

GURPS[®]

Fourth Edition

POWERS[™]

Enhanced Senses[™]



Written by **WILLIAM H. STODDARD**

Edited by **NIKOLA VRTIS**

Illustrated by **SHEA RYAN and DAN SMITH**

Additional Material by **JAMES L. CAMBIAS, S.A. FISHER,
STEVE JACKSON, PHIL MASTERS, DAVID L. PULVER, SEAN PUNCH,
HANS-CHRISTIAN VORTISCH, and JON F. ZEIGLER**

GURPS System Design ■ **STEVE JACKSON**

GURPS Line Editor ■ **SEAN PUNCH**

Assistant **GURPS** Line Editor ■ **JASON "PK" LEVINE**

GURPS Project Manager ■ **STEVEN MARSH**

Production Artist and Indexer ■ **NIKOLA VRTIS**

Page Design ■ **PHIL REED and JUSTIN DE WITT**

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Art Direction and Prepress Checker ■ **NIKKI VRTIS**

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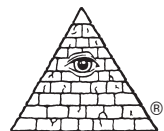
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ABOUT GURPS

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Errata. Everyone makes mistakes, including us – but we do our best to fix our errors. Up-to-date errata pages for all **GURPS** releases, including this book, are available on our website – see above.

Rules and statistics in this book are specifically for the **GURPS Basic Set, Fourth Edition**. Page references that begin with B refer to that book, not this one.

INTRODUCTION

Ruuarrh slipped through the fading twilight, her pupils spread wide to watch the trail, so that no noise would betray her. Her stealthy movements were half-instinct, and she gave them little thought. All her mind was directed forward, seeking the roundeye scout she was tracking. She had the scout's tang in her nostrils; now she had to track him down before he could bring other men to the campsite where her sisters were looking after her children.

Up ahead, there was a sound of breathing, loud in Ruuarrh's ears. She couldn't see through the bushes it came from, but that wouldn't matter.

She had carried her horn-and-sinew bow already strung. Now she took out an arrow and nocked it. All her attention went to listening, as the Old One had taught her. Her ears turned, bringing her target's breathing closer and closer, until she heard nothing else. Her own breathing became one with it, as she took aim at the sound – and loosed the arrow.

Heightened perception is a common special ability in fantastic fiction. It's the defining trait of some characters, such as Heimdal, the watchmen of the Norse gods; the Marvel Comics superhero Daredevil; or Rachel Pirzad on the television series *Alphas*. Many others have keen senses as one among multiple special abilities, such as the animal-like perceptiveness of Tarzan of the Apes, or Superman's vision and hearing powers. Being able to see, hear, or otherwise sense what others can't is a subtle advantage, but it can be a potent one.

The opening chapter reviews the **GURPS** rules for powers, suggests ways of applying them to the senses, and examines and expands the existing rules for sensory advantages. The other chapters describe specific abilities: new or enhanced channels for sensory input in the second, and improved ways of processing that input in the third. Scattered through the supplement are expanded or modified rules for Sense rolls and other game mechanics.

GURPS Powers: Enhanced Senses can be used in a wide range of campaigns: hard science fiction rooted in biology and engineering, fantastic adventures where a martial artist or a sage can have mysterious gifts, supers campaigns where drama overrules the laws of nature, and more. The abilities presented in this supplement are categorized into powers that fit these varied genres, sometimes as variants for different powers. The GM should treat it as a toolkit, choosing abilities to suit his campaign.

Enhanced Senses also serves as a source of information on realistic nonhuman sensory capabilities. The abilities included in the Enhanced Senses power (p. 4) are based on actual biology. A GM wanting to write up a real-world animal, or a fictional alien race as discussed in **GURPS Space**, can find added detail in this supplement.

PUBLICATION HISTORY

This is the first edition of **GURPS Powers: Enhanced Senses**. It draws inspiration from **GURPS Powers**, whose treatment of sensory powers it expands upon; **GURPS Bio-Tech**

and **GURPS Space** for the biological basis of sensory abilities; and **GURPS High-Tech** and **GURPS Ultra-Tech** for technological sensors. However, nearly all of the content is original.

REQUIRED BOOKS

This supplement requires the **GURPS Basic Set** and **GURPS Powers**, as the abilities within make extensive use of the advantages and modifiers in those works.

And what magnificent instruments of observation we possess in our senses! This nose, for example, of which no philosopher has yet spoken with reverence and gratitude, is actually the most delicate instrument so far at our disposal: it is able to detect minimal differences of motion which even a spectroscope cannot detect. Today we possess science precisely to the extent to which we have decided to accept the testimony of the senses.

*– Friedrich Nietzsche,
Twilight of the Idols*

ABOUT THE AUTHOR

William H. Stoddard is a professional copy editor, specializing in scientific and scholarly publications in fields ranging from aerospace technology to literary history. Fortunately, he likes reading nonfiction; his research library is threatening to take over his apartment, and he regularly visits the nearest university library, which supplied many useful sources for this supplement! His other pleasures include cooking, reading science fiction and alternate history, and running and playing in roleplaying games, which he has been doing since 1975 when he first encountered **Dungeons & Dragons**. His previous work for Steve Jackson Games includes **GURPS Supers**, **GURPS Low-Tech**, and the award-winning **GURPS Social Engineering**. He lives in San Diego with his cohabitant Carol, two cats, two computers, and far too many books!

CHAPTER ONE

SENSORY POWERS

“Senses” in this volume means abilities of the physical body – the eyes, ears, nose, skin, tongue, and more exotic sense organs. It doesn’t include abilities purely of the mind; those can be found in *GURPS Psionic Powers*, especially under ESP. Similarly, awareness of supernatural forces is

dealt with by *GURPS Magic* and *GURPS Thaumatology*. (See *Other Sources*, p. 5, for exceptions.) It *does* cover a wide range of sensory gifts, from documented abilities of actual animals to the wildly unrealistic senses of supers and space-opera aliens.

SOURCES AND POWERS

As defined in the *GURPS Basic Set* and *GURPS Powers*, a power has three components: a set of advantages, the power’s *abilities*, that represent different manifestations of the power; a *power modifier* based on the source of the power, which turns an advantage into an ability of the power; and a *Talent* that makes it easier to use a power’s abilities.

Talents for sensory powers cost 5 character points/level. However, 5 points/level is also the cost of raising Perception above IQ. Why buy a Talent that only affects sensory powers, when the same points will boost *all* the senses? There are three reasons:

- Many sensory advantages allow both Sense rolls and IQ rolls (for example, to memorize or analyze sensory impressions). A specialized Talent adds to both; raising Perception only improves the Sense rolls.
- For normal human characters, Per can’t be raised above 20. However, a Talent can add to this, giving up to +4 to Sense rolls.
- Talent aids Power Block rolls (such as with *Glare Adaptation*, pp. 13-14, and *Reality Testing*, p. 29).

Perception itself can’t be included in a sensory power. *GURPS Powers* disallows attributes within powers, and in this particular case, it would be too much like double counting if the power source granted an ability that’s a near substitute for the power Talent! This also applies to Acute Senses, which amount to discounted forms of Per for one sense each.

POWER SOURCES

A variety of power sources can grant sensory abilities. This supplements presents five sensory powers.

Enhanced Senses

You have sense organs that normal human beings lack, or your sense organs are modified from the human norm. (The skin counts as a sense organ!) Your biological differences can be identified by such methods as dissection, medical imaging, or DNA sequencing. They are subject to technological countermeasures ranging from TL0 herbs to advanced nanotechnology. Related abilities have the power modifier *Biological (Passive)* (-5%) – distinguished from *Biological* by not including *Costs Fatigue* as a limitation; see *Active and Passive Senses* (p. 7).

*The writer claimed by a momentary
expression, a twitch of a muscle, or a glance
of an eye, to fathom a man’s inmost thoughts.
Deceit, according to him, was an impossibility
in the case of one trained to observation
and analysis.*

– Arthur Conan Doyle, *A Study in Scarlet*

Hypercognition

You can enter a state of intense concentration, through self-hypnosis or innate neurodiversity. This lets you maximize your brain’s processing of sensory information. The power modifier is *Savant* (-10%). Your powers give you two Temporary Disadvantages: *Incurious* (12), making it hard for you to focus on anything you weren’t looking for, and *Oblivious*, hindering your interaction with other people.

Sensor Implants

You have electromechanical devices inside your body, or permanently attached to it, that augment its senses. Their functions include some that biological organs can't provide. These implants are more advanced than TL8 technology, probably TL9-10, and their power modifier is *Electronic* (-30%): They require weekly maintenance, at one hour per ability (Temporary Disadvantage, Maintenance, -5%); they are easily found by metal detectors and any sensor that can detect radio emissions (Nuisance Effect, Detectable, -5%); and they're subject to electrical disruption (Temporary Disadvantage, Electrical, -20%). For far-future tech and superscience that lacks some of these flaws, see *Other Sources* (below).

Sensory Focus

You've trained in esoteric mental and physical disciplines that let you channel your life force into superhuman feats, including perception. The power modifier is *Chi* (-10%). You must engage in regular exercises to maintain your abilities; this requires a -10-point disadvantage, such as Disciplines of Faith (Monasticism or Mysticism), a major Vow, or combined lesser disadvantages as discussed in **GURPS Thaumatology: Chinese Elemental Powers**. If you neglect this, your power fails the first time you call on it under stress, leaving you mildly ill; treat this as one of coughing/sneezing, drowsy, nauseated, or moderate pain (p. B428), as the GM determines. You need 1d days of continued meditation to restore your inner balance.

Supersenses

Your sensory abilities are a full-blown superpower; they can include scientifically unrealistic advantages such as Dark Vision, Para-Radar, or Penetrating Vision. The power modifier is *Super* (-10%). Your abilities can be suppressed by Neutralize or Static, or blocked or stolen by weird-science inventions – a wider range of vulnerabilities than for Biological (Passive).

INCLUDING SENSORY ABILITIES IN OTHER POWERS

Many sensory abilities fit powers that aren't primarily sensory. Sight relies on light and can form part of light powers. Hearing can be part of sound powers. Smell and taste can be added to chemical powers. An enhanced sense of touch might appear in elastic powers. Exotic senses can be included in powers based on what they detect: radiation powers for X-ray vision, or electrical powers for radar, radio, or electric field senses.

Another option is to include enhanced senses in animal-themed powers. For example, a character with bat powers could have sonar as well as flight.

It's possible to break up a sensory power into narrower themes, such as Enhanced Vision or Enhanced Taste and Smell. The associated Talent costs less, just as Acute (Sense) costs less than Per. Treat this as a -60% limitation on the Talent: *Only (Sense)*.

OTHER SOURCES

Almost any power modifier can be used with sensory abilities. Many modifiers have a value of -10%, and can be substituted for Chi, Savant, or Super without recomputing costs; all that's needed is to decide what abilities make sense with a source, and the nuances of how they work. Here are suggestions for alternate sources:

Advanced Electronic (-20%): In a mature TL10+ setting with pervasive nanotech, photonics, and so on, implants will be distinguishable only via medical imaging. The technology may have lifetimes that rival those of natural body parts. These use Advanced Electronic (-20%), which is Temporary Disadvantage, Electrical.

Cosmic (+50%): Your abilities have the *form* of senses: They perceive reality rather than controlling or creating it, and they're tied to your body and your (physical or metaphysical) location. However, they aren't limited by natural laws – only other cosmic powers can elude or block them. Cosmic senses start with everything included in Supersenses and go on from there! Cosmic senses fit gods into whose domains the senses fall, and alien entities with weird and inexplicable minds.

Divine (-10%): Saints and prophets often have abilities resembling Hypercognition (p. 4) or Sensory Focus (above). These may be accompanied by access to

supernatural knowledge through Blessed, Oracle, or even Common Sense. More potent blessings may be comparable to Supersenses.

Magical (-10%): Lots of spells in **GURPS Magic** affect the senses, and most mages rely on spells rather than on powers. Moreover, a spell or enchantment may permanently enhance the senses, in ways comparable to any of the listed powers – even Sensor Implants (above), for Technological spells. The GM who favors *Magic Is Power* (see Chapter 7 of **GURPS Thaumatology**) can select abilities, change their modifier to Magical, and include them in a list of magical effects.

Nature (-20%): Keen senses are a common benefit of being raised by animals or nature spirits. Defining them as Sensory Focus abilities, with a different modifier and cost, usually works well.

Psionic (-10%): Sensory abilities don't have the "action at a distance" that's common to psi. Even so, psi can improve sensory functions, just as Psychokinesis can grant Lifting or Striking Strength. Hypercognition or Supersenses (above) can be reinterpreted as psionic effects.

Superscience (-10%): Some supers use devices instead of innate powers. Substitute Superscience for the standard Super modifier of Supersenses, and add appropriate gadget limitations.

DEFINING THE SENSES

Both natural human senses and senses available as advantages can be described by their range of operation; what they detect; and whether they're active or passive.

SENSORY RANGE

Senses are divided into *ranged* and *contact* senses. Contact senses, such as taste and touch, respond only to things that come in contact with the body. If this isn't inherent in the definition of the sense, it can be represented as *Melee Attack, Reach C* (-30%); see p. B112. Inability to parry is included, but can't claim the extra -5%, being inherent in sensory abilities.

Range

Noncontact senses have varied ranges.

Near-field senses work at a yard or less (see below).

Short-range senses take -1/yard. This applies to smell, which depends on chemical diffusion. Other senses can be given Short-Range if sensitivity drops rapidly with distance.

Intermediate-range senses take the standard range modifiers defined in the *Size and Speed/Range Table* (p. B550). This applies to vision and to Detect and Vibration Sense. A 1,000× increase in range means -18. *Unless otherwise specified*, ranged senses use the standard range modifiers.

Scanning senses have a base range; each doubling of distance beyond this range imposes -2. Detect with *Signal Detection* (p. B48) can pick up the emissions of a Scanning Sense at twice its base range; each doubling of distance imposes -1 (*Under the Hood: Range Penalties for Telecommunication*

and *Signal Detection*, below). The same applies to Telecommunication (Receive Only) and to Detect (Signal Detection) that responds to telecommunication. Hearing takes -1 per doubling (*Hearing Distance Table*, p. B358; see also *Loudness Levels*, p. 21, and *Hearing in Tunnels*, p. 22), though its base range depends on the loudness of the sound source – and it gets *bonuses* at shorter distances! A 1,000× increase in range means -20 for Scanning Sense and -10 for other senses in this group. Senses with a stated base range use these modifiers.

Long-range senses take *Long-Distance Modifiers* (p. B241). This applies only to a few supersenses. Past the initial range steps, a 1,000× increase in range means -6.

Arc

Ranged senses also have an *arc*, or angular width (see *New Modifiers*, p. 9, for more options).

Tunnel Vision operates in a 60° wedge to the front.

No Peripheral Vision operates in a 120° wedge to the front. This is the usual arc for Scanning Sense.

Normal Vision operates in a 120° wedge to the front and allows *peripheral vision* 30° to each side, for a total of 180°. (See *Fields of View and Extra Eyes*, p. 16.)

Peripheral Vision operates in a 180° arc in front and allows peripheral vision 30° to each side, for a total of 240°. Scanning Sense with Extended Arc can be fully effective in a 240° arc.

360° Vision operates all around the user. Scanning Sense with Extended Arc can do likewise, and hearing, Detect, and Vibration Sense normally work this way.

Near-Field Senses

Some senses have little range but don't require physical contact, yet Reduced Range (p. B115) is unsuitable if the smallest range is still too large. If range is just a yard, use *Melee Attack, Reach C, 1* (-20%) with a special interpretation: No touch is required, the sense always gets an unmodified Per roll, and the user can claim +4 by forgoing active defenses ("All-Out" use). Devices with such senses always roll at effective Per+4.

Under the Hood: Range Penalties for Telecommunication and Signal Detection

Why is the range penalty for a radio receiver -1 per doubling of range, when the range penalty for a radar set is -2? A radar set is *both* a transmitter and a receiver. To detect a target at doubled range, it has to transmit a radar beam to doubled range, for -1; then it has to receive a reflected beam from doubled range, for -1. A purely receptive system at doubled range is subject to only one penalty, because it performs only one function. The same applies to hearing versus sonar.

THE SENSORY HIERARCHY

Different senses yield different sorts of information about the environment. This provides a basis for classifying them. Some senses function as if they belonged to a higher class if the Sense roll is a critical success.

Vague senses respond to the presence of a substance or process. *Example*: Detect (Vague).

Nondirectional senses (*New Modifiers*, p. 9) also reveal the amount of a substance or the intensity of a signal. *Examples*: Detect (Nondirectional), smell, taste.

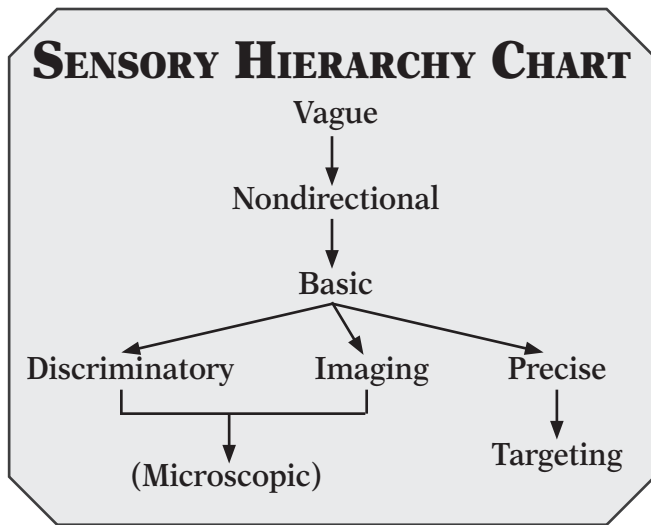
Basic senses, if ranged (see above), also reveal the direction to the nearest significant quantity of a substance or the source of a signal. If not ranged, they allow discrimination of points of contact. *Examples*: Detect; hearing; touch with the torso or limbs.

Discriminatory senses have the capabilities of basic sense and can distinguish individual objects or places, enabling their use to navigate the environment or track prey. Nonvisual discriminatory senses become substitutes for vision and are at +4 to Sense rolls; vision doesn't get this bonus, because these capabilities are the *baseline* for human vision. *Examples other than vision*: Discriminatory Hearing, Smell, or Taste; Sensitive Touch. *Analyzing senses* are comparable, but if a Sense roll to detect an object succeeds, identification is automatic, as for vision; such senses are forms of Detect (Analyzing).

Imaging senses have the capabilities of basic senses and can also detect small objects and distinguish relief on a scale from a centimeter (2/5") to a millimeter (1/25"). *Examples:* Imaging Radar; Infravision; Para-Radar; Sonar; vision with Bad Sight (see p. 12); touch with the hands. If they are also discriminatory senses, they have submillimeter resolution (like human vision) and are at +4 to distinguish fine relief and identify objects. *Examples:* Active IR; Ladar; Megahertz Sonar (p. 8); Sensitive Touch; T-Ray Vision; vision (see p. 15).

Precise senses have the capabilities of basic senses and can determine the distance to a target, allowing an aimed ranged attack. They are always ranged. *Examples:* Active IR; Detect (Precise); Imaging Radar; Ladar; Megahertz Sonar; Para-Radar; Radar; Sonar; T-Ray Vision; Vibration Sense; vision.

Targeting senses have the capabilities of precise senses and can determine a target's exact range and speed, giving +3 to hit with an aimed ranged attack. This option narrows your arc of perception – you perceive the object normally, and 30° to each side at -2. *Examples:* Radar (Targeting); Sonar (Targeting); Vibration Sense (Targeting).



ACTIVE AND PASSIVE SENSES

Biologists define passive senses as simply responding to energy or matter coming in from the environment, and active senses as emitting energy into the environment, as in sonar or active electroreception. *GURPS* uses the terms slightly differently. An ability is *passive* if it's in effect constantly or comes on reflexively in specific situations. It's *active* if it comes into

Some of the abilities in this supplement are based on new versions of existing advantages.



VARIANT ADVANTAGES

Infravision

see p. B60

Standard Infravision detects everything between microwaves and visible light. Sense organs restricted to particular infrared bands gain some benefits but trade them off for certain restrictions.

FIELD SENSES

The rules for Detect (p. B48) cover awareness of an object or substance, and of a beam of energy (Signal Detection). But there's a third case: awareness of a field – gravity, electric, or magnetic fields, or such conditions as pressure or temperature. Detect reveals several aspects of fields:

Quantity of a substance translates to *intensity* of a field (or of a signal).

Direction to a substance translates to *direction of change* felt while moving through a field (for example, increasing or decreasing pressure underwater). It may also translate to *orientation* of a field – for example, a compass pointing north rather than east or west.

Distance to a substance translates to *gradient* of a field – how rapidly it changes as you move through it.

Speed and direction of movement have no equivalent for most field senses – they can't have Targeting (p. 8).

effect only when a maneuver is taken to use it or when a die roll is based on it. This isn't limited to senses that emit energy, but that's a common reason for not having a sense on all the time. (Active and passive sensors in *GURPS High-Tech* and *GURPS Ultra-Tech* use the biologist's distinction.)

An active ability must be either switchable or transient. An advantage that's not inherently switchable can be made so as an enhancement (usually +10%) if there is some inconvenience in having it always on, but as an option (+0%) otherwise. An advantage that's switchable can be made Reflexive (see *GURPS Powers*) – keeping it on all the time at a low level and automatically turning it on fully if something significant happens – but this can't apply if the sense requires emitting energy.

Even a sense that emits energy rarely has Costs Fatigue as a *limitation*. Bats, for example, spend energy sending out ultrasound pulses, but they can do so hour after hour. Over the course of a day, such senses may produce long-term fatigue at a rate of 1 FP per hour of active use, as discussed in *GURPS Thaumatology: Chinese Elemental Powers*. This prevents keeping the sense on all the time but doesn't seriously hinder its use, and is worth -0%. Active Electroreception, Hunting Sonar, Imaging Sonar, Metal Detection, Para-Radar Imaging, Proximity Sense, Radar Imaging, Spy-Ray, T-Ray Imaging, Ultrasonography, and X-Ray Vision cause long-term fatigue. Such abilities can still take *Biological (Passive)* (p. 4).

Near Infrared Vision works with frequencies close to those of visible light, allowing sharply resolved images, without a penalty to see small details such as facial features or print. Living organisms don't radiate in this band and can only be seen by reflected near infrared from sunlight, very hot objects, or technological sources such as active IR. Fires and heated objects emit a dull glow at 350°F and a bright one at 1,350°F. Given such sources, you gain benefits similar to those of Ultra-vision; see *Infrared Sight* (p. 14). *0 points to see near infrared but not visible light; 10 points to see both.*

Thermal Infrared Vision works with longer wavelengths, including those emitted by human bodies. These aren't detected by the eyes, but by separate structures similar to pinhole cameras, which still function if the eyes are dazzled or injured. Their resolution is too poor to allow reading by reflected infrared. *10 points.*

Scanning Sense

see pp. B81-82 and *Powers*, p. 72

Megahertz Sonar uses higher frequencies than standard Sonar. Sense rolls to distinguish fine relief are at +4, making subtle details (such as facial features) readily identifiable. The range of Megahertz Sonar is greatly reduced: 200 yards underwater, or two yards in air, multiplied by air pressure in

*Lose your mind and
come to your senses.*

– Fritz Perls

atmospheres. The frequencies you use are inaudible to normal Ultrahearing or ultrasound detectors. *20 points.*

Telecommunication

see p. B91; *Powers*, pp. 81-82;
and *Ultra-Tech*, p. 31

Cable Jack gives you a plug for a fiber-optic cable, which allows direct, unjammable communication with any other computer or communicator with a similar jack and interface. A short cable (up to 10 yards long) is included; you can use extensions to add another 10-50 yards. *5 points.*

Vibration Sense

see p. B96 and *Powers*, p. 86

Active Electroreception uses a completely different mechanism than standard Vibration Sense (sensing electric field distortions rather than air or water currents), but provides very similar capabilities. It only functions in water and can only detect objects that are either insulators or conductors relative to water. Water currents don't hinder it, and it can't detect them. A successful Sense roll identifies an object's size, location, and speed and direction of movement. The roll is modified for the range to the target, per the *Size and Speed/Range Table* (p. B550); in addition, *add* the target's SM to the roll and *subtract* your own. Using this sense generates an electric current that can be detected. *10 points.*

MODIFIERS

Sensory abilities can take many different limitations and enhancements other than power modifiers.

GENERALIZED MODIFIERS

Some modifiers originally defined as special enhancements or limitations for particular sensory advantages can apply more broadly to other sensory traits – including normal senses. See the original descriptions for additional details on usage.

Precise (p. B48): Turns a ranged basic sense into a precise one (see p. 7), enabling it to be useful in determining the distance to a target. +100%.

Profiling (*Powers*, p. 47): Provides a mental database of sensory signatures, giving an extra +4 to rolls to analyze and recognize targets using vision or a discriminatory sense. All attempts to memorize new signatures succeed automatically without an IQ roll. +50%.

Stethoscopic (*Powers*, p. 73): Allows extracting sounds from a nonacoustic sensory stimulus: vibrations of a surface, electric currents in a phone line, etc. Requires actual acoustic waveforms, not digital signals! +50%.

Targeting (p. B82): Turns a precise sense into a targeting one (see p. 7), giving +3 to aimed ranged attacks. +20%.

Targeting Only (p. B82): As Targeting, but the sense is too narrowly focused to spot targets; another sense must be used for initial target choice. -40%.

Universal (p. B96): Allows a sense that is normally restricted to one of air or water to function in both media. +50%.

VARIANT MODIFIERS

Some general modifiers are available in new versions.

Hypersensory

see *Powers*, pp. 46-47, 69

Hypersensory abilities are based on the integration of sensory information at a depth impossible to normal people. This can be an enhancement (as for Dark Vision) or a limitation (as for Psychometry). Its value changes with the number of senses it relies on:

- If a “sixth sense” depends on other, mundane senses to work, it's at -80% if blocking one other sense stops it (in effect, it's an alternative ability), -65% if blocking two other senses stops it, -50% if blocking three other senses stops it, -40% if blocking four other senses stops it, or -30% if blocking all five mundane senses stops it.

- If a standard sense can fall back on other senses when its primary channel is blocked, it's at +10% if blocking one other sense is needed to stop it, +25% if blocking two other senses is needed to stop it, +40% if blocking three other senses is needed to stop it, or +60% if blocking four other senses is needed to stop it.

In most cases, blocking some but not all senses gives a penalty to the Sense roll: For an ability based on two other senses, -5 for blocking one; for an ability based on three other senses, -3 for each sense blocked; for an ability based on four or five other senses, -2 for each sense blocked. Blocking all senses gives -10 (complete failure).

Some Hypersensory abilities give a *bonus* to a roll. Blocking one or more senses reduces the bonus proportionally. See *Reality Testing* (p. 29) and *Truth Sense* (p. 29).

Long

Increases effective SM for a sense organ that extends out from the body, but has no manipulatory functions – such as eyestalks or antennae (see *Size Modifier and Reach*, p. B402). +20% per +1 to SM.

NEW MODIFIERS

Some new modifiers are available for sensory advantages.

Microscopic: Only applies to senses that are both discriminatory (p. 6) and imaging (p. 7). Each level gives 10× magnification, allowing -6 in SM penalties to be disregarded. +25%.

Nondirectional: A less restrictive form of Vague (p. B48). A Sense roll detects not only the presence, but also the quantity

of a material or the intensity of a field or signal; the *direction* can be determined only on a critical success. An IQ roll can identify what kind of thing is sensed. -25%.

Restricted Arc: For Scanning Sense (pp. B81-82), this is the opposite of Extended Arc – you can scan an arc less than 120°. A 60° arc (comparable to Tunnel Vision) is -75%. You may *not* take both Restricted Arc and Extended Arc! For senses whose unmodified form covers 360° (including hearing, smell, Detect, and Vibration Sense), the modifiers are -30% for 240°, -60% for 120°, and -75% for 60°.

NORMAL SENSES AND MODIFIERS

Some abilities are defined by applying one of the various modifiers presented on pp. 8-9 to normal human senses. This is done in the same way that special modifiers for Extra Arms (p. B53) are applied to beings with one or two arms – the point cost is set at a fraction of the percentage modifier: 1/5 the percentage value of the modifier for vision, 1/10 for hearing, 1/50 for smell and taste, and 1/10 for touch. Thus, Precise is worth +100%, so Precise Hearing is worth 10 points as an advantage (see *Locational Hearing*, p. 20). If multiple modifiers apply to a single normal sense, buy *each* as an ability in this way, and add the costs.

FROM PERCEPTION TO DESTRUCTION

Some sensory abilities (see *Active and Passive Senses*, p. 7) involve emitting energy into the environment; radar, sonar, and active electroreception are all examples. More intense energy of the same kind can provide an attack capability. There are two ways to approach this.

- Treat the sensory ability and the attack as *Alternative Abilities*, as defined in *GURPS Powers*. This could be either a low-damage attack and a primary sensory ability, or a sensory ability and a primary high-damage attack. An electric eel's high-voltage attack is an example.

- Treat the attack as a stunt based on the sensory ability, as described in *GURPS Powers* under *Using Abilities at Default*. Each such stunt costs 3 FP and will

usually cause only modest damage, as the total cost of the attack can't exceed that of the sensory ability. This would fit dolphins using underwater sonar to stun fish.

Example: The electric field of Corona's body grants her Proximity Sense (p. 18) for 31 points. Through intense effort, she turns it into an *attack*: Burning Attack 4d (Accessibility, Not in water, less effective in humid air, -30%; Area Effect, 2 yards, +50%; Emanation, -20%; No Incendiary, -10%; Side Effect, Stunning, +50%; Super, -10%; Surge, +20%) [30]. By taking a Ready maneuver, making a difficult HT roll, and spending 3 FP, she can inflict electric shocks and shut down electronic devices within a two-yard radius.

SENSES AND SKILLS

The basic roll to use a sensory ability is a Sense roll – called a Vision, Hearing, Smell, Taste, or Touch roll when a specific sense is required. Sense rolls are made by the GM; the player should not know whether his character *failed* to perceive something or there was nothing to perceive.

If a Sense roll succeeds, the character may try to analyze or interpret what he perceived. This calls for an IQ roll. The player makes these rolls.



SKILLS ENHANCING ABILITIES

It's possible to substitute skill rolls for attribute rolls in using sensory abilities, if the GM approves. Talent with the power adds to these skill rolls. Two main groups of skills provide such benefits.

In a Sense roll to notice that something significant is present, a Per-based skill can replace Per: Observation to spot something that's in sight but not obvious, Search to find signs that something has been hidden, or other skills at GM discretion.

In an IQ roll to identify what has been perceived, a relevant knowledge-based skill can substitute for IQ.

ABILITIES ENHANCING SKILLS

A sensory ability can substitute for access to high-quality equipment, giving a bonus to skills that use such equipment. Definitions of specific abilities provide some bonuses; for others, listed here, an ability gives +2 if it takes the place of fine-quality mundane equipment, or +4 if its aid goes beyond that of purchasable equipment, into the realm of the miraculous. Some examples:

Active Electroreception: +2 to Navigation (Underground) in underwater caves.

Blood Taste: +2 to Diagnosis or Forensics based on blood samples.

Cutaneous Chemical Sense: +2 to Tracking if you are barefoot.

TRIANGULATION

With ranged senses that reveal the direction of a substance or process – and particularly with signal detection – it's possible to determine distance indirectly by *triangulation*. This requires two Sense rolls from some distance apart. After the second successful roll, the GM makes a roll vs. IQ-4, Electronics Operation (Comm, EW, or Sensors)-2, Mathematics (Surveying)-2, or Navigation-2. The result of this third roll can reveal where the lines from those places converge. Accuracy increases with a longer baseline. On a success, you know the target's position to within (10 yards/length of baseline in yards); on a critical success, to within (2 yards/length of baseline in yards). On a failure, you can't locate it accurately. On a critical failure, you're certain you know where it is – but you're wrong.

Triangulation can be improved as an Average technique, limited to IQ, Electronics Operation+2, Mathematics (Surveying)+2, or Navigation+2.

Diagnostic Scan: +2 to Diagnosis or First Aid.

Gene Sequencer: +2 to Forensics to extract clues from biological residues. *Genescan* gives +4!

Gravimetry: +2 to Cartography, Engineer (Mining), Geography (Physical), Geology, Mathematics (Surveying), Navigation (Land), and Prospecting.

Hunting Sonar, Imaging Sonar, or Sonar Implants: +2 to Navigation (Underground) in underwater caves.

Immune Spectrum Detection: +2 to Biology (Genetics) or Diagnosis.

Infrared Sight: +2 to Naturalist or Prospecting; +2 to Artist (Pottery or Sculpting) or Metallurgy, for tasks that benefit from knowing the temperature in a foundry or kiln; +2 to Vision-based Forensics, Observation, or Search rolls; +4 to Vision or Observation in Quick Contests against Camouflage or Disguise.

Infrasonic Hearing: +2 to Geology to detect earthquakes; +2 to Meteorology; +2 to Survival to locate large animals.

Inner Awareness: +2 to Diagnosis or Esoteric Medicine (Traditional Chinese); +2 to Alchemy or Herb Lore; +2 to Expert Skill (Hydrology), Meteorology, Naturalist, Navigation (Land or Sea), and Prospecting.

Ladar Implants: +2 to Architecture or Cartography for mapping the interior of a building or large vehicle.

Laser Spectrometry: +2 to Chemistry, Hazardous Materials (Chemical), Metallurgy, or Poisons to identify the composition of objects or substances.

Magnifiers: +2 to Forensics to examine small clues.

Mass Perception: +4 to Search.

Metal Detection or Metal Detector: +2 to Prospecting if searching for shallow deposits of metals; +2 to skill rolls to find buried metal objects, metal water or gas pipes, etc.

Microscopic Sight: +2 to Geology or Metallurgy for identifying minerals or alloys; +4 to Bioengineering (Tissue Engineering) and many specialties of Biology; +4 to Forensics to examine small clues.

Micro-Touch: +4 to Bioengineering (Tissue Engineering) and Engineer (Microtechnology); +4 to Forensics to examine small clues.

Object Reading: +2 to Archaeology or Forensics for interpreting material evidence.

Odor of Fear: +2 to Intimidation.

Omnivision: +2 to Astronomy (for observation), Engineer (Electronics), or Physics.

Para-Radar Imaging: +2 to Observation; +4 to Search.

Passive Electroreception: +2 to Survival in water environments.

Radar Imaging or Radar Implants: +2 to Observation in any situation where the sense would work and be able to spot the objective.

Radiation Scanner or Radiation Sense: +2 to Hazardous Materials (Radioactive).

Seismic Sense: +2 to Geology to detect earthquakes; +2 to Survival to locate large animals.

T-Ray Imaging or T-Ray Implants: +2 to Observation in any situation where the sense would work and be able to spot the objective; +4 to Search if the concealing material is transparent to T-rays.

Tactile Imaging: +4 to touch-based Forensics or Search.

Thought Tracking: +2 to Brainwashing, Interrogation, or Psychology (Applied); +2 to Teaching if working with a single student; +4 to Detect Lies or Fortune-Telling.

Ultrascan: +4 to Chemistry, Electronics Repair, Engineer (Clockwork, Electrical, Electronics, or Materials), Hazardous Materials (Chemical), Mechanic, and Physics.

Ultrasonography or Ultrasound Scanner: +2 to Diagnosis for internal injuries or pathologies.

Ultraviolet Sight: +2 to Naturalist or Prospecting; +2 to Vision-based Forensics, Observation, or Search rolls; +4 to Vision or Observation in Quick Contests against Camouflage or Disguise.

Visual Profiling: +2 to Connoisseur (Visual Arts).

Voice Profiling: +2 to Connoisseur (Music) for singing; +2 to Linguistics.

Warp sense: +4 to Navigation (Hyperspace) to plot a course in pursuit of another hyperspatial craft; +4 to IQ to pursue a teleporter (see **GURPS Powers**, p. 89).

X-Ray Vision: +2 to Diagnosis for internal injuries or pathologies; +4 to Search if the concealing material is transparent to X-rays.

Zoom: +2 to Forensics.

CHAPTER TWO

SENSORY ABILITIES

Because sensory powers overlap, abilities aren't grouped by which power they belong to, but by the energy, force, or substance the sense responds to. Each ability's entry includes a list of which powers can include it. (See pp. 4-5 for explanations of the powers and their power modifiers.) The GM may allow variations, if there's a good rationale for them – but players should ask before designing new versions!

If your race entirely lacks a human sense, you may be able to acquire it as an ability. Start with the cost of buying off the relevant disadvantage (Blindness, Deafness, No Sense of Smell/Taste, Numb) and apply a power modifier and any other applicable modifiers. See *Feelers* (p. 22) for an example.

Many of these abilities can aid with skill attempts; see *Abilities Enhancing Skills* (p. 10) for details. For further information on range, see *Sensory Range* (p. 6).

ELECTROMAGNETIC RADIATION SENSES

In the 19th century, James Clerk Maxwell, a theoretical physicist, predicted that changing electric and magnetic fields could produce *electromagnetic radiation*. The calculated speed of such radiation was the same as that of light, which was recognized as electromagnetic. Later research discovered radiation at lower frequencies (such as radio) and at higher frequencies (such as X-rays). The same equations describe all of them, though they interact with matter in different ways. Electromagnetic radiation is divided into bands based on frequency, wavelength, or energy; higher-frequency radiation has shorter wavelengths and higher energy.

The best possible resolution of an image is about half the wavelength of the radiation used to form it.

See the unseen. Know the unknown.

– Motto of the Defence Imagery and Geospatial Organisation (Australia)

RADAR AND RADIO

Electromagnetic radiation at long wavelengths (a millimeter or more) can be generated and detected by electronic circuits. It's most conveniently described in terms of waves; it's sometimes measured by wavelength, but more often by frequency (in hertz). Long wavelengths include radio,

microwaves, and millimeter waves. Recent technology has opened up wavelengths shorter than a millimeter (the terahertz band), overlapping far infrared.

There aren't many natural sources of radio waves on Earth. Senses attuned to them are either *passive* detection of technological sources or *active* scanning of the environment.

HF/DF

4 points

Included in: Sensor Implants.

Pronounced "huffduff" (for *high-frequency direction finder*, a radio receiver with a highly directional antenna). You can point to a radio transmitter from up to twice its range with a Sense roll. To locate it, see *Triangulation* (p. 10).

Statistics: Detect Radio (Electronic, -30%; Signal Detection, +0%) [4].

Radio Source Detection

7 points

Included in: Supersenses.

Equivalent to HF/DF, but an inherent ability rather than an implant. It functions automatically. You can also sense radio noise from lightning and distinguish it from technological sources.

Statistics: Detect Radio (Reflexive, +40%; Signal Detection, +0%; Super, -10%) [7].

VISUAL IMPAIRMENT

Bad Sight offers two options: Nearsighted or Farsighted. However, other visual disabilities are possible.

Many people become nearsighted when young; then as they age, close-up things become increasingly difficult to see, requiring bifocals as a Mitigator. This amounts to Bad Sight (Nearsighted) with Bad Sight (Farsighted) as an alternative disability; total point value is -30 (-12 with bifocals). You aren't going to have trouble seeing things close up and far away simultaneously!

Other restrictions on vision are represented by new versions of Bad Sight.

Low Resolution: Human eyes are extraordinarily keen, with closely spaced retinal cells. Most animals' vision is coarser. Treat this as a straightforward -4 to spot objects at any range, and -8 to resolve fine details (see *Under the Hood: The Mark One Eyeball*, p. 15). This can also represent human visual defects such as astigmatism; in this case only, it can be corrected with lenses.

No Fovea: The high-resolution central area of your vision has been destroyed – for example, by a blinding laser. You can find your way about with peripheral vision, but you defend against *all* attacks at -2, and all your attacks count as Wild Swings (p. B388). You cannot read, and you must work by touch to perform fine manipulation. You are at -3 to DX for close combat and larger mechanical tasks.

water. You can perceive through thin fabric or vegetation. Make a Sense roll to distinguish fine relief on a scanned object; roll at +3 to spot concealed weapons. Ordinary radar detectors pick up your emissions at -4.

Statistics: Imaging Radar (Electronic, -30%) [14].

Radar Imaging

18 points

Included in: Supersenses.

Similar to Radar Implants, but as an inherent power.

Statistics: Imaging Radar (Super, -10%) [18].

T-Ray Implants

18 points

Included in: Sensor Implants.

You have an implant that generates submillimeter or terahertz radiation, whose reflections you can use to perceive your surroundings at high resolution – Sense rolls are at +4 to perceive fine relief. Your base range is 200 yards, and your ability doesn't work in water. You can perceive through light cover, clothing, or wood or plaster walls. Make a Sense roll at +4 to spot concealed weapons. Only special sensors can detect your emissions.

Statistics: T-Ray Vision (Electronic, -30%) [18].

T-Ray Imaging

23 points

Included in: Supersenses.

Similar to T-Ray Implants, but as an inherent ability.

Statistics: T-Ray Vision (Super, -10%) [23].

Radar Detector

4 points

Included in: Sensor Implants.

You can pick up the emissions of a radar system directed toward you, at twice the system's active range, on an unmodified Sense roll (-4 for imaging radar). To locate it, see *Triangulation* (p. 10). An IQ roll lets you identify the source (such as police speed radar or targeting radar), if it's one you've encountered or studied; if not, an IQ roll lets you memorize it.

Statistics: Detect Radar (Electronic, -30%; Signal Detection, +0%) [4].

Radar Detection

7 points

Included in: Supersenses.

Equivalent to a radar detector, but an inherent ability rather than an implant. It functions automatically.

Statistics: Detect Radar (Reflexive, +40%; Signal Detection, +0%; Super, -10%) [7].

Radar Implants

14 points

Included in: Sensor Implants.

You have an implant that generates millimeter radiation, whose reflections you can use to perceive your surroundings. Your base range is 200 yards, and your ability doesn't work in

VISION AND LADAR

Vision is perception of the intermediate part of the spectrum: infrared, visible, and ultraviolet light. These bands are normally measured by wavelength. They can be described in terms of *rays*, or straight-line paths, as in optics.

Far and mid infrared are created by molecular rotation and vibration – that is, heat. Near infrared, visible light, and ultraviolet are produced by chemical processes. Lenses work well for near infrared, visible, and ultraviolet light. Earth's atmosphere absorbs the longest wavelengths (far infrared) and the shortest (vacuum ultraviolet), so there's not much to see in those ranges.

Vision is a *passive* sense. Ladar is an *active* sense in the same frequency range, using laser beams to scan objects.

Darksight

28 points

Included in: Supersenses.

Your vision is independent of light sources: You can see even in total darkness as if you were in direct sunlight. This is *not* a realistic ability!

Statistics: Dark Vision (Color Vision, +20%; Super, -10%) [28].

Eagle Eyes

19 points

Included in: Enhanced Senses.

Your eyes have superior focusing power, like a bird of prey's. You can ignore -4 in range penalties to Vision rolls in general, and up to -8 if you have zoomed in on a specific target with an Aim maneuver. If you use this with a ranged weapon, you gain an extra +4 Accuracy with an aimed attack, as if using a scope (p. B412) – but this isn't cumulative with actually using a scope.

Statistics: Telescopic Vision 4 (Biological (Passive), -5%) [19].

Farsight

9 points

Included in: Supersenses.

Your visual abilities go beyond mere telescopic vision! Rather than standard range modifiers, you use long-distance modifiers for Vision rolls (p. B241). This is not a realistic ability, but fits the “telescopic vision” of some supers.

If you use this ability with Forward Observer, apply the long-distance modifier in place of the standard -3 per 500 yards.

Statistics: Long-Range Vision* (Long-Distance Modifiers; Super, -10%) [9].

* An application of *Normal Senses and Modifiers* (p. 9).

For the eye altering alters all . . .

– William Blake, “*The Mental Traveller*”

Glare Adaptation

5 points

Included in: Supersenses.

Your eyes adapt rapidly to bright light (see *Illumination Levels*, below). You are at +5 to HT rolls to recover from being dazzled, and you make the first such roll after two seconds. The same bonus applies against Vision-Based attacks. Your sight will never be permanently damaged by excessive light such as lasers or nuclear fireballs; treat such impairment as temporary.

If you have a very bright light source – brighter than direct sunlight – you gain from +1 to +5 to Vision rolls for the illuminated area, once you adapt. Light intense enough to cause permanent blindness is still too bright to see by.

ILLUMINATION LEVELS

The human eye operates across an extremely wide range of light levels; each -1 to Vision from low light corresponds to tenfold less illumination. The following table defines illumination levels, with examples of natural and artificial light typical of those levels. (Values for point sources such as candles assume they are one yard away.) Water strongly cuts down the intensity of visible light – each 75 yards of depth reduces illumination one level.

Too much light, as well as too little, can hinder vision. Illumination brighter than full sunlight saturates the visual pigments, causing complete blindness (dazzle) on a failed HT roll for minutes equal to the margin of failure. Lower illumination has the same effect if it's five or more levels above what the eye has adapted to. Light-based weapons such as stun grenades and laser dazzlers have

comparable effects, with a penalty to the HT roll; see the statistics for each weapon. More intense light can cause lasting or permanent vision loss; use the rules for crippling injury (pp. B422-423). Intense light from a distant source damages the fovea (see *Visual Impairment*, p. 12). Being surrounded by bright light can destroy the entire retina, causing Blindness. Protected Vision reduces or eliminates these effects (see *Glare Adaptation*, above).

If you have a light source in a dark environment, this eliminates or reduces Vision penalties in the illuminated area, but *prevents* seeing outside it. Treat your light as *in plain sight* to distant observers who have a clear view of it: +10 to Vision rolls to notice the lighted area (p. B358). However, they're at -7 to see anything else.

<i>Illumination (lux)</i>	<i>Natural Light</i>	<i>Artificial Light</i>	<i>Penalty</i>
0	Total darkness		-10
0.0001	Overcast night		-9
0.001	Starlight		-8
0.01	Crescent moon		-7
0.1		Indicator LED	-6
1	Moonlight	Candlelight	-5
10	Twilight	Street lighting; torchlight	-4
100		Living room	-3
1,000	Overcast	Office	-2
10,000	Full daylight	TV studio	-1
100,000	Direct sun	Surgery	0

When you use this ability for a Power Block, a roll vs. 3 + (HT + Talent)/2 gives you +10 to resist.

Statistics: Protected Vision (Super, -10%) [5].

Eye Protection

6 points

Included in: Sensor Implants.

Similar to Glare Adaptation, but technologically based, and includes DR 2 for your eyes and +2 to HT rolls to resist eye damage from any cause.

Statistics: Nictitating Membrane 2 [2] + Protected Vision (Electronic, -30%) [4].

Infrared Sight

10 points

Included in: Enhanced Senses.

Like the optic organs of some fish, your eyes have an extra pigment that responds to near infrared. This lets you see visual patterns that normal humans can't recognize, giving +2 to Vision rolls. Near infrared is less subject to scattering, letting you ignore two levels of Obscure (Vision) or equivalent penalties from natural conditions – for example, swimming in murky water. In total darkness (-10 to Vision), you're still blind!

You have no penalty to Vision rolls when seeing only by infrared. However, there isn't much to see – warm-blooded animals emit almost no radiation in this band. If there is a source of near infrared (such as a hot fire or an active IR system), you can see by its reflected light, with no penalty to distinguish size and shape.

Statistics: Near Infrared Vision (p. 8) (Biological (Passive), -5%) [10].

Ladar Implants

14 points

Included in: Sensor Implants.

Your body contains a laser that can scan your surroundings in a 120° arc in front of you, to a base range of 200 yards (only in air). You locate objects of interest on a Sense roll at -4, and gain knowledge of their direction and distance. If you have located an object, you can identify it on an IQ roll at +4. You can make a ranged attack against any object you have located, but you don't get a targeting bonus. Others can see or detect the beam on a Sense roll at -4, because of its narrowness.

Statistics: Ladar (Electronic, -30%) [14].

Laser Microphone

10 points

Included in: Sensor Implants.

If you have an ability based on the Ladar advantage, you can focus its beams on a vibrating surface, such as a

window. You can “hear” whatever sounds are made behind it with a Sense roll, subject to penalties if you are beyond the standard range.

Statistics: Detect Vibrating Surfaces (Electronic, -30%; Ladar-Based, Reversed, -20%; Stethoscopic, p. 8, +50%) [10].

Laser Spectrometry

12 points

Included in: Sensor Implants.

With a Sense roll, at -1 per yard, you can detect the spectra of chemical substances in a solid, a liquid, or an opaque gas, and assess their intensities. With an IQ roll, you recognize familiar substances; on a critical success, you can judge purity and recognize combinations of substances. This only works if you direct ladar at the substance you want to analyze; you must have an ability based on the Ladar advantage to use it.

Statistics: Detect Chemical Composition (Electronic, -30%; Ladar-Based, Reversed, -20%; Short-Range 1, -10%) [12].

Laser Targeting

10 points

Included in: Sensor Implants.

Your body contains a laser that you can direct at a target with an Aim maneuver. Your base range is 1,000 yards. The target must be identified and located with some other sense, such as vision. Once the target is acquired, you are at +3 with any aimed ranged attack. This is not cumulative with weapon sights!

Statistics: Ladar (Electronic, -30%; Increased Range, 5x, +20%; Targeting Only, -40%) [10].



Microscopic Sight

14 points

Included in: Supersenses.

Your eyes can resolve visual detail of nearby objects down to the limit set by the wavelength of visible light (1,000× magnification). You can see organelles within cells or structural features on integrated chips (chips made after 2008 are too small!).

UNDER THE HOOD: THE MARK ONE EYEBALL

A Vision roll to see something in plain sight is made at +10; this is how good the unaided eye is at spotting things that aren't hidden or camouflaged. But this isn't the right modifier for every visual task. If you've already located a target, and are focusing on it to see small details (such as reading text or seeing facial expressions), the modifier doubles, to +20, the same way the modifier for Telescopic Vision doubles for similar tasks. (You don't get a bonus to aimed attacks; normal human visual acuity is already factored into ranged attack rolls!)

Example: The eye chart in an optometrist's office is viewed from 20' away, a range modifier of -3. The line for 20/20 vision requires seeing details as small as 0.0698",

a Size Modifier of -18. The combined penalty is -21; the basic +20 modifier offsets all but -1.

An *unmodified* Vision roll is made in several cases:

- You aren't consciously watching for anything significant, and may or may not notice it in passing.
- You're in a Quick Contest against a skill used to conceal something.
- Your Vision roll must be followed by an IQ or skill roll to gain the relevant information.

Vision-based *skill* rolls do not take the +10 or +20 modifier.

There is no "Enhanced Senses" version of this ability. No species is much better than humans at seeing close-up fine detail.

Statistics: Microscopic Vision 3 (Super, -10%) [14].

Magnifiers

4 points

Included in: Sensor Implants.

You have contact lenses or eye implants that enhance the magnifying function of your natural lenses by 10x. You can just barely make out single cells as tiny dots.

Statistics: Microscopic Vision 1 (Electronic, -30%) [4].

Night Sight

3/6/9 points for levels 1-3

Included in: Enhanced Senses, Supersenses.

Your eyes function efficiently under low light through retinal sensitivity, pupil dilation, and/or greater size. Two natural levels are available: The 3-point version (typical of nocturnal animals) cancels three levels of darkness penalties, while the 6-point version (found in deep sea creatures and some nocturnal predators) cancels six levels of darkness penalties. A third, extreme level, only available as a superpower, eliminates darkness penalties if there is *any* light.

Statistics: Night Vision 3 (Biological (Passive), -5%) [3] or Night Vision 3 (Super, -10%) [3]. The second level adds three levels of either Night Vision (Biological (Passive), -5%) [+3] or Night Vision (Super, -10%) [+3]. The third level adds another three levels of Night Vision (Super, -10%) [+3].

Light Amplification

3/5 points for levels 1-2

Included in: Sensor Implants.

Equivalent to Night Sight, but based on miniaturized light amplifiers as corneal implants.

Statistics: Night Vision 3 (Electronic, -30%) [3]. The second level adds three levels of Night Vision (Electronic, -30%) [+2].

Omnivision

38 points

Included in: Supersenses.

You see the entire electromagnetic spectrum, from radio waves to gamma rays (including all infrared bands). You suffer no vision or combat penalties if there is any light available. Under normal light, you are at +3 to Vision rolls and to visually based Forensics, Observation, Search, and Tracking rolls. In total darkness, you can see opponents whose body temperature is above the background level; roll at -4 to see small details or tell individuals apart.

Statistics: Hyperspectral Vision (Extended Low-Band, +30%; Extended High-Band, +30%; Super, -10%) [38].

Thermal Sense

9 points

Included in: Enhanced Senses.

You have a pair of pits like a rattlesnake's that work like pin-hole cameras in response to radiant heat. These aren't affected by eye injury or impairment. You detect warm-blooded creatures, or objects hotter *or colder* than the background, at -1 to your Sense roll per yard of range. You can't see color and have only a vague sense of shape, but you fight at no penalty even in total darkness against a target you can detect. You gain +2 to Vision to spot any such target, and +3 to Tracking for a trail no more than an hour old, but you are at -4 to Vision to distinguish similar objects.

This is more common in cold-blooded life forms, but not limited to them – vampire bats have heat sensors.

Statistics: Thermal Infrared Vision (p. 8) (Biological (Passive), -5%; Short-Range 1, -10%) [9].

Thermal Locator

6 points

Included in: Sensor Implants.

Functionally equivalent to Thermal Sense, but based on electronic implants.

Statistics: Thermal Infrared Vision (p. 8) (Electronic, -30%; Short-Range 1, -10%) [6].

Ultraviolet Sight

10 points

Included in: Enhanced Senses.

Like many birds, you have a fourth visual pigment that responds to ultraviolet light. This lets you see visual patterns normal humans can't recognize, giving +2 to Vision in the presence of ultraviolet (outdoors or under fluorescent light; window glass blocks ultraviolet). At night, your eyes receive the benefit of ultraviolet in starlight, letting you ignore -2 in darkness penalties. Ultraviolet penetrates water to greater depths than visible light, halving Vision penalties underwater – but in total darkness (-10), you're still blind!

Statistics: Ultravision (Biological (Passive), -5%) [10].

FIELDS OF VIEW AND EXTRA EYES

Human eyesight has about 120° of binocular vision, with 30° of peripheral vision to each side, for a total of 180°. It has a vertical arc of about 120°. Standard Peripheral Vision is a 30° expansion *in every direction* – left, right, up, and down – giving a vertical range from straight up to straight down. 360° Vision is a full sphere.

Realistic Peripheral Vision is often achieved by moving the eyes to the side, which doesn't affect the vertical arc. This is a special limitation: *No Increase in Vertical Arc*, -10%. It reduces the central overlap from 120° to 60°, a Nuisance Effect worth -5%: you defend against attacks from outside the 60° wedge at -2.

Putting the eyes on the sides of the head, like a rabbit's, is Extreme Peripheral Vision, covering 300°, for 20 points. This gives *no* overlap, which is functionally effectively *No Depth Perception*: You have -1 to DX in combat and for eye-hand coordination, and -3 on ranged attacks (unless you Aim first), all for -15%. Furthermore, you also have *No Increase in Vertical Arc* for -10%.

Realistic 360° Vision requires at least one occipital eye. This also has limited vertical arc, and can't overlap with the two frontal eyes, giving it the limitations for *No Depth Perception* when looking backward, a Nuisance Effect worth -5%. Having two occipital eyes avoids the latter problem.

Full vertical arc requires two tiers of eyes, looking upward and downward. Applying this to the frontal eyes alone gives normal side-to-side range but vertical arc 180°. This is a limitation on Peripheral Vision: *Vertical Only*, -50%.

X-RAY AND GAMMA RAY SENSES

X-rays and gamma rays are what “radiation” means in everyday language (as opposed to physics, where it includes the entire electromagnetic spectrum). These have very high energy, enough to disrupt chemical bonds, and are most conveniently described as little bundles of energy, or *particles*, measured by energy content. Sources are nuclear reactions, matter-antimatter reactions, and high-energy collision of electrons with atoms.

Realistic living organisms don't have sense organs for radiation. Technological implants may detect it, but their applications are limited. Few natural materials reflect radiation, so it isn't much use for a scanning sense, and natural sources are (fortunately!) rare, so it isn't much use as a light source. Less realistic treatments of radiation figure in comic-book supersenses.

Radiation Scanner

11 points

Included in: Sensor Implants.

You have a built-in device that responds automatically to radiation on a Sense roll; it will even wake you if a source suddenly appears! You can tell in what direction different sources are and how intense they are. An IQ roll lets you determine whether you're dealing with alpha rays, beta rays, gamma rays, X-rays, or neutrons.

Statistics: Detect Radiation (Electronic, -30%; Reflexive, +40%) [11].

Radiation Sense

13 points

Included in: Supersenses.

The same as Radiation Scanner, except that it's an inherent power of your body.

Statistics: Detect Radiation (Reflexive, +40%; Super, -10%) [13].

Zoom

4 points

Included in: Sensor Implants.

Your lenses have been replaced with transparent materials that can be controlled to achieve higher refraction. You can ignore -1 in range penalties to Vision rolls in general, and up to -2 if you have zoomed in on a specific target with an Aim maneuver. With a ranged weapon, you gain +1 Accuracy with aimed attacks. This can be combined with a custom-made scope (double cost), but not a normal scope.

Statistics: Telescopic Vision 1 (Electronic, -30%) [4].

X-Ray Vision

14 points

Included in: Supersenses.

You can see through solid objects made of organic matter or silica up to 1' thick. Dense metals such as gold, lead, mercury, and uranium block your vision. Light metals and many minerals appear as shadowy shapes – you can see a human skeleton, for example. If you see through an object, things on its other side appear in full color, as if under visible light.

Statistics: Penetrating Vision 2 (Blockable by dense metals, -20%; Super, -10%) [14].

ELECTRIC AND MAGNETIC SENSES

Electric or magnetic fields that are unchanging, or change slowly, produce little or no electromagnetic radiation; this includes magnetic fields produced by steady electric currents. Such fields have separate electric and magnetic effects. Human senses don't respond much to these effects; other life forms have specialized sense organs for them.

ELECTRIC CURRENTS

Electric current is a flow of charge through a conductor. The human nervous system responds directly to electric current, as many people have found out the hard way! But electronic devices with complex circuits were a human invention; there are no biologically evolved senses to trace currents in such devices. Technological implants are better suited to this function. See *Sensory-Ability Perks* (p. 26) for Circuit Probe.

Wiretap

3 points

Included in: Sensor Implants.

Comparable to Circuit Probe (see *Sensory-Ability Perks*, p. 26), but the implant can interpret a signal as audio, enabling listening in on conversations with a Hearing roll.

Statistics: Detect Electric Currents in Circuits (Contact Agent, -30%; Electronic, -30%; Melee Attack, Reach C, -30%; Stethoscopic, p. 8, +50%) [3].

*... the settlers went blind
a long time ago and now think
themselves superior to sighted
people. Radar wires tickle their
living brains. . . .*

*– Cordwainer Smith,
“Mother Hitton’s
Littul Kittons”*

ELECTRIC FIELDS

Electric fields are produced by charged objects; in a conductive medium such as water, they are accompanied by diffuse electric currents. Aquatic organisms have evolved sense organs to detect them. Sensitivity to electric fields is rare in land organisms.

This section offers three versions of electric field senses, two based on Detect and one on Vibration Sense. Two of the abilities here are based on the senses of actual organisms, for biologically realistic campaigns; the third is designed for campaigns about cyborgs or powerful supers.

GURPS Supers defined a different advantage, Field Sense, as a form of Scanning Sense. None of the abilities here is based on it. Field Sense can be used as a generalized sensory advantage for a campaign with few scientific details.

Active Electrotoreception

12 points

Included in: Enhanced Senses.

You have organs – like the tuberous organs of weakly electric fish – that respond to AC fields at a few hundred hertz. You generate low-voltage electric pulses at these frequencies and use them to perceive your surroundings, in a process similar to Vibration Sense (p. 8). This sense only functions in water.

To use active electrotoreception, make a Sense roll. Apply separate modifiers from the *Size and Speed/Range Table* (p. B550) for *your own* size and for the size of your target, and a penalty for the range to the target. Water currents don't hinder it and you can't perceive them. A successful roll reveals the target's size, location, and direction. You can only detect targets that are either insulators or conductors compared to water; on an IQ roll, you can use a target's electrical characteristics to identify the type of material. You cannot perceive shape or color.

With an Aim maneuver, you can lock onto a target and determine its precise range and speed. This gives you +3 to hit the target with an *aimed* ranged attack. The modifiers for your Sense roll also apply to the attack roll, but only if they add up to a net penalty.

Others with Active Electrotoreception, or suitable devices, can detect your fields when you are using this sense.

Statistics: Active Electrotoreception (p. 8) (Biological (Passive), -5%; Targeting, p. 8, +20%) [12].

Passive Electrotoreception

11 points

Included in: Enhanced Senses.

You have organs that respond to DC or low-frequency AC electric fields, like the ampullae of Lorenzini of many fish. You perceive electric field sources, such as the gills of fish (typically about 1 mV), with a Sense roll. Higher-voltage sources create stronger fields, as shown in the table.

Source	Modifier
Flashlight battery (1.5 V)	+6
Lithium battery (3-3.6 V)	+7
Car battery (12 V)	+8
Household current (120 V)	+10
Electric eel (600 V)	+11
Power lines (35 kV)	+15

You can identify the strength, direction, and distance of a source. With an IQ roll, you can recognize different species or different electrical devices. This sense only functions in water.

Statistics: Detect Low-Frequency Electric Fields (Accessibility, Only in water, -30%; Biological (Passive), -5%; Precise, +100%; Reflexive, +40%) [11].

Proximity Sense

31 points

Included in: Supersenses.

Your body can generate a static charge and use it to sense objects by their capacitance. With a Sense roll you can judge direction and distance, allowing you to attack targets. You are at -1 for each 10% humidity. In fog or rain or when grounded, you can't perceive anything. You have a 360° arc of awareness; you defend against side and rear attacks at no penalty, and you are at +5 to detect Shadowing attempts. On an IQ roll, you can judge an object's overall shape and composition. People who touch you, or come within an inch of your body surface, may feel sparks.

Statistics: Detect Dielectrics (Accessibility, Not in water, less effective in humid air, -30%; Nuisance Effect, Shocks, -5%; Precise, +100%; Super, -10%) [31].

Capacitive Mesh

24 points

Included in: Sensor Implants.

Your body contains a subdermal network of capacitive proximity sensors. The principle is similar to Proximity Detection, but you operate at low voltage and your range is limited to one yard. Your Sense roll is unmodified by range, and if you forgo active defenses, you make it at +4. You are never surprised by *melee* attacks from the side or rear, and your active defenses against such attacks are at only -2. In close combat, you can attack a foe to your side or rear without a visibility penalty.

Statistics: Detect Dielectrics (Accessibility, Not in water, less effective in humid air, -30%; Electronic, -30%; Melee Attack, Reach C, 1, -20%; Precise, +100%) [24].



MAGNETIC FIELDS

Magnetic fields are produced by permanent magnets and electric currents, and by natural objects such as magnetic rocks or Earth itself. Many organisms have receptors for them, based on iron oxide particles or electrochemical reactions in neurons.

Magnetic Field Sense

14 points

Included in: Enhanced Senses.

You have receptors for magnetic fields, which you perceive on a Sense roll. Changes in the field automatically allow a Sense roll and even wake you if it succeeds. With an IQ roll, you can find the source of a magnetic field by moving about the area where it's present. You sense Earth's magnetic field, giving +1 to Navigation by air, land, and sea, as if using a compass. Strong nearby fields disrupt your navigational abilities.

Statistics: Detect Magnetic Fields (Biological (Passive), -5%; Reflexive, +40%) [14].

Internal Magnetometer

7 points

Included in: Sensor Implants.

The same as Magnetic Field Sense, except that it's technologically granted rather than biological and has to be turned on.

Statistics: Detect Magnetic Fields (Electronic, -30%) [7].

Magnetism Detection

9 points

Included in: Supersenses.

The same as Magnetic Field Sense, but it must be consciously turned on.

Statistics: Detect Magnetic Fields (Super, -10%) [9].

Metal Detector

4 points

Included in: Sensor Implants.

Your body contains an implant that generates an oscillating magnetic field, which is modified when you pass over electrically conductive material. You detect such material on a Sense roll at -1 per yard of depth below your feet, and sense the amount. With an IQ roll, you can identify different metals. This is an active sense, creating a magnetic field that can be detected.

Statistics: Detect Metal (Electronic, -30%; Nuisance Effect, Generates a signal, -5%; Restricted Arc, 60°, p. 9, -75%; Short-Range 1, -10%) [4].

Metal Detection

15 points

Included in: Supersenses.

Similar to Metal Detector, but an inherent power rather than an implant. Your awareness of metal is omnidirectional.

Statistics: Detect Metal (Nuisance Effect, Generates a signal, -5%; Short-Range 1, -10%; Super, -10%) [15].

ACOUSTIC AND VIBRATORY SENSES

Acoustic waves are pressure fluctuations in material media. Unlike electromagnetic waves, they cannot travel in vacuum. Their speed, and thus their wavelength, varies with the medium: 1,125 feet per second in air at sea level, but 4,911 feet per second in fresh water. Low sound frequencies overlap with frequencies that can be felt as vibrations.

*They say a bat's got radar
And he can fly through fan
– Carly Simon,
"De Bat (Fly in Me Face)"*

SONAR

Sonar is an *active* sound-based sense. It bounces sound waves off objects in the environment, building up a picture from the echoes. Resolution is limited by wavelength; sonar-using animals rely on ultrasonic frequencies for better detail.

Hunting Sonar

6 points in air/4 points in water

Included in: Enhanced Senses.

You can locate objects by directing ultrasound at them, either in air (like a bat) or in water (like a dolphin). Your sound beam is directed straight ahead and 30° to left and right; you can only spot things in that arc. Your base range is 20 yards in air (multiplied by air pressure in atmospheres) or 2,000 yards in water. You have a resolution of one millimeter in air, or five millimeters in water. You can spot small objects and determine their shape, but you must make a Sense roll to distinguish details (for example, to recognize a face); roll at -3 in water. By taking an Aim maneuver, you can lock onto objects and determine their precise range and speed; this gives you +3 to hit them with *aimed* ranged attacks.

Statistics: Sonar (Accessibility, In air, -10%; Biological (Passive), -5%; Restricted Arc, 60°, p. 9, -75%; Targeting, +20%) [6] or Sonar (Accessibility, In water, -30%; Biological (Passive), -5%; Restricted Arc, 60°, -75%; Targeting, +20%) [4].

Imaging Sonar

18 points

Included in: Supersenses.

You can locate objects and scan their shapes, as described for Hunting Sonar (above), with the same resolution. Your base range is 20 yards in air (multiplied by air pressure in atmospheres) or 2,000 yards in water, with an arc of 120°. Your sonar functions both in air and under water. You must make a Sense roll to perceive details such as faces, at -3 in water. You get no bonus to targeting.

You have a limited capability to sense the interiors of living bodies or solid objects, as described for Ultrasonography (below); make a Sense roll at -4 to do so.

Statistics: Sonar (Super, -10%) [18].

Sonar Implants

12 points in air/8 points in water

Included in: Sensor Implants.

Similar to Imaging Sonar, but based on electronic implants. This set of implants works *either* in air or under water but not both – though they can be purchased as alternative abilities!

Statistics: Sonar (Accessibility, In air, -10%; Electronic, -30%) [12] or Sonar (Accessibility, In water, -30%; Electronic, -30%) [8].

Ultrasonography

11 points

Included in: Supersenses.

You can generate megahertz sonar frequencies, beyond the limits of realistic biological systems. These penetrate solid matter to a depth of 1', revealing internal structure and defects. The high frequencies you use allow enhanced resolution, down to 1/15 millimeter. Thus, you can perceive fine detail automatically (enabling facial recognition) and very fine detail on a Sense roll. Your base range is two yards (multiplied by air pressure in atmospheres), and your ability only works in air. Your emissions are too high-pitched for normal Ultrahearing to detect.

Statistics: Megahertz Sonar (p. 8) (Accessibility, In air, -10%; Penetrating*, +50%; Restricted Arc, 60°, p. 9, -75%; Super, -10%) [11].

* Penetrating represents the ability of megahertz frequencies to penetrate solid matter.

Ultrasound Scanner

4 points

Included in: Sensor Implants.

Similar to Ultrasonography, but requires actually touching the person, creature, or object you are examining.

Statistics: Megahertz Sonar (p. 8) (Accessibility, In air, -10%; Electronic, -30%; Melee Attack, Reach C, -30%; Penetrating*, +50%; Restricted Arc, 60°, p. 9, -75%) [4].

* Penetrating represents the ability of megahertz frequencies to penetrate solid matter.

HEARING

Hearing is the ability to perceive sound. Normal human hearing ranges from 20 to 20,000 hertz (the upper limit decreases with age!). Other species hear lower or higher frequencies.

Analytical Hearing

15 points

Included in: Enhanced Senses.

Your sense of hearing is attuned to subtle acoustic distinctions. You can always tell individual voices apart or recognize individual machines by their sound signatures. On an IQ roll, you can memorize a sound after listening to it for at least one minute. You are at +4 to Shadowing when following a noisy subject and to any task that utilizes hearing.

Statistics: Discriminatory Hearing (Biological (Passive), -5%) [15].

Super-Hearing

14 points

Included in: Supersenses.

The extranormal version of Analytical Hearing.

Statistics: Discriminatory Hearing (Super, -10%) [14].

Sound carries farther in narrow tunnels.

Augmented Pinnae

14 points

Included in: Enhanced Senses.

You have ears like a cat's: large, pointed, and movable. You can aim them at the source of a sound, canceling -1 of the range penalty to hear it clearly; this happens automatically with sounds too faint to hear consciously. You can judge the distance and direction to the source of a sound, and the speed and direction of motion of its source, letting you target it without penalty.

Statistics: Parabolic Hearing 1 (Biological (Passive), -5%) [4] + Precise Hearing* (Biological (Passive), -5%) [10].

* An application of *Normal Senses and Modifiers* (p. 9).

Infrasonic Hearing

8 points

Included in: Enhanced Senses, Supersenses.

Like elephants, tigers, or whales, you can hear sounds too low-pitched for the human ear, such as distant thunder, earthquakes, or the movement of large animals or vehicles. Your effective range is doubled below 50 Hz – ignore the first -1 modifier for distance. You have +1 to Tracking if your quarry is on the ground (or moving through water you are immersed in).

Statistics: Subsonic Hearing (Biological (Passive), -5%) [5] + Parabolic Hearing 1 (Accessibility, Only infrasonic and very low frequency sounds, -20%; Biological (Passive), -5%) [3]; or Subsonic Hearing (Super, -10%) [5] + Parabolic Hearing 1 (Accessibility, Only on infrasonic and very low frequency sounds, -20%; Super, -10%) [3].

Locational Hearing

10 points

Included in: Enhanced Senses.

You have asymmetrical ears (in placement or shape), like an owl's, that enable you to distinguish the exact location a sound is coming from on a Sense roll, with the usual range penalty for hearing. You can make a melee or ranged attack on the source at no penalty for being unable to see.

Statistics: Precise Hearing* (Biological (Passive), -5%) [10].

* An application of *Normal Senses and Modifiers* (p. 9).

Targeting Hearing

11 points

Included in: Supersenses.

Functions like Locational Hearing, but you can lock onto the source with an Aim maneuver. This lets you determine its exact range and speed, and gives +3 to hit it with an *aimed* ranged attack.

Statistics: Precise Hearing* (Super, -10%) [9] + Targeting Hearing* (Super, -10%) [2].

* An application of *Normal Senses and Modifiers* (p. 9).

Microphonics

9 points

Included in: Sensor Implants.

You have highly sensitive ear implants that let you hear at greater distance. You can disregard up to -3 in penalties to Hearing rolls for distance (8x range).

Statistics: Parabolic Hearing 3 (Electronic, -30%) [9].

Passive Sonar

34 points

Included in: Supersenses.

You can sense moving objects underwater with a Sense roll at +4, with *separate* bonuses for the target's size and speed, and penalties for the range to the target and the speed of currents in the water. If you succeed, you know the target's direction, distance, the general class of object, and the speed and direction of motion. You are at +8 to IQ to identify the specific type of target, +4 to Shadowing to follow it, and +3 to hit it with an aimed attack, if you take an Aim maneuver to lock onto it. You can memorize a new acoustic signature by listening for one minute. Your hearing range includes ultrasound, letting you track active sonar systems.

Despite the name, this isn't based on the advantage Sonar. It doesn't send out sound waves, but only picks up incoming waves. Thus, it can't be detected by Ultrahearing.

Statistics: Discriminatory Hearing (Accessibility, Only underwater, -30%; Link, +10%; Profiling, +50%; Super, -10%) [18] + Ultrahearing (Accessibility, only underwater, -30%; Link, +10%; Super, -10%) [4] + Vibration Sense (Water; Link, +10%; Super, -10%; Targeting, p. 8, +20%) [12].

Hydrophony

28 points

Included in: Sensor Implants.

Similar to Passive Sonar, but based on electronic implants.

Statistics: Discriminatory Hearing (Accessibility, Only underwater, -30%; Electronic, -30%; Link, +10%; Profiling, +50%) [15] + Ultrahearing (Accessibility, only underwater, -30%; Electronic, -30%; Link, +10%) [3] + Vibration Sense (Water; Electronic, -30%; Link, +10%; Targeting, p. 8, +20%) [10].

Ultrasonic Hearing

5 points

Included in: Enhanced Senses, Supersenses.

Like dogs, bats, or some insects, you hear sounds too high-pitched for the human ear. This is functionally a signal detection sense: You detect active sonar (technological or biological) at twice its effective range on a Sense roll. With an IQ roll, you can identify distinctive sources of ultrasound.

Statistics: Ultrahearing (Biological (Passive), -5%) [5] or Ultrahearing (Super, -10%) [5].

LOUDNESS LEVELS

Hearing distances in *GURPS* (p. B358) are based on the *decibel* scale, or dB. Each decibel level allows an unmodified Hearing roll at a certain range. Apply +1 or -1 for each range step by which the sound source is closer or more distant. Some decibel levels have other effects.

- Prolonged exposure to 100 dB or more causes tinnitus lasting the rest of the day, making you Hard of Hearing. Roll vs. HT: On a failure, you remain Hard of Hearing for 1d months. On a critical failure, you are permanently Hard of Hearing.

- Any exposure to 130 dB or more causes moderate pain while the sound lasts. This becomes severe pain at 150 dB and terrible pain at 170 dB. You also suffer tinnitus and risk hearing loss; roll vs. HT as above, but at -1 per 10 dB over 130 dB.

- At 190 dB, roll vs. HT to avoid ear injury. Failure results in Deafness for 1d months, and critical failure in eardrum rupture and permanent Deafness. For each extra 10 dB, roll at -5!

Protected Hearing (p. B78) gives +5 to HT to resist these effects, and prevents permanent hearing loss.

Sound	dB	Range	Effects*
–	0	1/2"	Threshold of hearing
Quiet breathing	10	1"	Critical success on Stealth
Very quiet room	20	2"	
Whisper	30	4.5"	
Leaves rustling, library	40	9"	Success on Stealth
Quiet conversation	50	1.5'	
Conversation, cocking pistol	60	1 yard	Failure on Stealth
Light traffic, vacuum cleaner	70	2 yards	
Loud conversation	80	4 yards	
Shout, gasoline engine	90	8 yards	Critical failure on Stealth
Silenced pistol, orchestra	100	16 yards	Long-term hearing damage
Chainsaw, car horn, rock concert	110	32 yards	
Jackhammer	120	64 yards	
Loud hand clapping, siren	130	128 yards	Threshold of pain
Light pistol, bat sonar	140	256 yards	
Smithy, heavy pistol	150	512 yards	
Stun grenade	160	1,024 yards	
Jet engine	170	1 mile	
Tank gun	180	2 miles	
–	190	4 miles	Eardrum rupture
Explosive shockwave	200	8 miles	Limit of undistorted sound in air: 194 dB
Artillery	210	16 miles	
Dolphin sonar	220	32 miles	

* Deleterious effects are for exposure at one yard. Each step of range increase lowers the effective decibel level one step.

Example: An explosive shockwave is at 200 dB at one yard. At two yards, it drops to 190 dB – still able to rupture eardrums. At 128 yards, it reaches 130 dB – the threshold of pain and able to cause short-term hearing loss.

Extreme Ultrasonic Hearing

6 points

Included in: Supersenses.

Extends ultrasonic hearing above biological limits to technologically generated megahertz and gigahertz frequencies. This ability provides signal detection vs. Ultrasonography.

Statistics: Ultrahearing (Extended High-Band, +30%; Super, -10%) [6].

HEARING IN TUNNELS

Hearing sometimes works differently in enclosed environments. Sound carries farther in narrow tunnels or tunnel-like caves. On the *Hearing Distance Table* (p. B358), once the range in yards exceeds the width of the tunnel, the penalty to Hearing rolls is -1 for each *two* steps.

Example: A party of monster hunters venture into the sewers, in pursuit of rat men. They keep their voices down to a quiet conversation level (range of one yard). The Hearing penalty is -1 at two yards. But the sewer is only two yards wide! The narrowness makes the penalty -2 at eight yards, -3 at 32 yards, -4 at 128 yards, and -5 at 512 yards. The lycanthropes have a chance to hear them a long way off.

VIBRATION SENSES

You have sense organs that respond to vibration in the air, the water, or the ground. Awareness of air or water vibrations lets you move in total darkness without penalty by making a Sense roll.

Lateral Line

10 points

Included in: Enhanced Senses.

Like a fish, you have lateral lines – sense organs along your sides that respond to vibrations in the water (they don't function in air), based on hair cells like those in the inner ear. You spontaneously detect movements in the water, or notice barriers or openings in an area you are moving through, on a successful Sense roll. Apply separate bonuses for target size and speed, and penalties for the distance to the target and the speed of any currents. You learn its rough location, size, speed, and direction of motion, and can target it with an attack.

Statistics: Vibration Sense (Water; Biological (Passive), -5%) [10].

Seismic Sense

4 points

Included in: Enhanced Senses.

You can feel faint movements in the surface you're standing, walking, or lying on with a Sense roll, including earth tremors, distant explosions, and footsteps. Modify the roll for loudness and distance as for sound (p. B358). If lying full length, roll at +2! Standing still and taking a Concentrate maneuver lets you guess the source's direction within a 60° arc; with an IQ roll, you can tell what's causing the vibrations and which way it's moving, if it is. Taking Extra Time (*Time Spent*, p. B346) gives bonuses. You can use triangulation (p. 10) to locate a continuing source.

Statistics: Subsonic Hearing (Biological (Passive), -5%; Melee Attack, Reach C, -30%) [4].

Sensory Hairs

10 points

Included in: Enhanced Senses.

Part or all of your body is covered with fine, stiff hairs (like a cat's vibrissae or a spider's leg hairs) that respond to air currents and contact with objects. This is similar to a lateral line (above), but in air rather than water.

Statistics: Vibration Sense (Air; Biological (Passive), -5%) [10].

TACTILE AND PRESSURE SENSES

The sense of touch detects steady or slowly changing mechanical forces applied to the body. In human beings, it's most acute on the face and hands; other species have other patterns. The sense of pressure is related but responds to overall average force from the air or water, rather than localized force.

Feelers

7 points

Included in: Enhanced Senses.

This ability is intended for life forms with rigid exoskeletons, such as an insect's chitin, that make them Numb as well

as granting Damage Resistance, or for biologically modified human beings with similar traits. You have specialized feelers that are not armored and provide a normal sense of touch. These are *not* manipulatory organs; you must use your hands or other manipulators, which suffer the effects of one level of Ham-Fisted unless you take twice as long to perform the action and can clearly see what you are doing. Your feelers are physically comparable to eye-stalks (p. B34) and can be targeted at -6.

When you travel in darkness, you can use your feelers to detect hazards before you walk into them.

Statistics: Not Numb (Biological (Passive), -5%; Partial, Feelers Only, -60%) [7].

Long Feelers

11 points

Included in: Enhanced Senses.

Similar to Feelers, but long enough to feel things a yard away.

Statistics: Not Numb (Biological (Passive), -5%; Long, p. 9, +1 SM, +20%; Partial, Feelers Only, -60%) [11].

Pressure Sense

7 points

Included in: Enhanced Senses.

You have an organ like a fish's swim bladder that expands or contracts in response to external pressure. This is only useful under water, where pressure increases rapidly with depth. A Sense roll lets you judge the pressure level, recognize changes, and determine the direction of change. An IQ roll can identify transient pressure changes such as explosive shockwaves. If subject to decompression sickness (*The Bends*, p. B435), you are at +2 to HT to avoid ill effects, because your pressure sense warns you if you ascend too fast.

Statistics: Detect Pressure (Accessibility, Only in water, -30%; Biological (Passive), -5%) [7].

Pressure Gauge

4 points

Included in: Sensor Implants.

Similar to Pressure Sense, but based on a device rather than a biological organ.

Statistics: Detect Pressure (Accessibility, Only in water, -30%; Electronic, -30%) [4].

Tactile Imaging

10 points

Included in: Enhanced Senses.

Part of your body – typically the hands for a human being – has extremely closely spaced tactile receptors, like those in a star-nosed mole's nose (10× as close as on a human hand). You can recognize patterns by touch as readily as most people

can by sight; you can read Braille as fast as print (*How Fast Can You Read?*, below). You're at +4 on Touch rolls and skill rolls based on tangible qualities. You can disregard penalties to skill for working by touch, if a task doesn't *require* visual information; unfamiliarity penalties apply for the first eight hours performing a given task.

Statistics: Sensitive Touch (Biological (Passive), -5%) [10].

HOW FAST CAN YOU READ?

A normal, sighted human being can read $IQ \times 25$ words per minute. Speed-Reading multiplies this by a factor of $1 + (\text{skill}/10)$. Bad Sight (Farsighted) divides reading speed by 3.

Reading Braille is slower – divide reading speed by 2 (thus, $IQ \times 12.5$ words per minute). Speed-Reading (Braille) is a separate required specialty. With Tactile Imaging or Super-Touch, you can read Braille as fast as print. With Super-Touch, you can read *print* by touch!

Micro-Touch

12 points

Included in: Supersenses.

An enhancement of Tactile Imaging: Your tactile resolution is 100× that of the human hand. You automatically notice anything that could be sensed by an ordinary human with a Touch roll. You can detect objects or patterns as small as single human cells by succeeding at a Touch roll.

Statistics: Sensitive Touch (Microscopic 1, p. 9, +25%; Super, -10%) [12].

Super-Touch

12 points

Included in: Supersenses.

A different enhancement of Tactile Imaging: You can read print by feeling the outline of the ink. By making a Touch roll at -5, you can read computer screens by feeling tiny differences in heat or electric field strength.

Statistics: Sensitive Touch (Super, -10%; Ultra-Fine, +30%) [12].

CHEMICAL SENSES

The chemical senses – in human beings, smell and taste – are triggered by contact with molecules, producing different sensations depending on the kind of molecules encountered.

SMELL

Smell is the ability to recognize chemical substances from traces carried about by diffusion. It's a ranged sense, taking -1 per yard of distance from the source of the odor (but see *Long-Range Smell*, p. 26). Like Vibration Sense, it should be specified as working either in air or in water; some fish have a sense of smell, for example.

Even my dirty socks? Some things just don't need to be smelled.

– Jonathan Luna and Sarah Vaughn, *Alex + Ada* #6

Analytical Smell

15 points

Included in: Enhanced Senses.

You have a sense of smell comparable to that of a dog (which has four *billion* olfactory cells, compared to 12 million in a human!). You can recognize people, places, and things by scent. On an IQ roll, you can memorize a scent by sniffing it for at least a minute. You are at +4 on all tasks that utilize the sense of smell, specifically including Tracking (Sanitized Metabolism protects against this).

Statistics: Discriminatory Smell (Biological (Passive), -5%) [15].

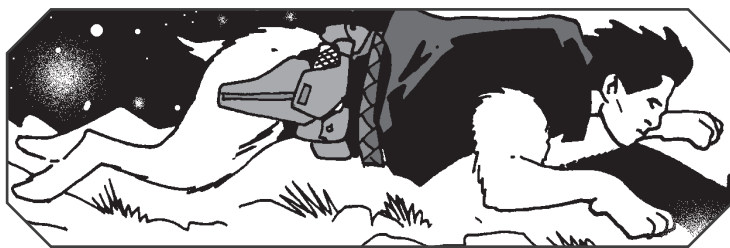
Super-Smell

14 points

Included in: Supersenses.

This is the extranormal version of Analytical Smell.

Statistics: Discriminatory Smell (Super, -10%) [14].



Odor of Fear

8 points

Statistics: Supersenses.

On a Sense roll, you can tell whether a person or animal is feeling fear. Roll at -1 per yard of distance. This isn't a biologically realistic ability!

Statistics: Animal Empathy (Accessibility, Only Fear, -30%; Smell-Based, Reversed, -20%; Super, -10%) [2] + Empathy (Accessibility, Only Fear, -30%; Smell-Based, Reversed, -20%; Super, -10%) [6].

TASTE

Taste differs from smell in requiring contact with substances, normally with the tongue. The human sense of taste can discriminate a limited number of substances: acids (sour), alkaloids (bitter – often a signal of toxicity), salts (salty), sugars (sweet), and amino acids and their salts, such as monosodium glutamate (the “fifth taste” of East Asian cuisine, called *umami* in Japan).

Analytical Taste

10 points

Included in: Enhanced Senses.

You can recognize people and things, including food and drink, by taste; you must ingest a small quantity of material to do so (for a living being, this means bodily fluids). On an

IQ roll, you can memorize a taste or discern whether a substance is safe to eat. You are at +4 on tasks that utilize the sense of taste.

Statistics: Discriminatory Taste (Biological (Passive), -5%) [10].

Super-Taste

9 points

Included in: Supersenses.

Similar to Analytical Taste.

Statistics: Discriminatory Taste (Super, -10%) [9].

Cutaneous Chemical Sense

8 points

Included in: Enhanced Senses.

You have chemical sensors in your skin, especially the palms of your hands and the soles of your feet. You can taste chemical substances as if with your tongue; a Taste roll will detect unobvious tastes or judge concentration. An IQ roll can discern combinations of tastes.

Over your general body surface, your chemical sense is more limited. You can recognize strong tastes, but not judge concentrations, and you can't attempt an IQ roll.

Statistics: Detect Chemical Substances (Biological (Passive), -5%; Melee Attack, Reach C, -30%; Nuisance Effect, Must touch with palm of hand or sole of foot for full sensitivity, -5%; Reflexive, +40%; Touch-Based, Reversed, -20%) [8].

PROTEOMIC SENSES

Identifying specific proteins is possible for living organisms – that's how the immune system selects targets. Proteomic senses allow this identification to be made consciously.

Blood Taste

9 points

Included in: Enhanced Senses.

You can identify human blood types from a few drops on a successful Taste roll. You must actually take the blood in your mouth to do so. On an IQ roll, you can recognize an individual's distinctive combination of blood components if you have tasted his blood before, or recognize toxins and other pathological conditions. For other species, apply the appropriate physiology modifier (p. B181).

Statistics: Detect Blood (Analyzing, +100%; Biological (Passive), -5%; Taste-Based, Reversed, -20%) [9].

Blood Group Analyzer

8 points

Included in: Sensor Implants

Similar to Blood Taste, but based on a device rather than a biological organ, and requires penetrating a vein with a needle. This causes a perceptible sting but does not inflict significant damage.

Statistics: Detect Blood (Analyzing, +100%; Contact Agent, -30%; Electronic, -30%; Melee Attack, Reach C, -30%; Nondirectional, p. 9, -25%; Nuisance Effect, Causes minor discomfort, -5%) [8].

Immune Spectrum Detection

9 points

Included in: Enhanced Senses.

Recent research suggests that the chemistry of the major histocompatibility complex (a key component of the immune system) affects the composition of sweat, and that people respond to both their own and other people's immune spectra behaviorally. This ability makes the process conscious. You automatically recognize your own immune spectrum, and with a Smell roll, you can judge how different another person's spectrum is and how wide a range of immune responses he has. On an IQ roll, you can identify specific immune responses or recognize someone you know. For other species, apply the appropriate physiology modifier (p. B181).

Statistics: Detect Immune Responses (Analyzing, +100%; Biological (Passive), -5%; Smell-Based, Reversed, -20%) [9].

GENOMIC SENSES

DNA controls the form and development of living beings, but the nervous system can't detect it. The ability to perceive

genetic material requires advanced technology or unrealistic superpowers.

Gene Sequencer

9 points

Included in: Sensor Implants.

You can extract genetic material from a living creature's tissues or bodily fluids; you must touch living tissue to obtain this. You can then discern the concentration of genetic material, and the size of the genome, with a Sense roll. An IQ roll can determine the exact sequence of the genome and compare it with other genomes.

Statistics: Detect DNA and RNA (Analyzing, +100%; Contact Agent, -30%; Electronic, -30%; Melee Attack, Reach C, -30%; Nondirectional, p. 9, -25%) [9].

Genescan

14 points

Included in: Supersenses.

Essentially the same as Gene Sequencer, but it's an innate power and requires only touching the subject's tissues, not sampling them.

Statistics: Detect DNA and RNA (Analyzing, +100%; Melee Attack, Reach C, -30%; Nondirectional, p. 9, -25%; Super, -10%) [14].

He knew that he did not invent the information brought to him by his senses. There had to be something else out there, some otherness that produced the things his senses recorded.

– Robert A. Heinlein, "They"

MISCELLANEOUS SENSES

Other sensory abilities can be defined that don't fit the preceding categories.

CHI SENSE

Qi, or *chi*, is an unseen energy thought to pervade the natural environment (see *GURPS Thaumatology: Chinese Elemental Powers*). It's similar to the *élan vital* or "life force" of 19th-century biological thought.

Inner Awareness

18 points

Included in: Sensory Focus.

You can detect the flow of *chi* within living bodies and through the environment, locate such flows, analyze the elemental affinity of *chi*, or diagnose disturbances in its flow. You are especially sensitive to intense flows of *chi* created by the use of cinematic skills or *chi*-based powers – but not only

to these. This requires a Sense roll for detection, or an IQ roll for analysis. If the GM allows cinematic Fortune-Telling, you can learn cinematic Fortune-Telling (Feng Shui) (*Chinese Elemental Powers*, pp. 19-20).

Statistics: Detect Chi (Chi, -10%) [18].

GRAVITATIONAL SENSE

Physicists and astronomers have worked on developing gravity-wave detectors, but they have few practical applications. The shortest predicted wavelengths are over 600 miles, which means they could reveal objects no smaller than 300 miles (SM +33), such as small moons or huge space stations. In a universe with superscience or superpowers, the instruments or abilities might pick up signals from gravity-warping technology or powers. Static gravitational-field detection could be the basis for three-dimensional mass perception, like that of *Rigellians* in the *Lensman* novels.

Gravimetry

23 points

Included in: Supersenses.

You can judge the strength of the local gravitational field with extreme precision. If a Sense roll succeeds, you can perceive stronger or weaker fields created by mineral deposits, caves, or tunnels. An IQ roll will let you identify the most likely cause of the difference after surveying an area.

Statistics: Detect Gravitational Fields (Precise, +100%; Reflexive, +40%; Super, -10%) [23].

Mass Perception

36 points

Included in: Supersenses.

You can sense matter by its gravitational mass. This is an ongoing process, giving you continued awareness of your surroundings; a Sense roll will let you notice something

significant. Mass Perception is at -1 per yard. You automatically know how massive an object is and what direction it's in; an IQ roll can estimate density or notice patterns.

Statistics: Detect Matter (Short-Range 1, -10%; Reflexive, +40%; Super, -10%) [36].

Warpense

9 points

Included in: Supersenses.

You can detect a sharp fluctuation in the gravitational field, as from a starship entering hyperspace, a wormhole drive (**GURPS Space**), or teleportation that warps space. This requires a Sense roll, which uses long-distance modifiers. An IQ roll allows you to analyze a fluctuation; for wormhole drives and teleportation, this lets you estimate the direction of the jump. If you weren't expecting the event, roll to analyze at -2. You can sense a signal from a gravity ripple communicator (**GURPS Ultra-Tech**) at twice its range, but not understand it!

SENSORY-ABILITY PERKS

A few perks affect the senses. Perks don't take limitations, since they normally cost only 1 point, but they can be included in powers and benefit from their Talents (see *Power Perks* in **GURPS Power-Ups 2: Perks**).

Accessory: Accelerometer

Either as an implant or as an innate ability, you can sense the acceleration you are subjected to from moment to moment. You always know the local G-rating.

Accessory: Circuit Probe

Your body contains an implant that functions like a multimeter. It responds to both DC and low-frequency AC. A Sense roll notices the presence of electric current or voltage; an IQ roll measures voltage, current, frequency, or resistance. You must touch exposed conductors at two points with conductive probes built into your body.

Accessory: Radio Receiver

You can hear AM, FM, CB, police band, and other radio signals with a Concentrate maneuver and an IQ roll. You can understand what's being said if you know the language (and if you know the code, for telegraphic transmissions).

Illumination

Your vision is not dependent on external sources of light. Your body can emit light, at a cost of 1 FP/hour. This is normally equivalent to a torch, illuminating a circle with radius equal to your body's longest dimension with a darkness penalty of -4. Optionally, it may take the form of a 10-yard beam with a darkness penalty of -3. In effect, sight is an active sense for you. You're *in plain sight* to observers who can see your light: +10 to Vision rolls to spot it.

Long-Range Smell

This represents application of one level of Long-Range (see **GURPS Powers**) to the sense of smell, allowing it to use standard range modifiers, like the olfactory organs of a wolf or a shark. At the GM's option, someone with a Supersenses ability may take a second level of this perk, letting the sense of smell use long-distance modifiers (p. B241).

Polarization Detection

Direct sunlight is not polarized, but sunlight scattered by the atmosphere is vertically polarized (its waves go up and down, not side to side). Like the eyes of bees or cephalopods, your eyes can tell the difference. You know the true direction of the sun even through clouds, and can navigate without a penalty for being unable to see it. You have +2 to spot water surfaces from above or below.

Robust Sense

One of your senses is less vulnerable to overloading, as if you had a weaker version of Protected Sense (p. B78). You get +1 to HT rolls to resist sensory impairment. You can ignore -1 to Sense rolls from distracting stimuli (glare, noise, etc.).

Tetrachromatism

The range of wavelengths you can see is no wider than normal, but you have a fourth visual pigment, giving you much finer color discrimination. At the GM's discretion, you gain +1 to skills and Sense rolls where subtle color differences are relevant.

Universal Smell

Your sense of smell operates both in air and underwater.

At the GM's option, if gravitational weapons such as force beams, graviton beams, or displacers (*Ultra-Tech*) – or comparable powers – exist within the setting, you can perceive their use, but at -5 to Sense and IQ rolls, except with displacers.

Statistics: Detect Gravitic Anomalies (Long-Range 1, +50%; Reflexive, +40%; Super, -10%) [9].

ORIENTATION AND ACCELERATION SENSES

Orientation and acceleration senses overlap gravitational senses, as they also respond to gravitational fields. However, they're more realistic, being based on the position and movement of internal structures and fluids in response to gravity. They can often be affected by other forces acting on the body as well.

Nav Implants

20 points

Included in: Sensor Implants.

Your natural sense of balance has been augmented with accelerometers, gyroscopes, and a chronometer. You automatically know what forces you are being subjected to and what accelerations you are undergoing, including the local G-rating; your implants track this to tell you your current velocity and position and how much time has passed. You have +1 to Climbing; +2 to Free Fall, Navigation (Space), and Piloting; and +3 to Acrobatics, Body Sense, and Navigation (Air, Land, and Sea). You can walk along any stable surface; on a slippery or unstable surface, you have +6 to DX to keep your feet. In combat, you have +4 to DX and DX-based skill rolls to avoid being knocked down. If you teleport, or travel through hyperspace, you can track your subsequent movements only from your new three-dimensional starting point.

Statistics: 3D Spatial Sense (Accessibility, Only in three-dimensional space, -10%; Electronic, -30%) [6] + Absolute Timing (Electronic, -30%) [2] + Accessory (Accelerometer) [1] + Perfect Balance (Electronic, -30%) [11].

Super-Balance

14 points

Included in: Hypercognition, Sensory Focus, Supersenses.

As bipedal animals, human beings have a good natural sense of balance. Yours is even better! You can keep your footing on any surface, no matter how narrow, without a skill roll. If the surface is slippery or unstable, you roll at +6. In combat, you roll at +4 to DX and DX-based skill rolls to keep your feet or avoid being knocked down. You get +1 to Acrobatics, Climbing, and Piloting.

Statistics: Perfect Balance (Chi, Savant, or Super, -10%) [14].

PARA-SENSES

You perceive the world through energies unknown to 21st-century science. These are cinematic, hand-wavy abilities, not suited to a realistic campaign!

Para-Radar Imaging

36 points

Included in: Supersenses.

You perceive your surroundings through reflected para-energy; this works in *any* environment. Your base range is 200 yards. Make a Sense roll to distinguish fine relief; roll at +3 to spot concealed weapons. Only exotic superscience detectors or powers can locate your emissions.

Statistics: Para-Radar (Super, -10%) [36].

*If the doors of perception
were cleansed every thing
would appear to man as it is,
infinite. For man has closed
himself up, till he sees all
things through narrow chinks
of his cavern.*

*– William Blake,
The Marriage of
Heaven and Hell*

Spy-Ray

58 points

Included in: Supersenses.

You can emit a narrow beam of nearly undetectable energy that can pass through air or water or up to 1' of solid material. Your base range is 2,000 yards. You must make a Sense roll to find a target. Once you do, you can both see and hear events taking place there, with another Sense roll to pick up details accurately.

Statistics: Para-Radar (Increased Range, 10x, +30%; Penetrating, +50%; Restricted Arc, 60°, p. 9, -75%; Stethoscopic, p. 8, +50%; Super, -10%) [58].

Ultrascan

64 points

Included in: Supersenses.

Similar to Para-Radar Imaging (above), this ability also provides detailed information on the physical and chemical characteristics of anything it scans, penetrating up to a foot into a solid object. Effective range is limited to 20 yards.

Statistics: Para-Radar (Penetrating, +50%; Reduced Range, 1/10, -30%; Scanner, +50%; Super, -10%) [64].

CHAPTER THREE

SENSORY APPLICATIONS

In addition to new or enhanced senses, some abilities let you do extraordinary things with the senses you already have. These can be included in sensory powers. (For explanations of the powers and their power modifiers, see pp. 4-5.)

Many of these abilities can aid with skill attempts beyond what's described here. See *Abilities Enhancing Skills* (p. 10) for details. For additional notes on range, see *Sensory Range* (p. 6).

HYPERSENSORY ABILITIES

Hypersensory abilities are advantages normally treated as mystical, supernatural, or psionic, but acquired with a *Hypersensory* modifier (pp. 8-9). They are a big part of *Hypercognition* (p. 4).

This section also includes two abilities that don't have the *Hypersensory* modifier, based solely on vision, but that similarly rely on heightened attention to sensory input: *Archer's Trance* and *Battle Arc*. (Note that characters can *have* both of these abilities, but they don't function at the same time!)

Archer's Trance

4 points

Included in: *Hypercognition*, *Sensory Focus*.

By taking an *Aim* maneuver, you can lock onto a target in your range of vision and determine its precise range and speed, within $\pm 5\%$ (the GM will roll 2d-7, keeping negative numbers, if needed). This gives you +3 to hit with an aimed attack. While you're using this ability, the field of your vision narrows, as for *Tunnel Vision* (p. B151): you see the target clearly, and anything within 30° to either side as if with peripheral vision, giving you -2 to active defenses. You're blind to side attacks.

Statistics: *Targeting Vision** (Chi, Savant, or Super, -10%; *Temporary Disadvantage*, *Tunnel Vision*, -30%) [3] + *Eye for Distance* (*GURPS Power-Ups 2: Perks*, p. 13) [1].

* An application of *Normal Senses and Modifiers* (p. 9).

Battle Arc

11 points

Included in: *Hypercognition*, *Sensory Focus*.

Your eyes are physically no different, but thanks to sensitivity to the flow of chi in your environment, or heightened ability to shift attention between different areas of your

surroundings, you have a wider arc of alertness in combat. You can attack foes in "side" as well as "front" hexes – though attacks with the opposite hand are treated as *Wild Swings* (p. B388). You defend against attacks from "side" hexes at no penalty, and against those from "rear" hexes at -2. The GM will make a *Vision* roll for you to notice an *attack* from behind your back, but not other actions or events that happen there.

Statistics: *Peripheral Vision* (*Aspected*, *Combat*, -20%; *Chi* or *Savant*, -10%) [11].

*I see the bird, but I
don't see the tree or you.
– The Mahabharata*

Darksense

53 points

Included in: *Hypercognition*, *Sensory Focus*, *Supersenses*.

Your brain automatically synthesizes a visual image of your environment, exempting you from all penalties for being unable to see, even in complete darkness or against an invisible target. What you perceive does not include color. The process depends on information from your senses of hearing, smell, touch, and vision (based on tiny flashes of light caused by cosmic rays, electric discharges, and the like). Each sense that is blocked gives you a cumulative -2 to *Vision* rolls (not exceeding the current penalty for low light or an invisible target). If all four senses are blocked, you're completely blind.

Statistics: Dark Vision (Chi, Savant, or Super, -10%; Hypersensory, pp. 8-9, +40%) [33] + See Invisible (Electromagnetic; Chi, Savant, or Super, -10%; Hypersensory, +40%) [20].

Diagnostic Scan

6 points

Included in: Hypercognition, Sensory Focus, Supersenses.

You can integrate sensory impressions of other people to detect pathological conditions within their bodies. A Sense roll, from up to one yard, will tell you if illness or injury is present and how severe it is (points of injury suffered). Each of sight, hearing, smell, and touch that's blocked gives a cumulative -2. If all four are blocked, you automatically fail. If you totally focus on the scan, precluding active defense, you make the Sense roll at +4.

If you perceive illness or injury, you can attempt an IQ roll to identify the organs or body regions affected. On a critical success, you identify the specific illness or injury, if it's one you are familiar with.

Statistics: Detect Illnesses and Injuries (Chi, Savant, or Super, -10%; Hypersensory, pp. 8-9, -40%; Melee Attack, Reach C, 1, -20%) [6].

Object Reading

8 points

Included in: Hypercognition, Sensory Focus, Supersenses.

When touching an object, or standing in a place, you can reconstruct its history from minute clues detected by your senses of sight, smell, and touch. Roll vs. IQ to gain a general sense of events connected with it. Roll at no penalty for events earlier the same day, at -1 for up to 10 days ago, -2 for up to 100 days ago, -3 for up to three years ago, and another -1 per additional 10x multiplier. Each sense that's blocked gives a cumulative -3. If all three senses are blocked, your ability doesn't work.

On a critical success, you experience an actual vision of a highly significant past event, if any occurred in the indicated time span.

Statistics: Psychometry (Chi, Savant, or Super, -10%; Hypersensory, pp. 8-9, -50%) [8].

Reality Testing

3 points

Included in: Hypercognition, Supersenses.

The sensory functions of your brain are exceptionally resistant to distortion. If subjected to telepathic illusions, deceptive "senses," hallucinations, hypnotic suggestions about perception, or the like, you reflexively test them against your senses of sight, touch, and balance, giving you +3 to resist; roll vs. Per rather than Will to do so. Each sense that is unable to function reduces the bonus by one – but the illusion itself doesn't prevent its functioning.

When you use this ability for a Power Block, a roll vs. $3 + (\text{Will} + \text{Talent})/2$ allows you to *double* your bonus to resist.

Statistics: Resistant to Mental Illusion (+3) (Based on Per, +20%; Hypersensory, pp. 8-9, -50%; Savant or Super, -10%) [3].

Enhanced Reality

5 points

Included in: Supersenses.

As above, but you are at +8 to resist, and each sense that is unable to function reduces the bonus by three. The bonus to resist rises to +16 when you rely on the ability for a Power Block.

Statistics: Resistant to Mental Illusion (+8) (Based on Per, +20%; Hypersensory, pp. 8-9, -50%; Super, -10%) [5].

Thought Tracking

9 points

Included in: Hypercognition, Supersenses.

You can observe another person closely enough to reconstruct his surface thoughts, as if he were speaking them aloud. This requires awareness of the subject through sight, hearing (subvocalized words and breathing), and touch (for muscle tension). Roll a Quick Contest of IQ vs. the subject's Will, at a cumulative -3 for each sense that's blocked. If you have no sensory contact, you cannot use the ability. If you attempt it at a distance, you are at -1 per yard, *in addition* to the penalty for not being able to touch the subject. Winning lets you track the subject's thoughts as long as you maintain concentration. You may try again if you lose, but at -2 per attempt in the past hour. Any critical failure precludes further attempts on that subject for 24 hours.

If the subject speaks a language you don't know, or no language at all, you can only pick up images, feelings, and general intentions.

Statistics: Mind Reading (Hypersensory, pp. 8-9, -50%; Savant or Super, -10%; Short-Range, -10%) [9].

Threat Detection

6 points

Included in: Hypercognition, Sensory Focus, Supersenses.

You have an innate or trained ability to recognize subtle evidence of danger. On a Sense roll, you detect the presence of a threat, and it can't surprise you. On a 3 or 4, you get a feeling for the *kind* of threat. The GM may allow an Observation roll to identify the threat.

Each of sight, hearing, and smell that's blocked gives you a cumulative -3. If all three are blocked (or there is no physical evidence to react to), you get no warning.

Statistics: Danger Sense (Chi, Savant, or Super, -10%; Hypersensory, pp. 8-9, -50%) [6].

Truth Sense

3 points

Included in: Hypercognition, Sensory Focus, Supersenses.

You notice subtle clues to another person's truthfulness: microexpressions and pupil dilation (sight), voice stress (hearing), and muscular tension and perspiration (touch). If all three senses are available, you have +3 to Detect Lies. Each sense that's blocked reduces this bonus by one.

Statistics: Empathy (Aspected, Truth and lies, -20%; Chi, Savant, or Super, -10%; Hypersensory, pp. 8-9, -50%) [3].

PERCEPTUAL SPEED

More efficient neural architecture, or rewiring of the nervous system for accelerated transmission of impulses, may allow faster perception. Simply being in tune with the universe may grant similar benefits.

Stop Motion

32 points

Included in: Hypercognition, Sensory Focus, Supersenses.

You perceive everything with high time resolution. With a Sense roll, you perceive things too fast for normal people to notice, such as bullets in flight, individual frames of a moving picture, or a fluorescent light's 60-hertz flicker. If something happens at normal speed, you can study it at leisure. You can read text equal to your words per minute (*How Fast Can You Read?*, p. 23) in a single turn. Roll for Observation, Body Language, Connoisseur, Lip Reading, and Tracking at +5,

as if taking the maximum possible extra time on these tasks (p. B346). You never freeze in a surprise situation, and get +6 on IQ rolls to recover from surprise, but you gain no other direct combat benefits.

Statistics: Enhanced Time Sense (Aspected, Perception, -20%; Chi, Savant, or Super, -10%) [32].

Rewired

23 points

Included in: Sensor Implants.

The same as Stop Motion, but based on ultrafast neural connections, a neural accelerator chip, or something else electronic.

Statistics: Enhanced Time Sense (Aspected, Perception, -20%; Electronic, -30%) [23].

SENSORY KNOWLEDGE

The Profiling enhancement (p. 8) can be used to store vast amounts of information for later reference. Abilities similar to Voice Profiling can be based on Discriminatory Smell, Discriminatory Taste, or Sensitive Touch.

Visual Profiling

9 points

Included in: Hypercognition, Supersenses.

You automatically memorize any visual pattern you encounter – faces, fingerprints, maps, works of art – without an IQ roll. You make rolls to recognize and analyze visual images at +4, by comparing them with your mental database.

Statistics: Profiling Vision* (Savant or Super, -10%) [9].

* An application of *Normal Senses and Modifiers* (p. 9).

Voice Profiling

18 points

Included in: Hypercognition, Supersenses.

You have the normal benefits of Discriminatory Hearing (see *Analytical Hearing*, p. 20), but only for human speech and singing. Your awareness is superhumanly acute, comparable to an audiospectrograph. You remember every voice you've ever heard, and can memorize the signatures of new voices automatically. You're at +8 to IQ to analyze and recognize individual voices, and at +4 to Mimicry to imitate them.

Statistics: Discriminatory Hearing (Aspected, Speech, -20%; Profiling, +50%; Savant or Super, -10%) [18].

SHARED SENSES

The senses are sources of data. With high enough bandwidth, "sense" capabilities may allow sharing sensory data with others.

Sensory Link

8 points

Included in: Sensor Implants.

You can connect yourself with a fiber-optic cable to another person who has a Sensory Link. This carries not only vocalized or subvocalized speech, but also sensory impressions from your nervous system and implants. Communication is direct and unjammable.

Two people with shared senses are at +3 to Per, Observation, or Search to spot a hidden person or object (roll once vs. the higher score). Shared senses allow triangulation (p. 10) with up to a 10-yard baseline. The same bonus applies to collaborative tasks where knowing exactly what the other person is doing is an advantage. It's not an advantage in melee combat, where divided attention gives -2 to attack rolls.

I see it feelingly.

– William Shakespeare, *King Lear*

Either person can apply his skills through the other's senses. Encountering sensory capabilities you don't share (for example, a blind person linking to a sighted one) imposes -2 for unfamiliarity for the first eight hours.

Sensory Link can function as Peripheral Vision or 360° Vision if the participants are looking in different directions, but then they don't gain the direct benefits of collaboration.

Statistics: Cable Jack (p. 8) (Electronic, -30%; Sense, +80%) [8].

SYNESTHESIA

In the real world, synesthesia is a neural process where stimulation of one sense produces involuntary sensations in another modality – numbers may appear colored, or sounds produce tactile sensations. This may function as a perk if the GM agrees (see below). In a cinematic treatment, it might have more dramatic effects, with multiple sensory modalities processing input from one sense. This can be represented as a group of alternative abilities that make up a meta-trait.

Sensory Refocus

18 points

Included in: Hypercognition, Supersenses.

You can devote the processing power of your brain to a single sense, as if you were a single huge eye or skin surface. This is voluntary – you have the option of not boosting any of your senses! Whichever senses you aren't focusing on recede into the background; you see poorly resolved images, barely notice odors or tastes, or feel only unlocalized pressure, for example. The sense you *are* focusing on is enhanced beyond normal human limits.

- Your vision can ignore -3 in range penalties when scanning the environment, or zoom in on a target to ignore -6 in range penalties – you can read a computer screen *casually* from 15-20' away, for example. You can disregard -6 in darkness penalties *at the same time*. If you are using a ranged weapon without a telescopic sight, your eyes act as a sight, giving +3 Acc if you take an Aim maneuver for three seconds.

- Your hearing is at +4. You gain +4 to sound-based tasks and to Shadowing if your target is making sounds. You can instantly recognize people by voice, or machines by sound signature.

- Your smell is at +4, and you gain +4 to smell-based tasks and to Tracking to follow anyone who leaves a scent trail (Sanitized Metabolism will stop this). You can instantly recognize people, places, or things by scent.

- Your taste is at +4. If you ingest a small sample of a substance (including bodily fluids, for a person), you can recognize whether you have encountered it before, and judge whether it's safe to consume.

- Your tactile senses are at +4 to discriminate between objects or materials by texture, or to find minute irregularities. You can feel faint seismic vibrations as someone walks toward you, or trace heat in an object that someone has touched.

Statistics: Telescopic Vision 3 (Savant or Super, -10%; Temporary Disadvantage, Hard of Hearing, -10%; Temporary Disadvantage, No Sense of Smell/Taste, -5%; Temporary Disadvantage, Numb, -20%) [9] + Night Vision 6

(Savant or Super, -10%; Temporary Disadvantage, Hard of Hearing, -10%; Temporary Disadvantage, No Sense of Smell/Taste, -5%; Temporary Disadvantage, Numb, -20%) [4]

- + Discriminatory Hearing (Savant or Super, -10%; Temporary Disadvantage, Bad Sight, Nearsighted, -25%; Temporary Disadvantage, No Sense of Smell/Taste, -5%; Temporary Disadvantage, Numb, -20%) [2]*

- + Discriminatory Smell (Savant or Super, -10%; Temporary Disadvantage, Bad Sight, Nearsighted, -25%; Temporary Disadvantage, Hard of Hearing, -10%; Temporary Disadvantage, No Sense of Taste, -2%; Temporary Disadvantage, Numb, -20%) [1]*

- + Discriminatory Taste (Savant or Super, -10%; Temporary Disadvantage, Bad Sight, Nearsighted, -25%; Temporary Disadvantage, Hard of Hearing, -10%; Temporary Disadvantage, No Sense of Smell, -2%; Temporary Disadvantage, Numb, -20%) [1]*

- + Sensitive Touch (Savant or Super, -10%; Temporary Disadvantage, Bad Sight, Nearsighted, -25%; Temporary Disadvantage, Hard of Hearing, -10%; Temporary Disadvantage, No Sense of Smell/Taste, -5%) [1]*.

* Alternative Abilities (x1/5 cost) to combination Telescopic Vision + Night Vision.

SENSORY-APPLICATION PERKS

Three perk-level sensory applications are available.

Page at a Glance

You have the superhuman reading speed of Stop Motion (p. 30), but none of its other benefits.

Perfect Pitch

You can identify or recreate a musical note or tone without a reference tone. You have +2 to all rolls to tune musical instruments or to confirm that they're in tune (or out of tune), and to Hobby Skill (Whistling) (*GURPS Low-Tech Companion 1*).

Synesthesia

You have cross-modal associations between two senses or cognitive functions, resulting in enhanced creativity. You are at +1 to a specific artistic skill or a narrow set of closely related skills, such as Poetry and Writing, when you are using them creatively.

APPENDIX

POWER TABLE

This table presents the abilities described in Chapters 2 and 3 by the five main powers they are associated with. (For alternate power sources, see p. 5.) It offers the following details.

Ability: The name of the ability.

Levels: The maximum number of levels permitted for the ability.

Cost: The character point cost of the ability's levels.

Page: The page reference for the ability.

<i>Ability</i>	<i>Levels</i>	<i>Cost</i>	<i>Page</i>	<i>Ability</i>	<i>Levels</i>	<i>Cost</i>	<i>Page</i>
Enhanced Senses (p. 4)				Hypercognition (p. 4)			
Active Electroreception	1	12	17	Archer's Trance	1	4	28
Analytical Hearing	1	15	20	Battle Arc	1	11	28
Analytical Smell	1	15	24	Darksense	1	53	28
Analytical Taste	1	10	24	Diagnostic Scan	1	6	29
Augmented Pinnae	1	14	20	Object Reading	1	8	29
Blood Taste	1	9	24	Reality Testing	1	3	29
Cutaneous Chemical Sense	1	8	24	Sensory Refocus	1	18	31
Eagle Eyes	1	19	13	Stop Motion	1	32	30
Feelers	1	7	22	Super-Balance	1	14	27
Hunting Sonar	1	6 in air/ 4 in water	19	Thought Tracking	1	9	29
Immune Spectrum Detection	1	9	25	Threat Detection	1	6	29
Infrared Sight	1	10	14	Truth Sense	1	3	29
Infrasonic Hearing	1	8	20	Visual Profiling	1	9	30
Lateral Line	1	10	22	Voice Profiling	1	18	30
Locational Hearing	1	10	20	Sensor Implants (p. 5)			
Long Feelers	1	11	23	Blood Group Analyzer	1	8	24
Magnetic Field Sense	1	14	18	Capacitive Mesh	1	24	18
Night Sight	2	3/6	15	Eye Protection	1	6	14
Passive Electroreception	1	11	17	Gene Sequencer	1	9	25
Pressure Sense	1	7	23	HF/DF	1	4	11
Seismic Sense	1	4	22	Hydrophony	1	28	21
Sensory Hairs	1	10	22	Internal Magnetometer	1	7	18
Tactile Imaging	1	10	23	Ladar Implants	1	14	14
Thermal Sense	1	9	15	Laser Microphone	1	10	14
Ultrasonic Hearing	1	5	21	Laser Spectrometry	1	12	14
Ultraviolet Sight	1	10	16	Laser Targeting	1	10	14

Well, thief! I smell you and I feel your air. I hear your breath. Come along! Help yourself again, there is plenty and to spare!

*– J.R.R. Tolkien, **The Hobbit***

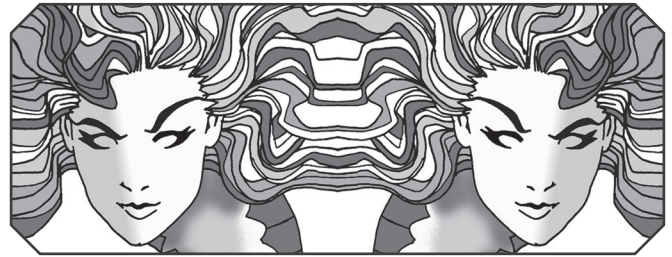
Ability	Levels	Cost	Page
Sensor Implants (continued)			
Light Amplification	2	3/5	15
Magnifiers	1	4	15
Metal Detector	1	4	18
Microphonics	1	9	20
Nav Implants	1	20	27
Pressure Gauge	1	4	23
Radar Detector	1	4	12
Radar Implants	1	14	12
Radiation Scanner	1	11	16
Rewired	1	23	30
Sensory Link	1	8	30
Sonar Implants	1	12 in air/ 8 in water	19
T-Ray Implants	1	18	12
Thermal Locator	1	6	15
Ultrasound Scanner	1	4	19
Wiretap	1	3	17
Zoom	1	4	16

She was strangely and wonderfully blind, for she could see in the infrared only, from 7,500 angstroms to one millimeter wave lengths, far below the normal visible spectrum. She saw heat waves, magnetic fields, radio waves; she saw her admirers in a strange light of organic emanations against a background of red radiation.

– Alfred Bester, *The Stars My Destination*

Sensory Focus (p. 5)

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Battle Arc	1	11	28
Darksense	1	53	28
Diagnostic Scan	1	6	29
Inner Awareness	1	18	25
Object Reading	1	8	29
Stop Motion	1	32	30
Super-Balance	1	14	27
Threat Detection	1	6	29
Truth Sense	1	3	29



Ability	Levels	Cost	Page
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Supersenses (p. 5)

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Darksight	1	28	12
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Enhanced Reality	1	5	29
Extreme Ultrasonic Hearing	1	6	22
Farsight	1	9	13
Genescan	1	14	25
Glare Adaptation	1	5	13
Gravimetry	1	23	26
Imaging Sonar	1	18	19
Infrasonic Hearing	1	8	20
Magnetism Detection	1	9	18
Mass Perception	1	36	26
Metal Detection	1	15	18
Micro-Touch	1	12	23
Microscopic Sight	1	14	14
Night Sight	3	3/6/9	15
Object Reading	1	8	29
Odor of Fear	1	8	24
Omnivision	1	38	15
Para-Radar Imaging	1	36	27
Passive Sonar	1	34	20
Proximity Sense	1	31	18
Radar Detection	1	7	12
Radar Imaging	1	18	12
Radiation Sense	1	13	16
Radio Source Detection	1	7	11
Reality Testing	1	3	29
Sensory Refocus	1	18	31
Spy-Ray	1	58	27
Stop Motion	1	32	30
Super-Balance	1	14	27
Super-Hearing	1	14	20
Super-Smell	1	14	24
Super-Taste	1	9	24
Super-Touch	1	12	23
T-Ray Imaging	1	23	12
Targeting Hearing	1	11	20
Thought Tracking	1	9	29
Threat Detection	1	6	29
Truth Sense	1	3	29
Ultrascan	1	64	27
Ultrasonic Hearing	1	5	21
Ultrasonography	1	11	19
Visual Profiling	1	9	30
Voice Profiling	1	18	30
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- Analytical Taste ability, 24.
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*To know ultraviolet,
Infrared and X-rays,
Beauty to find
In so many ways*

*– The Moody Blues,
“The Word”*

She'd walked past a stall selling roasted meats and her mouth had started to drool! The sense of smell wanted the body to eat without consulting the brain!

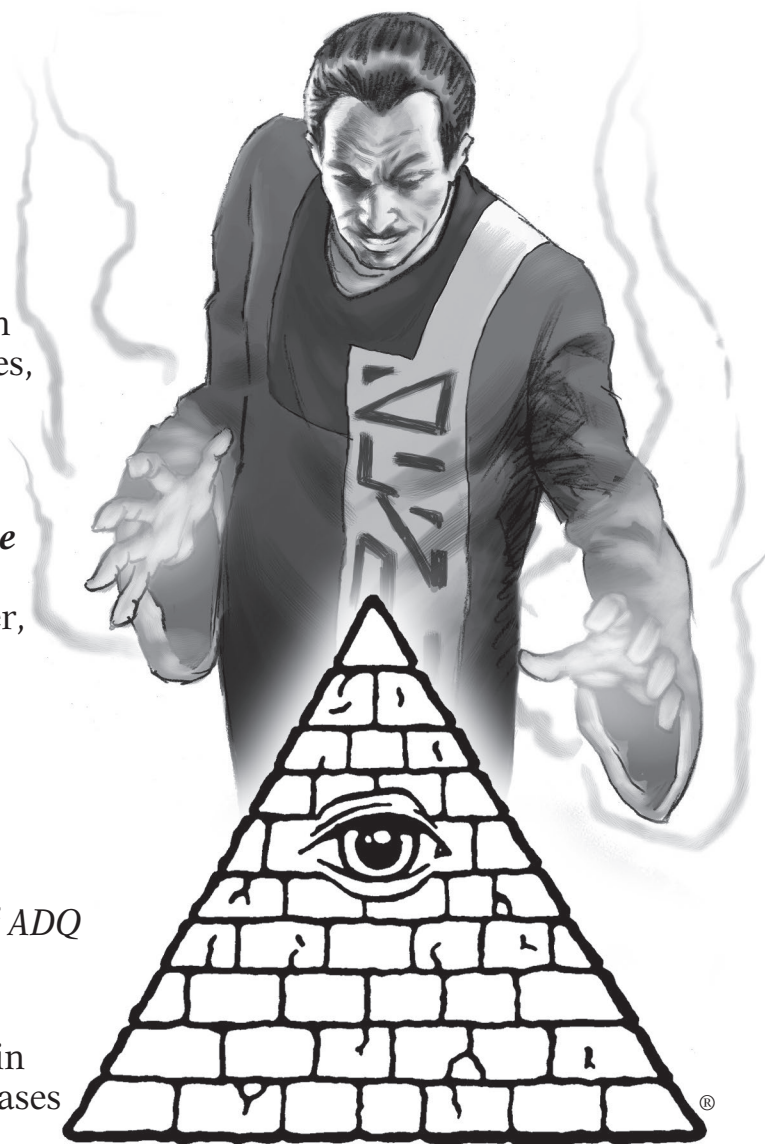
*– Terry Pratchett, **Thief of Time***

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