

# TRANSHUMAN SPACE

## UNDER PRESSURE



POWERED BY  
GURPS



WRITTEN BY DAVID MORGAN-MAR,  
KENNETH PETERS, AND CONSTANTINE THOMAS

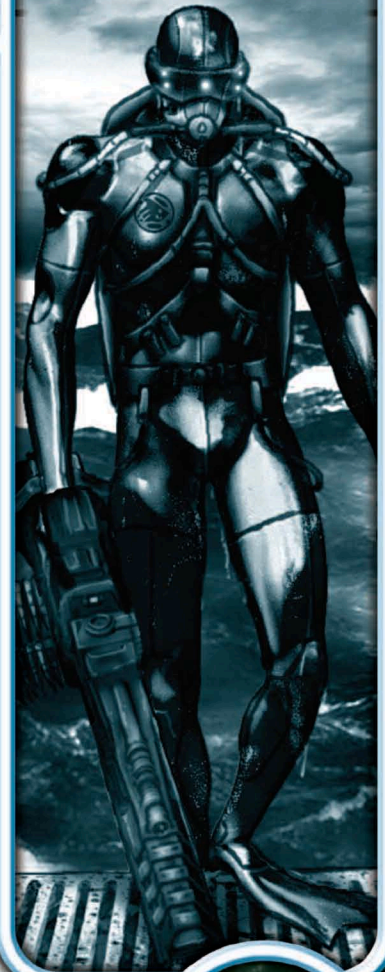
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# THE OTHER FRONTIER

As humanity reaches to the planets, a last frontier remains on Earth. The oceans offer immense wealth, and the freedom to pursue it. Governments, corporations, political idealists, and outlaws are staking their claims in this realm. There are oceans on other worlds, too – Europa, Mars, Titan – all unique and full of possibilities.

***Transhuman Space: Under Pressure*** describes the oceans of the 22nd century, from the teeming seas of Earth to the most hostile liquid environments of the solar system . . .

- The history of the oceans of Earth, from the collapse of the fisheries to the colonization of the deep.
- The ocean environment: how it has changed, and how it affects everyday life.
- Elandra, the largest aquatic habitat, and many others around the world.
- Organizations ranging from biotech giant GenTech Pacifica to the terrorist groups fighting oceanic development.
- The oceans of Europa, Mars, and Titan, where the environments and impact of humanity are vastly different.
- New character templates, including new parahumans, bioroids, cybershells, and uplifted animals designed for underwater life.
- Modular design rules for aquatic vehicles, compatible with the system in ***Transhuman Space: In The Well***.



***Transhuman Space*** is required to use this supplement. ***GURPS Basic Set, Third Edition Revised***, and ***Compendium I*** are also recommended. The ideas in ***Under Pressure*** can be used with any roleplaying system.

***Transhuman Space: Under Pressure*** examines the other frontier of the 22nd century. Transhumanity is heading out into the cold, airless void, but it all began down here, with warmth and water.

## RETURN TO THE WOMB OF LIFE.

Written by David Morgan-Mar, Kenneth Peters, and Constantine Thomas  
Edited by Alain Dawson Cover by Christopher Shy  
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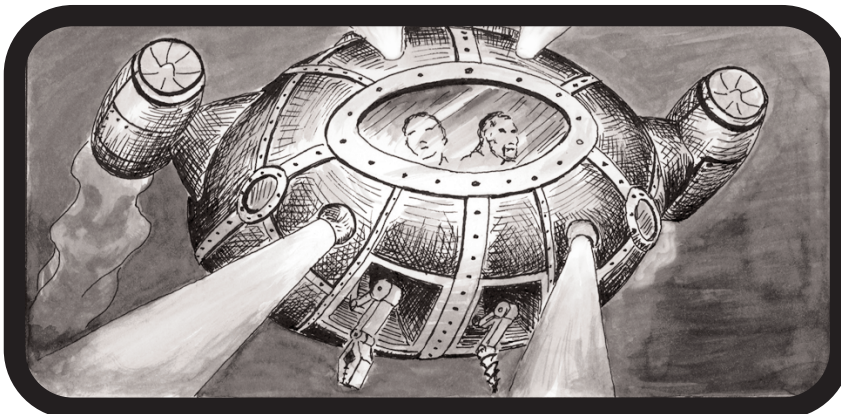
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# INTRODUCTION



Space may be a frontier, but it's not the only one. There is an environment just as hostile, just as dangerous, just as unknown – and all it takes to get there is a trip to the beach. The oceans of Earth represent a bonanza of living space and resources, waiting to be claimed by whomever can overcome its unique difficulties. The transhuman synthesis of mechanical and biological technology allows people to live, work, and come into conflict in this shadowy world beneath the waves.

As humanity spreads to the planets, more liquid environments are found – or created. The technologies spawned on Earth also find applications in the seas of Mars, the high-pressure ocean of Europa, and the hydrocarbon lakes of Titan.

*Transhuman Space: Under Pressure* examines the oceanic environments of 2100, from the teeming seas of Earth that millions of transhumans call home, to the exotic oceans of liquid ethane and other chemicals on moons of the Deep Beyond.

Space is the easy frontier. Now try the hard one.

## ABOUT TRANSHUMAN SPACE

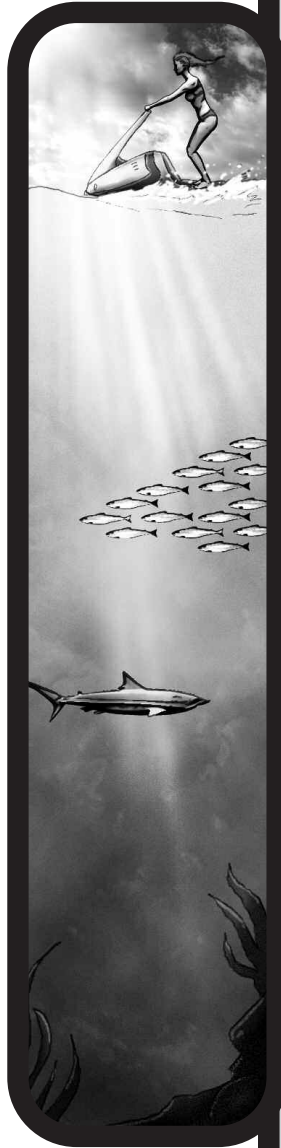
The *Transhuman Space* series presents a unique hard-science and high-biotech universe for roleplaying. Set in the Solar System in the year 2100, it is a setting rich in adventure, mystery, and ideological conflict. The core book is *Transhuman Space*, which presents an overview of the setting. Other books available include *Fifth Wave* (focusing on Earth), *In the Well* (Mars and the inner system), and *Deep Beyond* (the outer system).

## ABOUT THE AUTHORS

*David Morgan-Mar* lives in Sydney, Australia. While studying for his doctorate in astrophysics, he goofed off creating web pages, watching cricket, and playing games. Since graduating, his jobs have been creating web pages, reporting on cricket matches, and writing gaming material. He has contributed to several *GURPS* books, including *Monsters* and *Steam-Tech*. Now he grows bonsai, plays with Lego toys, and wonders when those pursuits will start to pay off.

*Kenneth Peters* lives in Post Falls, Idaho. He is an anthropology major and sergeant in the USMCR. He spends his free time playing with *GURPS Vehicles*, *Second Edition* and learning 3D animation software. He wrote *Spacecraft of the Solar System* and sections of several *Shadowrun* books, but still wonders when he will be issued a posse of fanboys and a Ferrari.

*Constantine Thomas* is a Brit, living on Vancouver Island, British Columbia. He works at the Institute of Ocean Sciences, advancing the new field of planetary oceanography. He has been a *GURPS* fan for 15 years and has contributed to *Transhuman Space* since it was announced. He collects CDs and roleplaying games, hopes to visit a hydrothermal vent some day (since it's unlikely he'll walk on another world), and wonders when he will be able to convert this book into a research paper.



## ABOUT GURPS

Steve Jackson Games is committed to full support of the *GURPS* system. Our address is SJ Games, Box 18957, Austin, TX 78760. Please include a self-addressed, stamped envelope (SASE) any time you write us! Resources include:

*Pyramid* ([www.sjgames.com/pyramid/](http://www.sjgames.com/pyramid/)). Our online magazine includes new *GURPS* rules and articles. It also covers *Dungeons and Dragons*, *Traveller*, *World of Darkness*, *Call of Cthulhu*, and many more top games – and other Steve Jackson Games releases like *In Nomine*, *Illuminati*, *Car Wars*, *Toon*, *Ogre Miniatures*, and more. *Pyramid* subscribers also have access to playtest files online!

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

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*GURPSnet.* This e-mail list hosts much of the online discussion of *GURPS*. To join, point your web browser to [www.sjgames.com/mailman/listinfo/gurpsnet-I/](http://www.sjgames.com/mailman/listinfo/gurpsnet-I/).

The *Transhuman Space: Under Pressure* web page can be found at [www.sjgames.com/transhuman/underpressure/](http://www.sjgames.com/transhuman/underpressure/).

## Page References

Rules and statistics in this book are specifically for the *GURPS Basic Set, Third Edition*. Any page reference that begins with a B refers to the *GURPS Basic Set* – e.g., p. B102 means p. 102 of the *GURPS Basic Set, Third Edition*. Page references that begin with CI indicate *GURPS Compendium I*. Other references are DB to *Deep Beyond*, FW to *Fifth Wave*, ITW to *In the Well*, SSS to *Spacecraft of the Solar System*, and TS to *Transhuman Space*. The abbreviation for *this* book is UP. For a full list of abbreviations, see p. CI181 or the updated web list at [www.sjgames.com/gurps/abbrevs.html](http://www.sjgames.com/gurps/abbrevs.html).

## UNUSUAL OCEAN ENVIRONMENTS

*They say life itself got started in the deep sea. Maybe. It can't have been an easy birth judging by the life that remains.*

– Peter Watts, *Starfish*

### *Hydrothermal Vents*

The spreading of mid-ocean ridges opens tears in the sea-floor crust, through which water penetrates into deep rock layers. Heated by proximity to magma, the water rises and shoots into the ocean in geyser-like *hydrothermal vents*. The hot water carries dissolved minerals leached from the rocks, which precipitate out of solution as it mixes with the cold sea water, forming large “chimneys.” Active vents produce billowing jets of particulate matter of varying composition, the appearance of which has led to the nicknames “black smoker” and “white smoker,” depending on the color of the plume.

The emerging water can be as hot as 750°F, although 400°F is typical – the high water pressure prevents it from boiling into steam. It is rich in metal and hydrogen sulfides, which form commercially useful deposits, and also provide chemical energy for unusual ecosystems. Far from sunlight, *thiotrophic* (sulfur-metabolizing) bacteria use the vent chemicals and warmth to sustain metabolic processes, forming the base of a food chain that includes giant tube-worms, clams, crabs, and other creatures. The discovery of these communities, which thrived totally independent of solar energy, in the 1970s led to the development of theories regarding the evolution of life on worlds such as Europa. Since the 2049 discovery of European life, evolutionary biologists have given vent communities on Earth unparalleled attention.

### *Cold Seeps and Gas Hydrates*

In some places (e.g., the Gulf of Mexico, Eastern Mediterranean, and off the coasts of California and the Aleutian Islands) deposits of hydrocarbons such as petroleum or methane (see *Gas Hydrates*, p. 25)

slowly seep through the overlying rock and emerge on the sea floor. This phenomenon is known as a *cold seep*. Gas hydrates form when the cold seep hydrocarbons become frozen into a solid matrix. *Methanotrophic* bacteria metabolize these chemicals to form the base of an ecosystem independent of solar energy. Seep communities resemble the sulfide-powered vent ecosystems, both having clams and tubeworms further up the food chain. Cold seeps are at shallower depths, however, so fish and other creatures visit and interact with them.

In addition to the bacteria, macroscopic creatures also live within gas hydrate deposits. Burrowing worms dig through the ice-like compounds, obtaining energy by metabolizing hydrocarbons.

### *Brine Pools*

Large deposits of salt exist under the sea floor, being particularly common in the Gulf of Mexico and the Red Sea. Water seeping into these deposits returns to the sea floor and collects in pools of brine up to seven times as saline as sea water. The high density of the brine prevents it from mixing with the water above, so the pools are stable features.

Brine seepage is associated with methane seeps, and the regions around brine pools are rich ecosystems composed of mollusks, worms, crustaceans, and predatory fish. Any creature unlucky enough to fall into the brine dies from the salinity, and bodies of animals often float on the brine-sea interface.

Most brine pools are cold places, at the ambient sea temperature, and less than 100 feet across. In the Red Sea, however, pools a mile or more wide form on the mid-ocean ridge that runs beneath the sea, and are heated by volcanic activity to temperatures as high as 130°F. These immense brine lakes are being considered by the European Union as testing grounds for equipment designed to be used in Europa's basal seas (p. 59), but the Islamic Caliphate is reluctant to allow E.U. research vessels near what it sees as a natural resource.

There are very few submarine bases anchored on the continental slopes because of the danger of turbidity currents. Only the shallowest slopes, in regions of low seismic activity, are relatively safe.

### *Abyssal Plains*

At the bottom of the continental slopes lie the vast, flat *abyssal plains* that cover 53% of Earth's area. The sea floor here lies 12,000 to 20,000 feet deep. Any

small-scale topographic features are covered by a layer of sediment averaging 2,000-feet thick. The deeper regions – such as much of the North Pacific – are covered by *abyssal clay*, a reddish clay formed of wind-blown particles from land that settle on the ocean and drift slowly down. Shallower plains are covered with a biologically derived sediment known as *ooze*, which is actually the calcium carbonate or silicon dioxide shells of microscopic plankton, not a decaying mass of organic matter as the name might suggest.



# ANIMAL TEMPLATES

## Cetaceans

## Varies

**Advantages:** Acute Hearing +4 [8]; Alertness +4 [20]; Enhanced Move (Swimming) 1 [10]; Independently Focusable Eyes [15]; Injury Tolerance (No Neck) [5]; Nictating Membrane 1 [10]; Oxygen Storage [14]; Peripheral Vision [15]; Pressure Support 2 [10]; Sonar Vision (Nearsighted, -25%; underwater only, -30%) [12]; Temperature Tolerance 1 [1]; Ultrasonic Speech [25].

**Disadvantages:** Aquatic [-40]; Bestial [-10]; Distractible [-1]; Dull [-1]; Innumerate [-5]; Mute [-25]; No Manipulators [-50]; No Sense of Smell or Taste (Can taste, -50%) [-3]; Short Lifespan 2 [-20]; Social Stigma (Wild Animal) [-10].

**Features:** Poor color vision.

Cetaceans are highly specialized marine mammals ranging in size from three-foot long Hector's dolphins to massive blue whales that can stretch over 100 feet. Most are gregarious creatures with well-developed social systems, but their intelligence is often overstated – at least as measured by humans. All have streamlined bodies, tails with horizontal fins called flukes, flippers (actually modified forelimbs), and a nostril on the top of the body forming a blowhole. Many have a dorsal fin, which aids stability. The two major suborders of cetaceans are the *Odontoceti* (toothed whales) and *Mysticeti* (baleen whales). The template above applies primarily to toothed whales.

**Bottlenose Dolphin (*Tursiops truncatus*):** These dolphins are found worldwide in temperate and tropical waters. They range from eight to 15 feet in length and weigh between 450 and 1,000 lbs. Coastal bottlenose dolphins tend to be smaller; those native to offshore habitats are on the larger end of the scale. Males are slightly longer and substantially heavier than females. Most dolphins are gray-green or gray-brown in color, darker on the back fading to a pale belly.

To the basic cetacean template add: ST +6 (No Fine Manipulators, -40%) [42]; DX +3 [30]; IQ -4 [-30]; HT +1 [10]; Extra Hit Points +5 [25]; and Chummy [-5]. 52 points.

**Augmented Dolphin:** These are bottlenose dolphins with an implanted VI and translator NAI (see *Cetacean Uplift*, p. 100). Physically they are no different to unaugmented dolphins, but the opportunity to interact with humans and learn abstract concepts noticeably enhances their intelligence.

To the basic cetacean template add: ST +6 (No Fine Manipulators, -40%) [42]; DX +3 [30]; IQ -3 [-20]; HT +1 [10]; Extra Hit Points +5 [25]; and Chummy [-5]; and replace Mute with Mute (Mitigated by computer interpreter, -60%) [-10]. 82 points.

**Harbor Porpoise (*Phocoena phocoena*):** These common porpoises live in cold coastal habitats throughout the northern hemisphere. Although often confused with dolphins, they tend to be smaller – averaging four feet long and weighing from 90 to 150 lbs. Females are slightly larger than males. These porpoises are stouter than dolphins, lack a pronounced snout, feature small, triangular dorsal fins, and have differently shaped teeth, but their main differences are in social behavior. They are dark blue or gray on the back with a white underbelly; albinos have become more common since the 20th century.

To the basic cetacean template add: ST +3 (No Fine Manipulators, -40%) [18]; DX +1 [10]; IQ -4 [-30]; HT +1 [10]; and Extra Hit Points +2 [10]. Also add three additional levels of Short Lifespan [-30]. -32 points.

**Orca (*Orcinus orca*):** Also known as “killer whales,” orcas are the largest members of the dolphin family (*Delphinidae*) and are found all over the world, although they tend to stay in colder waters such as the Arctic. They have been observed in fresh-water rivers at times. Orca females are smaller than males, averaging 18 feet in length and weighing from one to four tons, compared to 20 feet and four to six tons for males. Orcas are distinctively colored: black on their backs and white on their stomachs, with a white swath behind the dorsal fin. The fin can be up to six feet high in males and is as distinctive as a fingerprint; about one in four orcas have bent or curved fins. A white “eyespot” is located just above and behind the real eye.

To the template above add: ST +45 (No Fine Manipulators, -40%; ST above 20 is Natural, -40%) [86]; DX +2 [20]; IQ -4 [-30]; HT +5 [60]; Congenial [-1]; DR 1 [3]; Extra Hit Points +10 [50]; Inconvenient Size [-10]; and Sharp Teeth [5]. Add a half-level to Enhanced Move (Swimming) [5]. 168 points.

**Humpback Whale (*Megaptera novaeangliae*):** Humpback whales are a member of the rorqual family that includes blue and minke whales, within the *Mysticeti*. They feed by filtering krill, small fish, and other organisms out of the water through baleen plates. Humpbacks average 40 feet in length when fully grown and weigh between 25 and 40 tons. Males are slightly smaller than females. Individuals can be identified by unique patterns on their dorsal fins and flukes. Humpbacks are not particularly sleek creatures, with a rounded body that narrows toward the tail, whose flukes can be up to 18 feet wide. The flippers are very long, averaging 25% of body length. Coloration is typically black on the dorsal side and a mottled black and white on the ventral.

Modify the cetacean template by removing Sonar Vision and Ultrasonic Speech and reducing Short Lifespan to one level. Add: ST +990 (No Fine Manipulators, -40%; ST above 50 is Natural, -40%) [230]; IQ -4 [-30]; HT +4 [45]; Congenial [-1]; DR 10 [30]; Extra Hit Points +50 [250]; Inconvenient Size [-10]; Passive Defense 4 [100]; and Subsonic Speech [20]. 587 points.

## Design Notes

Body structure is light carbon composite with radical streamlining, wings are heavy carbon composite. Armor is carbon composite and structure is sealed. Structure has basic emission cloaking and radical stealth. Wings are retractable. No access space.

## CHERNYSHEV KASATKA PATROL SUBMARINE

The *Kasatka* (Russian for “killer whale”) is a modern combat submersible used by Iran, India, and several microstates (such as Elandra) for low-endurance patrol and surveillance. It is not a popular design for crews, with grossly inadequate accommodations compared to other patrol submarines, but it is small and extremely stealthy, even on the surface.

The submersible has an outer form hull with a pressure hull inside. It is considered very survivable for such a small vessel, but that is of little consolation to the crew, who are aware that the *Kasatka* has only limited reserve buoyancy (9% of total volume).

The *Kasatka* requires the Shiphandling (Submersible) skill when underwater, or the Powerboat skill when on the surface. It rarely operates on the surface, as it is easily swamped and has a tendency to roll. It has computerized controls.

It uses 336.6 gallons of alcohol per hour. A full load of fuel costs \$3,600. Payload weight includes basic armament of six *Mk 90* torpedoes in the cargo bay and 3,400 lb. of carried equipment in the remaining cargo space. Occasionally the craft will carry four more torpedoes (two as cargo and two loaded into the vehicle bays) if it is expecting combat.

**Subassemblies:** Medium Cutter Body with double hull (form and pressure hulls) +6; 0.05-VSP pop-up full-rotation periscope turret -3.

**Powertrain:** 5,000-kW hydrojet and 5,100-kW gas turbine in the pressure hull; 8,000-kWh batteries.

**Fuel:** Four 1,500-gallon self-sealing alcohol tanks; 17.8 hours endurance at full power. Batteries can power all electronics for 127 hours, 1.58 hours including hydrojet.

**Occupancy:** 3 RCS      **Cargo:** 350 cf (Pressure Hull)

Armor	F	RL	B	T	U
Form Hull:	4/20	4/20	4/20	4/20	4/20
Pressure Hull:	4/605	4/605	4/605	4/605	4/605
Turret:	4/30	4/30	4/30	4/30	4/30

## Weaponry

Two reloadable vehicle bays (30 cf each) [Pressure Hull: F].

## Equipment

**Form Hull:** Sonar array; large active/passive sonar; 2 long-range sonarcomms; 3 bilge pumps; 120 ballast tanks.

**Pressure Hull:** Duplicate maneuver controls; 2 bunks; 3-man gill filter; 3-man full life support; Complexity 8 high-capacity mainframe; two Complexity 6 small computers; trailing antenna; inertial navigation system; radio IFF; compact safety system; 2 bilge pumps; 10.2 bilge space.

**Turret:** Medium-range radio; light sensor suite; 20' periscope system.

## Statistics

**Size:** 8'x7'x55'    **Payload:** 26.5 tons    **Lwt.:** 182.2 tons  
**Volume:** 6,000 cf    **Maint.:** 10.7 hours    **Price:** \$3,336,085

**HT:** 6 (Pressure Hull 9)

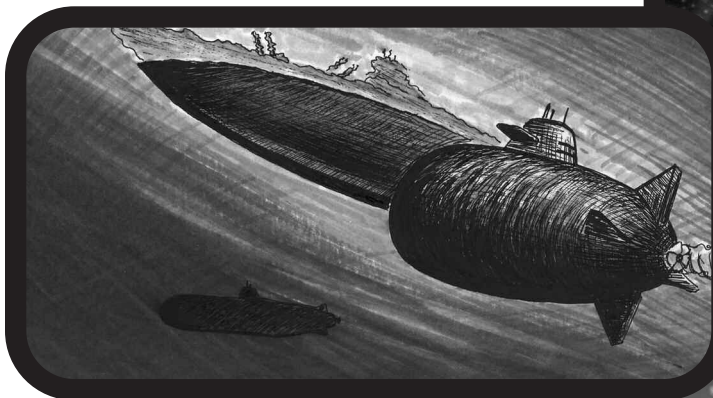
**HP:** 1,500 [Form Hull], 7,200 [Pressure Hull], 4 [Turret]

**wSpeed:** 30      **wAccel:** 5    **wDecel:** 10 (13)

**wMR:** 0.5      **wSR:** 5

Draft 9.5 feet. Flotation 187.5 tons.

**uSpeed:** 35    **uAccel:** 5    **uDecel:** 5 (8)    **uMR:** 0.5    **uSR:** 7  
**uDraft** 14.4 feet. Crush Pressure 261.4 atm (Pressure Hull).



## Design Notes

Form hull structure is light aluminum with submarine lines. Pressure hull is a 500 VSP extra-heavy aluminum structure, cylindrical shape, and total compartmentalization. All subassemblies are sealed. Armor is aluminum on form hull, carbon composite on turret, titanium on pressure hull. Uses the extra detail armor volume rule – 16 VSP of form hull armor and 145.2 VSP of pressure hull armor subtracted from form hull volume. Long-term access spaces for hydrojets and gas turbine; standard access for batteries. Crew stations have bridge access. Body has chameleon surface and radical sound baffling. Ewt.: 311,351 lbs. Ballast tanks add up to 37,500 lbs. when flooded with seawater. aASig -4. pASig -8 with gas turbine, -11 running on batteries.

# GLOSSARY

**amniotism:** "New Age" philosophy encouraging living in the ocean, which is considered the spiritual home of life.

**ANS:** Australian Naval Service.

**aquaculture:** Husbandry of aquatic life forms for the harvesting of food and other resources.

**aquatic-adapted:** Refers to *GURPS* characters with either the Amphibious advantage or the Aquatic disadvantage.

**archaeobiology:** The resurrection of extinct species by cloning preserved tissue.

**arcoblock:** A floating arcology, capable of providing permanent housing for thousands of people. Some are able to move under their own power, but many are permanently moored.

**aseptic bone necrosis:** Degeneration of bone mass caused by repeated compression and decompression of the body. See *Pressure*, p. 51.

**Atlantean:** A member of the Atlantean Society, a social group encouraging brotherhood and community support amongst underwater dwellers.

**atm:** Atmospheres (of pressure).

**atoll tower:** A tower constructed on the seabed and reaching up to or beyond the surface.

**AUV:** Autonomous Underwater Vehicle.

**bends, the:** Pain caused by dissolved gas bubbling out of body tissues during decompression. See *Breathing*, p. 48.

**benthic:** Found on the floor of seas or lakes.

**benthos:** Organisms inhabiting the benthic environment.

**bombjacking:** Taking control of a cybershell or bioshell, fitting it with explosives, and sending it to explode in a secure area to which it has access.

**CEP:** Cetacean Enhancement Program. A U.S. Navy program to develop combat-capable cetacean cyborgs. See *War-Dop*, p. 102.

**cetanist:** A person espousing the belief that cetaceans are spiritually uplifting beings, and wishing to live as a dolphin or whale by uploading into a cetacean bioshell.

**citizenship haven:** A nation offering Permanent Non-Resident Citizenships (PNCs) to people as a cheap way of raising revenues.

**cnidarian:** Radially symmetrical invertebrates with a sac-like cavity in their bodies. Includes jellyfish, anemones, and coral.

**Coriolis effect:** The deflection of objects moving along the surface of a rotating sphere, such as a planet. Objects in the northern hemisphere are deflected to the right, those in the southern hemisphere deflect to the left. This produces characteristic patterns of winds and ocean currents.

**CRABE:** *Centre de Recherche AstroBiologique d'Europa*. A European science foundation researching the unique life forms discovered in Europa's ocean.

**deek:** Slang term coined by uplifted dolphins for humans and infomorphs who have a fetish for pursuing sexual relations with cetaceans.

**deep sound channel:** A layer in the oceans at the base of the thermocline, where sound is trapped in a channel and can propagate vast distances.

**drifter:** An inhabitant of a floating community that sails on the open seas. See *Drifting*, p. 17.

**dry technology:** Tech based on mechanical engineering principles. cf. *wet technology*.

**DSL:** Deep Scattering Layer. A layer of marine life that migrates from the depths to the surface at night, and reflects sonar. See p. 25.

**E:** An E-model War-Dop cybernetic combat dolphin. See p. 102.

**ecohostile:** Disruptive to an ecosystem.

**EDF:** Europa Defense Force. Preservationist radicals who initiated the War Under the Ice to protect Europa's ecosystem from Avatar Klusterkorp's pantropic life forms.

**EEZ:** Exclusive Economic Zone. As defined by the Law of the Sea, a region extending 200 nautical miles from a nation's shore, up to 350 nautical miles if the continental shelf extends that far.

**euphotic:** Describing the region of the sea where enough sunlight penetrates to allow photosynthesis – from the surface to about 350 feet deep.

**fauxfish:** Artificial, vat-grown seafood meat. Usually fish, but can include shellfish.

**genesthetics:** Using living beings as artistic raw material, shaped by genetic engineering techniques. Also known as *gene sculpture*.

**halocline:** The boundary between layers of water of different salinities.

**heliox:** A breathing gas mixture of helium and oxygen, used for pressures up to 11 atmospheres.

**high pressure nervous syndrome:** Muscle tremors and other effects caused by high partial pressures of helium. See *Breathing*, p. 48.

**high seas:** The regions of the ocean outside the limits of any nation's EEZ.

**hydrox:** A breathing mixture of hydrogen and oxygen, used for pressures up to 18 atmospheres.

**JMSDF:** Japanese Maritime Self-Defense Force.

**krakenism:** Fringe belief that the seas should not be explored or colonized because unknown evil lurks beneath the waves.

**Law of the Sea:** A U.N. treaty which came into effect in 1994, establishing international laws for the use of the oceans, the sea bed, and the resources within.

**lighter:** An auxiliary vehicle used to transfer cargo from ship to ship or shore.

**littoral:** Of the shore region of a sea or lake.

**methanogen:** Life form that metabolizes carbon dioxide and hydrogen, producing methane as a byproduct.

**methanotroph:** Life form that metabolizes methane for energy.

**moon pool:** An opening in the floor of a pressurized, air-filled room that leads directly to water.

**nanogaian:** One who believes that Earth should be populated with self-replicating nanobots, to produce a single planet-sized living "being."

**nekton:** Organisms capable of swimming in the seas under their own propulsion.

**neomalthusianism:** The belief that low-technology societies have demonstrated a lack of survival ability and should be exterminated. cf. *technodarwinism*.

**nitrogen narcosis:** Inhibition of mental processes caused by nitrogen binding to brain tissue at high pressures. See *Breathing*, p. 48.

**non-aquatic:** Refers to *GURPS* characters without either the Amphibious advantage or the Aquatic disadvantage.

**Oceanus Noctis:** The Ocean of Night; the name of Europa's globe-wide, sub-ice ocean.

**oxygen toxicity:** Toxic effects caused by the absorption of oxygen at high partial pressures. See *Breathing*, p. 48.

**partial pressure:** The component of pressure exerted by a particular gas in a gas mixture. See *Calculating Pressures*, p. 48.

**pelagic:** In the open ocean, above the sea floor.

**perflubron:** Common name for perfluorooctylbromide, a chemical with a high binding affinity for oxygen. It can be used as a substitute for blood, or as a breathable oxygenated liquid.

**PLAN:** People's Liberation Army Navy, China's navy.

**plankton:** Organisms that float freely in ocean currents, unable to propel themselves.

**PNC:** Permanent Non-Resident Citizenship. A type of citizenship offered by some nations, establishing nothing more than nationality and specifically not conferring a right to reside in the issuing state, in exchange for a fee. See *Citizenship Havens*, p. 17.

**Promethan:** One who encourages exploration and colonization of remote locations simply because it leads to more knowledge and human mastery over the cosmos.

**pycnocline:** The boundary between layers of water of different densities.

**SAD:** Seasonal Affective Disorder. Clinical depression caused by lack of exposure to sunlight. See p. 54.

**scab:** Slang for "supercavitating bullet."

**supercavitation:** The formation of a bubble of gas around a submarine craft moving at high speed, reducing drag. See *Supercavitation*, p. 127.

**surfi:** A person who embodies the lifestyle of a late 20th century surfer, as part of a cultural revival movement.

**technodarwinism:** The belief that societies with high technology have demonstrated their inherent superiority to lower technology societies, and that the principles of evolution justify their dominance. cf. *neomalthusianism*.

**TEU:** Twenty-foot Equivalent Unit. A standard cargo container, see p. 148.

**thermocline:** A narrow layer of sea water where the temperature changes rapidly with depth. Water below the thermocline is at 29°F to 37°F.

**thiotroph:** Life form that metabolizes sulfide compounds for energy.

**TNI:** Tentara Nasional Indonesia, the Indonesian navy.

**trimix:** A breathing gas mixture of helium, nitrogen, and oxygen, used for pressures up to 18 atmospheres.

**tsunami:** A huge wave caused by an undersea earthquake or volcanic eruption.

**turbidity current:** A dense current of sediment-rich water that flows along the sea floor, down the slope of the continental shelf or slope.

**UAV:** Unmanned Aerial Vehicle (a cybershell aircraft).

**Universalism:** A political belief that parts of Earth and space should be left unclaimed and unowned by anyone.

**uplift:** The process of granting sapience to animal species.

**VCR:** Vortex Combustor Ramjet. A form of underwater rocket propulsion. See p. 139.

**wet technology:** Technology based on biological and genetic engineering principles, as opposed to mechanical. cf. *dry technology*.

**whalesinging:** The practice of an infomorph uploading into a whale bioshell and participating in whale songs with natural whales.

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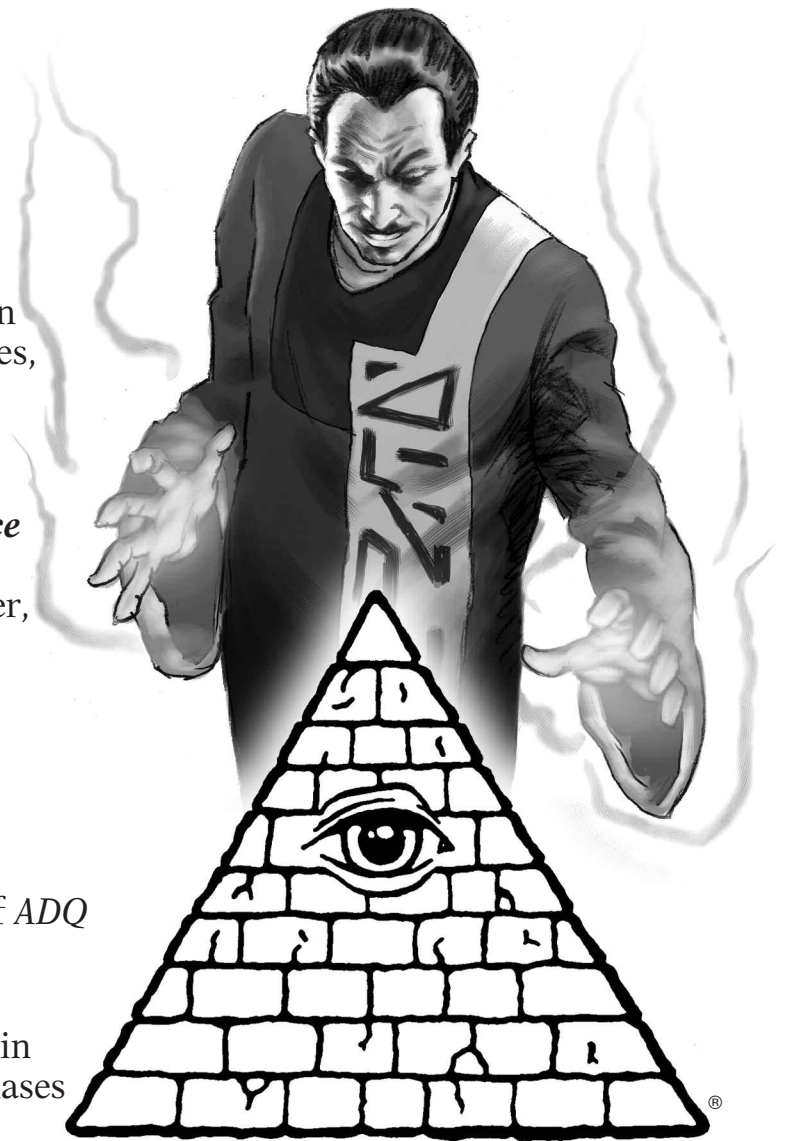
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