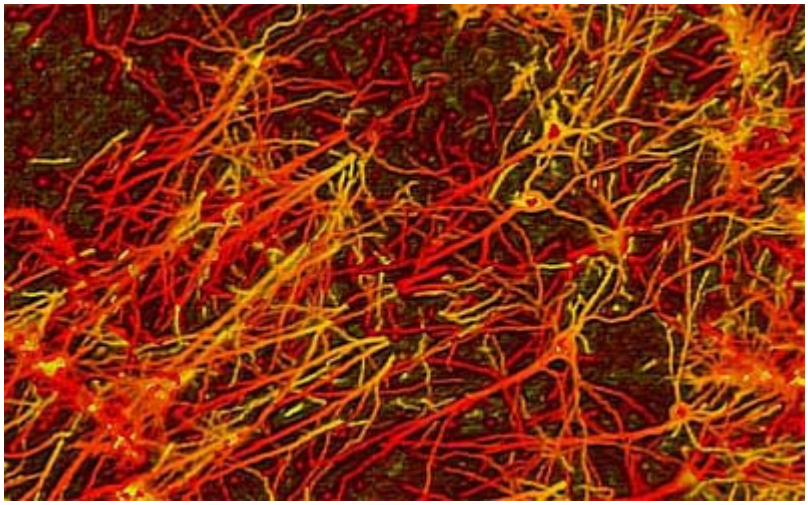
Neural hacking



Some things are relatively simple to do with psychosurgery and targeted nanites: increase/ decrease activity in certain brain regions, simulate the effect of any existing drug, add and remove connections temporarily. While psychosurgery takes time and effort because it deals with the large-scale complex mental representations, this is essentially low-level firmware hacking.

The rules for adding neural hacks are as for normal Psychosurgery (although it is not an opposed roll - the patient is being edited directly), and a +30 MoS halves the stress, a -30 MoS doubles it, a critical success avoids all stress and critical failure adds a Trauma or neural damage. The typical SV cost is 1d10/2 for voluntary hacks and 1d10 for involuntary.

In terms of cost, most are relatively cheap – they only require a few, standardized changes of the brain. The exception are those that are either legally/morally problematic, and those that require more personal tuning.

It is possible to do some of these changes in a slightly more advanced form that can be turned on or off. Essentially extra neurons are added for an artificial neural network that can control the changes, and this network is then connected to a software hook that allows the owner of the brain (and maybe their muse) to control them. Making them controllable increases the cost to Medium from Low in most cases.

Most hacks just do one thing, so of the possibilities in each entrybelow only one gets implemented at a time (although it is sometimes possible to stack them, especially with the advanced version).

Many of these hacks give skill or aptitude bonuses, but the size depends on the situation.

- By simulating drug effects in only some regions and at some receptors, very specific and side-effect free treatments can be done. Including software alcohol that you can turn off

instantly. A large number of people are on permanent **software antidepressants** or **stress limiters** after the Fall - otherwise they would be too traumatized to function. [Cost: Low]

- **Turn off area postrema** so you don't get motion sickness (hat tip to Alastair Reynolds). [Cost: Low]
- Turn off parts of parietal cortex to get those **depersonalization/unity with universe** Zen moments. Might be a good way of just spending time without getting bored. [Cost: Low]
- **Regulate emotional sensitivity up or down** - turn off your amygdala to become fearless (and unable to recognize dangerous people). Change your general mood setpoint (the fact is that our level of happiness is relatively unaffected by events and situation, so why not set it to just below hypomania?) [Cost: Low]
- Allow **external software to control your attentional focus**. "Muse, I need to work on this project. Please focus me on it for six hours, or if a level 2 priority event happens. And yes, allow me to go to the loo." [Cost: Medium]
- Tune your VTA reward response so you become more of an rational optimizer. People with the "**homo economicus**" mod are less risk aversive than normal people, have less status quo bias, don't care about sunk costs and don't do hyperbolic discounting - most normal transhumans find their behavior slightly odd but rational. [Cost: Medium]
- **Control your blood pressure** through nucleus ambiguus. [Cost: Low]
- **Control sleep/awake states directly** - your muse can wake you up to full alertness very rapidly by triggering nucleus coeruleus (and resetting various sleep activity), although it is not pleasant at all. A nicer wakeup process may take a few seconds from deep sleep to full alertness. And of course, you can emulate caffeine perfectly with no side effects. [Cost: Low]
- **Control hunger**: you can change your hypothalamic setpoint to make sure you approach your "ideal weight" (a bit old-fashioned in this day of anti-obesity macros for medichines, but this is what little old ladies still do), remove hunger pangs or give yourself appetite for that truly vile meal. [Cost: Low]
- **Control thirst**: modify the subfornical organ. Note that this is commonly needed when sleeving a human in a synthmorph body, since the lack of proper osmosensory activity is often interpreted as very annoying "phantom thirst" ("I have no mouth, and I must drink!" as one Reaper-sleeved soldier once said) [Cost: Low]
- **Change pain responses**: reduce pain, lower pain thresholds to get a suitable level of suffering and irritation to behave right at a neogoth revival, or why not cut the link between pain (somatosensory) and suffering (anterior cingulate gyrus)? Of course, rewiring the brain so it gives pleasure has been a favorite execution method in the Night Cartel. You lock the altered victim into a cell with a single razor and wait... [Cost: Medium]
- Activate "**flashbulb memory recording**" by artificially upping acetylcholine to the hippocampus (or just increase the synaptic plasticity directly) during an experience. Conversely, if you know you will be subjected to nastiness, you can turn off memory consolidation and deliberately forget whatever it was. [Cost: Low]
- **Change sexual preferences** (or level of interest) by modifying the preoptic nucleus. It requires some rewiring to tell the nucleus *what* stimuli to go for. "The latest fad here in Elysium is personalized paraphilias. Everybody is scrambling to get their own unique kink, and rumour says that Lindsay Turnell and Xi Zhou are in a spat about who was first with ursusagalmatophilia!" [Cost: Medium]
- Instantly **reset your diurnal rhythm** by modifying the superchiasmatic nucleus. Jetlag and gatelag are just a memory. [Cost: Low]

- **Amplify or decrease feelings of love, kinship or** friendship by modifying the oxytocin system and links between the fusiform cortex and the limbic system. "Darling, wouldn't you like an upgrade of our relationship?" (infatuation is most likely a somewhat separate system with amphetamine-like effects.) [Cost: Medium]
- **Wireheading** - why use drugs when you can re-wire your medial forebrain bundle to always give you pleasure that never habituates? And if you turn off plasticity in the nucleus accumbens at the same time, it is not even addictive. Sure, you won't care about anything while wireheading, but you can stop at any time you want (which you won't). [Cost: Medium]
- **Reduce boredom** effects by reducing basal ganglia habituation (quite dangerous, you could end up in a loop). [Cost: Low]
- Turn off the parahippocampal gyrus to induce a "**freshness effect**" - everything looks new, as if you have never seen it before. The exact opposite of deja vu. [Cost: Low]
- Increase mirror neuron activity (or add extra) to **improve empathy**. Or turn them off for a cool-headed outside look at what is going on. [Cost: Medium]

Some of these are based on oversimplifications or particular theories of brain systems, caveat psychomedicus.