



**POPSCI** THE FUTURE NOW **COM**

# DARPA Wants to Install Transcranial Ultrasonic Mind Control Devices in Soldiers' Helmets

By [Clay Dillow](#) Posted 09.09.2010 at 4:53 pm



**Standard Issue Mind Control** DARPA wants ultrasound-enhanced helmets that allow soldiers to stimulate certain regions of their brains.

DARPA has been trying to crawl inside the minds of soldiers for a while now, but a new ultrasound technology could let them get deeper inside than ever. Working under a DARPA grant, a researcher at Arizona State is developing **transcranial pulsed ultrasound** technology that could be implanted in troops' battle helmets, allowing soldiers to manipulate brain functions to boost alertness, relieve stress, or even reduce the effects of traumatic brain injury.

Manipulating the brain to enhance warfighting capabilities and maintain mental acuity on the battlefield has long been a topic of interest for DARPA and various military research labs, but the technology to do so remains limited. Deep brain stimulation (DBS), for instance, requires surgically implanted electrodes to stimulate neural tissues, while less-invasive methods like transcranial magnetic stimulation (TMS) possess limited reach and low spatial resolution.

But Dr. William J. Tyler, an assistant professor of life sciences at ASU, writes on the DoD's "[Armed With Science](#)" blog: "To overcome the above limitations, my laboratory has engineered a novel technology which implements transcranial pulsed ultrasound to remotely and directly stimulate brain circuits without requiring surgery. Further, we have shown this ultrasonic neuromodulation approach confers a spatial resolution approximately five times greater than TMS and can exert its effects upon subcortical brain circuits deep within the brain."

Tyler's technology, packaged in a warfighter's helmet, would allow soldiers to flip a switch to stimulate different regions of their brains, helping them relieve battle stress when it's time to get some rest, or to boost alertness during long periods without sleep. Grunts could even relieve pain from injuries or wounds without resorting to pharmaceutical drugs. More importantly, in the periods after brain trauma ultrasound technology could reduce swelling and metabolic damage that is often the root cause of lasting brain damage.

[[Armed With Science](#) via [Danger Room](#)]

**RELATED ARTICLES**

-  [Aiming High, DARPA Wants Inhalable Drugs to Counter Effects of Extreme Altitudes](#)
-  [Army Seeks Helmet-Mounted Radar to Give Every Soldier 360-Degree Awareness](#)
-  [Navigation Helmet Creates Sound Maps for the Blind](#)

**TAGS**

Technology, Clay Dillow, brain injury, darpa, defense, health, military, neurology, ultrasound

Previous Article: [Archive Gallery: The Twentieth Century's Best-Kept Military Secrets](#)

Next Article: [With China Clamping Down on Rare-Earth Metals, Japanese Manufacturers Devise Clever Alternatives](#)

26 COMMENTS



StephenD.Alvarez

09/09/10 at 5:10 pm

Oh Darpa, you must be run by a group of super nerds, who happen to be slightly sociopath-esk.

[Link to this comment](#)



TANGSTEN

09/09/10 at 6:25 pm

DARPA, if you want to turn people into robots you should probably start by making better robots and work less at dehumanizing people. Chances are you're gonna cause more brain damage then you'll prevent, not to mention the unwanted dependency soldiers might experience if they leave that thing on for too long. Taking off the soldier's helmet could be comparable to amputation if left on for too long. And what do you think would happen if the thing malfunctions in the middle of the field. Think before you act. Read "The Terminal Man" by Michael Crichton. It might give you some insight.

[www.joesid.com](http://www.joesid.com) - Where 3D meets Flash

[Link to this comment](#)

thor0997

09/09/10 at 7:34 pm

Technically soldiers sign away almost all of their rights when entering the military, so I guess it is "legal" if you really want to stretch the word. But I can see this going horribly wrong. If the magnetic part of the device is in the helmet and then the helmet takes a bullet then it could have all sorts malfunctions that will in turn cause the brain to break.

[Link to this comment](#)

trireme

09/09/10 at 7:46 pm

If the soldiers have control over the devices and understand their functions, this could be a great tool for them. But if someone else is at the controls and the soldiers are ordered to receive treatment...

All the same, I would feel more comfortable with ultrasound or TMS than with drugs, since at least a machine has an off switch.

[Link to this comment](#)

Dirk Mcbratney

09/09/10 at 8:16 pm

The article uses the words "transcranial" and "implanted" to refer to a helmet that makes sounds.

But yes, although it sounds like the soldiers have the ability to control these functions, it could be abused by command structures in ways that could become questionable or at least unfashionable.

[Link to this comment](#)

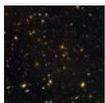


chieffranky

09/09/10 at 8:52 pm

I could see a small amount of satisfaction from the soldiers hacking it to aim it at the pleasure center of the brain. ...that is until they became so addicted that they pleased themselves to starvation.

[Link to this comment](#)



OnlyHuman

09/10/10 at 1:25 am

@thor0997 said "Technically soldiers sign away almost all of their rights when entering the military"

I was in the Military in the early 1980's. We were playing "war games" once and we were all in full chemical suits. The commanding officer call the enlisted people together and asked who was the lowest ranking individual.

A young kid came up and the officer told the guy that he was now part of "Operation Canary". Then he told him to remove his gas mask and take a deep breath.

The idea behind it was

1. We needed to know if there was gas around

and

2. If there was gas we could determine what kind by the reaction of the enlisted guy.

There was a medic there with stuff to counter gas exposure, but still that was messed up.

[Link to this comment](#)

Fummfur

09/10/10 at 5:05 pm

Vonnegut shouldn't of given them any ideas.

<http://books.google.com/books?id=YuLuAn3itnAC&pg=PA95&lpg=PA95&dq=rented+a+tent+MARS&source=bl&ots=eLuTKswki&...>

[Link to this comment](#)

skymward

09/10/10 at 6:01 pm

Technically, no, soldiers DON't give away their rights when they signup. They are under military law, which (in the USA) is entirely separate from civilian law, which is not to say you can't be convicted by local or federal law enforcement.

They don't have the right to refuse an order, no.

This tech is along the lines of the drugs they were developing for preventing PTSD before it occurs. They are REALLY trying to make veterans less expensive.

[Link to this comment](#)

Dirk Mcbratney

09/10/10 at 6:15 pm

Seriously? Protecting soldiers from PTSD is a viciously self-serving cost-cutting measure on the part of the military? Are you \*actually\* implying that?

[Link to this comment](#)

skymward

09/11/10 at 2:35 am

Yes, and why not? They give vaccinations, armor, and drones for the same reasons. Soldiers are expensive!

[Link to this comment](#)



Domin8or

09/11/10 at 10:37 am

Ya. So lets use are money on something that we actually need.

[Link to this comment](#)

QIII

09/11/10 at 7:56 pm

No. Soldiers do not sign away their rights. They assume a sacred National trust with grave, dangerous and demanding duties that demand selfless devotion to this Republic. We do not want robots. We want bright, thinking individuals who understand Commander's Intent, are able to react to the situations that occur on the battlefield to achieve the Commander's Intent when events do not develop as expected in the Op Order. Service Members maintain all the Rights afforded to any American under civil law and are protected also by rights afforded under the Uniform Code of Military Justice. The protection of Rights is effectively doubled, not lessened.

Yes. The most junior person unmask if no other option is available. The mission must be accomplished and a Commander must consider his assets and resources. This does not mean that any man is dispensable. None of them ever are. But a mission has to be accomplished. "Mission first, men always."

This idea is stupid, misguided and contrary to what it means to be a Soldier. It is a dangerous and sinister program wrapped in the colorful trappings of looking after the Soldier.

Sincerely,

24 year Army Veteran; former Field Grade Commissioned Officer; VFW Life Member; Disabled American Veteran; member, Sons of the American Revolution; member, The Society of the War of 1812; member, Sons of Union Veterans of the Civil War; member, Sons of Veterans of the Spanish American War; descendant of men who, at every generation since the Revolutionary War, have served in the Army; father of two Soldiers; uncle of a Soldier; uncle of a Sailor; brother of two Veterans;

cousin of two combat Veterans.

[Link to this comment](#)



jerzyguy29

09/12/10 at 2:52 pm

You are so wrong. We do and did give up many rights and we were reminded constantly that we are Gubbernut property. You're long patriotic speech is touching but as soon as you became a Commissioned Officer you lost what little touch with reality you had. Also as a Commissioned Officer you have the right to refuse an unlawful order, Try doing that as an E-1 through E-4! You would have an Article 15 rammed up your but in the blink of an eye. You should try to remember your Oath to the Constitution for that is your true and only mission.

Cpl/E-4 63S Heavy Wheeled Vehicle Mechanic  
63RD ENG CO CSE

[Link to this comment](#)

boka

09/13/10 at 8:44 am

Don't be too hard on DARPA. After all their purpose is come up with this stuff before any other country/terrorist organization. They don't actually put anything in production. The come up with ideas and see if they actually work. We don't want to be caught off guard again like when the USSR sent up sputnik.

[Link to this comment](#)

QIII

09/14/10 at 1:18 am

E1 - E5. Back to College before Commission.

As an EM, I was also compelled to disobey unlawful orders, just as I was as an Officer. It was not a "right". It was an obligation. Doing the right thing can ruin a career for both Os and Es. Os don't get Article 15s for standing against unlawful orders. They get General Officer Letters of Reprimand and disgraced separations. General Officers get publicly "retired".

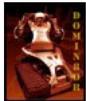
You need to distinguish between unlawful orders and orders that are stupid, counterproductive, asinine or just irritating. The first you have an obligation to disobey, whatever the personal consequences.

Yes. Your Oath to protect the Constitution - the one that guarantees you your Rights, Corporal. I remember it well, Corporal. I stood by it for 24 years. I appreciate your sage instruction, but I'll keep my own counsel on this one.

Essayons! Ranger! Sapper! Airborne! Air Assault!

This mind control crap is not even a good idea to contemplate. Someone ought to get some reverse imprints of stars in their forehead from a General Officer worth a shyte for even bringing it up.

[Link to this comment](#)



Domin8or

09/16/10 at 4:45 pm

@QIII:

Why not use robots? Of course not now. That would be a dumb mistake. But, as technology evolves, we will make better robots that take orders and complete missions human soldiers can do (and more). We have already made the Talon SWORDS. Not halve as good as a human soldier, but it can move about stealthily and find its target to destroy. There will always be human soldiers, but there will be less of them. I think it will be 2020 or so that 1/3 of all manned vehicles be replace by unmanned vehicles.

[www.unmannedwarfare.webs.com](http://www.unmannedwarfare.webs.com)

[Link to this comment](#)



bugstomper

09/19/10 at 2:39 pm

Try fighting the 'good fight' and actually 'winning wars' for a starter.

[Link to this comment](#)

blipvert

09/21/10 at 12:49 am

DARPA was working on a drug that would reduce a soldiers resistance to killing by suppressing their sense of morality.

I wouldn't be the least bit surprised if that was among the planned uses for this device as well.

[Link to this comment](#)

QIII

09/23/10 at 1:29 am  
@Domin8or

How about just not having so many wars? Maybe my species (combatus veteranus flatulentis) should go extinct.

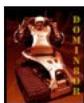
[Link to this comment](#)

Jiakopa

09/24/10 at 9:21 am

If everyone could stop and listen, then maybe it will make sense:the idea is to protect lives. if they wanted robots, I'm pretty sure DARPA would have made them

[Link to this comment](#)

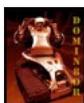


Domin8or

09/27/10 at 6:32 pm  
@QIII

That's a nice idea. But no matter how many humans we replace with robots (or vice versa) there will still be wars a plenty. Robots just eliminate battlefield death and mistakes.

[Link to this comment](#)

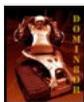


Domin8or

09/27/10 at 6:36 pm  
@Jiakopa:

DARPA is making robots but not efficient enough to replace humans. And they probably won't replace ALL humans in warfare. But a lot of soldiers will be. Robert Gates announced that by 2015, 1/3 of all military vehicles must be unmanned. I know that military vehicles aren't the same as soldiers, but you get the idea where the Military is going.

[Link to this comment](#)



Domin8or

09/27/10 at 7:46 pm  
@QIII

You said that the military does not want robots? Well that may have been the case when you were still serving. But today is a new day. Warfare is changing. What was necessary 10 or even 5 years ago needs to be replaced. I know that the soldiers are the ones who will have the hardest time with this. But it has to happen. DARPA is already spending millions of dollars on military robots and systems to make them even better. No matter what we do or say, its going to happen. Many soldiers will be replaced with technology. I don't believe however that all humans will be replaced, but like I said. A good many will.

[Link to this comment](#)

whatthefnow

09/29/10 at 11:27 pm

Yup the movies Terminator, Matrix, say it all. Don't they always give a clue in movies of what they are planning to do in the future? People need to start paying attention. Corporal, don't ever let anyone tell you what to think. Americans have been letting people think for them for far too long and look where we've arrived. So far down the craphole, no freakin Roto Rooter may be able to get us out. Neo-cons will always be pro-war, but we need to be pro-homeland defense, empahsis...HOMELAND. In the meantime, we got crazy crap going on south of the border and or troops are wasting time in the Middle East. Our whole country is screwed up and needs fixing fast. Help this country out and vote for Liberty candidates this November...

[Link to this comment](#)

Head Kandi

10/04/10 at 2:41 am  
@thor0997, Imfao

[Link to this comment](#)

To comment, please [Login](#).



**BOSE**  
**NEW** VideoWave™  
entertainment system

**BOSE® SOUND.**  
Built into an HD display.

EXCLUSIVELY AT BOSE STORES

[LEARN MORE >>](#)

Copyright © 2009 Popular Science  
A [Bonnier Corporation](#) Company. All rights reserved. Reproduction in whole or in part without permission is prohibited.

