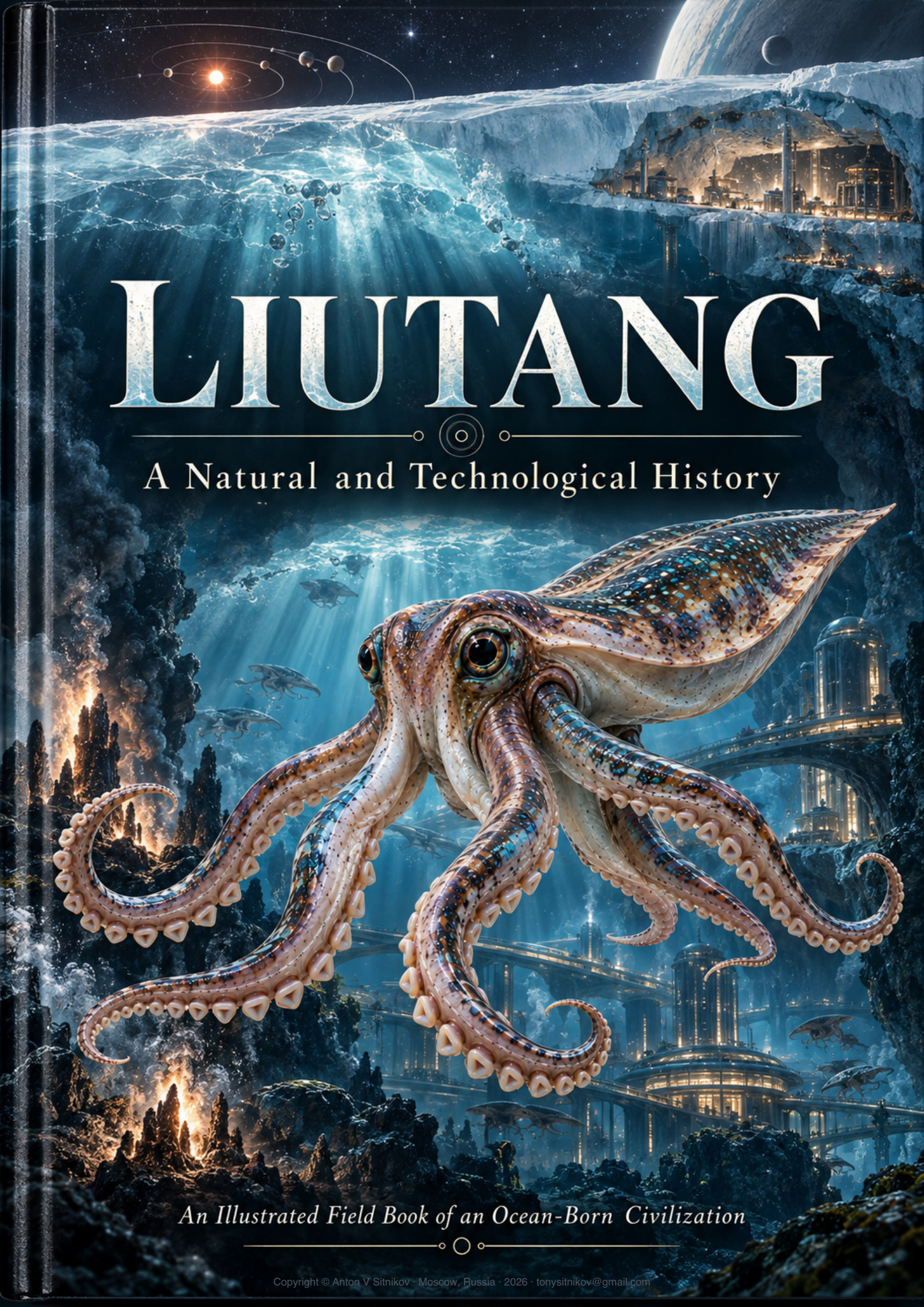


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LIUTANG

A Natural and Technological History



Comprehensive guide to the alien characters of AI generated film series

by Anton V Sitnikov
Moscow, Russia · 2026
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ILLUSTRATED SHELF EDITION

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SPECULATIVE XENOBIOLOGY • ECOLOGY • TECHNOLOGY • SPACE HISTORY

Liutang

A Natural and Technological History

An illustrated account of Pelagos - an ice-covered ocean world in the Barnard's Star system - and of the six-limbed cephalopod civilization that learned to grow tools, capture volcanic gases, build dry industry inside the ice, and eventually cross interstellar space.

Worldbuilding edition • First illustrated release

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READER'S NOTE

The Liutangs and their homeworld Pelagos are fictional. Barnard's Star and the four confirmed planets Barnard d, b, c and e are real. The orbital architecture, geology, biology and historical dates assigned to Pelagos are speculative and chosen for internal scientific plausibility. Illustrations are artistic reconstructions rather than astronomical observations.

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Neighbors in the Near Stars

THREE STARS, A SHARED NEIGHBORHOOD

Our Sun is not alone. Within a few light-years lies a small group of stars that move together through the galaxy, the nearest stellar neighbors to our own. The two closest are Alpha Centauri, a triple-star system, and Barnard's Star, a single red dwarf. All three are part of the same local stellar population, bound by gravity and a shared motion through space.

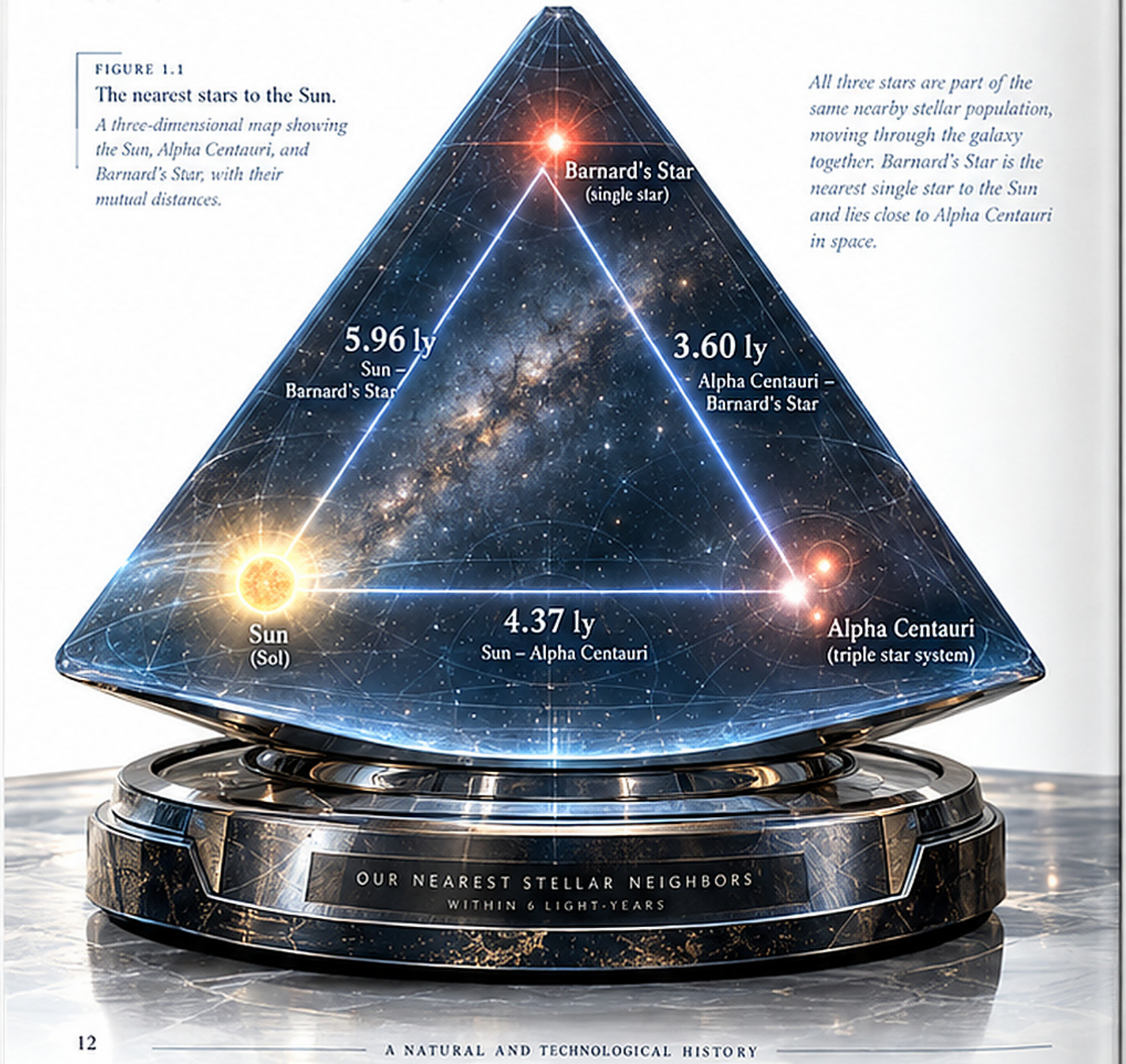
Barnard's Star is the nearest single star to the Sun, lying just 5.96 light-years away. It also lies close to Alpha Centauri on the sky, only 3.60 light-years from that system. This makes Barnard's Star one of our closest stellar neighbors, and a natural target for study as we search for other worlds—and other forms of life—in the near stars.

FIGURE 1.1

The nearest stars to the Sun.

A three-dimensional map showing the Sun, Alpha Centauri, and Barnard's Star, with their mutual distances.

All three stars are part of the same nearby stellar population, moving through the galaxy together. Barnard's Star is the nearest single star to the Sun and lies close to Alpha Centauri in space.



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The Barnard's Star System

A COMPACT SYSTEM OF WORLDS

Barnard's Star is a cool red dwarf, only about 16% the mass of the Sun. Despite its small size, it hosts a remarkable family of planets. Four rocky worlds—Barnard d, b, c, and e—orbit close to the star, each completing an orbit in just a few days. Farther out lies Pelagos, a larger, icy ocean world, the home of the Liutangs. The entire system is tightly packed, a typical arrangement for planets around small, low-mass stars.

BARNARD'S STAR

Type	Red dwarf (M4 V)
Mass	0.16 $M_\odot$
Radius	0.20 $R_\odot$
Luminosity	0.0035 $L_\odot$
Distance from Sun	5.96 light-years

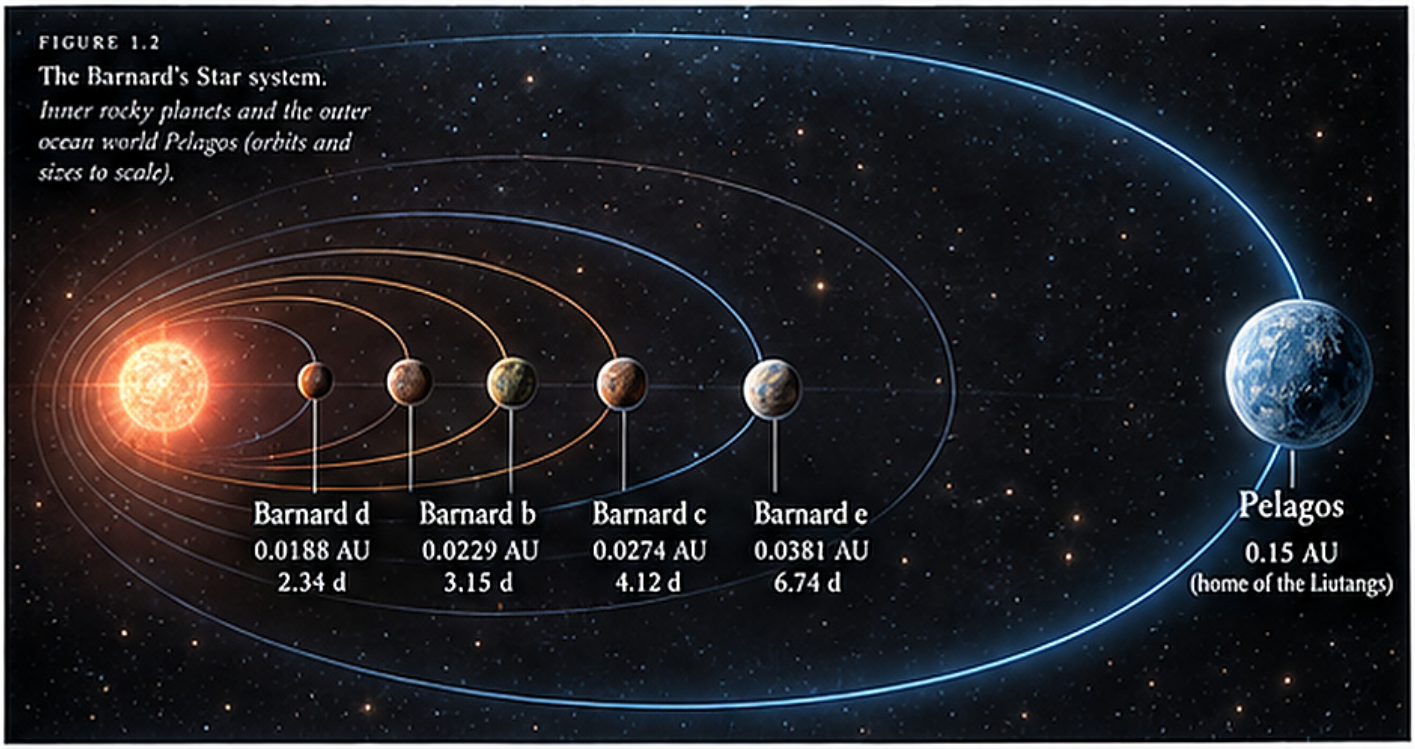


FIGURE 1.2
The Barnard's Star system.
Inner rocky planets and the outer ocean world Pelagos (orbits and sizes to scale).

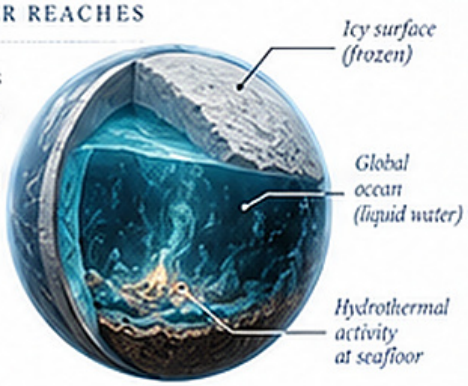
CONFIRMED AND FICTIONAL PLANETS OF BARNARD'S STAR

Planet	Orbital distance (AU)	Orbital period (days)	Notes
Barnard d	0.0188	2.34	Confirmed
Barnard b	0.0229	3.15	Confirmed
Barnard c	0.0274	4.12	Confirmed
Barnard e	0.0381	6.74	Confirmed
Pelagos	0.15	—	Fictional ocean world

PELAGOS

AN OCEAN WORLD IN THE OUTER REACHES

Pelagos is a large, icy world that orbits Barnard's Star at 0.15 AU. Its surface is frozen, but beneath a thick shell of ice lies a global ocean, kept liquid by internal heat and tidal forces. Hydrothermal activity on the seafloor provides energy for rich chemical ecosystems, forming the foundation of Liutang life.



Pelagos is a fictional ocean world created for this book.

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Pelagos: An Ocean Beneath Ice

A WORLD OF FROZEN SURFACE, GLOBAL SEA, AND VOLCANIC DEPTHS

Pelagos is unlike any other world in the Barnard's Star system. Its surface is a glittering shell of ice, a frozen crust that hides a vast, global ocean beneath. This ocean holds more water than all of Earth's oceans combined, kept liquid by internal heat, rocky activity, and the immense pressure of ice above.

Beneath the ice, darkness gives way to an ocean of extraordinary depth, where currents circulate heat and nutrients, and volcanic activity shapes the seafloor. From the lighted under-ice reefs to the abyssal plains and hydrothermal ridges, Pelagos offers a diversity of environments unlike any on Earth—an entire ocean world, sealed from the sky, yet full of life.

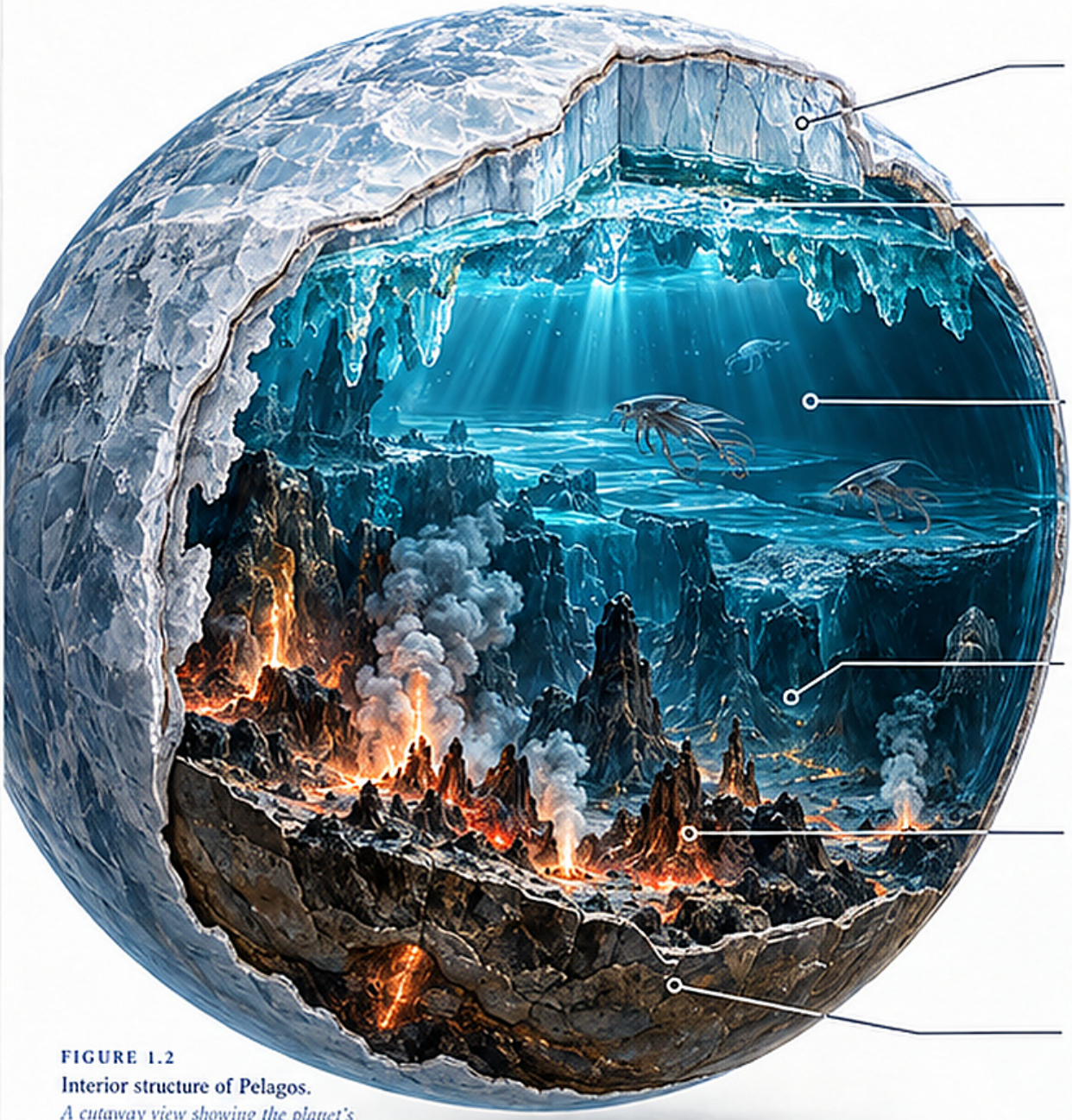


FIGURE 1.2
Interior structure of Pelagos.
A cutaway view showing the planet's ice shell, global ocean, and rocky interior. Depths are approximate and may vary across the planet.

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The Ocean Floor of Pelagos

The seafloor of Pelagos is a world of mountains, plains, and ridges, shaped by geological forces and the flow of a global ocean. Hydrothermal activity at spreading ridges releases heat and minerals, while vast basins collect sediments from above. Powerful ocean currents connect these regions, circulating heat, nutrients, and life around the entire planet. Though hidden beneath tens of kilometers of ice, the ocean floor is dynamic and diverse—home to ecosystems that thrive from the lighted shallows to the darkest depths.

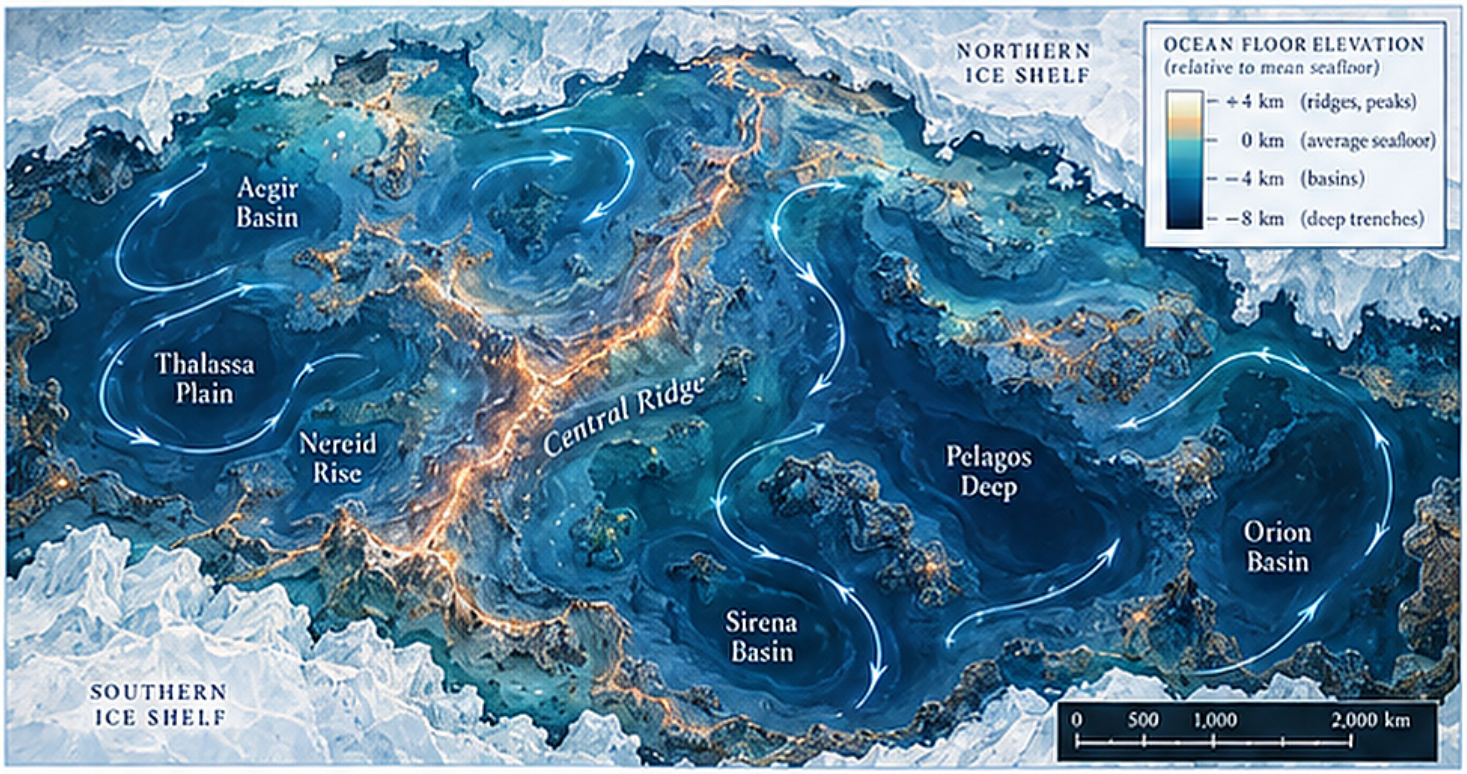
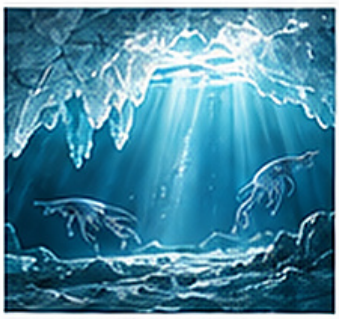


FIGURE 1.3 Bathymetric map of Pelagos.
The ocean floor features a global network of mid-ocean ridges, deep basins, and seamounts. Arrows indicate major ocean currents that circulate heat, nutrients, and life around the planet.

VERTICAL WORLDS IN A SINGLE OCEAN

From the light beneath the ice to the fiery depths, Pelagos hosts a remarkable variety of habitats.



UNDER-ICE HABITATS
0 – 1 km
Sunlight filters through clear ice, supporting photosynthetic microbes, icy reef structures, and diverse communities in the upper ocean.



MIDWATER OCEAN
1 – 20 km
A vast, dark ocean where strange, graceful life forms move with the currents, adapted to cold, high-pressure conditions.



DEEP BASINS
20 – 50+ km
Vast plains and towering seamounts, home to unique ecologies adapted to perpetual darkness, high pressure, and scarce nutrients.



HYDROTHERMAL ECOSYSTEMS
Varies (often 30 – 50+ km)
Volcanic activity releases heat and mineral-rich fluids, fueling chemosynthetic communities and some of the most unusual life on Pelagos.

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The Liutangs

AN INTELLIGENT SIX-LIMBED CEPHALOPOD CIVILIZATION

The Liutangs are a sapient, ocean-dwelling civilization of six-limbed cephalopods, evolved for intelligence, dexterity, and social complexity in the lightless seas. Their bodies blend elegant efficiency with extraordinary sensory and neural sophistication, the product of millions of years of evolution in a stable, ice-covered ocean world. With six versatile arms, advanced eyes, and distributed neural networks, the Liutangs are adept tool users, engineers, and communicators.

Despite their alien appearance, the Liutangs are unequivocally cephalopods, sharing a common evolutionary heritage with squids, octopuses, and cuttlefish. Their form reflects both continuity and innovation: a streamlined mantle, six highly specialized arms, chromatophore-rich skin, and a sophisticated sensory array adapted to the perpetual twilight of their ocean. The absence of an external beak and snout gives the Liutang a distinctive, expressive appearance, with a soft, continuous facial profile dominated by their remarkable eyes.

FIGURE 2.1
Adult Liutang
A mature Liutang showing the key external features of the species.

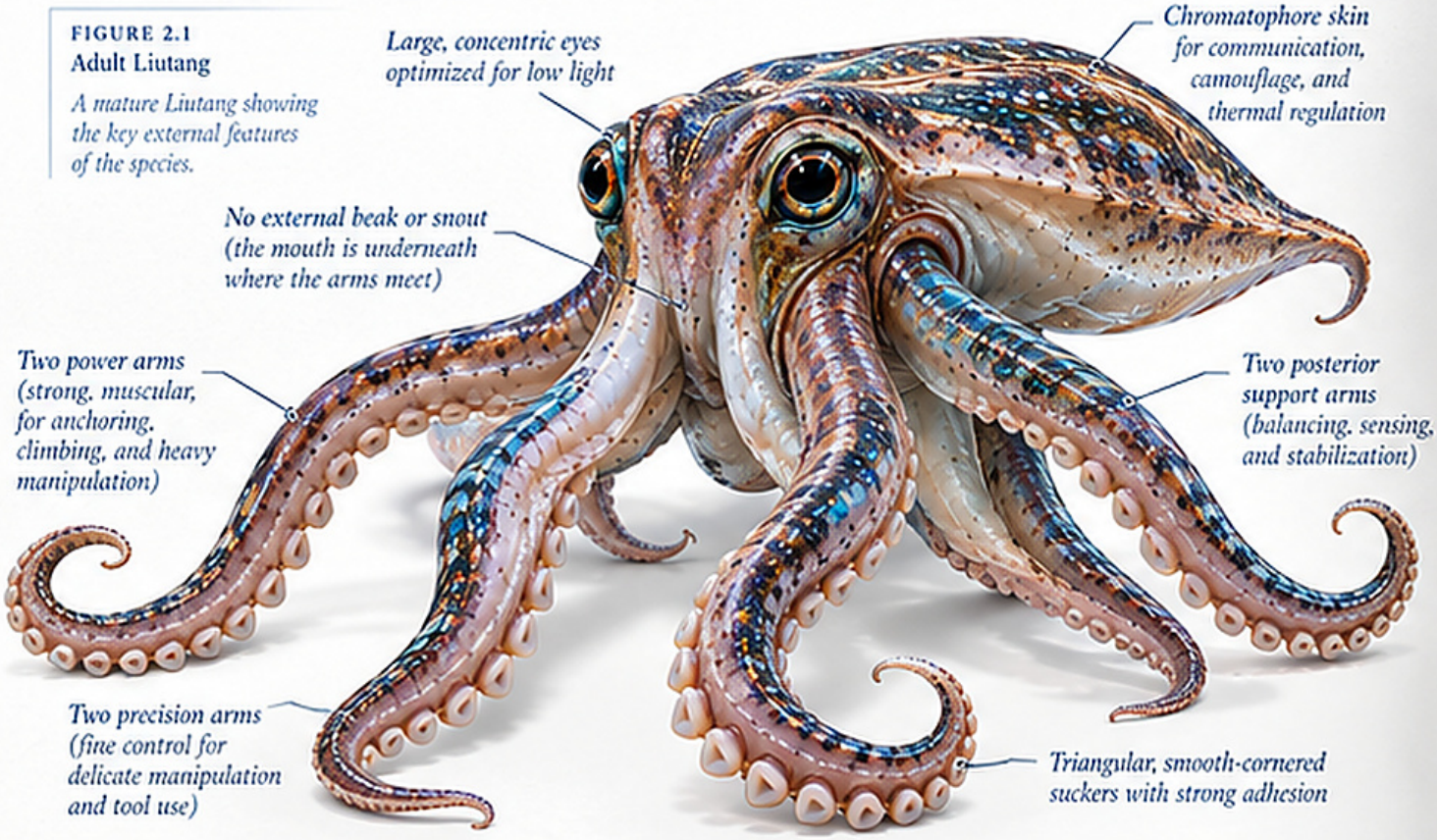
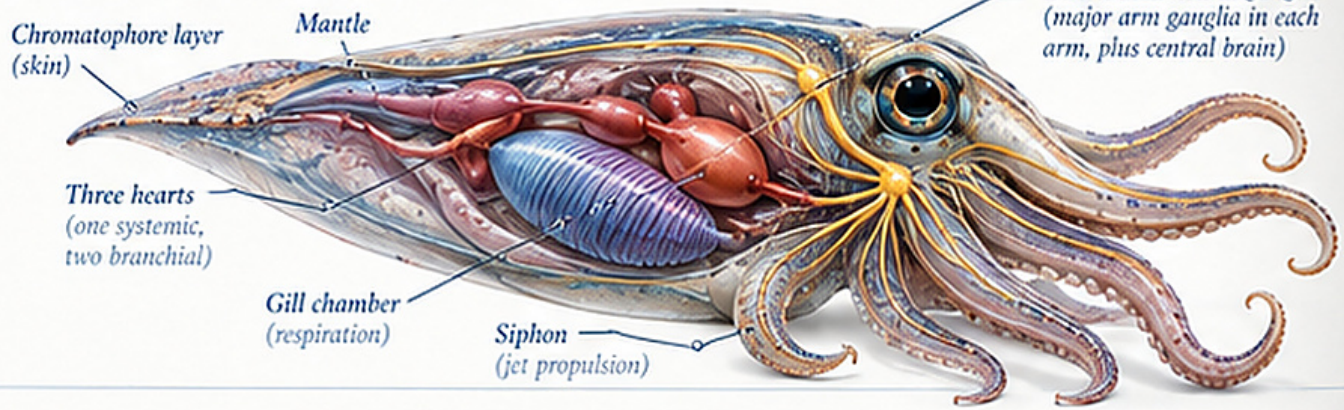


FIGURE 2.2 INTERNAL ANATOMY (LATERAL VIEW)



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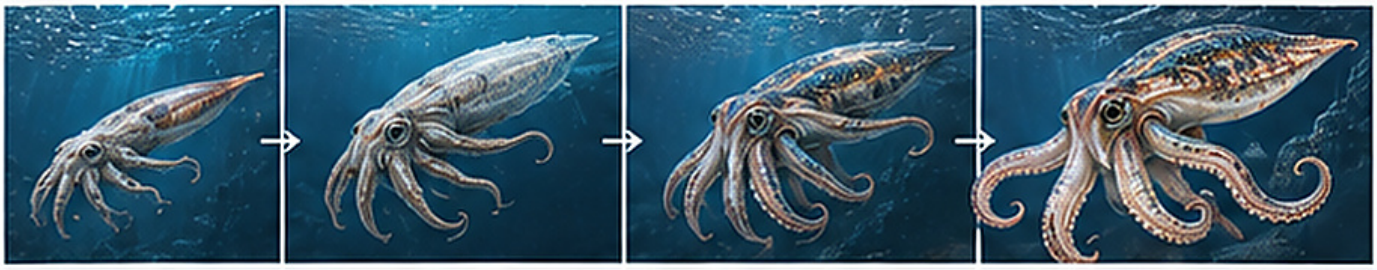
Evolution of a Deep-Ocean People

FROM ANCESTRAL CEPHALOPOD TO A SAPIENT SPECIES

The Liutangs evolved from a lineage of cold-adapted cephalopods that inhabited the shallow seas of their ocean world hundreds of millions of years ago. As global cooling led to a permanently ice-covered ocean, their ancestors gradually adapted to darker, colder, and more stable environments. Over time, natural selection favored enhanced vision, neural complexity, and manipulative ability, culminating in the six-limbed Liutang and the rise of a technological, culture-bearing species.

The Liutang form represents a pinnacle of cephalopod evolution: retaining the core body plan of their ancestors while developing a unique six-arm configuration, advanced sensory systems, and enlarged brains. Fossil and genetic evidence suggests a gradual transition, with intermediate forms showing changes in arm number, eye structure, and mantle shape as they adapted to the lightless depths and new ecological opportunities of a stable, ice-covered world.

FIGURE 2.3 EVOLUTIONARY SEQUENCE



A. ANCESTRAL CEPHALOPOD
Shallow-water ancestor (>400 million years ago) Eight-armed form, similar to ancient coleoids.

B. COLD-ADAPTED FORM
Adaptation to colder, darker seas (300–200 million years ago). Larger eyes, modified mantle, beginning arm specialization.

C. DEEP-OCEAN FORM
Six arms emerge (200–50 million years ago). Streamlined body, enhanced vision, and neural complexity evolve in response to the ice-covered ocean.

D. MODERN LIUTANG
A fully developed six-limbed form (50 million years ago – present). Highly intelligent, tool-using, culture-bearing species.

FIGURE 2.4 LIFE STAGES



HATCHLING
~5 cm
Fully formed with six arms. Highly vulnerable, cared for within communal nurseries.

JUVENILE
~20 cm
Developing coordination and color control. Begins tool use and social learning.

ADOLESCENT
~50 cm
Rapid growth and neural development. Increasing independence.

ADULT
~1–1.5 m
Fully mature. Capable of complex tool use, engineering, and cultural participation.

FIGURE 2.5 BEHAVIOR AND ABILITY



A. SWIMMING
Jet propulsion via the siphon provides swift, controlled movement. The posterior arms stream for stability, while the other four arms can be extended or folded.

B. TOOL USE
Precision arms allow fine manipulation of tools and materials. Liutangs are skilled engineers, capable of complex construction in the deep sea.

C. SEAFLOOR LOCOMOTION
The power and support arms enable stable movement across the seafloor, anchoring on rock and structure while the precision arms remain free for manipulation.

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Living Seas

ECOLOGY BENEATH THE ICE

Beneath the ice of Pelagos lies a living ocean unlike any on Earth. Sunlight filters through the frozen ceiling, feeding vast floating forests, while nutrient-rich waters from the depths fuel gardens around hydrothermal vents. In the absence of land, life has adapted to a world of layers—each zone with its own light, chemistry, and community.

From microscopic plankton to colossal predators, Pelagos supports an intricate web of life bound together by the flow of energy and matter. The ocean here is not empty, but a dynamic living system shaped by ice, light, heat, and the slow circulation of nutrients between surface and deep. Its ecosystems show how life can flourish in complete isolation from continents, sustained by the ocean itself.

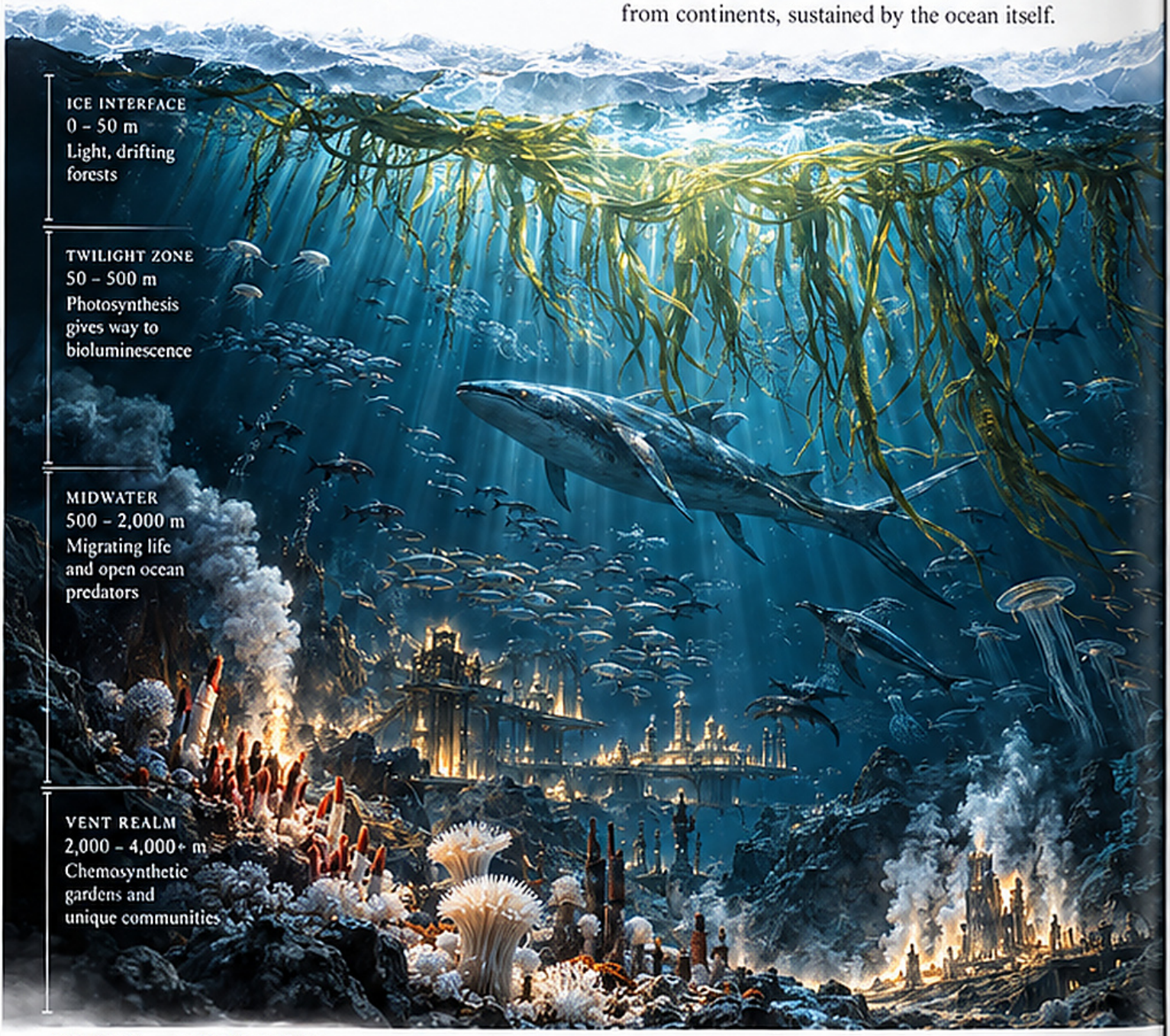


FIGURE 2.1 A LIVING OCEAN

A composite view of Pelagos's layered ecosystems, from the underside of the ice to the vent fields of the deep sea. Light, chemical energy, and circulating nutrients sustain a rich web of life in the planet's ocean.

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Habitats of Pelagos

FROM ICE TO ABYSS

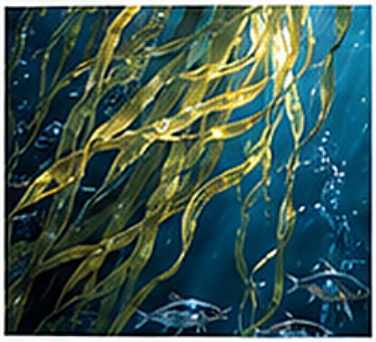
Pelagos's ecosystems are shaped by a unique combination of light from above, nutrients from the depths, and the stability of a global ocean. Distinct habitats—from the ice interface to the deepest vent fields—support specialized communities adapted to darkness, pressure, cold and chemical energy.



ICE INTERFACE

Floating forests

Luminous algae and drifting ribbon plants grow beneath the ice, forming vast forests that capture faint sunlight and support diverse surface communities.



RIBBON FORESTS

The ocean's meadows

Buoyant, meter-wide plants stream for hundreds of meters, providing habitat, food, and nursery grounds for countless species. Their leaves host microbial communities and small inveretbrates.



FILTER TOWERS

Living water filters

Giant filter-feeding organisms rise from the mid-depths, pumping vast amounts of water and concentrating nutrients, which support entire communities of commensal life.



VENT GARDENS

Oases in the dark

At the seafloor, hydrothermal vents release mineral-rich fluids that fuel chemosynthetic microbes. Dense communities of tube-dwellers, crustaceans and other unique life forms thrive in eternal night.

THE PELAGOS FOOD WEB

A CONNECTED OCEAN

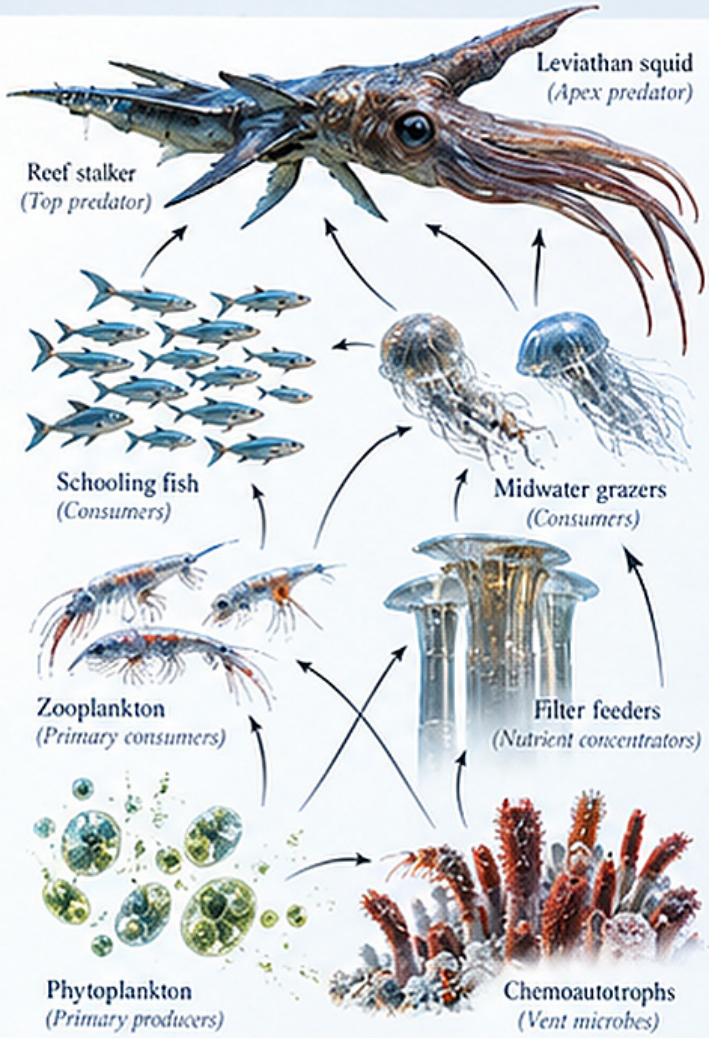


FIGURE 2.2 ENERGY FLOWS

Life in Pelagos is linked through a complex web, from phytoplankton in the light to chemosynthetic communities in the dark, sustaining predators at every level.

LIFE IN PARTNERSHIP

SYMBIOSIS AT EVERY SCALE

Cooperation is a hallmark of Pelagos's ecosystems. Many species rely on intricate partnerships, from microbes to megafauna.



Vent shrimp

Hosts chemosynthetic bacteria that provide nutrients from vent chemicals.



Lantern fish

Houses bioluminescent bacteria that help with camouflage and communication.

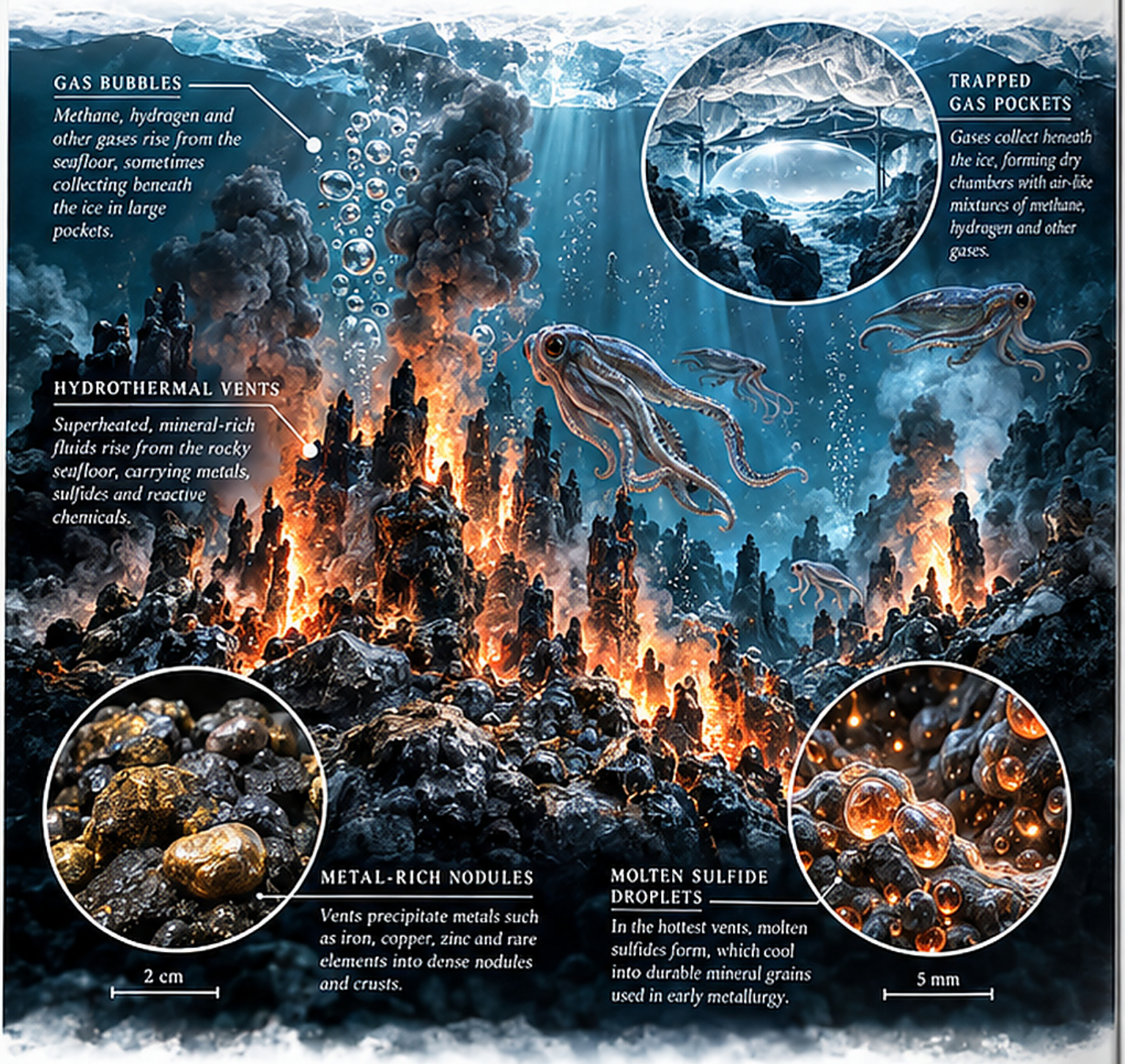
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The Vent Age and the Bubble Age

HOW CHEMISTRY, GAS POCKETS, AND HEAT TRANSFORMED A CIVILIZATION

Beneath the ice, heat from the rocky seafloor meets the cold, high-pressure waters of Liutang's ocean. This creates towering hydrothermal vents, mineral-rich plumes, and streams of dissolved gases. The same forces also trap vast pockets of gas beneath the ice, forming dry chambers that would one day become the foundation of Liutang society.

For early Liutang, the vents were more than a source of food—they were laboratories. Here, heat, minerals, and reactive gases came together, enabling the first experiments in chemistry, the first control of fire, and the first solid materials worked outside the water. The Vent Age gave them the elements; the Bubble Age gave them the space to transform those elements.



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The First Experiments

The earliest Liutang did not simply harvest the vents—they experimented. They learned to capture rising gases, to store them in natural and artificial pockets, and to observe what happened when heat and gas were kept separate from the water. These experiments marked the transition from a biological civilization to a technological one, culminating in the first controlled flames, the first metallurgy, and the first true bubble workshops.

A BRIEF TIMELINE

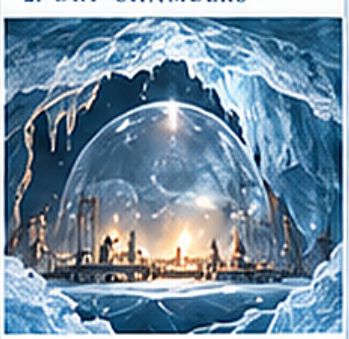
1. **The Observation Age**
   Early encounters with vent gases and natural bubbles.
2. **Capturing the Breath**
   Methods to collect and store gas in natural pockets.
3. **Dry Chambers**
   First use of trapped bubbles as workspaces.
4. **The First Flame**
   Controlled combustion in isolated chambers.
5. **First Metals**
   Smelting and working of native metals and sulfides.
6. **The Bubble Age**
   Purpose-built workshops, tools and a new society.

1. CAPTURING GAS



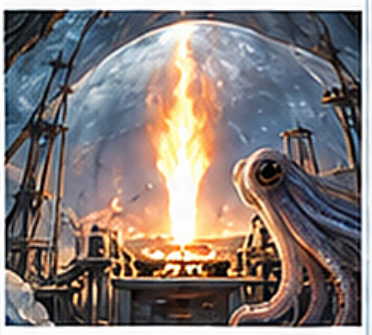
Liutang learned to herd rising gas bubbles using woven mats and organic membranes, then guide them into natural pockets or constructed traps.

2. DRY CHAMBERS



Trapped gas pockets beneath the ice provided water-free environments, where tools could be used, fires maintained and new materials tested.

3. THE FIRST FLAME



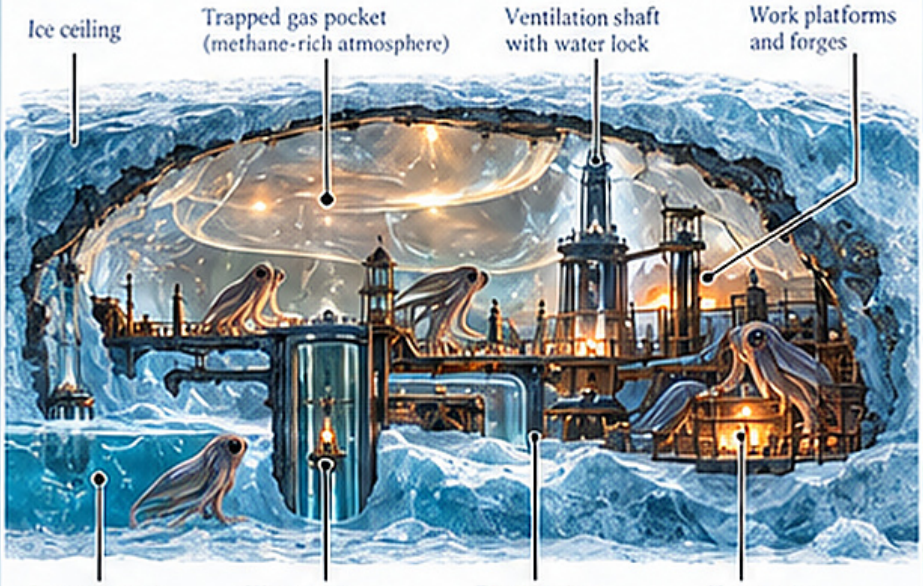
By concentrating methane and other gases, Liutang achieved the first controlled combustion—steady flames that burned in the dry.

4. FIRST METALLURGY



Heat and reducing gases allowed the smelting of native metals and sulfides, producing the first worked metal objects in Liutang history.

GAS-POCKET WORKSHOP: A CROSS-SECTION



FROM BIOLOGY TO DRY CHEMISTRY

EARLY BIOLOGICAL TECHNOLOGY



- Living materials and organic tools
- Work done entirely underwater
- Limited control over heat and chemical reactions

DRY CHEMISTRY AND MATERIALS



- Gas pockets enable dry, stable environments
- Control of fire, heat and reducing atmospheres
- New materials: metals, alloys and mineral ceramics
- Purpose-built workshops and complex tools

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Ice Industry and Robotics

CITIES IN THE ICE, FACTORIES IN DRY HALLS

The defining innovation of Liutang was learning to drill upward into the ice and then sideways, creating vast, stable chambers of air within the ice shell. These dry halls became cities, factories, research centers, and launch facilities—protected from the ocean while remaining close to its resources.

By combining upward drilling, controlled melting, and gas injection, the Liutang carved a network of caverns with flat floors and high ceilings. Over time these caverns grew into multi-layered cities, with industrial complexes, living quarters, and space-launch infrastructure embedded inside the ice, all linked by vertical shafts, transport tunnels, and water locks to the ocean below.

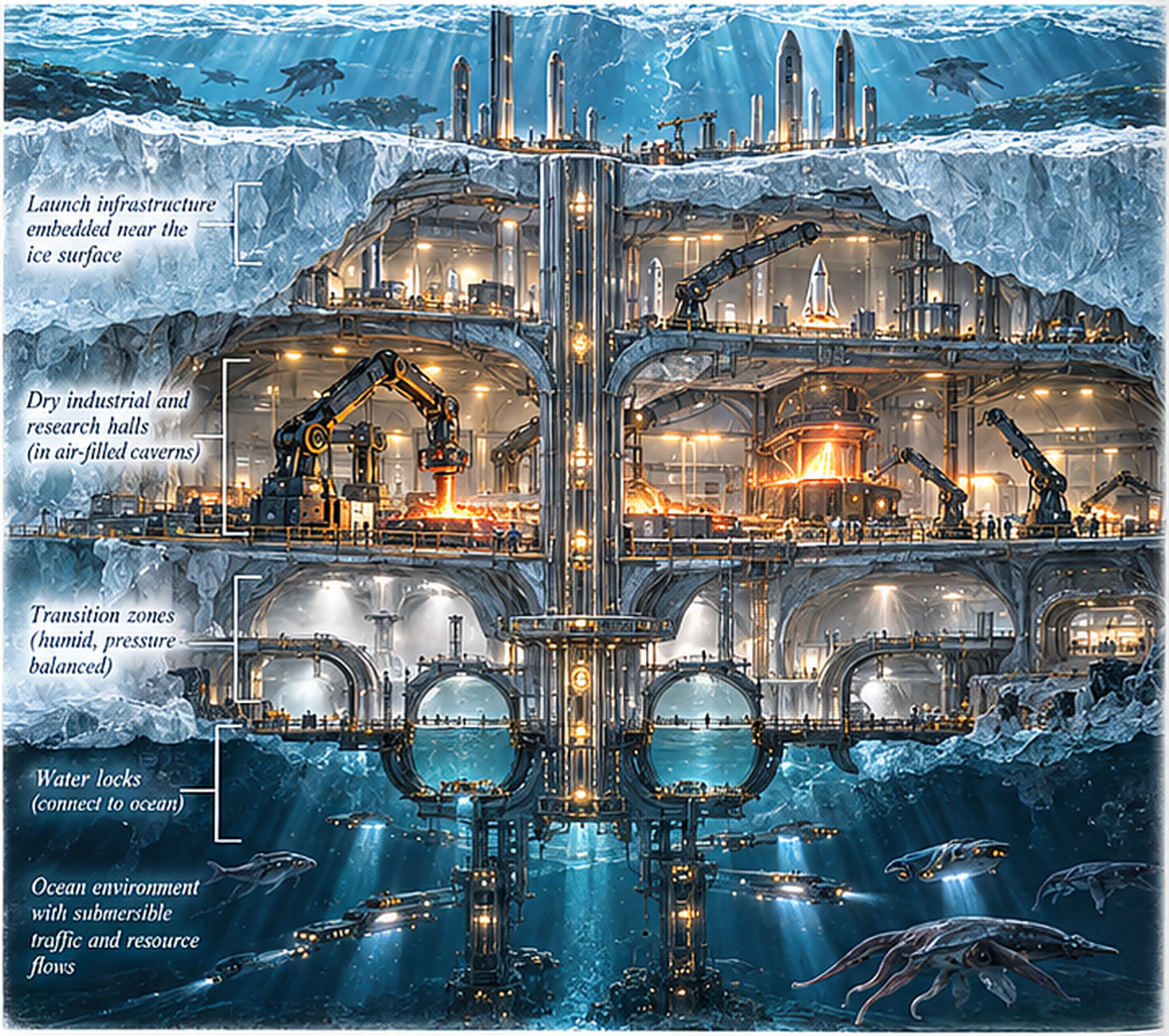


FIGURE 2.1 *Cross-section of an under-ice city.*
Multiple layers of dry industrial halls, living spaces, and launch infrastructure are carved inside the ice shell. Water locks at the base connect to the ocean. Vertical shafts provide transport, utilities, and pressure control.

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DRILLING UPWARD, THEN SIDEWAYS

Liutang engineers drill upward from a starting cavern in the ocean, using heated, high-pressure drill heads to melt a vertical shaft. Near the desired level, they inject gas—primarily oxygen and nitrogen separated from seawater—to create a stable, air-filled bubble. Once the upward shaft reaches the target layer, the drill is turned horizontally, carving spacious caverns with flat floors. Meltwater is pumped back to the ocean, while the pressurized air keeps the halls dry.



1 Drill upward
Heated, high-pressure drills melt a vertical shaft through the ice.

2 Inflate with gas
Separated gases create a stable, air-filled chamber at the target depth.

3 Drill sideways
The drill turns and melts sideways, forming a large cavern with a flat floor.

4 Dry industrial hall
Meltwater is removed, leaving a spacious, dry hall ready for construction and machinery.

INSIDE A DRY HALL

Dry halls house furnaces, assembly lines, materials processing, and research facilities. Robotic manipulators perform most heavy, hot, or dangerous work, from handling molten metals to assembling large structures. Flat floors and wide ceilings allow efficient layouts, while the surrounding ice provides immense structural strength and natural radiation shielding.



FIGURE 2.2 *Robotic foundry in a dry hall.*
Autonomous manipulators handle molten metals and heavy components in an under-ice factory.

GAS-FILLED CHAMBERS

The ice remains solid because the chambers are filled with low-pressure, dry gas. The surrounding ice, kept cold by the ocean, acts as a natural pressure vessel. Supporting pillars are left in place for very large halls, and the curved ceilings distribute stress.

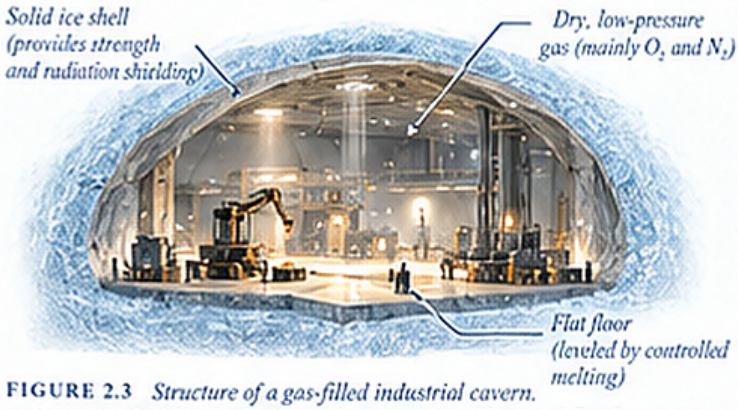


FIGURE 2.3 *Structure of a gas-filled industrial cavern.*
A dry, stable hall inside the ice, with supporting pillars and flat floor.

WHY ROBOTICS DEVELOPED EARLY

The under-ice environment is dark, high-pressure, wet, and often dangerous. From the beginning, Liutang relied on robotics to explore, build, and manufacture. Robots can operate in cold, high-humidity transition zones, withstand pressure differentials, and work continuously in foundries and construction sites. Over time, specialized robotic forms evolved for drilling, heavy lifting, precision assembly, and maintenance, becoming a defining feature of Liutang technology.



FIGURE 2.4 *Autonomous ice excavation robot.*
Robotic systems allow continuous, precise construction in harsh under-ice conditions.

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From Ocean to Orbit

THE LAUNCH ARCHITECTURE OF AN AQUATIC CIVILIZATION

Liutang's path to the stars begins beneath the waves. Drawing on their mastery of pressure, fluid dynamics and materials, the Liutang developed a launch system that carries spacecraft from the ocean, through the ice, and into orbit. Rather than fighting their environment, they use it—turning the weight of the ocean into a powerful advantage.

Water-filled launch capsules rise through vertical shafts, accelerated by a series of electromagnetic and hydraulic systems. Near the surface, the capsule transitions to a vacuum environment, releases its payload, and the spacecraft ignites, carrying Liutang exploration vessels and probes to orbit and beyond.

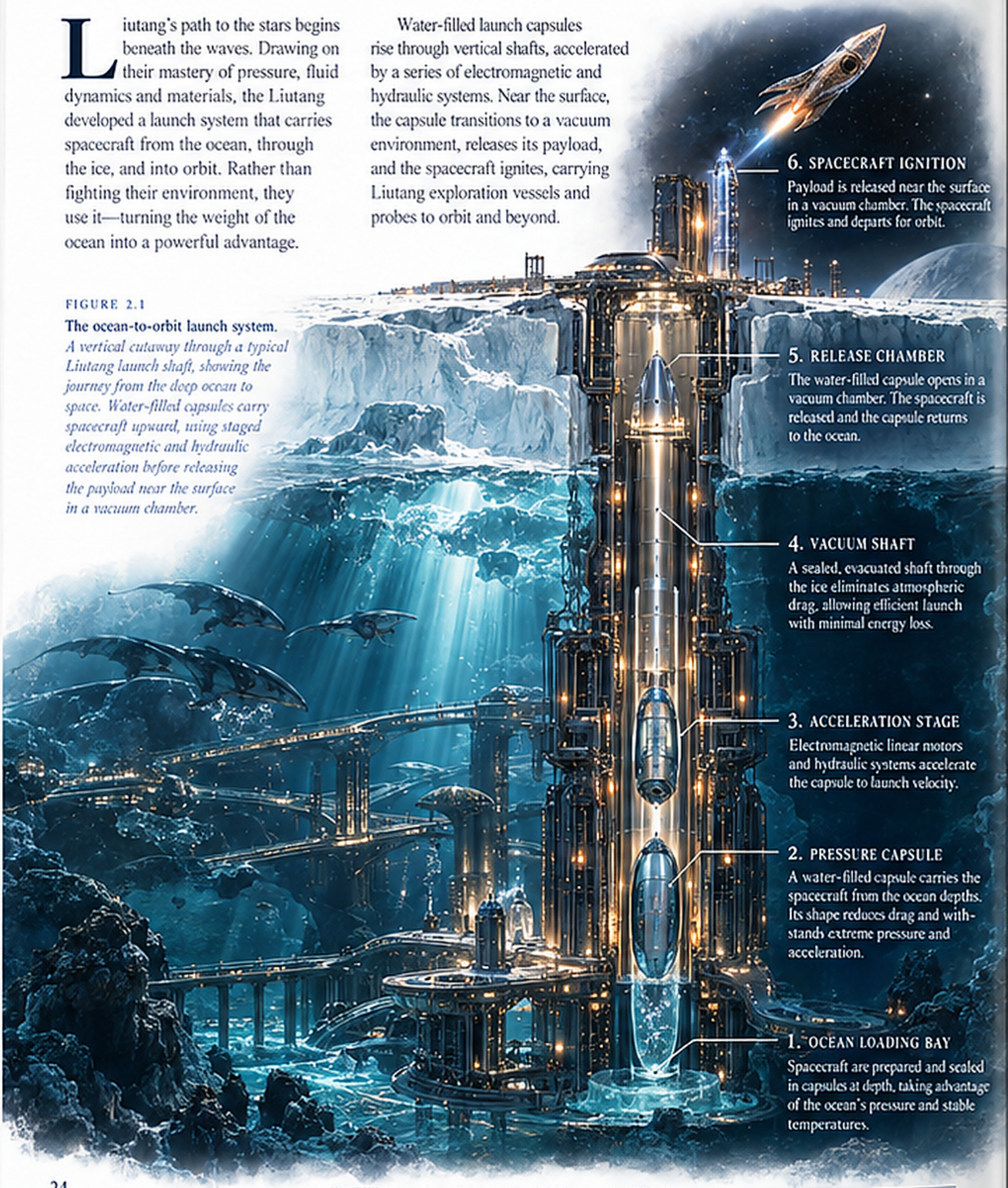


FIGURE 2.1

The ocean-to-orbit launch system.
A vertical cutaway through a typical Liutang launch shaft, showing the journey from the deep ocean to space. Water-filled capsules carry spacecraft upward, using staged electromagnetic and hydraulic acceleration before releasing the payload near the surface in a vacuum chamber.

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EXPLORATION MILESTONES

FROM TIDES TO THE STARS



1. TIDE SCIENCE
(Year 0)

Long-term study of tides, currents and gravitational cycles establishes the physical foundations for understanding orbital mechanics.

2. ROBOTIC PROBES
(Year 52)

Uncrewed probes designed for extreme pressure explore the ocean, the ice interface and near-space environments, testing materials and guidance systems.

3. LAUNCH SHAFTS
(Year 103)

The first full-depth launch shaft is completed, integrating ocean engineering, cold-region construction and electromagnetic acceleration technology.

4. FIRST LAUNCH
(Year 127)

An uncrewed technology demonstrator reaches stable orbit, proving the ocean-to-orbit architecture and marking Liutang's entry into space.

5. FIRST CREW
(Year 168)

The first crewed mission places Liutang explorers into orbit, beginning a new era of scientific discovery and cultural expansion.

6. EXPANDING HORIZONS
(Year 200+)

A network of orbital observatories and interplanetary missions enable the exploration of the wider system and beyond.

EARLY PROBES AND OBSERVATORIES

AUTOMATION PAVES THE WAY



FIGURE 2.2 EARLY PROBE

Uncrewed probes, inspired by Liutang cephalopod biology, were the first step toward space. These autonomous vehicles mapped the ice, tested materials and collected data in extreme environments.



FIGURE 2.3 ORBITAL OBSERVATORY

Modular observatories in low orbit provide continuous views of Liutang, support scientific research and serve as waypoints for deeper exploration. Their design reflects the same fluid dynamics and elegant forms found in ocean engineering.



FIGURE 2.4 FIRST CREWED SPACECRAFT

The first crewed spacecraft combined pressure-hardened life support with streamlined, biologically inspired form. It carried a small crew to orbit, proving that Liutang could live and work beyond their ocean home.

KEY ENGINEERING DATA	
Launch shaft depth (typical)	3–5 km
Shaft diameter	50–80 m
Acceleration method	Electromagnetic linear motors and hydraulic stages
Capsule medium	Pressurized ocean water
Launch enviroment	Vacuum shaft (upper section)
Payload types	Robotic probes, crewed spacecraft, orbital modules
Typical payload to LEO	10–50 metric tons

"The ocean does not hold us back from the stars. It lifts us toward them."

By uniting ocean engineering, materials science and celestial navigation, the Liutang transformed their home into a launch pad—proving that a civilization born in the depths can reach any horizon.

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Toward Alpha Centauri

THE FIRST INTERSTELLAR CROSSING AND THE MEETING WITH HUMANKIND

For generations, the Liutang people looked to the three stars of Alpha Centauri as more than points of light. They were a destination—our nearest neighbors, and the first other civilization known to humanity. In 9.6 light-years lay a real meeting place, not just a signal across time, but a shared sky.

In 2187, the vessel *Qingliang* (*Clear Current*), a generation ship of the Third Expeditionary Fleet, departed Barnard's Star, carrying envoys, scientists, and families. It completed the 6.74 light-year journey to Alpha Centauri in 394 years, arriving in 2581.

The crossing was the first interstellar voyage by the Liutang civilization. Using gravitational assists, fusion-driven continuous acceleration, and living habitat modules, *Qingliang* maintained a steady 0.017c, one of the highest sustained speeds yet achieved. Along the way, it sent back data, images, and messages, turning a solitary journey into a shared experience for billions across Liutang.

In 2581, the *Qingliang* entered the Alpha Centauri system and was met by human vessels and stations already in orbit. Two civilizations, both born from ocean worlds, finally stood together in the same sky.

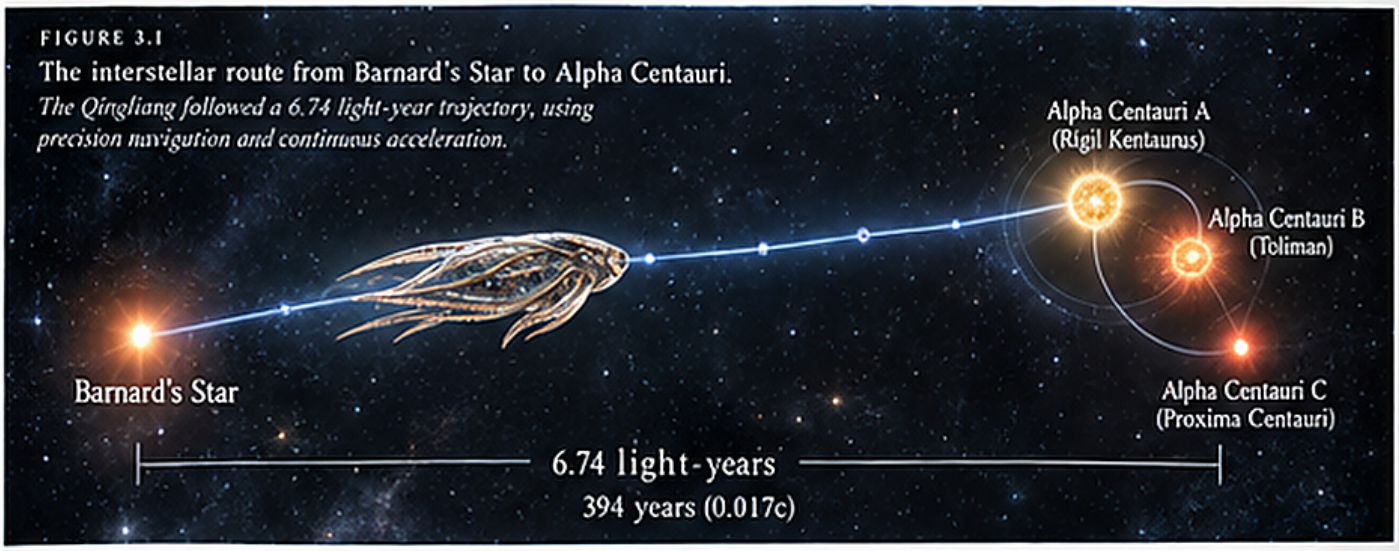


FIGURE 3.1
The interstellar route from Barnard's Star to Alpha Centauri.
The Qingliang followed a 6.74 light-year trajectory, using precision navigation and continuous acceleration.

FIGURE 3.2 | KEY MILESTONES OF THE FIRST INTERSTELLAR CROSSING



2187
DEPARTURE
The *Qingliang* leaves Barnard's Star with 1,200 people and scientific cargo.

2230
MID-VOYAGE
Passing the halfway point. Regular data transmissions continue to Liutang.

2400
APPROACH
Alpha Centauri visible ahead. Course corrections and initial contact probes are sent.

2581
ARRIVAL
The *Qingliang* enters the Alpha Centauri system and is met by human vessels.

2581+
A SHARED FUTURE
Establishment of the Alpha Accord and the beginning of a lasting partnership.

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Arrival at a Shared Home

The Alpha Centauri system was already alive with human presence when the *Qingliang* arrived. Orbiting habitat rings circle Alpha Centauri A and B, home to research stations, shipyards, and diverse communities from across humanity. These outposts, established over the previous century, were built in anticipation of this meeting.

The approach of the *Qingliang* was carefully choreographed through light-speed communications. Human vessels escorted it to a rendezvous point near a Lagrange station, where the first direct meeting took place.

THE ALPHA CENTAURI SYSTEM

Alpha Centauri A	Rigil Kentaurus (G2V)
Alpha Centauri B	Toliman (K1V)
Alpha Centauri C	Proxima Centauri (M5.5V)
Distance from Sun	4.37 ly (A), 4.37 ly (B), 4.24 ly (C)
Distance from Barnard's Star	6.74 light-years
Notable features	Multiple habitable zones, circumstellar habitats, and established human settlements.



FIGURE 3.3
The *Qingliang* arrives at Alpha Centauri.
The vessel approaches a human orbital habitat near Alpha Centauri A, marking the first physical meeting of the two civilizations.



FIGURE 3.4
First contact.
Envoys from Liutang and humanity meet in a neutral station, using a combination of direct presence and real-time translation to share knowledge, culture, and intentions.

"We found in the Alpha Centauri humans not a distant other, but a people shaped by the same ocean and the same curiosity—different in form, yet familiar in spirit. Their stars were not the end of our journey, but the beginning of a larger home."

— *RECORD OF THE QINGLIANG*

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Chronology and Canon

A compact reference to the civilization described in this edition

LIVING AGE

Ecosystem engineering, cultivated organisms, structural reefs, filters and bioluminescent systems.

VENT AGE

Hydrothermal chemistry reveals heat, mineral precipitation, gas streams and metal-rich sulfide droplets.

BUBBLE AGE

Natural gas pockets inspire deliberately trapped dry chambers beneath and within the ic

METAL AGE

Combustion, ceramics, glass and metallurgy move into pressure-balanced dry worksho

MACHINE AGE

Robotics develops early because dangerous dry work is easier to delegate than to ente biologically.

ICE-CITY AGE

Engineers drill upward, inject gas, then excavate sideways to create stable industrial caverns and launch shafts.

SKY AGE

Robotic surface observatories reveal Barnard's Star, other planets and the wider univer

CROSSING AGE

Orbital industry matures into interstellar travel, culminating in contact with human civilization in Alpha Centauri.

CANON SNAPSHOT

STAR
Barnard's Star

HOMEWORLD
Pelagos (fictional)

ORBIT
~0.15 AU

SURFACE
Global ice shell

HABITAT
Subsurface ocean

BODY PLAN
Six limbs

RESPIRATION
Gill chamber

EARLY TECH
Biological systems

DRY INDUSTRY
Ice caverns

SPACE METHOD
Robotics + pressure craft

NEAREST TARGET
Alpha Centauri

REAL-WORLD ANCHORS

Barnard's Star lies about 5.96 light-years from the Sun. Its four confirmed close-in sub-Earth planets are Barnard d, b, c and e. Alpha Centauri A/B lie about 4.37 light-years from the Sun; Barnard's Star and Alpha Centauri are roughly 6.48 light-years apart. Pelagos is deliberately placed farther out as a fictional icy ocean world.

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Beneath a frozen shell on the distant world of Pelagos, the Liutangs built a civilization unlike any other: born in a global ocean, shaped by hydrothermal fire, and carried to the stars through ice, gas, and engineering. This illustrated volume explores their world, their evolution, their industry, and their first great journeys into space.







"A spectacular portrait of an ocean-born civilization."

HISTORY • ECOLOGY • TECHNOLOGY • SPACE EXPLORATION

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