Cybernetic Sourcebook Update

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Credits

Foreword

One lazy summer day I wandered into the local game store looking to kill a few hours before work. A fantasy game was being held in the back, just a few guys killing the same few hours, and a few goblins. I watched for a while, politely refusing an invitation to join. I played fantasy for over a decade, it just wasn't my cup of tea anymore.

I wandered over to the used book bin, a ritual I performed often, seeking out the bits and pieces of yesterday's sci-fi games to fill out my growing collection. That's when I found it. A book devoted entirely to starships, in almost mint condition. Across the top, in black and green, was the name: Alternity.

Ever bought an entire shelf of books at a game store? You should have seen the look on the owner's face, and mine. I made for home like a thief who just stole the Mona Lisa. Needless to say, I never made it to work that day.

The first thing I did was work through the game mechanic, it's an odd thing, when you first see it. Then I flipped through the pages, reading a few sections here and there.

I remember grinning like an idiot when it finally dawned on me. This wasn't just another sci-fi game, it was a game system that could handle anything I wanted to do.

I spent the next several months converting my gaming friends to Alternity, running a few games and saving my pennies. By the time I returned to the game store, I was hopelessly addicted and craving a fix. But the shelf was still empty and no more books were coming.

The store owner suggested I visit a few websites to track down any remaining copies. I tried following a few dead links, downloaded a few files, but all in all, it was a depressing experience.

I decided to throw the name Alternity at my browser. At first, not much came up, just the usual vendors and web rings. I made a note to check them out later. It was the words "Official Site" that caught my attention. That looked promising.

What I found looked pretty good; a professional-looking format, several active online games, projects, resources, a great e-zine, and a forum so busy it felt like a chat room. It wasn't long before I found myself lurking around every chance I had.

A week later I signed on, only to discover there was another "Official Site", every bit as committed to this fantastic game. I joined that site too and I've never looked back. A game never dies as long as dedicated people continue to support, create, and play.

I'm committed to doing just that. This is my first creation, the Cybernetic Sourcebook. A collection of implants, equipment and weapons, both of new design and some old favorites. All created according to the guidelines laid out in the Alternity core books. Also included are suggestions for going beyond those limits.

Load your best enhancer, grab some ammo, and crank up the bikes. It's time to paint the town CHROME.

Shawn "Kzin" Trudeau
April 13, 2004

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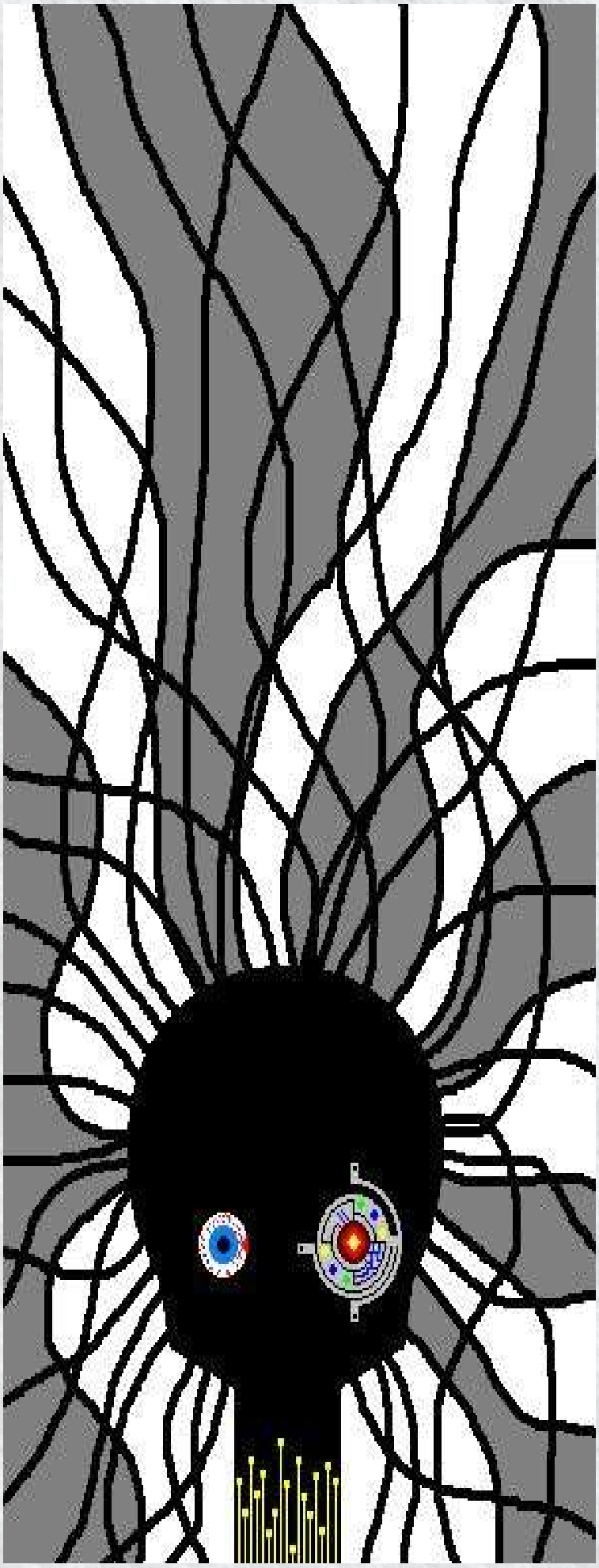

Introduction

The Evolution of Cybernetics

The practice of using pieces of foreign material to heal the human body is as old as the art of healing itself. The creation of prosthetics, however primitive, can be dated as far back as the 5th century. This was the earliest story I could find, about a one-handed blacksmith in Scotland, who fashioned a contraption about his arm in order to hold a shield or weapon.

The golden age of piracy in the 17th and 18th centuries brought a host of new stories and legends about peg-legged and hook-handed buccaneers. Where would our favorite books and movies be without them? Regardless of fiction, some ancient mariners did indeed use these "devices".

Today, prosthetics are quickly evolving into a truly mechanical device. Motorized limbs have been developed in laboratories, successfully tested, and are set to begin full-scale production by 2005. Ultra-sensitive sensors, small servomotors and sophisticated computer programs enable these limbs to function very close to the level enjoyed by a biological limb. They are not perfect by any means, and still appear as a robotic structure, but the work continues to show promise.

So how do we get from peg-legs to cybernetics and beyond? The key lies in the structure of today's prosthetics. The science and engineering of robotics.

Robotics

The term *robot* first appeared in 1923 in an English translation of Czech writer Karel Capek's play entitled R.U.R. (Rossum's Universal Robots), in which a man is destroyed by the robots he creates. The original Czech word *robota* literally means "servitude, forced labor". This seems an accurate definition, since robots are simply mechanical devices that cannot perform any task without first receiving commands.

If we accept this definition, then the first robot would be the programmable loom invented by Joseph Jacquard in 1801. This device, programmed by punch card, has often been credited with starting the Industrial Revolution.

Industry continued to inspire the creation and evolution of robots until 1948, when Norbert Weiner, an M.I.T. professor, published "Cybernetics", a look into the creation of artificial intelligence by mimicking the existing biological communication and control systems. This publication, and many more since, revolutionized robotics.

The 1950s saw the development of teleoperations, the "modern" industrial robot, computer-assisted manufacturing, and even a commercially available robot.

General Motors installed their first robot in 1962 in their Trenton, New Jersey plant. The 1960's also saw the "Rancho Arm" robotic arm for the handicapped, the "Tentacle Arm" by Marvin Minsky, and the founding of four artificial intelligence research labs. One of which (SRI) created Shakey, the first mobile artificial intelligence.

In the 1970s emerged the "Silver Arm", which had a sense of touch and pressure thanks to built-in sensors. Robotic arms were used on Viking 1 and 2. First the minicomputer, then the microcomputer entered the field of robotics, leading to several breakthroughs, including the Puma (Programmable Universal Machine for Assembly) Robot; the Stanford Cart, which used multiple camera angles to precisely orient itself within its environment and navigate through it without human assistance.

The 1980s saw the expansion of robots into many new fields. Robots descended into active volcanoes, explored the sea floor, assisted in skyscraper construction, scanned for flaws in railroad tracks, drilled for oil, and even prepared for war.

Robots are everywhere now. Performing surgery in the operating room, mixing chemicals in the lab, testing commercial products, and gathering reconnaissance over the battlefields. They have even become the new astronauts, exploring places we cannot yet go ourselves.

Still, they can only accomplish these remarkable feats because we commanded them to do so. A robot's artificial intelligence, as advanced as it is, pales in comparison to our own biological command system. Namely, the human brain and nervous system. Sometime in the very near future, we will find a way to combine the advantages of both.

Some of that work has been started already. The effort to improve the lives of amputees by providing a fully functional replacement has led

researchers, doctors and roboticists to the science of Bionics.

Bionics

By definition, bionics is the use of a biological system to control an electronic device. There are many examples of this technology already. They are limited only by our understanding of our own biology. As that knowledge increases, so will our ability to create better bionic devices.

The bionic arm and leg are already here. Nerve endings are grafted to existing muscle, the brain's signal causes the nerve to twitch the muscle. That twitch is detected by the electronics of the prosthetic and it signals the electric motors to carry out a pre-programmed command.

Some detection systems do not require surgery, they are sensitive enough (or simple enough) to sense signals directly from the nervous system itself.

As good as these bionic systems are, they suffer from two major flaws. First, they are not part of the body, meaning they have extremely limited access to the body's command and control structure, the nervous system. This places severe restrictions on what an artificial replacement can do. Second, they must have their own power supply. Even the smallest and most efficient motors available today use far more energy than our own biological "motors", the muscles. Recipients of artificial hearts are very aware of this drawback, as even the most advanced implant can only store enough energy for a single hour of operation.

The artificial heart, while not being bionic in nature, has nevertheless revealed a possible third complication for future bionic implants. That complication being infection. Studies have shown that implants can sustain colonies of bacteria, even after repeated treatments of antibiotics. This problem will need to be addressed before bionic implants become a viable option.

But enough about the limitations of today. At this point we travel ahead a few decades into the near future, where the risk of infection has been defeated by powerful new drugs, where the lithium polymer battery stores power for days at a time, and the invention of the nanocomputer is just around the corner.

Several important important events occurred before the end of PL 5. These events made it possible for bionics to expand from the medical field into the mainstream of commercial products.

In 2008, the first bionic arm was grafted to the skeleton of a test subject in London. After several months, a recurring infection forced doctors to remove the implant. The problem was linked to a complex chemical reaction between the polyurethane component of the implant, white blood cells called macrophages, reactive oxidative metabolites and some other agent that was never identified. All of which eventually caused the polyurethane to break down, forming cracks in the surface of the material. These cracks caused irritation, which allowed bacteria to gain access to areas of the body not equipped to handle them. The inevitable result being a breakdown of the subject's immune system, leading to secondary illness and death.

A solution appeared in 2011 with the creation of a living, cellular polymer in a lab in Stockholm. Erroneously dubbed "bioplastic" by the media, it could be readily attached to any living tissue without harmful side effects. Long-term studies even showed the subject's body would partially adopt the new tissue as its own, sending blood vessels and nerve endings into its first few permeable layers.

With an increasing number of applications being developed for the polymer every year, bioplastic companies began to appear everywhere. It could be used for repairing arteries and blood vessels, stitching muscles and tendons, and even as an artificial skin. It wasn't long before people began touting bioplastic as the invention of the century, but there was much more to come.

The first stable, room-temperature superconductor was created in 2024 in Kyoto. Although capable of transmitting energy at alarming efficiency, it was also alarmingly expensive to produce. The Mitsuyama Corporation, which held the patent, was unable to afford the facilities necessary for mass production and sold the patent to Microtel, giving the company a tremendous edge over its competition and propelling it toward the status of a world power. They managed to reduce the cost to a level which governments and the wealthier corporations could afford. The use of this early superconductor led to other critical discoveries, all helping to bring about the last two key events of the Information Age.

The Grid

The Grid, a whole new breed of Internet, went online in 2032, connecting the world through virtual reality. A host of wearable bionic devices appeared to take advantage of this new and powerful entity, as hand signals, eye movement, and voice commands replaced the ubiquitous keyboard and mouse. Long-term study of these devices led to many important discoveries about the nature of bioelectric fields and the ability of the brain to adapt to new kinds of stimuli.

Traditional network and system security meant nothing in the early years of the Grid. As quickly as new software could be written, a new weakness was being exploited. In a world where industrial espionage had almost become an accepted practice, keeping secrets was a critical matter, to be ensured at any price.

Sometime during these corporate Grid wars, an experiment to project the human consciousness into a virtual construct succeeded, and soon "gridpilots" were patrolling the systems of every major player.

These early pilots used bionic "rigs" that scanned the brain and sent that information to a bank of supercomputers for analysis. It was slow, unpredictable and dangerous to the pilots, who often fell victim to severe anxiety disorders, if another gridpilot didn't get them first, that is.

The Battlefield

The battles of the early 21st century were largely restricted to disputes over oil, water and fishing rights. These engagements were usually small, involving no more than a few hundred highly trained and specialized troops. They carried into battle the latest equipment, weapons, and the first implants.

At first, only a few simple devices were available. Mostly relating to communication and identification. Two of the most radical implants appeared near the end of the Information Age.

The first involved custom fitting armor plates to the exterior of the torso, then securing them in place by sinking screws deep into bioplastic-reinforced bone. Although it made movement awkward, it saved lives, and quickly became a favorite among the more fanatical corporate soldiers.

The second was a primitive form of cytronic circuitry. Developed in 2045 in an attempt to heal spinal cord injuries, it was adapted to deal with the increasingly common use of neurotoxins on the battlefield. The circuitry was immune to the paralyzing effects of the toxin, allowing the soldier to continue functioning, in a limited capacity, until treatment could be administered.

Mainstream

The creation of the fusion reactor in 2047 ushered in not only a whole new age, but a wide range of amazing new technologies and the means to mass-produce them in quantities only dreamed of a decade earlier.

The cost of producing superconductor fell sharply, allowing the creation of highly advanced computers and nano-electronics. With these new tools, cyberneticists were finally able to unlock the secrets of the brain's command and control signals.

Superconductor was also used to improve cytronic circuitry, solving the problem of signal degradation experienced by the earlier design. This improved cytronic circuitry provided the perfect platform on which to install the new nano-electronics, it wasn't long before the first nanocomputer followed up those experiments.

All the pieces were in place, the theory of cybernetics had become the fact of cybertechnology, and an industry began to grow up around it. The medical field was the first to capitalize on the technology, producing cybernetic limbs, eyes and ears. Several corporations simultaneously developed the NIJack. Military forces led the way in exoskeletons, body plating and covert communications. The general public, however, was still unconvinced about the benefits of surrendering perfectly good flesh in favor of mechanical or electronic "enhancement".

Until a small company in California invented the gridcaster. And the rest is history.

Section One

Cybernetics

In the Alternity game, the nanocomputer represents the only way to control a cybernetic implant. The brain issues a command by neural pathway, the nanocomputer intercepts and translates that command into data, sends the data down the cytronic circuitry to the appropriate implant and the implant carries out that command.

The reverse of this process is a little different. When an implant generates data and sends it up the cytronic circuitry to the nanocomputer, the nanocomputer has two choices. It can intercept, translate and send the information directly to the brain or it can let the brain know it has relevent information and wait for instructions on where to send that information.

The brain itself never interfaces with cybernetic implants directly, it wouldn't understand the signals sent to it by the implants. The same could be said of the implants, which wouldn't understand the signals sent by the brain. So the main function of the nanocomputer is to intercept all signals and translate them into the appropriate language. Without it, the cybernetic hero would be limited to using implants that precisely duplicate an existing body part or function, utilizing only the existing neural pathways. Also, each implant would need to be taught how to translate signals between itself and the brain. Essentially, each implant would require its own nanocomputer. An expensive proposition, in more ways than one.

By now you may be wondering how implants that don't use data transfer can still be called cybernetic. BioArt, the BattleKlaw (Ordinary) and Body Plating from the Player's Handbook are examples of this. Are they still considered cybernetic by the definition outlined above? Well, yes and no.

This isn't a contradiction, it's an advantage. In fact, it's the primary advantage of Alternity's vision of cybernetics. They *could be* cybernetic. With a little imagination, those implants could be wired to the cytronic circuitry and thus, the nanocomputer, to gain additional benefits. BioArt could be altered at will, the BattleKlaw could be (and is) made into a retractable version and Body Plating (in higher PLs) could make use of self-repairing, nanofluidic technology.

Using this system, just about anything can be implanted in the body. The possibilities are limited only by your imagination. This section of the sourcebook offers a few ideas.

The following is a breakdown of the terminology used throughout the cybernetic implant descriptions. Please make yourself familiar with the use of these terms.

Implant — This is the standard cybernetic device as described in the Alternity Player's Handbook. Specifically, you should be familiar with *Chapter 15: Cybertech* of the Player's Handbook (and the Alternity system in general) before reading this document further.

Upgrade — An upgrade is a feature or function that can be added to an existing implant at no further cost in cyber tolerance. An implant can only accept a number of upgrades equal to its cost in cyber tolerance (size) and only one of each type of upgrade can be purchased for each implant (you can't have both Good and Amazing Sound Filter in one Cyberear, for example). Keep in mind that a connection to the nanocomputer may or may not be required for each upgrade.

An upgrade can be purchased alone (as an implant) by giving it a cyber tolerance of 1 and doubling the price.

System — Also called a "smart" system, this is the interconnection of cybernetic implants, non-cyber equipment or electronics and a sophisticated nanocomputer program that ties it all together. Implants that are installed as part of a system generally do not function the same as their standard counterparts, careful attention should be paid to the description of their unique features and restrictions. Electronics and equipment designed to function in this manner are referred to as "smartronics", they too may have unusual properties. The smart program need not be installed in the nanocomputer, it may be stored in a 3D, X3D or other storage medium. However, the program must be running in the nanocomputer before the system will perform any of its unique functions.

Chapter One - Controlware

Nanocomputers & Subprocessors

Engram Encoder
Type: Implant
PL: 6
Mass: --
Size: 2
Cost: $2500
Avail: Restricted
Skill: Yes
Nano: Yes

Engrams are physical changes in the neural pathways of the brain. They are responsible for recording sensory input into memory. The encoder subprocessor monitors the activity of engrams and is able to add a chemical signature during the process. Once encoded by the chemical, the engrams can be destroyed at the command of the user or by injection of the proper "decoding" chemical into the bloodstream. The procedure is 90% effective, leaving only fragmented and meaningless flashes of memory behind.
The encoder holds enough chemical to encode up to 16 weeks of memory before requiring a refill. Refills cost $500 each.

Neural Transceiver
Type: Upgrade – Special (see description)
PL: 8
Mass: --
Size: --
Cost: $2000
Avail: Common
Skill: No
Nano: No

A large portion of the functions performed by the nanocomputer is the translation of signals, from electronic to biological, and vice versa. The neural transceiver (also called an NTU - U for unit) replaces this function, much like the way a dedicated computer supports the main computer by sharing the workload. Unlike the dedicated computer, however, the neural transceiver does not provide a bonus for the person using it, but simply frees up active memory in the nanocomputer for other functions to make use of. Also, the neural transceiver does not improve a hero's cyber tolerance score, nor does it reduce the tolerance cost of the cybernetic component it is installed in.
The cost listed above is for the purchase of each NTU.

Cytronic Circuitry

Cytronic Signal Booster
Type: Implant
PL: 7
Mass: --
Size: 1
Cost: $850
Avail: Controlled
Skill: Yes
Nano: Yes

Cytronic inhibitors are used by law enforcement to temporarily shut down cybernetic implants. The signal booster, once activated, allows the user to cut through that interference.
The booster is usually installed in the cytronic circuitry close to the nanocomputer, where it is difficult (and even dangerous) for the inhibitor to be used.
Using a booster causes 1d4 points of Fatigue damage for every round or portion thereof it is activated.

Chapter Two - Senseware

Optical

Cyclops™ Cybernetic Eye
Type: Implant
PL: 7
Mass: --
Size: O 2, G 1, A 1 (see description)
Cost: O $250, G $500, A $1000
Avail: O & G Common, A Controlled
Skill: Yes
Nano: Yes

The Cyclops brand of cybernetic eye represents the cutting edge of cyberoptic technology. Built with versatility in mind, each quality of eye comes ready to accept cyberoptic upgrades with ease.
The Ordinary eye can accept 1 upgrade. The Good and Amazing eyes can each accept 2 upgrades.
The costs listed for the Ordinary and Good eyes are for the purchase and installation of one eye. The costs listed for the Amazing version is for the purchase and installation of two eyes.

Microscopic Lens
Type: Upgrade - Optical
PL: 6
Mass: --
Size: --
Cost: $300
Avail: Common
Skill: Yes
Nano: Yes

This cyberoptics upgrade gives the user the ability to zoom in up to 1000x magnification on objects within 30cm of the eye. It grants a bonus of -1 step on skill checks where the user is manipulating very small objects or performing tasks on a tiny scale, such as repairing micro-electronics or searching for fingerprints.
The microscopic lens cannot be installed in an eye that already has a zoom lens.

Psi Detector
Type: Implant
PL: 7
Mass: 4
Size: 2
Cost: $2000
Avail: Common
Skill: Yes
Nano: Yes

Essentially just a cybernetic version of the hand-held psi-detector (pages 136 & 141, PHB), this bulky and expensive implant works in exactly the same fashion. Except, of course, it is entirely concealed at all times, even when being operated.
The information gathered by this device is usually sent to the user's cyberoptics (or similar optical implant) and appears as a glowing halo of light around sources of psionic energy. Keep in mind that recent targets of psionic energy will also produce a halo, but this will fade over time (usually a day or two).
This implant is only available in campaigns using the optional rules for psionics.

Thermal Imaging
Type: Upgrade - Optical
PL: 6
Mass: --
Size: --
Cost: $200
Avail: Common
Skill: Yes
Nano: Yes

Allows the user to see heat as color.
Temperatures at or below -101 Celcius show as black. Shades of blue cover temperature ranges between -100 and 0 degrees. A light red begins to appear at 1 degree, brightening into orange at 25 degrees, then yellow at 50 degrees. As the image approaches 100 Celcius, it begins to blaze with a blinding white light. If it exceeds 100 degrees for more than a round, the upgrade will temporarily shut down to prevent burnout of its more delicate components. It takes one full round to reset.
The costs listed above are for the purchase and installation of thermal imaging in one eye.

Ultrasound Imaging
Type: Implant
PL: 7
Mass: --
Size: 1
Cost: $1000

Avail: Common
Skill: Yes
Nano: Yes

USI is basically a sonar for humans.
One eye projects a "tone" of sound (well above the hearing range of most organisms) and the other receives it as it bounces back to the user. By analyzing the returning signal, the nanocomputer can then draw a 3-dimensional map of the current field of view. This map is sent to the subject's cyberoptics (or similar visual device), appearing as a grayscale representation of the world around her. Although the bizarre image takes some getting used to, it nevertheless provides an accurate, detailed view in a wide range of adverse conditions. Fog, smoke and light precipitation have virtually no effect on the implant. It works equally well in total darkness or blinding light, even if the subject cannot open her eyes. It functions well under water and can even detect the solidity of objects to a small degree (hard, dense objects have sharply defined lines while soft, less dense objects appear fuzzy).
Sound-based "vision" does have it limitations, however, as it cannot function in a vacuum or even see through clear glass or plastic (eyeglasses, windows, spacesuit helmet). Sound is also a slow medium compared to light, so there is a considerable delay and degradation of signal when viewing distant objects. The ultrasound signal can also be disrupted by very loud noises (80+ decibels), high frequency sounds and certain types of gravitic technology (such as the ablative harness).

Audio

Cyberear
Type: Implant
PL: 6
Mass: --
Size: 1
Cost: $500
Avail: Common
Skill: No
Nano: Yes

This procedure completely replaces the internal biological systems that provide hearing in favor of a sensitive electronic microphone.
The cyberear requires a nanocomputer only for translation of signals, the ear cannot be controlled by the user (although some upgrades allow this). However, the nanocomputer can be commanded to ignore the signals received from the ear, essentially making himself deaf until the signals are attended to once again. Be aware that this will not protect the microphone from damage caused by excessive noise, it continues to function even when it is being ignored by the nanocomputer.
The mass, size, and cost listed above is for the purchase and installation of one cyberear.
It should be noted that a cyberear does not need to be implanted in the side of the user's head, a tiny microphone could be placed almost anywhere.

Audio Amplifier
Type: Upgrade - Audio
PL: 6
Mass: --
Size: --
Cost: $200
Avail: Common
Skill: Yes
Nano: Yes

This upgrade allows the user of a cyberear to control the sensitivity of the microphone.
Sounds picked up by the microphone can be amplified by as much as 50x. It provides a -1 step bonus to detecting faint sounds.
The cost listed above is for the purchase and installation of one amplifier.

Audio Damper
Type: Upgrade - Audio
PL: 6
Mass: --
Size: --
Cost: $150
Avail: Common
Skill: No
Nano: No

This popular upgrade protects the user of a cyberear (and the cyberear itself) against harmful levels of noise. It functions automatically.
The cost listed above includes the purchase and installation of 1 damper.

Aural Targetting

Type: Upgrade - Audio
PL: 6
Mass: --
Size: --
Cost: $250
Avail: Controlled
Skill: Yes
Nano: Yes

Aural targetting is something the natural ear does already. Finding the source of a sound by analyzing the time difference as the sound is received by both ears. A tiny fraction of a second difference is enough to steer the head in the correct general direction. Once in the general direction, however, the ears lose much of their accuracy.
The cybernetic version improves this analysis by calculating the time difference in nanoseconds. This grants the user a -1 step bonus on all tasks that depend on sound for determining the location of a target. This is especially useful when the hero's vision is impaired, such as in total darkness, thick fog or smoke, or in an area of dense plant growth.
A minimum of two cyberears are required to use this upgrade.

Frequency Adjustment
Type: Upgrade - Audio
PL: 6
Mass: --
Size: --
Cost: $250
Avail: Common
Skill: Yes
Nano: Yes

This handy upgrade allows the user to adjust the frequency range of the microphone.
Sounds normally outside the range of human hearing can be easily heard by the user.
The cost listed above is for the purchase and installation of one frequency adjustment upgrade.

Sound Filter
Type: Upgrade - Audio
PL: 6
Mass: --
Size: --
Cost: O $150, G $250, A $500
Avail: Common
Skill: Yes
Nano: Yes

A sound filter upgrade allows the user to choose which sounds are received by the cyberear's microphone.
The Ordinary version allows the user to select a range of decibels so that only those sounds that fall within a specific volume will be picked up by the microphone. This upgrade works well with the Audio Amplifier, filtering out loud noises before they are amplified to damaging levels).
The Good version includes the ability to select a specific frequency range as well (providing the user already has the Frequency Adjustment upgrade).
The Amazing version can "remember" sound patterns and (with the help of the nanocomputer) single them out for filtration or focus. It also works with all audio upgrades.

Olfactory & Taste

Cybernose
Type: Implant
PL: 6
Mass: --
Size: 1
Cost: $1500
Avail: Common
Skill: Yes
Nano: Yes

The PL6 cybernose enhances the olfactory sense and provides a measure of protection to the user. Since all the components of this implant are entirely internal, a cybernose is indistinguishable from a flesh nose.
A cybernose gives the user a -1 step bonus on all actions requiring a sense of smell. Put another way, it gives the user a sense of smell about equal to someone who has spent a lifetime learning to develop their sense of smell. In essence, an olfactory athelete.
Filters are installed within the nasal cavities to prevent the passage of the most common forms of powder and aerosal-vectored irritants and poisons. It cannot protect against gases of any kind. To gain this protection, however, the subject must remember to breathe only through the nose. These filters are electrostatic in nature and can be turned off to allow the passage of harmless substances and aerosals (such as perfume).

All cybernoses come with nanocomputer-controlled cutoffs to prevent the user from being overwhelmed by intense odors.

Chemical Analysis
Type: Upgrade - Taste
PL: 6
Mass: --
Size: --
Cost: O $500, G $750, A $1000
Avail: Common
Skill: All versions
Nano: All versions

A chem-sis implant can identify most solid and liquid compounds simply by coming in contact with them.
Each quality of implant represents the implant's skill at identifying different compounds using Physical Science-*chemistry*. An Ordinary implant uses a score of 12/6/3 with just the control die, a Good implant has a score of 15/7/3 with a -d4, and the Amazing implant can identify compounds with a score of 18/9/4 with a -d6 modifier. A success (of any kind) will reveal the elements present in the compound. A Good success will identify the important characteristics of the compound and offer suggestions as to its purpose. An Amazing success will clearly identify everything about the substance (unless the substance is currently unknown to science). Access to a chemistry database will provide a -1 step bonus to this roll, which could be carried in the nanocomputer or an external storage medium.
Please note that this device does NOT provide protection from any harmful effects produced by the substance being analyzed.

Gas Spectrometer
Type: Upgrade - Olfactory
PL: 6
Mass: --
Size: --
Cost: $600
Avail: Common
Skill: Yes
Nano: Yes

The replacement of one of the sinus cavities with a tiny gas spectrometer allows the user to analyze the gases present in the air. This PL6 implant is new and somewhat crude, having a skill score in Physical Science-*chemistry* of only 8/4/2 with no modifier. A success of any kind will simply determine whether or not the air is breathable. A Good result will reveal the presence of all gases in their present ratios. An Amazing result will reveal the presence of harmful gaseous compounds. Access to a chemistry database will provide a -1 step bonus to this roll, which could be carried in the nanocomputer or an external storage medium.

Tactile

Chemical Analysis
Type: Upgrade - Tactile
PL: 6
Mass: --
Size: --
Cost: O $500, G $750, A $1000
Avail: Common
Skill: All versions
Nano: All versions

Essentially the same as the Taste Upgrade version, this item is designed to fit into a fingertip.
Each quality of implant represents the implant's skill at identifying different compounds using Physical Science-*chemistry*. An Ordinary implant uses a score of 12/6/3 with just the control die, a Good implant has a score of 15/7/3 with a -d4, and the Amazing implant can identify compounds with a score of 18/9/4 with a -d6 modifier. A success (of any kind) will reveal the elements present in the compound. A Good success will identify the important characteristics of the compound and offer suggestions as to its purpose. An Amazing success will clearly identify everything about the substance (unless the substance is currently unknown to science). Access to a chemistry database will provide a -1 step bonus to this roll, which could be carried in the nanocomputer or an external storage medium.
Please note that this device does NOT provide protection from any harmful effects produced by the substance being analyzed.

Tactile Boost
Type: Implant
PL: 6
Mass: --
Size: 1

Cost: $1000
Avail: Common
Skill: Yes
Nano: Yes

Basically a superconducting web of circuitry embedded just below the skin, a tactile boost gathers information for the nanocomputer, which then interprets that data and feeds it to the subject's brain as a direct neural signal.
While active, the boost gives the subject a -2 step bonus on all tasks that rely on the sense of touch.
The tactile boost is quite dangerous. The brain simply isn't designed to handle this level of neural input and can only endure the overload for short periods (2d4 minutes). Exceeding this time will "short out" that region of the brain, causing the user to lose all sense of touch for a number of hours equal to the number of minutes the boost was activated. Long term abuse of this implant may lead to permanent damage (the details of which should be worked out with the GM prior to purchasing this implant).

Chapter Three - Cyberweapons

Mounts & Stabilizers

Weapon Systems

Sidearm II
Type: System
PL: 7
Mass: 1
Size: 3
Cost: $5000
Avail: Military
Skill: Yes
Nano: Yes

The sole purpose of the Sidearm II system is to make the user a more efficient killer with almost any firearm.
The system's cybernetic component begins with the installation of a dedicated ONIPort in the palm of the hand. This port is uniquely coded for this system, it cannot be used for standard data transfer or to interface with any other kind of smartronics equipment. Also, each Sidearm II ONIPort is designed with its own unique signature weapon lock. While this prevents the user from operating the smart weapons of others, it also makes his own equipment useless to his enemies. Further enhancing the user is the replacement of both eyes with uniquely designed Cyclops™ Cybernetic Eyes. These eyes work in concert as a thermographic holocamera, providing detailed images of the surrounding terrain and the potential targets within it for storage in the nanocomputer's memory.
To make use of this system, the weapon of choice must be substantially modified with smartronics. This includes fitting the weapon with its own holocamera, also enhanced with thermal imaging. The trigger mechanism is replaced, allowing the user to control the trigger through the nanocomputer and thus, the Sidearm II program.
The Sidearm II program is the key to the whole system. It allows the subject to instantly select targets as "friendly" or "foe" and store them in memory. When the trigger signal is sent by the user, the program analyzes the target currently in the gunsight and decides whether or not to allow the weapon to fire. This means the subject can literally spray a room with automatic fire and only hit the targets he had previously selected. When used in this mode, the system provides no benefits to the user's skill.
When used only as an aid to aiming, the precise holographic imaging and targetting program provides a -3 step bonus to the user's skill with any properly equipped firearm.

Ranged Weapons

Starburst
Type: Upgrade - Optical
PL: 6
Mass: --
Size: --
Cost: $250
Avail: Controlled
Skill: Yes
Nano: Yes

This upgrade is designed to temporarily blind opponents with a very bright flash. No skill check is required to use this device to attack. All targets facing the user, however, do get a chance to avoid or reduce the effects of the attack. The result of an Athletics-*dodge* skill check or Dexterity feat check determine the extent of exposure to the flash. A Critical Failure result means the target was looking directly at the eye when the flash went off and is completely blinded for the remainder of the round and all of the next round. A Failure result means the target was facing in that direction and will be blinded for the remainder of the round. Any success means the target avoided the flash. Targets using flare-compensating equipment are automatically protected.
The starburst uses a capacitor to generate the flash and requires a minimum of 3 hours to recharge using the body's bio-electric field.
The user should be careful when using this attack, as the flash can be reflected back.

Melee Weapons

RazorNailz™
Type: Implant
PL: 6
Mass: --
Size: 1
Cost: O $200, G $400, A $600

Avail: Controlled
Skill: G & A versions only
Nano: G & A versions only

RazorNailz are small (2cm long), razor sharp blades that either protrude from beneath existing fingernails or replace them altogether. The Ordinary version provides five fixed blades. The Good version adds the benefit of retractability. Amazing Nailz are also retractable and can be fitted with a poison delivery system at no further cost.
RazorNailz, in addition to providing an unmistakable fashion statement, also add 2 points of damage to a hero's Unarmed Attack damage rating.
The cost, mass and size listed above refers to the purchase and installation of a single set of five blades.

Shock Fist
Type: Implant
PL: 6
Mass: 1
Size: 1
Cost: $600
Avail: Controlled
Skill: Yes
Nano: Yes

The shock fist is a favorite of police and security forces. It involves imbedding wires into the knuckles and/or fingertips of the hand. Those wires first lead into a nanocomputer-controlled switch, then to a capacitor which is fed by a replaceable power cell hidden in the forearm.
By itself, the capacitor will deal out d4s/d6s/d6+2s En(O) damage (this may require a Unarmed Attack skill check).
When used in conjunction with an Unarmed Attack the capacitor will add stun points to any successful attack based on the degree of success. The shock fist will add 2 points of stun damage to an Ordinary success, 4 points to a Good success and 6 points to an Amazing success. These points are added before any reductions for armor.
Replacement power cells cost $50 and are good for up to 5 uses of the shock fist.

Chapter Four
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Protection & Reinforcement

Filters

Electronic Flare Compensator
Type: Upgrade - Optical
PL: 6
Mass: --
Size: --
Cost: $650
Avail: Common
Skill: No
Nano: Yes

The electronic version of the flare compensator (EFC) uses a polychromatic lens to block the specific wavelength of dangerously bright light, allowing the passage of the rest of the spectrum for use in vision.
The EFC will work with all Optical implants, upgrades and systems, unless stated otherwise in the description.
The cost listed above is for the purchase and installation of EFC in both eyes.

Flare Compensator
Type: Implant
PL: 6
Mass: --
Size: --
Cost: $200
Avail: Common
Skill: No
Nano: No

This procedure simply adds a thin film of photo-reactive plastic over the pupil and iris of the eye. It does not require a nanocomputer, adds nothing to cyber tolerance and does not require the purchase of cyberoptics.
Whenever a potentially harmful level of light strikes the film, it instantly darkens to compensate. This effectively makes the subject immune to the blinding effects of bright light. However, the brighter the light, the darker the film becomes, possibly to the point where the subject is blinded anyway.
The flare compensator is completely undetectable by casual observation.

Skinweaves

Plating

Skeletal Enhancements

Energy

EMP Shielding
Type: Upgrade – Special (see below)
PL: 8
Mass: --
Size: --
Cost: +20%
Avail: Common*
Skill: No
Nano: No

A more precise understanding of the physics of energy allows cyberneticists to build cybernetic implants that are completely immune to the damaging effects of electromagnetic pulses and electric shock (providing the shock isn't so powerful that it vaporises the implant). This process cannot be retrofitted to existing cyberware. Implants must be constructed in this manner for it to be effective. Shielded and unshielded implants can work together, but this will not provide any bonuses to the unshielded implants. The process has no effect on mass or cyber tolerance and only adds an affordable 20% to the cost of the item.
*This upgrade has proven to be able to protect against most cyber-disabling devices used by law enforcement. As such, it has recently been raised to Controlled status in some areas.

Holographic Cloaking Array
Type: Implant
PL: 8
Mass: 2
Size: 3
Cost: $3000
Avail: Military
Skill: Yes
Nano: Yes

Representing the state of the art in personal camoflage technology, the HCA utilizes a network of holographic emitters implanted throughout the subject's body to cloak that person inside a

holographic image. (this needs re-working)

Quantum Cybercell
Type: Implant
PL: 8
Mass: 1
Size: 2
Cost: $4500
Avail: Controlled
Skill: No
Nano: Yes

The ability to power cyberware using nothing but the body's own bioelectric field was a great achievement. In the Energy Age, however, simply "functioning" is not enough. With internal gravitic inductors, ablative skinweave and hyperware, the body can find it difficult (if not impossible) to provide the necessary energy. The quantum cybercell is a scaled down version of the quantum cell used to power starships. It can provide enough power for any number of components and never needs recharging.

Chapter Five - Augmentation

Cyberlimbs & Hyperware

Electro Magnapads
Type: Implant
PL: 7
Mass: 2
Size: 2
Cost: $1200
Avail: Common
Skill: Yes
Nano: Yes

Electro magnapads are a more powerful version of the PL6 Magnapads. Instead of having shields that slip over the magnets, they are switched on and off through the nanocomputer. Electro magnapads require an external power source which is provided in the form of a belt. This power source has a charge of 1000kg-hours. In other words, it can hold up a 1000kg load for one hour, or a 100kg load for 10 hours. Recharging takes one hour.
Electro magnapads can support up to 50kg each (in 1 Earth-gravity), this is enough force to require a Strength feat check to pull free while the pad is activated. Under zero gravity conditions, the pads allow the user to stay in place (provided there is a suitable material to adhere to), reducing penalties for zero-G combat by -1 step.
Additionally, whenever the user holds a magnetically attractive object while the pads are switched on, he gains a -2 step bonus on any rolls made to maintain that grip.

Magnapads
Type: Implant
PL: 6
Mass: 3
Size: 2
Cost: $800
Avail: Common
Skill: Yes
Nano: Yes

Magnapads are powerful magnets implanted into the hands and feet. They allow the user to adhere to surfaces that would normally attract a magnet. When not in use, covers which block the attractive force of the magnets slip into place, allowing the user to handle objects normally.
Users of magnapads should exercise caution when using the implants under the influence of gravity, since each pad can only support about 20kg of mass (in 1 Earth-gravity). Under zero gravity conditions, the pads allow the user to stay in place (provided there is a suitable material to adhere to), reducing penalties for zero-G combat by -1 step.
Additionally, whenever the user holds a magnetically attractive object while the magnapads are switched on, he gains a -1 step bonus on any rolls made to maintain that grip.

Hyperware
Type: Implant
PL: 8
Mass: O 1, G 2, A 3
Size: O 1, G 2, A 3
Cost: O $1500, G $3000, A $4500
Avail: Controlled
Skill: All versions
Nano: All versions

Hyperware is a term covering any part of the body that has been removed in favor of using advanced holographic technology. Computer controlled holographic and ablative field emitters make the appendage look and feel like flesh, but they are capable of performing tasks far beyond the biological.
Although the emitters are normally used to simulate fingers, toes, feet, limbs, etc., they are limited only by the programs the user has installed in his nanocomputer. This can be anything from a bladed weapon to a octopus tentacle. Any shape can be duplicated, provided the user has the appropriate program. If the user so chooses, either the holographic or ablative field emitter can be turned off, making the appendage invisible (but solid) or intangible (but still visible).
Hyperware has the same senses as a flesh appendage. It can sense temperature, has a sense of touch and can even simulate pain or pleasure (although this requires a modified LSD encoder, add $500). The sensitivity can be increased at will, granting the user a more detailed sense of touch. In game terms, this grants the user a -1 step bonus to rolls involving touch or manual dexterity. The density of the virtual particles in the field can be adjusted as well, in order to simulate everything

from fog to neutronium. And finally, the strength of the field in Good and Amazing versions can also be adjusted, providing a Strength score up to 16 at its highest setting (this requires skeletal reinforcement).
Ordinary hyperware can create a field the size of a finger or toe. Good generates a field the size of a hand or foot. Amazing implants can simulate entire limbs.

Fast Chips & Reflex Wiring

Bio-monitors, Bio-control & Self-repair

Adrenal Booster
Type: Implant
PL: 6
Mass: --
Size: 1
Cost: $1250
Avail: Controlled
Skill: Yes
Nano: Yes

A bit of a misnomer, the adrenal booster actually has nothing to do with the adrenal glands. An implant that simply pumped adrenaline into your body would do little more than make you a shaking, nervous wreck. The adrenal booster is a complex auto-injector that includes a uniquely-configured bio-monitor and two drugs, pseudo-adrenaline and a neutralizer.
Pseudo-adrenaline is a powerful drug that heightens Awareness-*perception* and improves all physical tasks by -1 step. Unless overridden, the device will automatically inject the neutralizer after 60 seconds.
Each use of the booster will cause 1 point of Fatigue damage. Every 10 seconds of use beyond the 60 second timer will cause an additional point of Fatigue damage. A loss of consciousness will automatically trigger the release of the neutralizing agent.

LSD
Type: Implant
PL: 6
Mass: --
Size: 1
Cost: O $150, G $300
Avail: Controlled
Skill: Good version only
Nano: Good version only

LSD stands for Low-voltage Stimulation Device. The LSD implant was originally created as a means to control the emotional state of violent criminals. It is a device that feeds an adjustable current of electricity directly into the pleasure center of the brain. It is extremely distracting, causing the subject to suffer a +1, +2, or +3 step penalty on all actions for each of its three settings.
The Ordinary LSD is connected to its own specialized jack, where the hand-held controller can be plugged in. A Good LSD has no external jack, instead it is controlled directly by the user's nanocomputer. The Amazing version of the LSD is a wireless device, it does not require an implant.
The LSD is an overwhelmingly addictive device. Each use of the implant forces the user to make a Will feat check at a +1 step penalty, with a cumulative +1 step penalty (up to a maximum of +5) added for each Failure. A Critical Failure signals the end of all resistance, the subject is hopelessly addicted (see below).
The lowest setting requires a check after every hour; medium, every 30 minutes; and high, every 30 seconds. When not under the influence of the LSD, an addicted user (called a "wirehead") suffers a +1 step penalty on all actions and will appear nervous or agitated.
The highest setting of the LSD can completely interrupt the brain's ability to sense pain. Wireheads have been known to starve to death while under the influence.

Organ Replacements & Enhancements

Circulatory Impellers
Type: Implant
PL: 6
Mass: 1
Size: 1
Cost: $2500
Avail: Common
Skill: No
Nano: Yes

A device with a long history, the original impeller (called a Ventricular Assist Device or VAD) was designed and implanted prior to the year 2000. Both the original and cybernetic versions serve the

same purpose, to keep the blood moving.
The circulatory impeller is tiny cylindrical pump that actually fits inside the blood vessel. When enough of them are implanted in the necessary locations, the heart itself becomes unnecessary.
A subprocessor (added to the nanocomputer) controls the network of impellers, increasing and decreasing flow to match activity. It can also close an impeller completely, cutting off blood flow to damaged areas and preventing death from loss of blood.
The procedure includes heart bypass tubing that can also be controlled by nanocomputer. In the unfortunate event that the heart is damaged or destroyed, the bypass will route bloodflow around it and keep the subject alive.
In game terms, this has no effect on penalties incurred by damage, it simply means the subject will not die by "bleeding out" from mortal damage. However, keep in mind that a failure to provide oxygenated blood to body parts will lead to organ failure and tissue necrosis, particularly quickly where the brain is concerned.

Electronic Equilibrium
Type: Implant
PL: 6
Mass: --
Size: 1
Cost: $500
Avail: Common
Skill: Yes
Nano: No

The ability to walk upright, balance on a wire, or even just stand still is controlled by the effects of fluid flowing through tubes in the inner ear. It is a marvelous construction of evolution, but it is also easily fooled.
An electronic inner ear can sense and react to the effects of movement much more quickly and efficiently than the body's own mechanism. It cannot be fooled by micro-gravity, violent or repetitive movements, or suffer the after-effects of a loss of consciousness. The subject will always be fully aware of which way is "up" and have an uncanny ability to stay on their feet.
Electronic equilibrium provide a -1 step bonus to all actions that depend heavily on balance. Also, the subject gains a +1 resistance modifier against being thrown "off balance".

Nephrotic Enhancer
Type: Implant
PL: 6
Mass: 1
Size: 1
Cost: $1500
Avail: Common
Skill: No
Nano: No

Also known as a renal implant or kidney booster, the nephrotic enhancer acts as a heavy-duty filter and chemical disassembler.
The implant is actually two implants, one for each renal artery that leads into the kidneys. Together, they filter out the debris carried in the plasma (the liquid part of blood) and use a converter to break down or neutralize a predetermined list of chemicals (alcohol, for example).
The implants function much like the kidneys themselves, in that they cannot negate the effect of chemicals on the body. Alcohol will still make the subject intoxicated and analgesics will still reduce the sensation of pain. The difference lies in durability. Long-term drug or alcohol abuse will no longer affect the kidneys, nor will acquired disease (hereditary kidney disease is not affected), medications or high blood pressure. Manufactured toxins designed to attack the kidneys (such as those that cause the kidneys to extract water from the blood and cause death by dehydration) will have no effect whatsoever.

Chapter Six
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Styleware

Cosmetic Alterations

API
Type: Implant
PL: 6
Mass: 1
Size: 1
Cost: O $100, G $250, A $400
Avail: Common
Skill: G & A versions only
Nano: G & A versions only

API stands for Adaptive Pigmentation Implant. Originally a medical device designed to regulate skin pigmentation for sufferers of skin pigmentation disorders, it has since become popular fashion to alter the color of skin to match the latest trends in clothing. The API functions like an ER Slot (page 243, PHB), automatically injecting darkening agents in response to increased UVR (ultra-violet radiation) exposure. It can also be connected to a nanocomputer, allowing the subject to alter their skin tone at will. The change occurs quickly, usually between 15 to 30 minutes, thanks to the accelerated metabolizing agents used in the pseudo-melatonin and lasts for hours.
Pseudo-melatonin can also create a wide range of colors beyond the usual red/yellow, light brown and brown/black commonly found in humans. This allows the user to have blue, green, or purple skin color, to name a few examples.
The Ordinary implant includes a UVR sensor and functions automatically, the Good implant contains the same components of the Ordinary version and can be controlled by nanocomputer, the Amazing implant has the functions of both the Ordinary and Good versions and comes with a rainbow of color options.
Pseudo-melatonin refills cost $10 for the Ordinary and Good versions, $25 for the Amazing implant. Each refill is good for 300 hours or 25 doses, depending on usage.

Chromatix™
Type: Upgrade - Optical
PL: 6
Mass: --
Size: --
Cost: $300
Avail: Common
Skill: No
Nano: No

Chromatix allows the subject to control her eye color at will, by implanting a special film over the iris in both eyes.
The film has a 24 hour "memory" that allows it to reproduce any color or image that is beamed onto it by a hand-held device (included in cost). If the memory is not refreshed after 24 hours the film will return to its natural, transparent state.
The film is highly elastic and will alter its size to match any changes made by the pupil, it should never interfere with normal vision.
Chromatix costs nothing in cyber tolerance and cannot be rejected.
The cost listed above is for the purchase and installation of Chromatix in both eyes.

Bioart & Fiberoptics

Skin Flix™
Type: Implant
PL: 7
Mass: --
Size: 1
Cost: O $500, G $750
Avail: Common
Skill: Good version only
Nano: Good version only

This procedure turns the subject's skin into a living video display.
Both versions of this odd fashion fad implant hundreds of highly elastic photo-film sheets into the subject's skin, which then act like standard display screens (they may be linked together to form one single image). Any image or video that can be displayed on a standard display screen can be used by Skin Flix™.
An interface jack and external source are required to use the Ordinary version of the implant, since it has no connection to the user's nanocomputer.
The Good version is wired directly to the cytronic circuitry and therefore can display anything the nanocomputer has access to.

Softlite™

Type: Implant
PL: 6
Mass: --
Size: --
Cost: $200
Avail: Common
Skill: No
Nano: No

Essentially a specialized form of bioart, the Softlite produces a soft glow through the skin.
This white light is brighter than standard bioart, enough to illuminate a circular area about 30cm across.
It has no cyber tolerance cost and cannot be rejected. The light is activated by a sub-dermal micro switch.

Chapter Seven - Netware

Neural Interfaces

Optical Neural Interface Port
Type: Implant
PL: 7
Mass: --
Size: 1
Cost: $1500
Avail: Common
Skill: Yes
Nano: Yes

The ONIPort is a wireless form of NIJack that is virtually immune to outside interference. It does not have a range, however, since both ports involved in data transfer must be in contact with one another. The ONIPort is usually installed in the palm of the hand (for weapons, vehicles, handshakes, etc.) or the forearm (for computer gauntlets), but could be installed almost anywhere.
The ONIPort is completely invisible to the naked eye until activated, when it appears as a glowing red triangle similar in appearance to bioart. In fact, it could be easily disguised as such and left active all the time.
ONIPorts are uncommon interface devices rarely found on standard equipment.
All ONIPorts are of Amazing quality.

Communication

Optical Laser Comm Port
Type: Implant
PL: 7
Mass: --
Size: 1
Cost: $1000
Avail: Controlled
Skill: Yes
Nano: Yes

An optical laser comm port includes an emitter, a receiver, and a 100x zoom lens. All contained within a single eyeball. It allows the user to communicate covertly with another similarly equipped subject or piece of equipment. It has a maximum range of 5000 meters under ideal conditions (certain environments, such as the vacuum of space, may increase this maximum).
This implant is large and must be installed alone in an existing cyberoptic eyeball. It cannot share space with any other implant, upgrade or system.
When in use, the subject's eye must remain open and the beam focused on the target's receiver. The target, likewise, must keep it's beam fixed on the subject's eye, requiring both users to remain as still as possible.
The beam is invisible to the human eye, including the user, but some guided weapons can be programmed to track the beam emitted by an optical laser.

Optical Laser Microphone
Type: Implant
PL: 6
Mass: --
Size: 1
Cost: $500
Avail: Common
Skill: Yes
Nano: Yes

A laser microphone detects the vibrations in solid matter when it is affected by sound waves. It then uses this data to recreate the original sound with near-perfect accuracy. The cybernetic version is contained entirely within a single eyeball. It has a maximum range of 5000 meters under ideal conditions (certain environments, such as the vacuum of space, may increase this maximum).
This implant is large and must be installed alone in an existing cyberoptic eyeball. It cannot share space with any other implant, upgrade or system.
When the laser is in use, the eye must remain open and focused on the target. This action is assisted by a built-in, 100x zoom lens.
The beam is invisible to the human eye, including the user, but some guided weapons can be programmed to track the beam emitted by an optical laser.

Gridware

Section Two
Goods & Services