<sup>xvii</sup> with sound modulation improvement,<sup>xviii</sup> and mathematical prediction compared to experimental results.<sup>xix xx</sup> Basic methods for such speakers are described in the Audio Engineering Handbook.<sup>xxi</sup> The connotation of ‘loudspeaker’ is somewhat misleading as a term for these speakers, since virtual point sources of sound are generated within the ultrasound beams<sup>xxii</sup> without scattering outside the beam intersection.<sup>15</sup> Recently parametric array emitter<sup>xxiii</sup> and directivity<sup>xxiv</sup> improvement, as well as less cumbersome mathematical descriptions for circular<sup>xxv</sup> or rectangular sources<sup>xxvi</sup> are reported. These sound projection techniques are internally perceived by a recipient without directional orientation as described from demonstrations, and patents for non-lethal weapon applications.

Lowrey patent # 6052336 “Apparatus and method of broadcasting audible sound using ultrasonic sound as a carrier” clearly focuses on non-lethal weapon application against crowds or as directed at an individual.<sup>xxvii</sup> Communication is understood as an inner voice with loss of the directional quality of sound perception. “Since most cultures attribute inner voices either as a sign of madness, or as messages from spirits or demons, both of which . . . evoke powerful emotional reactions”, quotes the effect on people. Replaying speech, with a delay impedes talking and causes stuttering. Normal brain wave patterns can be changed (or entrained), which “may cause temporary incapacitation, intense feelings of discomfort.” Entrainment technique is detailed by Monroe Patent # 5356368 “Method of and apparatus for inducing desired states of consciousness”, as accomplished by an auditory replication of brainwave patterns to entrain the EEG.<sup>xxviii</sup> Interstate Industries licensed this patent.

The Norris patent # 5889870 “Acoustic heterodyne device and method” produces sound particularly within cavities such as the ear canal.<sup>xxix</sup> An individual readily understands communication across a noisy crowded room without nearby discernment. Sound can also be produced from mid-air or as reflecting from surfaces.

American Technology Corporation (ATC) licensed this latter patent, and commercially sells their HyperSonic Sound<sup>®</sup> system, which has a technical treatment available<sup>10</sup> and been presented at a professional meeting.<sup>xxx</sup> This company also has an acoustic non-lethal weapons system<sup>xxxi</sup> called the Long Range Acoustic Device (LRAD<sup>™</sup>). The LRAD is being integrated into the Navy’s radar situational awareness

surveillance systems, accounts for 60% of military sales,<sup>xxxii</sup> and has a reported 80 % efficacy in deterring wayward Persian Gulf vessels.<sup>xxxiii</sup> Besides the Navy the device is also deployed to the Army, Coast Guard, and Marine Corps<sup>xxxiv</sup> as well as ground troops in Iraq<sup>xxxv xxxvi xxxvii</sup> and Afghanistan.<sup>xxxviii xxxix</sup> The Miami police used the LRAD for the free trade conference,<sup>xl</sup> while the New York Police obtained it for the Republican Convention.<sup>33 xli</sup> The inner nature of sound perception is described from demonstrations for the Audio Engineering Society,<sup>xlii</sup> an engineering news article,<sup>xliii</sup> and Popular Science.<sup>xliv</sup> Some description of more obnoxious sound effects is available.<sup>xlv</sup> A similar ultrasound method capable of limiting sound to one person, Audio Spotlight<sup>®</sup> has peer reviewed publication,<sup>xlvi</sup> and is marketed. The Audio Spotlight has had exhibition at Boston's Museum of Science,<sup>xlvii</sup> the General Motors display at Disney's Epcot Center,<sup>xlviii</sup> the Smithsonian National Air & Space Museum, and other public venues.<sup>xliv</sup> The American Technology Corporation and Audio Spotlight devices feature in science news and technology articles.<sup>li lii liii</sup> A non-lethal weapons program director confirms the lack of nearby discernment on ultrasound voice transmission.<sup>liv</sup> Other acoustic influence methods may utilize ultrasound.<sup>lv 3</sup>

## MICROWAVE HEARING

There are early references to “radiofrequency hallucination”<sup>lvi</sup> and of reaction to radio wave energy<sup>lvii lviii</sup> by Italian authors that may have observed radio frequency hearing phenomena, but the observations were poorly characterized, at least in available English publications. However sound perception was known through radar technicians in World War II<sup>lix lx</sup> and the late 1940's,<sup>lxi</sup> who had microwave hearing effect anecdotes. Though most literature on the hearing effect refers to microwave hearing, the phenomenon extends below microwave frequencies, and radio frequency hearing is also an appropriate term.<sup>60</sup> Allan H. Frey was the first to substantially characterize the microwave hearing effect in a series of articles beginning in 1961.<sup>lxii lxiii</sup> Subjects can hear appropriately pulsed microwaves at least up to thousands of feet from the transmitter.<sup>lxiv</sup> Transmitter parameters above those producing the effect result in a severe buffeting of the head, while parameters below the effect induce a pins and needles sensation. Peak power is the major determinant of loudness, though there is some dependence on pulse width.<sup>63</sup> Pulse modulation appears to influence pitch and timbre. Microwave hearing is described as perceived within or near the head.<sup>59</sup> The hearing effect can be produced from radio frequency components of magnetic resonance scanners.<sup>lxv</sup>

Direct microwave hearing experience by many microwave workers, and the phenomenon's well replicated animal definition makes this the most accepted of low power microwave effects.<sup>61</sup> Review of human and animal microwave hearing confirmation by independent investigators establishes validity.<sup>58 59 60 lxvi lxvii lxviii lxix</sup> Designs for scaring birds away from aircraft or other hazards by microwave hearing<sup>lxx</sup> and induction of vertigo<sup>lxxi</sup> exist.<sup>lxxii lxxiii</sup>

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<sup>3</sup> Loos Patent # 6017302 “Subliminal acoustic manipulation of nervous system” can “cause relaxation, drowsiness, or sexual excitement, depending on the precise acoustic frequency near ½ Hz used. The effects of the 2.5 Hz resonance include slowing of certain cortical processes, sleepiness, and disorientation.”

While working for the Advanced Research Projects Agency at Walter Reed Army Institute of Research, Sharp and Grove discovered “receiverless” and “wireless” voice transmission.<sup>lxxiv</sup> Their method was simple: the negative deflections of voiceprints from recorded spoken numbers were caused to trigger microwave pulses. Upon illumination by such verbally modulated energy, the words were understood remotely. The discovery’s applications are “obviously not limited to therapeutic medicine” according to James C. Lin in Microwave Auditory Effects and Applications.<sup>lxxv</sup>

A Defense Intelligence Agency Communist literature review affirms microwave sound and indicates voice transmission. The report states: “Sounds and possibly even words which appear to be originating intracranially (within the head) can be induced by signal modulation at very low average power densities.”<sup>lxxvi</sup> Among weapon implications are “great potential for development into a system for disorientating or disrupting the behavior patterns of military or diplomatic personnel.” An Army Mobility Equipment Research and Development Command report affirms microwave speech transmission with applications of “camouflage, decoy, and deception operations.”<sup>lxxvii</sup> “One decoy and deception concept presently being considered is to remotely create noise in the heads of personnel by exposing them to low power, pulsed microwaves . . . By proper choice of pulse characteristics, intelligible speech may be created” quotes the report.

The Brunkan Patent # 4877027 “Hearing system” is a device for verbal microwave hearing.<sup>lxxviii</sup> The invention converts speech with remote introduction into the head by parabolic antenna. The microwave spectrum granted by the patent is from 100 to 10,000 MHz (0.1-10 GHz) with pulse width from 10 nanoseconds to 1 microsecond, and bursts of such pulses lasting from 500 nanoseconds to 100 microseconds. Preferred operation is at 1000 MHz, which is the frequency of optimal tissue penetration.<sup>lxxix</sup> Bursts of narrowly grouped, evenly spaced pulses determine sound intensity by their amount per unit time. A similar German patent for remote antenna microwave voice transmission is also based on microwave bursts.<sup>lxxx</sup> A microwave voice transmission patent with a non-remote transducer that is based on microwave bursts is “designed in such a way that the burst frequencies are at least virtually equal to the sound frequencies of the sounds picked up by the microphone.”<sup>lxxxi</sup>

Microwave hearing literature confirms an ability to reproduce sound characteristics, and aspects of these patents. Though loudness is modulated by pulse power,<sup>63 lxxxii</sup> closely spaced pulses also increase sound intensity,<sup>lxxxiii lxxxiv</sup> or lower the perception threshold.<sup>65</sup> Pulse width affects tonal quality with longer pulses producing lower frequency sound.<sup>59</sup> Microwave pulse width differentially influences cat cochlear nucleus auditory units that are responsive to different tones<sup>lxxxv</sup> over sound frequencies from 931 Hz to 25.5 kHz.<sup>lxxxvi</sup> The responses dependent on the separation of twin pulses<sup>86</sup> have at least some analogy to the parameters of human pitch discrimination.<sup>lxxxvii</sup> Lin extends the range of microwave hearing to frequencies into the ‘tens of gigahertz.’<sup>59</sup>

There are numerous patents for microwave voice transmission with non-remote transducers<sup>lxxxviii</sup> with one based on multiple microwave frequencies.<sup>lxxxix</sup> The first inventor of non-remote radio frequency voice transmission had a patent held up for five years by a Defense Intelligence Agency secrecy order,<sup>xc</sup> but the device is now for sale over the internet as the Neurophone.<sup>xcii</sup> Two separate devices with non-remote transducers show efficacy in peer reviewed publication either by independent analysis of

operation,<sup>xciii xciv xcv</sup> or the developers demonstrating improved speech discrimination.<sup>xcvi</sup>  
<sup>xcvii</sup> Although this latter report's title features electrotherapy, radio frequency hearing had just previously been considered as electrophonic hearing,<sup>xcviii</sup> with the report stating a radio frequency method, while referring equipment description to an Air Force Systems Command commissioned study.<sup>xcix</sup> This 1964 Air Force study is the first report of radio frequency voice transmission with improved word discrimination in 9 hearing impaired patients.

Descriptions in some of the patents attribute microwave hearing to direct neural influence. However in review, the most accepted mechanism is by thermoelastic expansion, which results in sound waves<sup>67</sup> that most likely induces bone conducted hearing. The cochlea does appear to be involved, but not the middle ear.<sup>69</sup>

"Communicating Via the Microwave Auditory Effect" is the title of a small business contract for the Department of Defense. Communication initial results are: "The feasibility of the concept has been established" using both low and high power systems.<sup>c</sup> A Freedom of Information Act (FOIA) request as to the project's final outcome met with denial on the part of the Air Force, on the grounds that disclosure "could reasonably be expected to cause damage to national security."<sup>ci</sup> Though the Air Force denied this FOIA disclosure, such a contract's purpose is elaborated by the Air Force's "New World Vistas" report: "It would also appear possible to create high fidelity speech in the human body, raising the possibility of covert suggestion and psychological direction . . . . If a pulse stream is used, it should be possible to create an internal acoustic field in the 5-15 kilohertz range, which is audible. Thus it may be possible to 'talk' to selected adversaries in a fashion that would be most disturbing to them."<sup>cii ciii</sup> Means to actualize such communication 'possibility' is evident in patents<sup>civ cv</sup> assigned to the Air Force without royalty payment. These patents describe demodulation of speech at the head of a recipient without a proximate emitter, and no beneficial use presumed. The process involves amplitude modulation where the carrier wave's influence is fully suppressed, high frequency speech components are filtered, and further distortion preventing processing. The inventors are Air Force employees who have received awards from the Directed Energy Directorate, apparently both for assistance in developing the millimeter wave area denial system later discussed.<sup>cvi cvii</sup> Robert O. Becker, whose eminence was enough to have been twice nominated for the Nobel Prize in biological electromagnetic fields research, is explicit regarding clandestine use of radio frequency voice transmission: "Such a device has obvious applications in covert operations designed to drive a target crazy with "voices" or deliver undetectable instructions to a programmed assassin."<sup>cviii</sup>

A microwave voice transmission non-lethal weapon is referenced in the thesaurus of the Center for Army Lessons Learned, which is a military instruction website.<sup>73 4</sup> An article from a magazine that publishes notably non-mainstream views details microwave inner voice device demonstration by Dr. Dave Morgan at a 1993 classified Johns Hopkins sponsored non-lethal weapon conference, manufacture by Lockheed-Sanders, and implies use by the CIA, who call the process 'voice synthesis' or 'synthetic telepathy.'<sup>cix</sup>

When electromagnetic signatures of spoken words are applied to the head at very low field levels (1 microTorr), word choice is significantly affected along the same emotional dimensions as the applied word.<sup>cx</sup> Though inspired by microwave hearing,

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<sup>4</sup> *Vide infra* for discussion of the analogously listed "Silent Sound" device in this reference.

this report is not of direct auditory perception. The author suggests that such an influence, even though weak, could shift the direction of group decisions in large populations, and has previously elaborated on the possibility of less specific electromagnetic influence on populations.<sup>cxv</sup>

## TARGET TRACKING TECHNOLOGY

The maintenance of isolated hearing effects on people requires obstacle penetration and target tracking. Internal voice capable energy forms penetrate obstruction and can be localized. Sound transmission through enclosures is a common experience. Human tracking ability is not nearly as apparent for ultrasound as for microwave radar, but ultrasound is being developed to discern movement through walls.<sup>cxii cxiii cxiv</sup> Though ultrasound is unnoticed even at high intensity and can pass through walls, a significant portion of the encoded sound from ultrasound speakers reflects audibly upon striking hard flat surfaces.

Common technology utilizes the radio frequency hearing spectrum, which encompasses cell phone,<sup>cxv cxvi</sup> TV, and radar frequencies.<sup>cxvii</sup> A variety of antennae localize the structurally penetrating radiation with collimation or focusing.<sup>cxviii cxix</sup> The Luneburg lens emits parallel rays and has over 50 years utilization.<sup>cxx</sup> Masers are another method of collimation.<sup>cxxi</sup>

Military radar systems listing human tracking capability include: Advanced Radar Surveillance System (ARSS-1) by Telephonics;<sup>cxxii</sup> Beagle Portable Ground Surveillance Radar by Pro Patria;<sup>cxxiii</sup> AN/PPS-5D Man-Portable Battlefield Surveillance Radar by Syracuse Research Corp.;<sup>cxxiv</sup> Squire LPI Ground Surveillance Radar by MSSC Corp.;<sup>cxxv</sup> and Manportable Surveillance and Target Acquisition Radar (MSTAR) by Systems & Electronics, Inc.,<sup>cxxvi</sup> which have ranges from 7-12 km for personnel tracking. Some of these internet examinable references extend their capability from that listed in the 2000-2001 Jane's Radar and Electronic Warfare Systems, which lists 13 target acquisition or tracking systems specifying such capability on personnel, purchased by militaries of some 27 countries.<sup>cxxvii</sup> Besides Russian manufacture there are also East European producers of such systems.<sup>127 cxxviii</sup>

The most widely deployed system is the Rasit ground surveillance radar by Thomson CSF AIRSYS, which lists 20 km as 90% probability of detection for humans.<sup>127</sup> Earlier systems have been in use since the Vietnam War.<sup>cxxix</sup> Basic operation of these systems involves a track initiation processor acquiring a target, while a data association filter maintains a tracking lock on the target.<sup>cxxxi</sup> The above designs feature infantry portability or mobile forward deployment, and cannot be regarded as the limit of capability, since larger radars have a range of 100 miles,<sup>cxxxi</sup> though lacking human tracking specification.

A quarter of a century ago, Jane's Weapon Systems listed some 32 weapons fire control designs whereby aiming was entirely determined by radar tracking data with at least 10 systems primarily designed for control of one weapon system.<sup>cxxxi</sup> Eight weapons guidance systems utilized microwave target illumination by a dedicated surface beam (called semi-active homing).<sup>132</sup> Sensors for more recent active guidance systems also illuminate targets for both laser<sup>cxxxi</sup> microwave radar<sup>cxxxi</sup> units that are compact enough to be onboard the missile, and so inexpensive as to be disposable with

the weapon. Target illumination tracking systems have nanosecond to microsecond response times. Such responses do not require a wide scan area to lock illumination upon a person at achievable speeds. At 90 miles per hour an auto travels less than 1/100 of an inch in a microsecond.

Rowan Patent # 4893815 “Interactive transector device commercial and military grade” describes the acquisition, locking onto, and tracking of human targets.<sup>cxxxvi</sup> Stated therein: “Potentially dangerous individuals can be efficiently subdued, apprehended and appropriately detained.” The capability of “isolating suspected terrorists from their hostages . . . or individuals within a group without affecting other members of the group” is stated. Laser, radar, infrared, and acoustic sensor fusion is utilized to identify, seek, and locate targets. Locking illumination upon the target until weapons engagement accomplishes tracking. Among available non-lethal weapons is an incapacitating electromagnetic painful pulse. Tracking data automatically aims weapons, and the system even provides remote physiological stress assessment during attack.

Microwave methods of assessing life by detecting breathing and heartbeat rates had full description in 1967,<sup>cxxxvii</sup> and are reviewed respecting medical and possible rescue use.<sup>cxxxviii</sup> The technique can differentiate hypovolemic from normal rabbits.<sup>cxxxix</sup> The US Military has an interest in a non-contact vital signs monitor.<sup>cxl</sup> The capacity is evaluated for obtaining covert polygraph information for lie detection.<sup>cxli cxlii cxliii</sup>

Hablov Patent # 5448501 “Electronic life detection system” describes radar that detects vital organ motion, and distinguishes individuals through obstruction.<sup>cxliv</sup> Therein is stated: “the modulated component of the reflected microwave signal . . . subjected to frequency analysis . . . forms a type of “electronic fingerprint“ of the living being with characteristic features, which . . . permits a distinction between different living beings.” Though this patent applies to trapped victim rescue, another Hablov et. al. Patent # 5530429 “Electronic surveillance system” detects interlopers with security emphasis.<sup>cxlv</sup> Individual variance of human radar signatures is otherwise known<sup>cxlvi</sup> than these patents, and gait<sup>cxlvii cxlviii</sup> or heartbeat<sup>cxlix cl</sup> have consideration as biometric identifiers.

Battlefield human tracking specifications are not expected to consider obstruction. Some indication of radar capability through obstruction can be gleaned from the adaptation of military technology to through-wall surveillance,<sup>cli</sup> which has been spurred by declassifications of the Clinton administration, and Homeland Security initiatives. Surveys or overviews of through-the-wall radar open literature are available.<sup>clii cliii cliv</sup> Most materials negligibly attenuate radar at the lower microwave frequencies. High frequencies in the millimeter wavelengths (95 GHz =3 mm) can provide detailed imaging of humans, but are not suitable for brick and concrete.<sup>152</sup> Though without detail, some human image can be obtained at frequencies as low as 10 GHz, which also has good building material penetration.<sup>152</sup> Image resolution is enhanced by increased antenna aperture,<sup>clv</sup> which can be synthetic without dependence on a single antenna’s size.<sup>clvi</sup> Humans are actually emissive of millimeter wavelengths,<sup>clvii</sup> and otherwise have good reflectance,<sup>154</sup> with a radar cross section of one square meter,<sup>clviii</sup> which approximates the two dimensional profile. Human emissivity at millimeter wavelengths even allows some measure of passive detection through walls,<sup>152</sup> though weapons detection through clothing is most developed.<sup>clix clx</sup>

Many through-the-wall radars simply detect gross motion, a frequent state of awake humans. Raytheon's Enhanced Motion and Ranging System is battery operated, briefcase sized, lists maximum range as 100 feet, provides two dimensional tracking, and can report range to motion of up to 16 targets.<sup>clxi clxii clxiii</sup> Defense Research and Development Canada of their Defense Department commissioned a consulting company to examine the feasibility of constructing an Ultra Wide-Band (UWB) through-the-wall radar from off the shelf components.<sup>clxiv</sup> Subsequent demonstrations show that such systems can locate a moving target within a building from 60 meters away with methods being refined to provide building layout, and denote non-moving targets.<sup>clxv</sup> UWB radars decrease interference with commercial signals,<sup>clxvi</sup> and makes radar utilization more difficult to detect. A portable, battery operated radar can detect an individual through 3 walls.<sup>clxvii</sup> Another UWB radar detects personnel through several intervening walls, and an extended range system can track human targets in excess of 1000 feet, with tracking data used to point a camera in the target direction.<sup>clxviii</sup>

Some through-the-wall surveillance (TWS) radars have considerable commercial development. Fullerton et al. Patent # 6400307 "System and method for intrusion detection using a time domain radar array"<sup>clxix</sup> is licensed to Time Domain,<sup>clxx</sup> which has Federal Communications Commission approval for sale of 2,500 of its RadarVision units in the US.<sup>clxxi clxxii</sup> RadarVision is marketed internationally,<sup>clxxiii</sup> has police or fire fighter target markets,<sup>clxxiv</sup> and the company is developing a SoldierVision unit for the US Army.<sup>clxxv clxxvi</sup> Georgia Tech is developing their Radar Flashlight for security and rescue applications.<sup>clxxvii clxxviii</sup> Both of these TWS systems operate by detecting vital organ motion, being battery operated, highly compact (10 pounds or less) models for the widest commercial potential, thus limiting range. RadarVision detects within 30 feet, while Radar Flashlight has a 10 foot range.

Other commercial TWS system developers are Patriot Scientific Corporation,<sup>clxxix</sup> AKELA, Inc.,<sup>clxxx</sup> SRI International,<sup>clxxxi</sup> and Hughes Missile Systems Co.<sup>131</sup> Radar detection software for personal computer display is sold.<sup>clxxxii</sup> A Russian report describes an ability to record the frequency spectrum of speech besides heartbeat and respiration.<sup>clxxxiii</sup> Since through-wall surveillance systems evident in the open literature are subject to commercial regulatory, pricing, portability, imaging, and multiple subject observation constraints, they cannot be regarded as the limit of capability especially regarding radars for less economically constrained security markets or not featuring portable design.

## **RECOGNITION OF BEHAVIORAL INFLUENCE TECHNOLOGIES**

Though not necessarily only involving voice transmission, references to behavioral influence weapons by government bodies and international organizations are numerous. Negotiation submissions to the United Nations Committee on Disarmament affirm the reality of microwave weapon nervous system effects.<sup>clxxxiv</sup> European Parliament passage of resolutions calling for conventions regulating non-lethal weapons and the banning of "weapons which might enable any form of manipulation of human beings"<sup>clxxxv</sup> includes neuro-influence capability.<sup>clxxxvi</sup> A resolution relates to the US High Frequency Active Auroral Research Project (HAARP), which can have



environmental consequences, and although utilizing high frequency, ionospheric extra low frequency (ELF) emanation results. Since ELF is within brain wave frequencies the project has capacity to influence whole populations.<sup>111 clxxxvii</sup> President Carter's National Security Advisor, Zbigniew Brzezinski, predicted development of such capacity.<sup>clxxxviii</sup> A US draft law prohibiting land, sea, or space-based weapons using electromagnetic, psychotronic (behavioral influence), and sound technologies "directed at individual persons or targeted populations for the purpose of information war, mood management, or mind control" has not yet passed.<sup>clxxxix</sup> Use of electromagnetic devices against people or electronics in Michigan is a serious felony.<sup>cxc</sup> Russian electromagnetic standards are nearly 1000 times lower than the West, so their weapon law forbidding electromagnetic weapons exceeding Health Department parameters is strict.<sup>cxc</sup> A Russian draft law explicitly references behavioral influence non-lethal weapons, and development in several countries.<sup>cxcii</sup> Resolutions by the International Union of Radio Science recognize criminal use of electromagnetic technology, particularly against infrastructure.<sup>cxciii</sup>

An Israeli general in charge of military research and development acknowledged investment in "mind control" technology by Israel.<sup>cxciv</sup> CNN has also reported regular use of microwaves against Palestinians as sourced from a medical engineer, and that the US Defense Department has contingency plans to use electromagnetic weapons against terrorists.<sup>cxcv</sup> The same reference quotes an ex-intelligence agent as stating "The US Government has an electronic device which could implant thoughts in people" in a different program interview. Electromagnetic behavioral manipulation effects have had report on various Discovery cable channel programs, and suspicion of such technology use on then President Nixon was expressed on Larry King Live, which reiterated congressional testimony.<sup>cxcvi</sup> A statement by General John Jumpers about making enemies hear and believe things that don't exist would include inner voice technology.<sup>cxcvii</sup>

The US Department of Defense has declassified a millimeter wavelength area denial weapon.<sup>cxcviii</sup> The prototype weapon is vehicle mounted, and considered a non-lethal weapon.<sup>102 cxcix</sup> The device produces a beam that causes a burning sensation, that is stopped by switching off the transmitter, or escape from the beam.<sup>cc</sup> Development of this device is in the advanced stages, and deployment to Iraq is reported expected in 2005.<sup>cci</sup>

Besides confirming ultrasound internal voice capability,<sup>54</sup> non-lethal weapons treatments note high powered microwave impulse disruption of brain waves with functional alteration<sup>ccii</sup> including unconsciousness,<sup>cciii cciv ccv</sup> which is confirmed in experimental animals.<sup>ccvi</sup> Non-lethal weapon reviews also mention 'mind control' development and testing.<sup>ccvii ccviii</sup> Terms utilized in the latter references indicate subliminal messaging, particularly a Russian developed technique called psycho-correction,<sup>ccix</sup> the utilization of which was considered against David Koresh of the Waco, Texas Branch Davidian incident.<sup>ccx ccxi ccxii</sup> An American system in the previous Army thesaurus reference called Silent Sounds<sup>73 ccxiii 5</sup> also utilizes subliminal messaging, and was utilized in the 1991 Iraq War according to the company founder,<sup>ccxiv</sup> and British

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<sup>5</sup> Also called S-quad, Silent Sounds, Inc. licensed Lowery Patent #5159703 "Silent subliminal presentation system", also has advanced brain wave entrainment technology with several classified patents. (See <http://www.megabrain.com/eeg.htm> and <http://www.megabrain.com/patent.htm> accessed 8/4/04) Unessential is individual direction, but possible by ultrasound.

news reports.<sup>ccxv</sup> A system based on the same technology is for sale on the Internet.<sup>92</sup> Silent Sounds also has sophisticated brainwave entrainment by “emotional clustering” capability.<sup>214 ccxvi</sup> Subliminal messaging is utilized in retail stores for theft prevention.<sup>ccxvii ccxviii</sup> Although the Federal Communications Commission reports few complaints of subliminal messaging in broadcasts,<sup>217</sup> the technique was most recently utilized in a 2000 US presidential political advertisement,<sup>ccxix</sup> and is reportedly rampant within Russian television.<sup>ccxx</sup>

## MICROWAVE AND ULTRASOUND USE AGAINST HUMANS

The microwave irradiation of the American Embassy in Moscow received little publicity until the winter of 1976 instillation of protective screening, but irradiation was known since 1953.<sup>ccxxi</sup> The irradiation was directional from nearby buildings with pulsation detected. Complaint to the Soviets had no avail, but the signals disappeared in January 1979 “reportedly as a result of a fire in one or more of the buildings,”<sup>ccxxii</sup> though there was recurrence in 1988.<sup>ccxxiii</sup> Psychiatric cases occurred during the exposure period, but no epidemiologic relationship was revealed with fully a quarter of the medical records unavailable, and comparison with other Soviet Bloc posts.<sup>222</sup> Although significant results matched the Soviet recognized neurotic syndrome,<sup>ccxxiv</sup> these were dismissed as subjective symptoms. Professional publications further detail some of these flaws,<sup>ccxxv</sup> along with charges of government cover-up, particularly respecting cancer cases.<sup>ccxxvi</sup> The CIA had Dr. Milton Zaret review Soviet medical microwave literature to determine the purpose of the irradiation. He concluded the Russians “believed the beam would modify the behavior of the personnel.”<sup>ccxxvii</sup> In 1976 the post was declared unhealthful and pay raised 20%.<sup>ccxxviii</sup>

The most documented citizen microwave irradiation was of peace protesters at Greenham Common American Air Force Base in Berkshire England, who prompted investigation of unusual symptoms.<sup>ccxxix</sup> Radiation measurements exhibited microwaves with symptom experience up to a hundred times the background level, and rose sharply on protests nearer the base.<sup>223</sup> Symptoms became pronounced on cruise missile transport, a protest focus.<sup>223</sup> Recorded were wide ranging complaints: skin burns; ‘severe’ headaches; drowsiness; temporary paralysis; incoordinated speech; two late (5 mos.) spontaneous abortions; an apparent circulatory failure; and unlike usual menstrual synchronization, irregular or postmenopausal menstruation. The symptom complex fits well with electromagnetic exposure syndrome.<sup>223</sup> It is also reported that some of the women ‘heard voices.’<sup>ccxxx</sup> The base closed finally in 1991.

Measurement of non-ionizing radiation fields in the vicinity of an Australian victim is described.<sup>ccxxxi</sup> The intensity ranged from 7 mV in an adjacent room to 35 mV next to the head. Criminal microwave directed energy weapon use is reported in Germany<sup>ccxxxii</sup> having similarity of circumstances, complaints, and symptoms in a number of cases, with microwave field measurement excluding the usual sources (cell phone towers, etc.) in at least one case.<sup>ccxxxiii</sup> Other anecdotal cases affirm microwave field measurement without strength publication.<sup>196 ccxxxiv ccxxxv</sup> A security company advertises investigations of electromagnetic harassment including microwave voice transmission with field measurement.<sup>ccxxxvi</sup> Victims have asserted an ability to record harassment effects. Though the evidence for recording microwave harassment effects is

inconclusive and only slightly more than anecdotal, condenser microphones are responsive to the thermo-acoustic mechanism, and other microphone design types have elements that are similar to thermo-acoustic responsive situations.<sup>ccxxxvii</sup>

Ultrasound behavioral influence technology use in Northern Ireland is cited.<sup>204</sup> The device could focus on one person and utilized ultrasound like the previous discussed patents, though voice transmission is unconfirmed. It was employed in Vietnam by the Americans, and is known as the squawk box. Psychological effects are summarized as ‘spooky.’ More detail by a defense journalist is quoted: “When the two frequencies mix in the human ear they become intolerable. Some people exposed to the device are said to feel giddy or nauseous and in extreme cases they faint. Most people are intensely annoyed by the device and have a compelling wish to be somewhere else.”<sup>ccxxxviii</sup> British police inventories list the specific device, though a spokesman denied use.<sup>223</sup>

Sophisticated behavioral influence capability is confirmed by ex-intelligence officers. Julianne McKinney, Director of The National Security Alumni Electronic Surveillance Project has conducted a study of victim cases. This is a largely classified employee victim study with internal voice transmission avowal.<sup>ccxxxix</sup>

## DISCUSSION

Ultrasound voice transmission technology is well confirmed by peer reviewed literature, deployed in military<sup>35 36 37 38</sup> or police situations,<sup>33 40 41</sup> publicly demonstrated in museum exhibits,<sup>47 48 49</sup> and for sale to the public.<sup>ccxi ccxli</sup> Microwave internal voice transmission citations rest on a solid foundation of microwave hearing literature, with confirmation in peer reviewed literature as well as a government report for non-remote transducer systems,<sup>95 97 99</sup> and a further such device for sale.<sup>92</sup> There are four patents for remote radio frequency voice transmission,<sup>78 80</sup> two of which were developed by the US Defense Department<sup>104 105</sup> as well as additional references affirming successful development.<sup>74 77 100</sup> Though there is only some publication of microwave field strength around victims<sup>223 231</sup> or measurement anecdotes,<sup>196 234 235</sup> with such publication to remote radio frequency voice transmission use being in media of less respected reliability, such reports are supported by descriptions of non-lethal weapon applications<sup>76 103</sup> and references indicating weapons.<sup>73 109</sup> The existence of numerous systems capable of tracking humans, has long demonstrated the feasibility of constructing devices capable of producing internal voice continuously in isolated individuals. To deny such technological capability in the face of extensive complaint is willfully to ignore documented development of the relevant technologies and engineering competence for complete integration. It must be appreciated that engineering development is often proprietary and less published than open science, especially in areas with covert application. Even the most prejudiced skeptic, who would honestly consider the relevant literature, would have to concede that such capacity has had development. The fact is that such complaints have had no adequate investigation.

The logic in the prediction by Brzezinski<sup>6</sup> of the appearance of a more controlled and directed society dominated by a power elite willing to use the latest modern techniques for influencing behavior without hindrance by liberal democratic values is

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<sup>6</sup> National Security Advisor to President Carter.

compelling.<sup>188</sup> Since those supposedly expert regard a victim's perceptions as psychotic, all complaints are disregarded, much less capability to bear witness. Potential targets are multiple, and may include anyone worth neutralization: domestic adversaries; security risks, which may only comprise classified disclosures; witnesses of improprieties; those prone to committing advantageous felonies; and even those psychologically similar to target groups for development purposes. Internal voice technology is most applicable within the same language and culture. Security agencies have little legal accountability, particularly with utilization of unrecognized technology. Legality is readily circumvented by executive orders, (particularly declaration of a crisis or emergency situation), which can be sealed, and this prerogative is only accountable to co-equal branches of government.

Most complainants allege public sector involvement or sub-contracted private companies.<sup>ccxlii</sup> Remote behavioral influence research has long been funded by the US,<sup>108</sup> with evidence of inner voice transmission development<sup>31 74 77 78 80 100 104 105</sup> and weapons,<sup>34 35 36 37 54 73 109</sup> though denying on national security grounds project results<sup>101</sup> and even foreign literature analyses.<sup>ccxliii</sup> Some 30 countries evidence active behavioral influence weapon research.<sup>ccxliv</sup>

Leaders of victim movements for investigation and protest have written presentable treatments from the East European<sup>234 235 ccxlv</sup> and victim<sup>196</sup> perspectives, but while there has been some psychoanalytical acknowledgement,<sup>ccxlvi</sup> no concise treatment is published in mainstream media. Current medical awareness ensures effective neutralization of the afflicted, though not all those affected are stigmatized. However phenomena of 'hearing voices', or perception of remote manipulation, when recounted to health professionals results in various prejudicial diagnoses,<sup>ccxlvii ccxlviii</sup> totally without investigation. The longstanding disregard for people with such symptoms that give presumed rationale for civil rights abrogation must be justified by adequate investigation, which is not apparent in medical scholarship. Mandatory is determination of relevant fields around complainants. Professional opinions formed without excluding these technologies are negligent. Such diagnosis must be regarded as presumptive.

Longstanding complaints by numerous victims about remote voice transmission to the medical community<sup>ccxlix</sup> are too correspondent to the technologic development herein documented to further ignore. The fact that microwave bioeffects have extensive correlation with reported symptoms of major psychosis other than 'voices,'<sup>cccl</sup> further substantiates the ambiguity of diagnostic supposition. All of society should be disturbed at the prospect of remote inner voice induction, since the unaware subject would perceive such voices as his own natural thought, without complaint provoking assault. Even complaints of 'mind reading' by some victims perceiving such intrusion has basis in that recent EEG analysis studies confirm and extend the feasibility of thought reading, which was reported initially by a 1975 Defense Advanced Research Projects Agency study, and there are references to 'remote EEG' microwave methods.<sup>cccli</sup>

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