Settings

Major types of settings

USA gone to trash or the Laissez Faire capitalist setting

In this setting, everyone either lives and works in one of the large mega-corps's arcologies or is a street hustler, a cyberpunk living on the fringes. There is no such thing as illegal activities, everything is legal. Corporations make the law, because no central government is in existence. The net is accessible to everybody, and data is as valuable as money. The world is broken up into sprawls and run for profit.
There are a few problems with this setting. Thinking people are difficult to lead around by the nose-ring, therefore the net would be difficult to access. You need to explain everything in terms of profitability, and many elements of cyberpunk stories are not so profitable.

City States in the USA

The USA is broken up into city-states, ruled by corporate dictators. Control is determined by addictions to drugs, tech, or food supplies. Everybody works in this militaristic society. There will be lots of wars between the individual city states. Possibilities include any variety of high technology, space colonization, satellite warfare, superweapons and more. Groups of free traders run between cities in caravans. People in the city-states rebel. Plenty of espionage and conspiracies. Anarchists will live outside of the readily claimed lands, occasionally rising up if they feel interfered with.
This setting is like the first setting, however, the political boundaries are slightly more defined. You run into plausibility problems when you think of the ideal city-state environment (Greece) and how the cities are geographically separated. This is not true in North America. However, with political bodies, technology becomes more plausible, especially if the only way to expand is up.
City States are small political bodies, even smaller than states. Each one can have its own set of laws and government. Ideally, it would be more representative than our current system, because the people who live in the city state will shape the government to their preferences. However, the City States will probably end up being mere servants to the corporations. Also, huge projects are difficult for one city state.

Socialist Empire

The USA and the rest of the world are unified into one massive socialist empire. AI programs run the world, no hacking is possible or permitted. Computers monitor everything, so there is no corruption or crime. Money is only made by submitting ideas to the AI. Work is not even possible, because robots do most of the work. All people are protected by the computer, therefore there is no need for guns or weaponry. Many people will take up dangerous hobbies and sports instead, trying to kill themselves. Because each person is nothing but a number, the only way to express your individuality is to die in the most interesting manner. This is fine with the computer, because suicide is legal, giving him one less person to bother with. Think of the movie "Always" or "Point Break" and you get the picture. They do dangerous sports for the sheer rush of it.
Socialism requires equal work from all members. This is impossible unless each member of society is the same. It will be tried again and again, but human nature goes against a large socialistic or communistic culture.
Look at the example of the Soviet Union. They failed at their goal because they had to bring in the military to enforce socialism. You can't force socialism on people; they need to choose it out of their free will.
However, small communes might work. If the US was split into many small communes, each with less than one hundred members, that was almost completely self-sufficient, it might work. Even this is debatable. In order for socialism to work, the people must want for it to work.
With city-states, one or more of them can be socialistic.
Getting out under the yoke of this system would make a pretty good epic series. People will never stand this system.

World War

See John Shirley's "Song Called Youth". War Zones, rebellions, fascism, nukes, extremely powerful military weaponry, space station, political intrigue are all present. Totalitarian governments are formed to keep the people fighting.

However, plausibility leaks when you think about the power of today's weapons. The surface of the planet is likely to be devastated far too quickly, especially if nukes are used. A World War will probably signal the end of the world. It'll be one hell of a bang when it does, though.

Systems of Government

Anarchy

Anarchy is a flawed system. It fails to draw out the evils of society. It seems that it is human nature to form a government. The next step after anarchy is to form a militaristic system, with the strongest leading and trying to answer the needs of all the people in the group. It is inevitable that feudalism will rise out of anarchy, because only the strong are prepared for anarchy, and there aren't enough strong out there.

Feudalism

Feudalism looks to be the only form of government besides democracy that works for long terms. Capitalism is merely feudalism disguised. Fascism is an extreme version of feudalism. The strongest person will kick down the weaker person and rule. It is a reflection of humanity's past as evolved primates.
Cults are already fascist semi-feudal systems, thankfully doomed to follow their own prophecies and self-destruct. Larger religions usually end up supporting the reigning power in order to receive kickbacks for keeping the masses quiet and submissive.

Empires / States

Empires are likely. Much like the United States Empire swallowed up the individual states, the Russian Empire created the USSR, and many similar examples in today's politics, the city states or states of the futures will be bound up into confederations or empires or countries lead by a larger central government.
States, like the United States are also likely. Today, people think of themselves as people of the state they live in as much as their country. Europe is going to be fragmentary for a long time, because each "state" has a different language, history, political system, and identity.

Places

The Sprawl

Many cyberpunk novels talk about the Sprawl. Many make specific reference to the BAMA Sprawl - the land between the Atlantic ocean and the Appalachians. Other suggested sprawls are the Rustbelt Sprawl in Ohio, Western New York State, Toronto, Michigan, and Chicago, the Texas Sprawl, which includes most of Texas, the Denver Sprawl, which is Cheyenne to Colorado Springs to Western Kansas. Usually people from the west coast write about their area as separate cities and states, but that can be yet another sprawl.
Each sprawl is a conglomeration of major cities, towns, villages, etc. into one vast puzzle of real estate. Arcologies pick a reasonably abandoned spot and build a massive structure. Industries sprout along side of the arcologies to provide workers with anything not inside of the arcology. Everywhere except the arcologies is anarchy, but inside is a controlled system.
Sprawls fit into many different settings. They can be a single city state, a conglomeration of city states, or a disorganized area.
Remember that the suburbs will become part of the sprawl. The countryside near the suburbs will become part of the sprawl. The inner city areas might remain the same, or they might just end up a wasteland.

Arcologies

Arcologies are often linked to cyberpunk writings, even though they appear in many non-cyberpunk writings. An arcology is a massive structure that contains many of the elements of a city, however it is built like a massive building. They can only be built with massive corporate funding or massive government funding. The advantage of them is that you can have a massive population density in a small space.
Think of a massive mall. Then think about adding a hotel. A few apartment buildings. An office building or two. A factory. A power generator. Stick a few mansions. Add some heliports. If you have enough roof space, try adding a runway. Elevators and walkways to connect it all. Air filtration systems. Make it the side of a few city blocks. Tall as the Sears Tower, except much wider.
A corporate town is a lot like an arcology. Instead of building a self-contained building inside of a city, a self-contained town is built.

Space Colonies

Space colonies, built either in orbit or at one of the Trojan points over Earth, are also quite nice. The two popular locations outside of orbit are L4 and L5, which are about one eighth of an orbit away from the moon. In order to construct the colony, you need a moon base equipped with a mass-driver to fling buckets of undifferentiated lunar soil to lunar orbit. From there, you fling it to L4 or L5. Extract the titanium and aluminum from the soil and use it as building materials. The remaining slag, plus tons of extra soil, is used as the radiation shield. If you are not planning on artificial gravity, design the colony in a doughnut shape that rotates. The center of the hub is in zero-g and holds the manufacturing plant and docking ports. You also need space for a massive radiator and solar panels.
The doughnut needs to be at least one kilometer in diameter in order to hold enough people to be self-sufficient. Population is somewhere over ten thousand.
For larger designs, you either build a larger doughnut, or you build a sphere. Spheres are easy to make; they are just like blowing bubbles.
It is expensive to build a space station. Arcologies are usually regarded as expensive, however space stations are an order of magnitude more expensive. Hundreds of launches are needed to get the building blocks up. More launches are needed to support the station as it is being built. A considerable investment is needed. Also, anything but a large space colony (100,000 people and up) will be dependent on the Earth. The larger ones will be mostly dependent on the moon or the asteroid belt.
There is debate as to the realism of Space Colonies. It would take somewhere over twenty years to build a single colony. The cyberpunk era might be over by the time it is built. A space colony can be a wonderful way to take over the world. No current ICBM can reach a L5 point. A Saturn V or perhaps a Proton might be able to reach it. According to Larry Niven, in space, "Anything worth doing is worth turning into a weapon." A ten ton chunk of lunar material, if targeted at a population center, would cause more damage than a nuclear bomb, without the radiation afterwards.

This is all theoretical, however. It depends on how you construct your universe. Marshal Motley is vehemently against the idea of space colonies.Obstructions

Nukes

Nuclear War has been a shadow over our heads since it's invention. When communism collapsed, everybody thought that we didn't have to worry about nuclear annihilation anymore.
Right. The opposite has happened. The chances of a nuclear bomb are greatly increased. Russia is selling nuclear weapons to the highest bidder. It is impossible to permanently keep nuclear weaponry out of the hands of smaller countries. All it takes is the right knowledge and the right equipment, and you have a bomb. If the USA splits up, each state will have a bomb. If the corporations become powerful, they are likely to have nuclear bombs as well. Right now, there's thirty hit wars going on, eleven of them involving a nuclear power. If you don't have an airplane to drop a nuke, then you just need to sneak one in. Even if it doesn't work, you still have the radioactive fallout all over the city.
A truck or a trawler could conceal a nuclear bomb. The coast guard and the police don't carry Ge iger Counters.
The US used to think that our nuclear umbrella was enough to deter opponents. However, that is sadly wrong. The more countries that have nuclear bombs, the greater the chance that a group of individuals will get their hands on it. No longer do we have to use James Bond style tricks to get a nuke, because large amounts of Russian nuclear material are already missing, thanks to inadequate record keeping. You can't nuke or bomb a terrorist group without killing a lot of innocents.
Therefore, it is not a question of if a nuclear bomb will go off, it is a question of when, where, and how damaging will the effects be when it gets set off.

Plagues

Doctors used to think that all of the diseases were curable. Nope. We thought that Syphilis was history, but it is back with a vengeance. All of the old viruses that we stopped fearing can easily kill you. Because bacteria evolve at a frantic pace, they quickly evolve to exploit our mistakes. We overused antibiotics in the farm and the hospital. Antibiotics are overprescribed all across the country and we are going to regret that when we don't have any more antibiotics that work on killer bacteria.
AIDS is a killer. What many people don't know is that there are many different strains of HIV and some of them are undetectable by standard medical tests. Science has yet to come up with a vaccine to it. You can be vaccinated against one strain of AIDS and the other strains will infect you worse.

The now famous Ebola virus is out on the loose as well as the Hantavirus. Also out there is the Dengue Hemorhaggic fever, which can infect you multiple times, each time worse until you are finally dead. Plus, it is spread by mosquitoes, just like meningitis.
Genetic engineering is a wonderful weapon. Killer bugs can infect other populations. If the designer is racist, it can be keyed to infect only people of a certain racal group. Killer bugs are better than Nuclear bombs for wiping out the population. The cities are still there, but the people are gone. If you design it properly, you will have a vaccine that you can administer to your troops. If you don't design it properly, you will be decimated, however.

The curse of Immortality

Immortality sucks. Man is not meant to be immortal. Today's technologies have extended life and reduced mortality. Population is slowly reaching the limit of the maximum food production on Earth. People are not stopping to reproduce. Therefore, our population is increasing exponentially.
Science has discovered the key to eliminating natural deaths. Computers can scan DNA fragments. Eventually, they will be able to scan the entire set of chromosomes and repair any accumulated DNA damage. Telomeres, which serve as caps for the DNA, will eventually be able to be regenerated, which will also eliminate aging. Xeroderma pigmentosum controls the rate of the body's natural DNA repair system. Accelerate its production, and the body will repair its own damage. Nerve cells die in time and no new nerve cells are created to take their place. Extract chemicals from aborted fetuses to stimulate nerve growth, and senility will be cured.
Humanity is not well suited to immortality. Paradoxically, we search for immortality. There is not enough room for humanity on Earth. The ecosystem is strained already.
Some independent soul may release a retrovirus containing the necessary genetic changes necessary for immortality. If such a virus is released, chaos will result. Humans will live much longer, freed of the limitations of natural death, leaving unnatural death as the only method of population control. Wars will be fought over the Earth's finite resources. Everybody thinks that they are the most suited to survive, therefore they will fight hard for immortality. Everybody thinks that they should spread their genetics, therefore they will all have children, with nobody stopping them from doing it until it is too late.

Subcultures

Anarchists

Anarchists will be prevalent in the future as they are today. Some have a misguided ideal that government is inherently evil and people can live without government. Others are just nuts who are looking for an excuse to kill people. They will destroy arcologies, attack governments and corporations.
Generally anarchists will claim that they want to return to a farming or a hunter-gatherer society. Problem is, there's too many people to do that with.

Greens

The greens love the environment. Nothing matters but the environment. If properly provoked, they will take up arms to destroy companies that are not friendly to the environment. If the corporations have bought off the government, it is even more plausible for them to take up arms, because the government is not going to listen to them.
Some groups are peaceful, Amish types who practice what they preach. Others are hypocritical terrorist groups. Some of the green's advice makes sense, but they can go too far and end up wasting more energy and resources than they save.

Cybers / Mechanists

The future will be filled with people who love technology. They think that the ultimate of coolness is to have the latest mind toy. They will not flinch at augmenting the body. They feel that immortality can be achieved merely through the augmentation of the body.
The existence of this subculture hinges on the sort of cybertechnology you use.

Shapers

Shapers are the opposite of cybers. They dislike technology, and instead prefer to concentrate on the use of biological life forms. They modify their genetic code to improve themselves. They create servile life forms much like the mechanists will create robots.

Technophobes

Technophobes are opposed to any technology or genetic engineering. They do not want to have their humanity taken away; they instead wish to stand on their own two feet. Instead of robots or genetic engineered life forms, they think that animals and other humans should be enslaved. Ever notice how everybody has to stand on something?

Xenophobes

Xenophobes are afraid of anything that is different, like mutants, aliens, other races and free-thinkers. Xenophobia often goes well with Fascism. Xenophobia is one of mankind's long-standing traditions. Early homo sapiens waged war with neandethrals. Xenophobia finds excuses for itself in everything. Many people will be afflicted with some form of Xenophobia.

Kinetics

Kinetics are people who want to go as fast as possible everywhere. They go fast for the thrill of doing so. The only thing that matters to them is the next big thrill. Kinetics do not live long.
Kinetics are usually people who are financially secure. Being secure is boring. Even worse are the people who retire at the age of twenty.

Hackers

Hackers are keen on powerful computing. Some of them will try to exploit other people's computers, but many of them do not break in to other systems. Hackers are often interested in writing neat hacks more than actual productions. Not that hackers are not stereotypical 'geek' type people.

Phreaks/Crackers/Warez D00dz

The illegal part of computer subcultures. Most hackers look down on these subcultures. They choose to maliciously break into established systems in order to seek thrills, much like the Kinetics. Phreaks play with the phone systems, Crackers play with the networks, and Warez D00dz are concerned with software piracy.

Drug Culture

Drug Culture is going to figure big. You are not just going to have the destitute addicts who wash up on the street corner, you are going to have the upper class trying it out. Kinetics are likely to engage in drug culture.
Drug dealers do not like competition. This way, they can charge as much as they want for the drugs. Because they charge huge sums of money for drugs, they will have access to powerful weaponry and advanced technology. Depending on the government and political systems, drug culture will either be a legitimate entertainment or remain a criminal organization. If drugs are legalized, expect brash promises to be made as to their effects. They probably will not be true, but who is going to do anything about it?

Mafia / Yakuza / Organized Crime

Organized crime figures big in most cyberpunk novels. Organized crime also does not like competition. They like things nice and orderly and have the guns to change things if they aren't.

Occupations

Downsizing and rapid job changes are going to effect culture. There are going to be a lot of unemployed people. There will always be jobs for those who are not proud. Jobs that are ill suited for robots to attend to will be available for poverty-level wages.
Many jobs like Accountant, Secretary, Typist, Postal Clerk, and many other office jobs are replaced by computers. Receptionists only exist for sex appeal. Automation replaces most assembly line jobs, except when the cost of labor is less than machine cost.
Also, rich people will rediscover old toys as they realize they can't keep up with new toys. Servants are a sign of status. They are also a method of relaxing. They will know that a machine could do their job better and cheaper. They also know that it is probably better than the alternative jobs. The master will have a person to look down upon. When you've got cash, servants can disappear if they try to protest.
The winners are going to be the bright people. Think of a technological priestood. The people who can hack will end up with the money. Freelance hackers will be in an especially good position, because they are able to jump into new markets faster than any of the large companies.
The mediocre programmers will be assured a job. Despite attempts by many, the ability to program is not inborn. They will build tiny pieces of huge projects like assembly line workers. However, they will not be in the upper class.
A buzzword of the last few years is "Defense Conversion". Defense Conversion is the practice of taking military technologies and defense contractors and enabling them to try to dominate the civilian markets. However, it's not happening. The only thing that is preventing Defense contractors from converting to providing paramilitary gear is the Pentagon and the State Department. When the defense contractors start selling paramilitary gear, expect powerful private armies to follow.
Here are some typical jobs:

Hacker/Cracker

> Uses computers and special software like weasels and viruses to retrieve, change, or erase any stored data. They charge a fee, unless they are receiving a piece of the action. Teenager wanabees run rampant. Extremely glamorized.

Hacker/Wizard

> Uses computers to create new innovative software. This brand of hackers is not too glamorized. A freelance hacker in his/her garage will be able to conquer new markets much faster than the larger corporations can.

Scientist

> Any scientific skill from gene splicing, chip design, programming, robotics, hardware, bionics, and more are welcome and needed. They are treated like resident gods by the company, the brighter, the more valuable. Most have their start in the corporate world and are occasionally liberated by extraction specialists.

Medical

> This ranges from nurse to surgeon to genetic engineer. This is a big money maker. Surgeons and nurses are always needed to rebuild people who have been blown apart, but only if they have the money. Genetic Engineers take lots of training. Most only specialize into genetic research in order to ignore the medical associations, if they still exist. Wherever a genetic engineer is, somebody acts as a middleman.

Runner

> A runner is a courier who is paid to carry some object from one place to another. They specialize in avoiding detection, escaping pursuit, with the necessary skills to do so. Most of them are proficient at a hacking, piloting, booby-traps, and concealment. All are experts at combat.

Data Runner

A courier who transports valuable data. Depending on the level of cybertechnology, they either have a brain chip or just a pack of disks. Only they know the encryption key, and sometimes even they don't know the key. They are sworn to die rather than give up the information, because even death is correctable if they follow their oath.

Extraction Specialist

See Count Zero for an example of this. Paid by one company to kidnap / liberate a scientist bearing knowledge of value, probably having skills needed by the buyer. Many cases involve kidnapping and slavery, so characters will be extreme.

Bodyguard

Usually well armed and armored big guys who are paid to steer their client away from trouble and catch all the bullets. Defensive techniques and surrounding awareness are often their tools. A good type of person to become covered with cybertechnology or mutated with genetic engineering. Keep in mind that they also have to be intelligent, not just big brutes.

Hit Squad

Put on search and destroy missions regarding terrorist attacks against the company they serve. Sometimes kidnapping and interception are their goals. All members share their skills, though they are usually hired separately. If a group is hired together, they are known as Mercs. With hit squads, the whole is greater than the sum of its parts.

Ninja / Xerosoldier

Secretive, highly trained, and biologically or mechanically upgraded contract owned assassins / terrorists. Works only for the country who owns them and owes undying loyalty to them. Often, small men or women with a slight or pudgy build are used because they look harmless and kill rapidly. Skills always include martial arts, awareness, weapons, sabotage, and tactical defense.

Hustler / Broker

People who have connections and use them to deal any information, services, or hardware to another. Hustlers have a extremely short life expectancy; hustling is a extremely risky business. Hustlers who specialize in weaponry are called fixers. Awareness, street lingo, appraisal, bargaining, and library research are just some of the required skills. They deal in drugs, software, hardware, weaponry, or information. Some are reporters who find and sell stories to major and minor media, like P.I.'s

Bonded Corp / Sarariman

Lifetime contract member of a corporation; a little guy who does a certain job at an arcology. His kids and wife belong and can't leave the arcology. His family serves as a leash to reign him in.

Clones

Genetic duplicates of certain people. Usually registered as either a sibling or an unconscious braindead organ donor. Clones are often acquired later in a donor's life, so an age differential exists. Abilities are what genetically was added in and how the clone was trained.

AIs

> Artificial Intelligence programs are a hot commodity. Brain power ranges from small dog to super genius, according to the power of their mainframe. Often times, they are inclined to kill their parents, either through brute force, subterfuge, or zapping them while they are working on the AI. They tend to leave little bobby traps lying around the net. They often guard valuable information. If they start trying to figure out how to improve their intelligence or transcend their hardwired limitations, they are usually terminated.

Security guards

> Dull people who are assigned to guard something. A few elite guards exist to guard valuable targets, but most are just cannon fodder.

Media Technicians

> People like Digital Video Editors, Voice Sources, Computer Animators, Cameramen, and the ilk. They are generally replaceable, but some of the elite are extremely valuable.

Data Technicians

> With the influx of data today, software tools have been developed to enable people to index and correlate them. However, until AI technology becomes accessible to everyone, technicians will be needed to manage the data retrieval software. Individual pieces of data are not incriminating, however, when they are collected and cooborated, they become useful.

Organleggers

> In a cyberpunk environment, nobody's going to care about donating their organs. The organ banks are going to have two ways to get organs for people with money: Dispose of murder evidence or pay freelance criminals to bring back organs. Hello Igor.

Dull workers like janitors, arcology workers, etc.

> You'll still need them.

Social Concequences of Technology

There are many consequences of technology. To a certain extent, progress is regress. Technology changes the status quo, forcing humanity to adjust to the new conditions.

Technology often replaces jobs. Accountants, secretaries and bookkeepers will be replaced. Some feel that computer programmers will be replaced, however, it is my opinion that the opposite will occur. Consider what the impact is on society. Does everybody find new jobs or does the software replacement overrun everything, leaving socialism the only option? What options are there for the general population other than work? Would it be possible for the entire population to work at artisan jobs? If all food production is done robotically to ensure that the highest quality food is cheap, what will the rich do?

Crime will probably increase. As a result, weapon technology will be improved. Marshal Motley once wrote a hilarious piece where fashion designers added weapons to their lineups. Not only will the new guns be better, they will look better, too. Guns will be easy to conceal. Clothing will be probably be armored in the future, especially if the police get much worse than they already are. Consider the failure rate of equipment. Batteries die and guns jam. A clip doesn't hold an infinite number of bullets. Think about new weapons that people would use. Will everybody carry a gun? Will the cops let you carry a gun around?

With cheap, portable technologies, production out of the garage is possible. Research and Development cost for garage companies can easily undercut the large companies. Mass production is not possible, however robotic assembly is possible. Many companies will exist for the sole purpose of assembling garage designer's products. They will not achieve the quantity of the large corporations, however, they will have higher quality. Computer chips

could be assembled quickly with special equipment in a garage Every surface would be painted over to control dust, plastic would be hung over the walls. An airlock and a ventilator and filter will keep the air clean. Ask yourself how this will affect society. Will attempts to ban technologies fail because of the ease of manufacturing? What technologies will be created by people working in their garage?
Consider carefully the affects of super weapons such as nuclear bombs. Proliferation is unstoppable. It may serve to stabilize governments, however, it also might serve to increase violence, especially if there are less consequences than the nuke.
Pollution will affect the world. Radioactive waste has to be held safe for the rest of eternity. What are we supposed to do with it? Many industrial chemicals are toxic and carcinogenic. Today, the government requires them to be stored safely, however if government falls, there is nothing to prevent the corporations from dumping them, preferably on other people's land. If new fuels or forms of transportation are created, air pollution will reduce in severity. If pollution becomes a problem, what will happen to the people? Think about polution-control domes, carbon filter masks, airlocks, fashionable gas masks and chemical isolation suits. How will we get food if all of our farmland is corrupted? What will they do with the polluted lands?
New viruses, plagues, and germs will probably be created, both by corporations and nature. Consider the effect that plagues will have on society. Will viral warfare be effective in war? What happens if the virus backfires?
Genetic engineering has many consequences. What will happen to individuality when cloning is possible?
Consumer electronics will be cheap and accessible. If everybody can access the information of the 'net, what will happen? Remember that a thinking population is difficult to lead around by the nose. Look at today's politic ians trying to destroy the net because of the supposed pornography. What excuse will they use once nobody gives a hoot about morality?
How about culture? The future has much more to offer than just bar brawls and gunfights. What kinds of clothing fads will the future offer? Will fashion designers finally run out of new areas of the body to expose or will they work the other way? Every woman with money will be beautiful thanks to plastic surgery, so people are going to have to find new ways of competing. What will Science Fiction be like in 2020?

"Good Tech"

Computers / Communications

Data Storage

Future computers will be able to store more and more data into a smaller package. Currently, the new DVD will be the same size as a CD, but because of multilevel storage techniques, they can store 17 gigabytes per disk. Lasers are being designed that will, instead of using red light to read data will use blue light, which has a shorter wavelength and therefore can be focused to a smaller spot. Magneto-Optical drives exist already and will become more popular in the future. Magneto-Optical drives use the laser to heat the plastic and a magnet to shift the reflector. As soon as the plastic cools, which only takes a fraction of a second, the data is permanent. All of this has a projected lifetime of about forty years before deterioration begins in their format.
Even better will be holographic storage. A three inch by three inch by three inch cube will store terabytes (thousands of gigabytes) of data.
If you are still think a five hundred megabyte hard drive is a lot of storage space, think again. When storage techniques improve, so does the demand for disk space. Full-screen, movie quality video will not fit on a DVD without some compression. MPEG2 compressed video takes several megabytes for each second.
Magnetic Media is becoming obsolete. The only advantage is that it is cheaper and simpler. However, it's also flimsy, vulnerable to magnetic fields, and tends to loose data after being left in storage.
RAM and ROM will always be necessary. Speeds will increase, chip size will increase. Flash RAM and EEPROM chips will be the rage for tiny storage. Technologies are being developed to allow chips to be stacked, which will make a matchbox sized case capable of holding hundreds of megabytes of memory.
Be careful of miniaturized technologies, however. The smaller the size of a storage medium, the easier it is to damage it and the more damaging dust is. Magnetic media is even worse, because of its susceptibility to many forms of radiation.

Security

Computer software will booby trap equipment to prevent it from being used if stolen. Identification scanners will become accessible for the common users. With pen based computing, signature identification will be included. Not only will the pen based computer read the form of the signature, it measures the pressure of your hands, so you can't trace somebody else's signature onto the screen. Fingerprint scanners will replace many locks. All other locks will be replaced by passcodes or electronic keys. People will carry some kind of computer identification with them, probably a microchip encased in a metal can or a card. Using special encryption techniques, the passcodes will never reveal the code while allowing authentication.
Manufacturers can force the customers to always use their batteries by designing special batteries with a specific shape and connection scheme.
Encryption will become accessible for everybody. The phone companies will encrypt all communication that could be tapped in a format that is crackable by them but requires more computer power than the average criminal has access to crack in. Additionally, other companies will provide extremely capable encryption for the security conscious. However, they might not tell you if there is a hole in the algorithm. Those people who discover holes in popular encryption algorithms will need to disappear, either by their choice, or somebody else's.
Tapping and surveillance is a game of chess. For every form of surveillance, there will develop a counter to it. If the surveyor has more expensive gear, he will probably break through the countermeasures. Otherwise, he will probably be found.
For communications lines there are taps and decoders. However, there are also scanners. White noise generators will prevent people from listening in, but they do not always work. With a boom microphone or a laser scanner that measures the vibrations of nearby objects, white noise can be sometimes circumvented. Radio is public, all it takes is a receiver, however, encryption will make sure that nobody can listen in.
There are several methods of making sure that nobody suspects anything. One of my favorite techniques is to hide data inconspicuously in something that will not arouse suspicion. A set library of video clips of two people having a video conversation can communicate simple messages. Additionally, in an uncompressed video link, you can pass data by fluctuating the brightness of a single pixel. A pornographic group can be a secret message base. Television signals leave room for fast communications in the vertical retrace system. Radio has sidebands that are left unused. These technologies can prove to provide better security than encryption.
The business of computer security has aroused considerable concern. The science of information warfare has been created. Recently, the U.S. Air Force created the 609th Information Warfare Squadron to protect our computer networks and attack enemy data networks. In a recent Mexican raid on rebel forces, they found disks and computers in the rebel headquarters that were used to effect psychological warfare. The era of information warfare is here; it will only become more prevalent.

Chip Developments

Most of today's chips are made of silicon and are packaged into small spidery plastic cases. In the future, both of these qualities will change. Gallium-Arsenide chips are slowly reaching marketability. Once Gallium-Arsenide chips are established, carbon and other exotic small-atom elements will be used.
Optical computing is slowly gaining popularity. Eventually, completely optical computers will be developed. Technology is being developed to meld computer chips and fiber optic links.
Multi-Chip modules are currently on the market. Instead of one chip per case, several chips are mixed. When chips are closer, there is less lightspeed delay and signal loss. Additionally, chips might be stacked to improve density. Three dimensional routing will make connections shorter. However, the more you pack the chips together, the greater the heat problem you have and the higher the rate of defective chips.
One idea that has been floating around is to manufacture a chip that spans an entire silicon platter. People ask why chips are sawn apart in the first place. However, between 10% and 90% of the chips on a platter are not usable due to errors. Companies have devised methods of mapping out the bad areas, however, nobody has made anything marketable.
Quantum Well Optoelectronics use quantum sized holes in chips to produce photons. This creates a laser on an angstrom scale. Using these techniques, a screen of micropixels could be created that would be a ultra-thin screen with extremely high resolution.
Nanites show promise. Today, extremely tiny machines are being built with techniques that were developed for computer chips. Has almost no inertia or friction. Micro mechanical computers are possible, made on a molecular scale.
Analog chips might make a comeback. Originally scrapped in favor of the more precise digital chip, they allow fuzzy logic and greater speeds for some operations.
Future chips may be powered by hydrogen instead of electricity. Manufacturing techniques exist to place fuel cells on a chip. Bathe the chip in liquid hydrogen and oxygen. Note that this might also help cool the chip, except that a fuel cell generates heat.

Personal Communications and computers

Tiny computers are in the future. A computer with more power than today's desktops will fit inside of a case the size of a tiny notepad. Large computers built like a clipboard will be the favored size. They will be as easy to use as a sheet of paper, complete with personal information managers that actually work.
However, people who carry their entire life on a handheld computer in their pocket will soon discover critical errors that will wipe their computer clean. Portable computers will have durability problems. Don't expect to be in a firefight and then immediately consult your computer.
A cellular phone will fit inside of the ear. Pagers will be obsolete, integrated into the electronic mail network and replaced by notepad computers.
Desktop computers will contain supercomputer level performance and mix it with a magazine-quality color printer, a high resolution screen, powerful communication options, and VR gear.
Hollywood will be obsolete, because people will be able to computer-generate movies from a desktop. Underground publications will have the same capabilities as the mainstream publications. Anybody will be able to generate a computer generated video indistinguishable from the real thing.
Look for computer walls. Instead of a whiteboards, blackboards, overhead projectors, bulletin boards, and projectors, everything will be done on a computer screen built into the walls.

The Net

The Net will be everywhere. IP will be replaced by IPng, but TCP will remain the same. Cheap radio transpounders attached to lightposts will enable mobile communications, replacing today's tall cellular towers. Fiber Optic links for high traffic links and copper links for everybody else will form the network. Instead of one phone company, there will be many net companies. Each town can choose its net company.
Civic minded individuals will set up networked libraries. Business will charge for people to access their data. Advertising might make the Net as bad as today's TV and telephone marketing is, however, intelligent mail cullers and brilliant hackers will offer solutions to drive out the intrusions.
Carefully consider the interface you choose. Cyberspace, like in Neuromancer, can loose realism. "Black Ice", i.e security software capable of killing the user is hard to implement in the real world. Why? Well, the computer you are connected to is not handling your presentation. You are. Even with a direct neural interface, there will be adequate safety locks in place that will save your skin. Imagery could be generated that would cause an epileptic seizure, subliminal messages could reprogram your mind, and software could cut you off. However, there will probably be software that can recognize visual attacks and block them. Software damage is possible, but difficult. Damaging the hacker's hardware is virtually impossible.
I recommend that cyber-combat be handled out of a virtual reality interface. The only real way to break in is to mess with the internals of the computer, not the image it presents.

Human Tech

Biologicals and cyber tech

Organs that are damaged can be replaced. Organ donations will remain prevalent, however, addiction to organ rejection drugs is immediate. Because there are never enough organs, people will resort to organlegging, kidnapping, and organ sale.
Organ buds can be produced from fetal tissue, probably from abortions. The organ will assume the body's DNA and start growing. After several months, the old organ is useless and can be removed. Women who obtain abortions will get paid for their fetus.
Growth factors can grow organs from the stump. However, it might cause severe cancer. Additionally, it is extremely difficult to manufacture.
Artificial organs are also possible. Many people who have a sense of what is legal will use them. Eventually, they will be of the same quality as replacement organs.
An interesting story I spotted on alt.cyberpunk.chatsubo used complete plastic surgery and statue adaptation as disguise.
Miniaturization in computers might produce nanites that can reside in the body. This can speed the repair of damage and reduce the speed of infections.
Computer chips that can interface with neurons exist. Neural jacks are possible, but difficult. Bionic limbs are easier and will eventually provide full motion, sensory sensation, plus greater strength and room for extra tools. Eye implants can enable the brain to see, even if the cornea and lens are damaged beyond repair. As long as the retina is intact, electronic vision is possible. However, if the eye implant has any errors, you might end up with a fried retina.

According to VR research, the mind will adapt to control extra items over time, much as it adapts to your sight being flipped upside down.
External cybernetics are difficult. Too much of a risk of infection exists. Mind altering chemicals and cybernetics do not mix. If there are any bugs in your implants, expect permanent brain damage.

Genetic Engineering

DNA rewriting is possible. They extract your DNA, fix any problems and augment it, and then insert it into a retrovirus. The virus infects you, causing an illness like the flu. Afterwards, the genetic code has been changed.
Genetic engineering can't change the skeleton, only change the direction of growth. Memory loss is permanent. Scarring and blindness is permanent.
Genetic engineering is extremely expensive and has only a 50% success rate. The more you change, the greater the possibility for failure and death. Additionally, retrovirus accidents can cause death as the body attacks itself.
Artificial beings are possible. Genetically engineered guard dogs will be used by the corporations to supplant human guards. Rich kids will play with miniaturized dinosaurs and dragons. Hunting exotic animals will become a great sport. Escaped genetically modified creatures are extremely dangerous and will require a highly trained team of experts to hunt down, because they can cause great damage if released into the environment.

Weaponry

Vehicles

Personal tanks will be popular. They are used today, except we call them armored cars or secure vehicles. In lawless areas of town, people will drive them. Heavily armored tanks with cannons will be used in corporate armies. Nobody runs a red light if the other guy is driving a tank.
Helicopters and airplanes can be loaded down with armor and weaponry. For an example, think of today's A-10 Warthog or AC-130U. Helicopters are less efficient, but they can maneuver through cities easier. Vectored thrust aircraft, like the Harrier offer the best of both worlds.
Many corporations will be able to afford fighter aircraft. Today, the Russians will sell you one for a cut rate price. Even civilian aerobatics aircraft are dangerous when armed. Business Jets will be equipped with missile bays for self-defense.
Cars will be heavily armored in the future, thanks to crime. Some will offer pop up gun turrets for the annoying driver in front of you.
The new automaker idea of having two sliding doors on vans is great for crime. This means two gunports!
Motorcycles are popular now and will be popular in the future. They are small, maneuverable, and use less energy than a car. Motorcycles will develop to become more combat-ready. Designers will add armor, faster engines, mount weapons, rocket bottles for speed boosts, and computer stabilization.
Adding powerful computers to vehicles improves performance. They will sense the road conditions to prevent any loss of control. The X-29 aircraft is unflyable without its computers. With computers the X-29 can easily out maneuver any of today's fighters. Cars will grip the road with accuracy. Motorcycles will never tip over. Unless, of course, your computer crashes.

Weapons

Today's guns cheaply built. With better design, guns could last longer, jam less, and fire faster. Caseless ammunition will reduce the weight of the ammunition and leaves less evidence. Cameras can sit where the gunsight usually is and allow the user to aim without looking directly at the target. With the addition of laser sights, there will be no guesswork with shooting. However, they also will probably contain bugs that will cause it to occasionally stop working in a firefight.
Military weapons are wonderful for crime. It is difficult to miss when you have the trigger pulled down in full automatic mode on your gun.
Dart guns are a good alternative to regular guns. They offer smaller size, less noise, and cheaper costs. Pneumatic powered guns are a possibility and would offer complete silence while firing. However, light armor will stop them.
Laser weapons will probably require a backpack battery pack while they are new. However, they are completely recoilless, free of ballistics, and rangeless. However, mirrors will stop visual lasers. Other wavelengths will require special mirrors. Currently, there is some classified research being done on coherent Gamma Ray lasers, which are virtually impossible to block. Gamma Rays can pass through even steel. It's no small wonder why nobody talks about them.

Rocket guns are also a possibility. They are nearly recoilless and are not as likely to dip throughout most of their flight. Can be designed with a long range for snipers.

Gas Weapons

Fosgene gas-enzyme unwraps any proteins it comes in contact with. Extremely deadly, because it does not break down. Any exposed victims die.
Concentrated hormones or steroids will function well as gaseous bio-weapons.
Sleep and tear gasses disable without killing. Also, cocktails of deadly chemicals in gaseous form can kill quickly.
Be careful if you are using gas warfare. If the wind changes, you had better have an antidote to the gas.

Non Lethal Weapons

Non lethal weapons are good. Nobody likes to kill civilians. Big countries love them, because once the technology is gone, all that matters is the numbers of troops. Remember, however, that they will still kill civilians, just in lesser quantities.
Weapons known to exist in the USA arsenal are:

- 40 mm laser cartridges that fit in the under launcher on a M-16. Designed to wreck optics in tanks and blind soldiers. However, photoreactive films can protect optics and eyes. These weapons were developed by the military but human rights proponents are protesting.
- Microbes the jellify gasoline. Can be defeated by catalysts and nonreactive coatings or pesticides and soap.
- Electromagnetic pulse weapons. A side effect of nuclear blast that can be simulated, they will fry all electronics in a graduated curve by line of sight. However, military computers are designed to absorb EMP without failing.
- Stun guns that fire high voltage to paralyze muscles or knock out. Size and drugs are useless, however grounded suits are useful.
- Sonic projectors can emit high irritating noises or ultra low noises that can burst organs. However white noise or sound wave cancellation can defeat them.
- Caustics can destroy buildings and equipment, however, they can be neutralized.
- Sticky films on runways and highways can tear tires, however, sand on the glue will defeat them and probably improve the pavement.
- Slippery films can make movement impossible if sprayed on any smooth surface. However sandblasting or solvents can defeat them.
- Crystallized chemicals on roads can flatten tires. The solution is to not use rubber tires. One car manufacturer briefly introduced a composite tire that will never go flat and therefore will not be effected by this weapon.
- Hard foam can disable invaders quickly.
- Combustion altering chemicals can destroy engines by reacting with the fuel. Metal fibers can short out electronics. However, if the engine is designed right, the chemicals don't matter and a magnetic grid will filter out the fibers. In the Persian Gulf conflict, Tomahawk missiles were loaded with spools of metal wires to take out generators.
- Microwaves can detonate enemy munitions before they can be used, jam radar, warn off intruders, and cook enemy troops. However, they can be stopped by layered metal grids. A reflector can be used as a weapon. Cheap gear can track the microwaves. All it takes is a modified radar detector.
- Computer viruses can disable some computers. Most critical computers are hardwired with software and are isolated from the networks.

Gear

Nightvision goggles are available today and are invaluable for any work at night. If Infravision is added, it is impossible to not be able to see in the dark. Beams of infrared light are useful for covert communications.
Combining a computer screen with night vision goggles will help. If you have a computer screen in front of your eyes, you can receive computer data about your environment much like today's fighter cockpits. You won't need to take your eyes off what you are doing to check a map. If you add some sort of rear-mounted sensor, the computer will warn you if somebody is sneaking up behind you.
Armor made out of high technology materials will stop almost all bullets. Computer circuitry could be added to make wearing the armor easier by interactively tightening and loosening. It will provide full coverage under all circumstances and never chafe the skin.

Many types of gear will be able to be powered by hydrogen. Fuel cells are improving. Currently, they can reach 65% efficiency and they are getting cheaper and more efficient.

Materials Science

- Cerement (Boro-carbon aluminide/ aluminum borocarbide) - This lightweight ceramic is extremely strong, however it has a low melting point. Makes great armor, though.
- Honeycombs are the strongest structure in existence.
- Spider Silk is made from sand and common household chemicals and is stronger than carbon fiber. Can be soaked in resins to make composite panels. Great for bullet proof vests. The gel form of spidersilk expands with current and can be used to replace hydraulics.
- Superplastic steel is stronger and more elastic than normal metal and is less likely to crack or break.
- Alumino-Ceramics are proposed, made from ceramic cast soaked in aluminum.
- Aerogels are a new field. The best insulators and shock paddings invented.
- Tantalum Oxide has also been mentioned. Stronger than steel or titanium and lighter, too.
- Artificial Diamonds are being developed. Eventually they will be available for a good price. They are unscratchable.
- Buckyballs have many new uses. They are extremely slippery. However, they break down if exposed to ultraviolet light.
- Cellulose compound uses grass and wood compounds to make new and different strong materials.
- Century glass is a mixture of glass and plastic layered that combined the best qualities of both.

Space

Space technology is difficult for a citizen of earth to think of. Spacesuits will remain awkward for years to come. Robots will be developed to help space construction, however space construction will always have challenges that land construction does not have.
Satellites are invaluable for any situation. Communication is much easier with them. It may be one of the few uses for space that are commercially sound.
Space colonies and space stations are possible. Both could be built with today's technologies, however it would be difficult, especially for a colony.
Power stations in space might remain a dream. In order to transmit power down, you need a huge microwave field. Studies suggest that the microwave field will gather no more energy than a solar cell field.
Space stations are expensive. Space Technology is expensive.
Remember that space equipment is different. Inside of space colonies, most weapons will be outlawed because of the danger of atmospheric loss. Knives and swords might be permitted. Outside, rocket ammunition or lasers will be used. Space gear will have Velcro pads in order to prevent it from floating off. Aluminum and other ultra-light metals will be used instead of heavier earth metals.
Remember that there is vacuum outside. If you loose your atmosphere, you had better consider an oxygen-optional lifestyle. Additionally, only the richest and smartest dwellers of the colony will be able to escape in the escape pods, because there aren't going to be enough of them.
However, most small holes in the body of a space colony are not fatal. Bullet holes will need to be patched, however, the colonists have enough time to wait for someone to do it right. A hole in a space craft needs to be fixed quickly, and a hole in a space suit is almost always fatal.
In space, any large chunk of mass makes a great weapon. Accelerate a lump of rock to hit a space colony. If you launch a properly heavy rock at a colony, you could create a huge hole in the hull. However, the colony will probably have magnetic deflectors and other defenses to prevent this from happening.

"Bad Tech"

Unless you want to use magic or a magical force, you need to be careful about what technologies you want to include in your universe. Forcefields, Antigrav, Shields and similar creations are difficult to explain without magic. Transporters don't require magic, but the level of technology required is near magic.
Robots are dangerous to use in a story. They are too difficult to kill. Remotely controlled robots are possible and slightly safer. Computer chips will eventually become intelligent enough to give us a fully automated security robot. However, guards are cheaper than an advanced robot.

Bionics are difficult. Plugs built into the skin create a hygiene problem. Connections via induction are also difficult, because it will microwave your skin. The brain is different in each person, and it may be difficult to rubber-stamp the brain. Nerves are fragile and don't like to be tortured. Completely internal implants with no exposure are okay, however. Huge cyborg suits require too much power.

A fully immersive cyberspace with neural links is debatable. Researchers have experimented on blind people and have enabled them to see points of light through electric stimulus. Other groups have simulated crude hearing and touch. Thus, a neural jack is possible, if a little difficult. However, the thinking parts of the brain are unknown to science. You only gain the ability to immerse yourself in the net, not join your mind to the net.

Supersharp ceramic knives are bad technology. They are not as hard as carbide blades. The thickness prevents deep cuts. The same goes for monomolecular whips. In fact, monomolecular lines are not like what most cyberpunk writers have envisioned. It is not the ultra-thin, super-strong line that people think it is.

Hovercraft will never replace cars. They lack sideways control. However, for amphibious usage or sport usage, they have their uses. Wheels are still better.

Jet cars are not good technology. Vertical Take Off and Landing aircraft are more efficient. Helicopters are more maneuverable and are also efficient. Tilting engine aircraft show much promise. Theoretically, they would beat out VTOL aircraft, but not helicopters.

Note that Harrier jets and other vertical take-off aircraft do not always work as promised. They can only take off vertically if they are lightly loaded. If you are packing a good combat load, you will need a runway, albeit shorter than any other jet fighter. They are not very stable while hovering.

Many other aircraft are taking on Harrier technologies. Sweden's Air Force is designed to be dispersed throughout the country and take off on short strips of highway. A VTOL aircraft has allot of extra weight it must carry. A fighter designed to take off in a short distance isn't.

Don't assume that technology will always work. Smart Bombs still hit civilians, they just hit less of them. Computers go haywire. Advanced technologies may be unable to withstand field conditions.

Avoid using too powerful of technologies. Many cyberpunk writers believe that the era of cyberpunk has already begun. It has a limited lifetime. After a while, a new era will replace the times of cyberpunk. This may make arcologies and space colonies implausible, depending on how you construct your timeline.

Don't feel like you need to follow the same footsteps as Gibson, Sterling, and Stephenson did in their novels. They have many developments of technology down pat, but some of their ideas are dead wrong.