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Wireheading: Towards a Consumer Market?

"If it was possible to become free of negative emotions by a riskless implementation of an electrode - without impairing intelligence and the critical mind - I would be the first patient."

-The Dalai Lama (Society for Neuroscience Congress, Nov. 2005)

The installation of such a mood-lifting device has been termed “wireheading”. It sounds like science fiction, and in fact the name comes from Larry Niven's *Known Space* science fiction stories. But this procedure has actually been performed before, and future developments might make wireheading available to consumers.

From 1950 to 1952 at the Tulane University Medical School, Dr. Robert Heath put electrodes in the brains of 26 severely mentally ill patients. He explained that “By implanting electrodes and taking recordings from these deep-lying areas, we were able to localize the brain's pleasure and pain systems. We'd interview a patient about pleasant subjects and see the pleasure system firing. If we had a patient who flew into a rage attack, as many psychotics did, we'd find the 'punishment' system firing” (Hooper)

Stimulating the septal area of the brain produced pleasure, both in behavior and subjective reports. When a device stimulated a severely depressed woman's septal area, she exclaimed, “What in the hell are you doing? You must be hitting some goody place” (Hooper). In another instance, Heath piped the chemical neurotransmitter acetylcholine into a patient's septal area through a tube. The

patient reported intense pleasure, including 30-minute orgasms confirmed by EEG readings (Hooper).

Some patients were given a remote control device that let them stimulate their own brain. One depressed man stimulated himself 1500 times per hour. They had to take away the device. However, Heath commented that “People don't self-stimulate constantly -- as long as they're feeling good. Only when they're depressed does the stimulation trigger a big response” (Hooper).

In addition to producing pleasure, stimulating the septal area negated negative emotions, such as pain or anger. It succeeded in turning off the pain of people suffering from cancer and arthritis. The stimulation even succeeded in stopping violent psychotic episodes for long periods of time (Hooper). Deep brain stimulation has since been very successful in treating depression, such as in a 2006 study in which depressed patients reported heaviness and emptiness disappear as soon as electrodes were switched on (Jha).

More recently, Dr. Stuart Meloy discovered that stimulation to a certain area of a patient's spinal cord produced sexual pleasure. He created a device (nicknamed the Orgasmotron) which stimulated this area. The device was somewhat successful in treating women who could not achieve orgasm (ABC). Though of course this device is less powerful than the ones studied at Tulane, it does represent progress towards pleasure-enhancing devices being marketed towards consumers.

The Hedonic Treadmill

Normally, people run on a “hedonic treadmill”. Though many events can make people more or less happy, these changes are mostly temporary. People adjust to changes, both good and bad, and eventually revert to their happiness set point, a default level of happiness (Lykken 187). The happiness set point is affected by multiple factors, mostly genetic or random (Lykken 189). Potentially, wireheading could increase this set point.

Of course, an increase in one's happiness set point doesn't negate all other ways of being happy.

A person with a high set point will still feel happier when eating good food, and will still feel less happy after stubbing their toe. Their low points might be higher than a severely depressed person's high points, but there is still considerable variation around the set point.

However, variations around the set point are limited. Buying physical possessions can temporarily increase happiness, but people quickly adjust back to the set point (Rosenbloom). Buying experiences, such as vacations, is more effective at increasing happiness, but they must be spaced out or else people will adjust to them (Rosenbloom). Drugs can produce a great deal of pleasure, but people adjust to these too. Almost all drugs cause tolerance and many cause dependence. In this way, drugs participate as part of the hedonic treadmill rather than subverting it.

It is useful to think of a constant state of wireheading as raising the set point of happiness. Just as average-happiness people have a higher set point than depressed people, wireheaded people would have an even higher set point than average-happiness people. So far, no tolerance has been observed resulting from wireheading. The existence of considerable genetic variation in happiness set point indicates that biological factors underly it, and these could potentially be manipulated.

Will motivation be affected?

As pleasure is strongly tied with humans' motivation, it would seem that wireheading would strongly affect motivation. Rats who are given the ability to stimulate their own reward center by pressing a lever will continue to press the lever until they die of starvation (Routtenberg). Humans who take crack cocaine, which temporarily creates pleasure, will sometimes become addicted and pursue the drug to the detriment of their other wants and needs. These facts would lead a reasonable person to be suspicious of wireheading.

However, the results from the Tulane study indicate that, even when given the opportunity, non-depressed humans do not compulsively stimulate themselves. It appears that most people are satisfied

at a moderate level of stimulation, and do not value increased stimulation above their other goals.

There was another case in which a woman with a deep brain stimulation device for treating pain developed addiction to it when she found that it could also produce pleasure (Portenoy). Although there is not much data available about the potential addictiveness of wireheading, it appears that it varies depending on the type of stimulation and the individual, with only some setups leading to addiction.

Wireheading can also be compared to hypomania, a mild form of mania. Hypomanic episodes are common in people with bipolar disorder, who have both depressive and manic episodes. A small number of other people are persistently in a hypomanic state (Carey). People with hypomania generally more creative, motivated, and happy than normal (Carey). One of the negative effects of hypomania is lower inhibition causing poor decisions, although some people can control this (Carey). So, an elevated mood is actually associated with more motivation, not less.

Based on past instances of wireheading and comparisons with more common psychological phenomena, it appears that most forms of wireheading would not cause people to compulsively self-stimulate like rats or crack addicts; instead, it might even enhance people's motivation to pursue goals other than happiness.

Reasons to Wirehead or Not

Why might someone choose to wirehead, or not? The answer depends on two factors: whether the person considers happiness to be a goal in itself, and how wireheading might affect their other goals.

The popularity of happiness research indicates that people do value happiness for its own sake. The fact that people listen to advice on how to be happy and sometimes follow it is evidence that, all else being equal, people would rather be more happy than less. This statement seems to be almost a tautology.

A form of wireheading with few side-effects would deliver exactly this: happiness with no other major effects. So why would someone be wary of it? There seems to be something that separates wireheading from, say, taking multiple shorter vacations rather than fewer longer ones in order to maximize overall enjoyment. It seems that only the second is actually taking pleasure in an experience, rather than being happy for no reason.

Perhaps happiness must be about something to be valuable. According to this view, it is the thing we are happy about (talking to a friend, going on vacation, listening to music) that is intrinsically good, and happiness is only useful as an indicator for this value. Happiness can be compared to money in a capitalist system in that, while it has no intrinsic value, it serves well as an indicator of value that motivates a person to achieve actual value. Just as a well-regulated financial system can cause the economy to satisfy consumers' needs, a well-regulated happiness system will motivate a person to achieve goals that have intrinsic value.

Yet people often feel happy for silly reasons. For most people, candy has no beneficial effects other than pleasure. Food is optimized for taste at least as much as it is optimized for health. It seems wrong to say that the experience of eating candy, minus the pleasure, has any value. Perhaps the anti-hedonist might argue that, even though it is pleasurable, eating candy has no value. This is inconsistent with most people's decisions, even long-term decisions (would any person in good health who enjoys candy pledge to never eat it in the future?). Most of the time a person's decision to buy candy or not comes from weighing happiness against other factors (such as money or health), indicating that happiness does have value by itself.

Furthermore, almost everyone agrees that the elimination of unnecessary suffering is a good thing. Depressed people who have lower than normal set points are given drugs (and sometimes wireheaded!) to artificially increase their set point. If bringing a depressed person to the average set point is good, then why wouldn't it be good to raise a person with an average set point to an above-average one? The designation of a certain point as "normal" is quite arbitrary, and is likely to be based

on the set point of the person or group of people making the designation. It is easy to imagine a group of depressed cynics deriding the false happiness of the majority.

Even if one believes there is a moral difference between adjusting up to rather than over the normal level, the fact remains that many people are below the normal level. For example, people who are poor compared to those around them are generally less happy than the relatively rich (Highfield). Unless one is to blame poverty on poor people, it seems fair that the poor should have the same set point as the middle class. It also seems fair for people who have had a traumatic past or who are less happy than average for genetic reasons to use wireheading to be happier.

A person might be concerned that wireheading would negatively impact goals other than happiness. Only the most resolute hedonist would say that happiness is all that matters, and that other things only matter to the extent that they produce happiness. This can be demonstrated, for example, in Robert Nozick's experience machine argument. According to this argument, if we had a machine that could produce any experience we wanted, we would not immediately want to plug ourselves into the machine (Nozick). An experience machine is portrayed in the movie *The Matrix*. Most viewers would agree that it was morally wrong for the robots to plug humanity into the Matrix, a collective experience machine.

Wireheading seems to go even further than the experience machine: happiness is not even gained through happiness-producing experiences (such as a beautiful virtual world), but is instead directly produced through electrical stimulation. It would take a very resolute hedonist to go beyond arguing that we should all plug ourselves into the experience machine, to argue that we should wirehead ourselves and disregard all other desires, such as the desire for knowledge and interpersonal relationships, in the pursuit of more intense forms of wireheading. Although by definition anyone would enjoy powerful wireheading, the image of someone doing nothing but receiving electrical stimulation seems wrong from almost everyone's current, non-wireheaded perspective.

Fortunately, because wireheading will probably increase motivation instead of decreasing it,

wireheading will help people achieve their other goals rather than hindering achievement. Inflation is empirically good for the metaphorical happiness economy. So, we should not view the problem as “either happiness or art and science and relationships etc.”, but as “why not more of both?”.

There are legitimate concerns that wireheading might cause some of the negative effects of hypomania, such as impulsive decision-making. Intense wireheading could cause effects similar to those of full-on mania, such as delusions of grandeur or hallucinations. It is unclear whether or not this will happen; other mood lifting drugs do not cause the same effects, and neither have these effects have not been observed in electrically stimulated humans. If wireheading has adverse psychological effects, a person has good reason to limit the stimulation; they should weigh the benefits of increased happiness against the psychological downsides.

Another important consideration is that often people want to feel negative emotions. People watch sad movies knowing that they'll be crying by the end. Someone might also feel that it's inappropriate to feel merely less happy soon after experiencing a serious loss. If someone wants to feel happy most of the time but not always, they might want the ability to temporarily disable their brain implant.

Overall, wireheading has many positive effects and few negative ones. Unless new negative effects come to light, a person's decision not to wirehead will probably be based on viewing it as unnatural, while a person's decision to wirehead will probably be based on valuing happiness or increased motivation.

Effects on Society

The large demand for pleasure-enhancing recreation drugs, despite their danger and ultimate ineffectiveness at overcoming the hedonic treadmill, indicates that wireheading would be quite popular

if it were safe, legal, and cheap (and even if it were none of the three). On the other hand, the fact that society often punishes drug usage out of proportion to the drugs' individual harms (consider the legal and social treatment of cannabis as compared with tobacco) indicates that, even if it were safe, wireheading would face significant opposition. The availability of wireheading could cause political conflict as people move from evaluating wireheading on a personal level to evaluating it on a societal level.

What would be the societal effects of wireheading? Since wireheading is quite effective at treating depression, widely available wireheading would reduce depression. It would also likely decrease negative emotions such as anger (as it did in the violent Tulane patients), reducing violence. The drug MDMA increases empathy in addition to producing pleasure, and some forms of wireheading might create a similar effect. Overall, effective wireheading would help people feel better and might improve relationships with other people.

There's really little bad to say about this conclusion. As I have argued before, greater happiness is associated with more motivation, so a wireheaded population would not resemble the complacent soma-addled citizens of Huxley's *Brave New World*. It will probably not be used, as alcohol is, to help people escape from their problems; instead it will probably give people the drive to confront them. Of course, since wireheading technology is still largely speculative, it is difficult to forecast its effects on the individual and society. Any unforeseen negative consequences might justify tighter regulation on wireheading. And people are likely to oppose societal change, even if the consequences are positive overall.

Regulation: Safety and Control

Any regulations on wireheading should be based on 2 factors: safety and control. Obviously,

forms of wireheading involving brain implants can be physically dangerous. It would make sense for the same safety standards used in other non-essential treatments, such as cosmetic surgery, to be applied to wireheading.

Psychological dangers are more subtle. Evidence from the Tulane study indicates that, for non-depressed people, the potential for addiction is low, and there are few adverse psychological effects. The woman who was addicted to her pain treatment stimulation did suffer from addiction, but her device was not specifically programmed to produce pleasure, and she had a history of addiction (Portenoy). If there are significant negative psychological effects, then some amount of regulation might be justified to minimize these. However, regulators should avoid too many regulations because these would create a black market, as with many illegal drugs. The question of whether the benefits of wireheading are worth any costs should be mostly left up to the individual; regulations should focus on educating consumers and banning products whose harms far outweigh their benefits.

Within broad safety limits, individuals should have control over the level and type of stimulation. Perhaps they can manipulate the device using a remote control slider, to adjust the level of stimulation to be anywhere from zero to some pre-defined maximum. Someone who wants to watch a sad movie might temporarily turn off the device.

How should the maximum level be chosen? Perhaps regulators will set some absolute maximum, if going above that level is very dangerous. Consumers should be able to set their own maximum in case they fear more moderate psychological harm. If people are afraid of a slippery slope (what if after I'm wireheaded I'll just want higher levels of stimulation?), then regulators might enforce a waiting period for having the device installed during which the person must not be wireheaded. So, someone wishing to upgrade to a higher maximum level of stimulation would have to remove the device for some amount of time before getting the new device. This would ease consumers' fears while still maximizing personal control over happiness level.

Though wireheading technology is not developed enough yet for a consumer market, it is only a

matter of time before the technology improves. Such technology will raise serious debate, on a personal and a societal level, about the merits of artificially lifting the moods of healthy people. Based on the limited evidence available at the moment, the effects will probably be mostly positive, and so regulation should focus on maximizing safety and individual control.

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