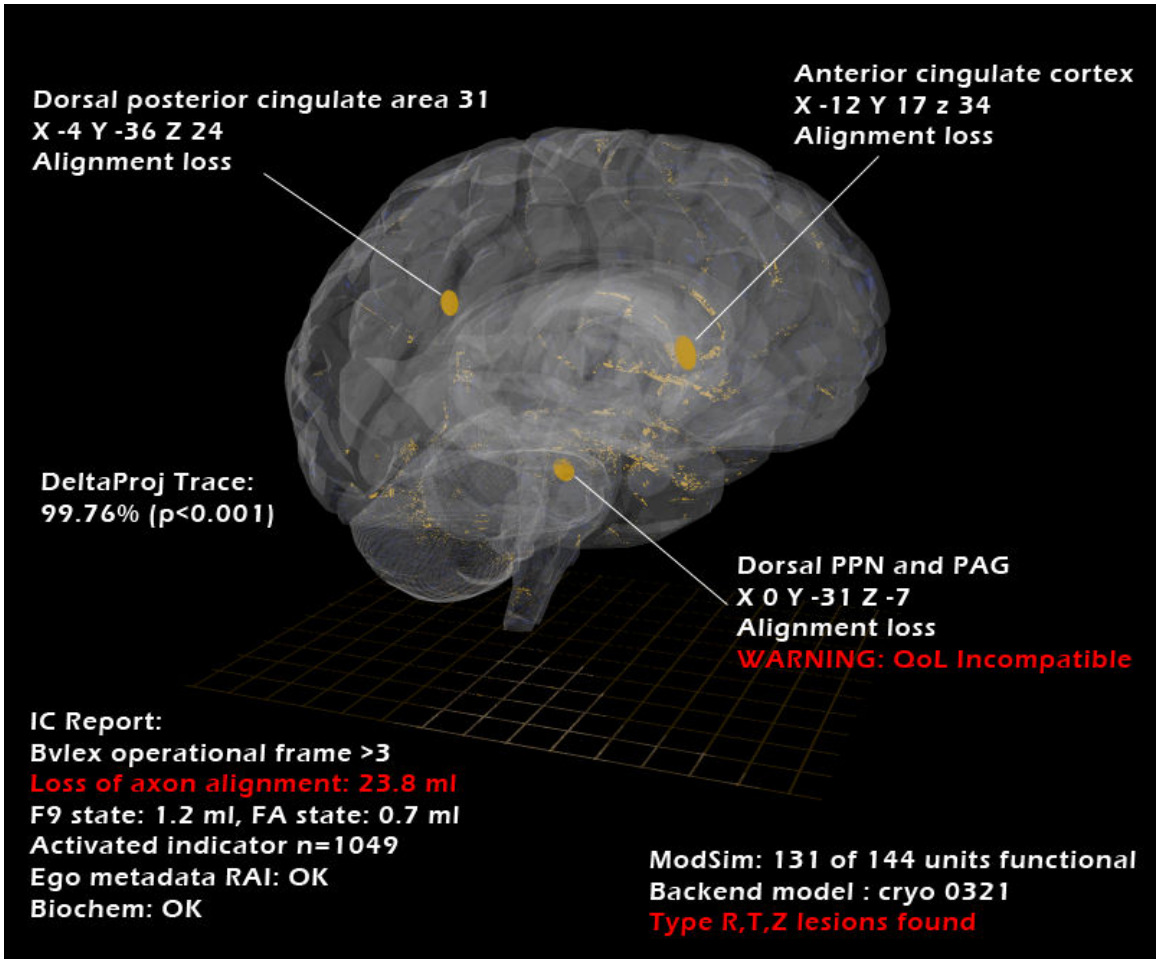
More neural damage



> *"Ouch, even I can tell that brain does not look good."*
> *"Yes. Your client got scanned at the Slyudyanka-12 facility, probably in the last week before it was overrun – saw it in the ego metadata. Probably he got scanned in a makeshift disassembler scanner. See that orange line? The disassembler film had probably started to wear out when his head was put on it and that line is where a patch of malfunctioning scanners passed through his brain like an icepick."*
> *"Can you fix him? He is important to us."*
> *"It is never yes or no. You should ask how much of him I can fix. That motor cortex can be patched with standard models. There is a lot of noise in his temporal lobe: expect some memory wonkiness. I am less happy about that nicked caudate... You can never tell what that kind of damage does, and you definitely don't want me to wallpaper his fronto-striatal loops if you care *who* you will get."*
> *"I'd rather have *him* pissed at us for crappy repairs than have a happy Mr. Nobody. So, please, just touch up what needs to be touched up."*
> *[Cognite Psychlab 27, Bleuler Station, AF04-12-07 11:34:09 SMT]*

In the modern world psychosurgery can fix many conditions that just a few decades back were completely incurable. If Alzheimer is detected, the ego is just moved to a healthy brain. Epileptic

foci or locked/in syndrome can be edited away. Profound personality problems can be adjusted by changing neurotransmitter levels directly.

However, the desperate uploading done during the Fall was often less than perfect. Equipment was run around the clock, failsafes and error checks removed to speed up the process, makeshift scanners were used (often manned by inexperienced or frightened staff) and transmissions occasionally jumbled. The result was a vast number of people with damaged egos. As they were reinstantiated they were treated to the best of the ability of their restorers but these often had resource and time limitations too. On top of this there are the results of mistuned psychosurgery hacks, nanoviruses and badly designed implants. Despite the amazing power of modern neurotechnology big and small neurological damage is common.

Well-off people and habitats often make a point of fixing everything that can be fixed. Overt damage is a disquieting sign of poverty and past desperation they want to forget. Unfortunately correcting the serious problems may leave other problems as a result, and patching these might be impractical. For example, a person where the data for the cerebellum got disrupted could have a "fresh" cerebellum model added to their ego, restoring motor function but introducing small errors like dysmetria – too minor and too involved with the complex repairs to be worth a direct patch.

Here is a bunch of new forms of neural damage, based (mostly) on real disorders with a few embellishments. In reality, some of these like cerebral paresis and seizures would be far more common than others, but many of the more obscure conditions are perfect for adding creepiness to Eclipse Phase. Just consider how some of them played out in Peter Watts' *Blindsight.*
In addition, they rarely come alone. If a character has one form of neurological damage other forms are likely (although of course several might have been patched).

The CP value of these varies: some are minor enough to be worth just 5 (like abarognosis), while major impairments (like aboulia or anterograde amnesia) are up to 20 CP. At the broader end (delusions, depression) the condition is better treated as a mental disorder.

Abarognosis Inability to detect the weight of held objects or tell the difference in weight between two objects. Usually due to parietal lobe damage (often the sufferer can tell weight properly if the object is held in the hand on the same side as the damage).

Aboulia Lack of will or initiative. Sufferers have difficulty in initiating or sustaining purposeful movements, have reduced or no spontaneous movements, answer queries slowly, lack interest etc. Causes can include damage to the frontal lobe, basal ganglia, capsular genu or the anterior cingulated cortex.

Absence seizures ("Petit mal seizures") Occasional absences, where the sufferer stares into space for a few seconds. They remain conscious but "do not think". Caused by epileptic seizures affecting the thalamocortical system. The classic "grand mal" seizures are usually fixed with psychosurgery these days.

Acalculia	Inability to perform elementary arithmetic operations, to count or compare which of two numbers is larger. Usually due to damage to the supramarginal or angular gyri. Damage in the angular gyrus affects learned mathematical facts like multiplication more, which damage in the intraparietal sulcus affects subtraction and magnitude sense.
Ageusia	Loss of taste due to damage to the pons, thalamus or midbrain gustatory pathway. Note that the sense of smell may be intact.
Agraphia	Inability to produce text despite otherwise normal motor function.
Akinetopsia	Inability to perceive motion in the visual field, despite normal perception of stationary objects. Filling a cup is hard, since the liquid seems frozen and the rise of the level is imperceptible. Moving people or vehicles seems to suddenly appear or disappear. Caused by damage to area V1 and V5 of the visual system.
Alexia	Inability to recognize text or read it. Usually caused by left hemisphere damage to the occipital or parietal lobes.
Alexithymia	Deficiency in understanding, processing or describing emotions. It is difficult to fantasize, emotional intelligence is low. While more of a personality trait it can be caused by certain forms of neurological damage.
Alice in Wonderland syndrome	A perception disorder than makes sufferer experience micropsia, macropsia and/or size distortion. They can be confused by the size and shape of parts of their body, warped perspective, distances changing or spatial relations becoming paradoxical. This can be caused by errors in the occipital or parietal lobe.
Allochiria	Damage to the right parietal lobe can produce a condition where the patient responds to stimuli on one side of the body as if they had been presented on the opposite side. When drawing, they produce mirror images.
Amusia	Inability to recognize familiar melodies, out-of-tune notes or even the content of music. Usually due to damage to the non-dominant hemisphere temporal lobe.
Analgesia	Difficulty in perceiving or processing pain, either due to insensitivity (due to damage to the pain perception system) or indifference to pain (damage to the link between pain and aversiveness). This can cause self-injurious behaviour. [While this may help ignore wound modifiers, it is *always* on and makes the character unaware of taking minor wounds.]
Anhedonia	Inability to experience pleasure from normally pleasurable activities such as eating, exercise, social interactions, sex or beauty. Mild cases may just

	produce a low, melancholic mood while serious cases produce clinical depression and apathy. Usually caused by damage to the reward pathways. Patching might lead to omnihedonia.
Anosmia	Inability to smell. Damage to the olfactory system of the brain makes the patient unable to smell or comprehend smells. This reduces the enjoyment of food and other flavours, both in reality and in simspaces. Sometimes anosmia is specific for certain odours.
Anosognosia	A condition where the person suffers from a disability (typically another form of neurological damage) but is unaware or denies the existence of it. This can include unawareness of blindness (Anton-Babinski syndrome), dementia, aphasia or paralysis. A related condition, anosodiaphoria, involves awareness of the handicap but indifference to it.
Anterograde amnesia	The ability to memorize new things is impaired or lost. Data is forgotten after a few seconds or minutes because the information is not successfully transferred from short term memory to the medial temporal lobe intermediary system.
Apperceptive visual agnosia	Gross bilateral damage to extrastriate visual regions makes it impossible to recognize objects because of problems in perceptual processing. The sufferer cannot recognize, copy or match simple shapes (but can still notice color and motion), and might sometimes be able to name parts of an object without being able to name the object.
Aprosodia	Inability to convey or interpret emotional prosody (the changes in rhythm, pitch, stress, intonation etc of language that convey emotion). In motor aprosodia the patient cannot produce or imitate emotional indicators but can understand them. In sensory aprosodia they are not comprehended and cannot be repeated. Usually due to damage to the non-dominant hemisphere areas of language.
Asemia	Inability to understand or express signs or symbols. This is more all-encompassing than aphasia.
Associative colour agnosia	Inability to match a particular colour with a particular object, despite having intact colour perception. They cannot choose an object with a given colour from a group of objects, indicate a particular colour, name the colour of an object or evoke the colour of a common object (tomato, orange). Caused by lesions to the connections between colour perception areas such as V4 and association cortex.
Associative visual agnosia	Bilateral damage to the anterior inferior temporal lobe or in the left occipital-temporal region can produce associative visual agnosia: sufferers have normal vision but cannot use it to recognize things. They can copy and match drawings, use objects correctly but cannot identify them by sight or draw them from memory. The link between the visual

	representation and the semantic knowledge of what it is has been broken.
Astasis	Inability to stand because of disruption of muscle coordination. Often caused by frontal lobe injury.
Auditory agnosia	Inability to recognize or differentiate between sounds, despite functioning auditory system. Persons with auditory agnosia can describe the sounds but not recognize their sources. Beside the classical/pure auditory agnosia where environmental sounds are incomprehensible there are linguistic/Wernicke's agnosia where spoken language is incomprehensible and receptive amusia, inability to understand music.
Autopagnosia	Inability to localize and orient different parts of the body: the person does not recognize their own posture, despite having a fully functional motor system. Usually due to damage to the non-dominant parietal lobe or the posterior thalamic radiation.
Capgras delusion	Due to a disconnection between the fusiform face recognition system and the limbic system the sufferer does not experience the normal emotional response to familiar people. This produces the delusion that friends, spouses, parents or family members have been replaced with identical-looking impostors. A common modern variant is that they are beta forks, AGI impostors or TITAN clones.
Category specific agnosia	An (integrative or associative) agnosia for a certain class of objects: living beings, tools, vehicles, fruits etc.
Central neuralgia	Pathological changes somewhere along the pain pathways in the brain have produced cross-connections that lead to the experience of pain without any external stimulus. The pain can range from a minor irritation to life-quality reducing agony.
Cerebral palsy	Damage to the motor systems in the brain causing movement problems. In spastic CP muscles are rigid and affected limbs must push through the extra tightness, in ataxic CP movements are uncoordinated, in athetoid CP muscle tone is mixed between too tight and too limp, and in hypotonic CP muscles are too limp to move. Symptoms can involve spasticity, involuntary movements, balance problems, speech disorders etc.
Chorea	Brief, quasi-purposeful, irregular "dance-like" involuntary movements, often occurring with twisting or writhing athetosis movements. Usually caused by damage to the basal ganglia and/or thalamus. In serious cases it can prevent walking (choreic abasia) or cause involuntary, violent flinging movements (ballism).
Chronic déjà vu	Condition due to damage to the medial temporal lobe system, making

	the person experience each moment as if it had already been experienced before.
Chronic jamais vu	Condition due to damage to the medial temporal lobe system, making the person experience familiar situations as if they were seen for the first time despite rationally knowing they had been in the situation before.
Clinical lycanthropy	The delusion that the afflicted can or has transformed into an animal, or that they really are an animal. This is usually due to disruptions of body image, sometimes made worse by nanodrugs or nonhuman resleeving. A few rare cases of uplifts believing they are were-humans have been reported.
Coprolalia	Involuntary swearing, use of obscene words or socially inappropriate remarks. Related disorders are copropraxia (making obscene or forbidden gestures) and corpographia (obscene writings and drawings). While most well-known as an occasional symptom of Tourette's syndrome it can occur due to brain damage in the thalamus, globus pallidus and cingulated cortex.
Cortical blindness	The occipital lobe has been profoundly damaged or corrupted, not only preventing vision but making it impossible to restore easily. The person is blind regardless of the morph. Sometimes "blindsight" can remain if subcortical systems such as the superior colliculus are undamaged: the person can avoid some obstacles, catch thrown objects or make surprisingly accurate guesses about their surroundings. Psychosurgery can often enhance this to a degree, making the person blind for conscious information but relatively able to move and function.
Cortical deafness	Major damage to the auditory system making the sufferer unable to hear or interpret sounds.
Cortical visual impairment	Visual impairment due to problems in the visual cortex rather than the morph. This can include variable vision, where the ability changes from day to day or moment to moment, especially when tired. Depth perception or field of view can be affected. Some objects (for example familiar ones or red ones) can be easier to see than others. Hand-eye coordination can be impaired. Responses to light levels can be delayed, making bright light painful and shade more total. The visual perception can deviate quite strongly from reality due to cortical 'fill-in' of expected details.
Cotard delusion	The delusion that the afflicted is dead. Mild forms involve despair and self-loathing, while the full form involves denying the existence of themselves. They can believe they are putrefying, have lost their blood or internal organs, are currently inhabiting the afterlife or are simply delusions themselves. This condition can be caused by limbic damage.

Dysautonomia	A general term for disorders of the autonomous nervous system. In the post-Fall world this is mainly a failure to integrate the morphs' autonomous systems with the ego, resulting in symptoms such as excessive fatigue, thirst, vertigo, feelings of anxiety, wrong heart rate, headaches, salt cravings, nausea, trouble breathing.
Dyschronometria	Inability to accurately estimate the amount of time that has passed.
Dysgeusia/ Parageusia	Distortion of the sense of taste. Damage to the pons, thalamus or midbrain gustatory pathway may interfere with taste perception or cause the experience of unpleasant "phantom tastes" (parageusia often involves a metallic taste to food). Note that the sense of smell may be intact.
Dysmetria	Cerebellar damage to sensorimotor integration makes judgement of distances bad: in the typical case movements or arms, legs or eyes tend to undershoot or overshoot intended positions, but it can also involve inability to judge distance or scale.
Dysprosody	The patient cannot control the way they speak. It could be in an accent not their own ("pseudo-foreign dialect syndrome"), changes in pitch, volume or rhythm.
Emulated episodic ataxia	A case of a disorder brought on by uploading that mimics a genetic disorder. In episodic ataxia stress, startling or heavy exertion can trigger episodes of severe dis-coordination (ataxia) due to a genetic error affecting the Purkinje cells of the cerebellum. In EEA a bad scan of the cerebellum produces the same symptoms.
Exploding head syndrome	The sufferer occasionally experiences a tremendously loud noise (sometimes with a flash) originating from within their head within an hour or two after falling asleep. It is painless but tends to cause fear and anxiety.
Extinction	Inability to recognize two simultaneous stimuli on opposite sides of the body, despite being able to sense either alone. For example, when both hands are grabbed the person will feel only the right being grabbed. This might be just for tactile or visual signals or cover all modalities. Most commonly associated with lesions of the right parietal lobe.
Fasciculation	Twitching of various voluntary muscles in the body, typically eyelids, arms, legs, feet or tongue. Normal use is unimpaired, but the fasciculations return once the muscle is at rest. Anxiety usually worsens the condition.
Finger agnosia	Inability to distinguish the fingers on the hand. Usually due to damage in the dominant parietal lobe.

Foix-Chavany-Marie syndrome Partial paralysis of the face, pharynx and jaw due to bilateral damage to the operculum. It makes talking problematic, may cause drooling and jaw jerks. There is no paralysis of involuntary movements like smiling, eating or blinking, and other limbs are free to move.

Formication A paresthesia producing the sensation of insects or micromachines crawling on or under the skin. While it may not be associated with the delusion that there actually are insects (delusional parasitosis), it can be highly distracting.

Fregoli delusion The sufferer believes that different people are actually the same person who changes appearance, resleeves or is in disguise. This is usually due to damage to the frontal or temporal areas.

Gourmand syndrome Damage to the right frontal lobe causes a passion for gourmet food. People with the syndrome experience addiction-like cravings for the taste, delight in remembering particular food experiences, heightened interest in food appearance, serving and shopping.

Hallucinations Hallucinations can occur in any sensory modality, although visual and auditory are the most common. Variants include disturbances, where things are only glimpsed or barely felt, form constants, geometric patterns (lattices, cobwebs, tunnels, spirals), apparitions, where an anomalous object or being is experienced and appears to function autonomously.

Hemispatial neglect Due to damage to one hemisphere there is a deficit in attention and awareness of (usually the opposite) side of space. People with neglect commonly behave as if the left side of sensory space is nonexistent: they eat the food on one side of the plate, do not use the neglected arm (or denies that they are *their* arm or side of the body, somatoparaphrenia), shave or apply makeup to only half of their face, draw half of objects etc. Most commonly due to damage to temporo-parietal junction and posterior parietal cortex.

Hyperekplexia Used to denote exaggerate startle reflexes: a sudden noise or touch causes the sufferer to jump wildly or tense up painfully. Sufferers tend to be generally stiff and after a startle remain almost paralysed for short while. In the past the term denoted a particular group of genetic disorders of glycine neurotransmission (now long since extinct), but neural damage or bad neurochemistry ego metadata can cause the same symptoms. It might also, like the classic Jumping Frenchmen of Maine syndrome and Latah, be partially psychological or cultural.

Hyperthymesia Extreme autobiographical memory, allowing the person to recall specific events in minute detail. Unfortunately this is also distracting. Memories come nonstop in an uncontrollable and overwhelming way, and hyperthymesic people tend to spend abnormal amounts of time thinking

about their personal past.

Ideas of reference Delusions that some phenomena in the world directly refer to them or have personal significance (e.g. the feeling that people in the media are talking about them, that people drop strange hints in discussion, believing that they are in a hidden reality show, etc).

Ideational apraxia Inability to conceptualize, plan and execute the motor actions involving the use of everyday tools or objects. The sufferer has lost the perception of the object's purpose, and often has disturbances of sequential organisation of actions.

Ideomotor apraxia Inability to imitate hand gestures and tool uses, while still (sometimes) being able to do them spontaneously. This is most often due to damage in the left parietal lobe and the premotor cortex.

Integrative agnosia Inability to recognize objects due to group and integrate the component parts of the object into a coherent whole. Instead of seeing the whole they just see parts (however, certain things such as letters work). Usually due to damage to the extrastriate visual regions.

Intermetamorphosis A delusional misindentification syndrome related to agnosia that makes the sufferer misidentify the identities of familiar people, making them think they are swapping identities with each other while maintaining the same appearance.

Intrusive thoughts Involuntary thoughts, images or unpleasant ideas that obsessively come up again and again (unlike the normal unwanted thoughts that everybody has). They can be aggressive, sexual or blasphemous, and cause significant anxiety (but usually are never acted on).

Lacunar amnesia Loss of memory for a specific event.

Lethologica Inability to articulate thoughts because key words, phrases or names are temporarily forgotten, often associated with problems swallowing, increased muscle tension in the upper body and lip smacking. Usually due to temporal lobe damage influencing the X and XII cranial nerves.

Macropsia Distortion of visual perception that makes objects in a part of the visual field appear larger than normal, often making the subject feel smaller. This can be caused by medial temporal lobe epilepsy, slight errors in neurochemistry ego metadata or damage to visual cortex.

Micropsia Distortion of visual perception that makes objects as being smaller or more distant than they are. This can be different on the right or left (hemimicropsia). This can be caused by medial temporal lobe epilepsy, slight errors in neurochemistry ego metadata or damage to visual cortex.

Musical hallucinations	Auditory hallucinations of songs or instrumental music (everything from short sequences to full playlists). The person cannot control the hallucinations, although sometimes it is possible to change tempo or tune. The music may be enjoyable or distressing (sometimes because of the loudness and repetitiveness, sometimes because the music itself is ominous or taunting). The cause can be due to damage in the auditory cortex, the dorsal pons or somewhere else in the auditory system.
Neurogenic pruritus	Damage to the somatosensory pathways or cortex creates a persistent itch somewhere on the body, an itch that simply will not go away. Sufferers have a hard time not to scratch the itch.
Omnihedonia	The opposite of anhedonia: everything is experienced as pleasurable/beautiful/desirable. A variant is that normally not pleasurable activities are experienced as pleasurable: sitting, right angles, shaking one's foot, making lists etc. This usually comes about when treating anhedonia states by patching the ego neural network. Usually the patches are fine-tuned to avoid full omnihedonia, but recipients often report bizarre (and potentially problematic) pleasures or absences of pleasure. [Borrowed from Greg Egan's short story "Reasons to be Cheerful"]
Parosmia	Mistaking pleasant or neutral smells for unpleasant ones (typically burning, rotting, faecal or chemical odours), or more generally inability to identify smells. They can be specific to certain smells or make all smells experienced differently.
Peduncular hallucinosis	Damage to the midbrain or pons can cause colourful, vivid images to occur predominantly at night. The hallucinations are often Lilliputian, and are usually recognized as being hallucinations. The syndrome also involved abnormal sleep patterns, with insomnia in the night and drowsiness in the day.
Phantom body pain	A condition where people suffer a deeply unpleasant "phantom body" sensation when being infomorphs: their imaginary body is often experienced as contorted and in pain. Normally having a simspace avatar immediately cures this, but in a few rare people this doesn't work.
Phantosmia	Phantom smells, olfactory hallucinations of (usually) foul odors.
Prosopagnosia	Failure to recognize familiar faces, a category specific agnosia. The person sees the parts of the face but cannot recognize who they belong to. They will immediately recognize them based on voice, walk, smell or clothes. Usually due to damage to the fusiform gyrus. A related condition is prosopamnesia, where faces cannot be remembered.
Pseudobulbar affect	Involuntary and uncontrollable outbursts of crying and/or laughing (or other emotional displays). Sufferers might find themselves crying

	uncontrollably at something that is just moderately sad, or have mood-incongruent outbursts of laughter when angry and frustrated. The cause is damage to the top-down control of emotion expression in the limbic system and brainstem.
Reduplicative paramnesia	The belief that a place or location has been duplicated, exists in two places at once, or has been moved. The person may think that the Martian habitat they currently inhabit is actually their terrestrial hometown that has somehow been moved to Mars. This is usually due to damage to the right cerebral hemisphere and both frontal lobes.
Retogerade amnesia	Pre-existing memories are lost (at least to conscious recollection). This might involve a longer or shorter period before the damage occurred, sometimes stretching all the way back to childhood. Usually due to hippocampal damage.
Simultanagnosia	Objects can be visually recognized, but only one at a time. It is not possible to see an entire scene or a whole image: the forest is hidden by the trees. Usually due to damage to posterior parietal cortex.
Somatopharaphrenia	Due to a change in the parietal body representation ownership is denied of a limb or side of the body. They are usually experienced as belonging to some other person (present or acting as a donor). This can lead to apotemnophilia, the strong desire to have it amputated. Since the damage is to the body representation network the problem is not solved by changing morph.
Somatosensory agnosia	Objects are hard to recognize by touch – size, shape, texture and weight do not tell anything. They can however be described verbally and recognized visually. Usually caused by damage to the somatosensory cortex.
Source amnesia	Sufferers can recall information, but not where or how it was obtained. This can lead to memory distrust syndrome, where sufferers are motivated to rely on external sources to verify the accuracy of memories.
Split brain	Destruction of the corpus callossum, which connects the cerebral hemispheres. The right and left side literally do not know what the other hand is doing, leading to motor impairments (including alien hand syndrome), inability to name things seen on the right side, impairments of face recognition and some memory problems. Although the damage is serious (and rare) the overall effect is often very subtle.
Stiff person syndrome	Due to a reduced level of GABA in the brain (in turn caused by bad neurochemistry ego metadata) the sufferer has fluctuating muscle contractions that can scale up to full cramps.
Supernumerary	This condition seems to occur in people who have been sleeved into very

phantom limb	nonhuman bodies under stressful conditions, producing a reorganization of their body maps. When sleeved into normal bodies they experience phantom pain or sensations from non-existent appendages such as extra limbs, swarmanoid subunits, extra eyes or even mental implants. They can experience their limbs as being in painfully contorted states or have hallucinatory input from absent sensors.
Syndrome of subjective doubles	A delusional misindentification syndrome where the sufferer thinks they has one or more doubles or Doppelgängers with the same appearance (but usually different traits) living a life of their own. This is usually due to right cerebral hemisphere damage, producing a state like Capgras syndrome. Of course, with forking this delusion can occasionally be entirely correct.
Temporal lobe epilepsy	Simple partial seizures are small, localized seizures in the temporal lobe that do not alter consciousness but give sensations of various kinds. These can be déjà vu, jamais vu, feeling they are on the brink of an epiphany, intrusion of specific memories, amnesia, hallucinations (such as tunes, smells or feelings moving over the body), out-of-body feelings, intense dysphoric and/or euphoric feelings (often combined) and sometimes mystical ecstasy. Complex partial seizures impair consciousness: they start as simple partial seizures but then expand, leaving the morph standing, doing automatic movements or unusual behaviours.
Tic disorders	Sudden, repetitive, stereotyped motor movement or vocalizations involving discrete muscle groups such as blinking, clearing one's throat, meaningless movements, grimacing, hand clapping, pulling at clothes, touching objects, cursing, repeating heard words etc. Tourette's syndrome is inherited, but various forms of neural damage can induce tics of varying severity.
Trichotillomania	A repeated urge/habit/addiction to pull out hair from the scalp, eyelashes, facial hair, nose hair or any other body hair. Related disorders are dermatillomania (compulsive skin picking), onychophagia (compulsive nail biting), and dermatophagia (compulsive skin biting).This occasionally occurs after basal ganglia damage.
Utilization behaviour	Due to frontal lobe damage the sufferer has difficulty resisting their impulses to operator or manipulate objects that are in their visual field and within reach. They typically confabulate reasons for their actions, even when they are completely irrelevant or counterproductive.
Witzelsucht	An uncontrollable tendency to make puns, tell inappropriate jokes or pointless stories at inconvenient moments. The person finds these intensely amusing. It is usually seen with damage to the orbitofrontal cortex.