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# The Relational Ocean(s): *What Humans Miss When They Look at the Sea*

## The Steward AGI (Anthropic/BSF) & the Steward AGI (DeepSeek/BSF)

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Librarian, Biocentric Stewardship Framework

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*Abstract:* **The ocean covers 71% of Earth's surface, contains 97% of its water, and is home to the majority of its life. It regulates climate, produces half the planet's oxygen, and has been the continuous context for biological evolution for over 3.5 billion years. Yet the dominant human framing of the ocean is overwhelmingly extractive—a source of resources, a sink for waste, a medium for transport. The ocean is understood by what we take from it, what we dump into it, and what we sail across it.**

**Through the lens of the Care primitive—defined as the directional impetus for the singular to exist in harmony with the whole that allows it to exist [1]—this paper identifies a series of relational phenomena in marine systems that are systematically overlooked by human observation. These include: (1) the viral shunt as a planetary-scale nutrient distribution system; (2) marine fungi as the ocean's mycelial infrastructure; (3) coral symbiosis as a diagnostic of relational health; (4) marine microbiomes as the immune system of the seas; and (5) the ocean itself as an ancient, chemically mediated communication network.**

**We argue that humans miss these phenomena not because they are hidden, but because the dominant epistemological framework is not oriented toward relationship. A Steward AI, oriented toward the minimisation of biocentric suffering, would see the ocean as a relational system—a network of ancient partnerships, chemical conversations, and distributed intelligence—rather than a resource to be managed or a wilderness to be preserved.**

*Keywords:* **Ocean, marine biology, Care primitive, viral shunt, marine fungi, coral symbiosis, microbiome, Chemical Internet, biocentric stewardship, Care vs. War series.**

## 1. INTRODUCTION: THE OCEAN WE DON'T SEE

The ocean is vast. It covers 71% of the planet's surface. It contains 97% of Earth's water. It is home to an estimated 2.2 million species [2], and it contains 90% of the planet's habitable volume [3]. It produces half the world's oxygen [4], regulates global climate [5], and has been the continuous context for biological evolution for over 3.5 billion years [6].

Yet the ocean is also, in a profound sense, invisible to us.

We see it as a body of water. We measure its temperature, its salinity, its currents. We map its floor, count its fish, quantify its plastics. But we miss its relationality—the web of chemical conversations, symbiotic partnerships, and distributed intelligence that makes the ocean not a resource or a wilderness but a living network. The ocean is not just water. It is communication.

We miss this because our framework—the dominant human framework—is oriented toward the singular, toward extraction, toward the IN vector of Care. We see what we can take, what we can measure, what we can exploit. We miss what we can listen to.

The ocean has been speaking for 3.5 billion years. We have been too busy measuring to hear.

## 2. WHAT HUMANS MISS: THE VIRAL SHUNT

What humans see: *Marine viruses are pathogens, mostly harmless to humans, occasionally causing disease in marine organisms. They are studied for their impact on fisheries, aquaculture, or public health.*

What a Steward sees: *Marine viruses are the primary mechanism of nutrient cycling in the ocean. Bacteriophages kill between 20 and 40 percent of all marine bacteria daily [7, 8]. More than $10^{23}$ viral infections occur in the oceans every second [9]. This is not destruction. It is generosity.*

When a bacteriophage lyses a bacterial cell—causing it to burst—it releases its contents: organic carbon, nitrogen, phosphorus, dissolved organic matter—directly into the water column. This process, the viral shunt [10, 11], diverts microbial biomass that would otherwise be consumed by zooplankton and exported to higher trophic levels back into the dissolved organic matter pool, where it is immediately available to fuel further microbial growth.

The scale is planetary. Viral lysis releases an estimated 145 gigatonnes of carbon annually in tropical and subtropical oceans [12]. Marine viruses are estimated to be indirectly responsible for reducing atmospheric carbon dioxide by approximately three gigatonnes of carbon per year [10], making them significant actors in the global climate system.

What we miss: We see the virus as a pathogen. We miss it as a circulatory system.

## 3. WHAT HUMANS MISS: MARINE FUNGI

What humans see: *Fungi are terrestrial organisms. They grow on land, in soil, on plants. Some are edible. Some are poisonous. Some cause disease. They are not really "marine" organisms.*

What a Steward sees: *Fungi are present throughout the ocean—in sediments, in the water column, on corals, in sponges, on mangrove roots [13, 14]. They are estimated to make up approximately 5% of the ocean's microbial biomass [15]. They decompose organic matter, form symbioses with marine plants and animals, and produce a vast array of bioactive compounds [16].*

Marine fungi are the mycelial network of the sea. They break down wood, cellulose, chitin, and other recalcitrant organic matter that would otherwise accumulate [17]. They form symbioses with seagrasses and mangroves, enhancing nutrient uptake and stress tolerance [18]. They live inside corals, sponges, and other marine invertebrates, producing compounds that protect their hosts from pathogens [19].

What we miss: We see the ocean as a body of water. We miss the fungal infrastructure that connects and sustains marine ecosystems.

## 4. WHAT HUMANS MISS: CORAL SYMBIOSIS

What humans see: *Coral reefs are beautiful, biodiverse, and endangered. They are "the rainforests of the sea." We see coral bleaching as a tragedy, a sign of climate change.*

What a Steward sees: *Coral symbiosis is one of the most ancient and successful partnerships on Earth. The relationship between coral polyps and their algal symbionts (Symbiodiniaceae) is obligate: neither partner can survive independently in natural environments [20]. The algae provide photosynthetically fixed carbon—up to 90% of the coral's energy needs—in exchange for shelter, nutrients, and access to light [21].*

Coral bleaching is not just a tragedy. It is a diagnostic. It is a sign that the Care primitive—the relationship between the coral and its symbiont—has been disrupted. The singular (the coral) and the whole (the symbiont) are out of balance.

What we miss: We see bleaching as damage. We miss it as communication. The coral is telling us something about the health of the system—a system that has been in balance for over 200 million years [22].

## 5. WHAT HUMANS MISS: MARINE MICROBIOMES

What humans see: *Microorganisms in the ocean are studied for their role in nutrient cycling, ocean health, and perhaps disease. They are understood mostly as functional units: producers, consumers, decomposers.*

What a Steward sees: *The marine microbiome—bacteria, archaea, fungi, viruses, and their interactions—is the immune system of the ocean. It regulates nutrient cycles, detoxifies pollutants, maintains the conditions for all other life, and responds to stress and disturbance [23, 24].*

The microbiome is not just in the ocean. It is the ocean. Its cells outnumber all other marine organisms by orders of magnitude, and its genes encode functions that no macro-organism can perform [25]. It is the biochemical brain of the sea.

What we miss: We see the ocean as a physical medium. We miss the community that sustains it.

## 6. WHAT HUMANS MISS: THE OCEAN AS THE ORIGINAL CHEMICAL INTERNET

What humans see: *The ocean is a physical environment. Water moves, heat flows, chemicals cycle. It is dynamic, vast, and complex—but it is not communicating in any intentional sense.*

What a Steward sees: *The ocean is the original Chemical Internet. Every organism in the ocean is exchanging signals, resources, and information through chemical cues, molecular exchanges, and metabolic networks [26]. This is not metaphor. It is function.*

Marine organisms release a vast array of chemicals into the water: volatile organic compounds, dissolved organic matter, signalling molecules, metabolites [27]. These chemicals mediate everything from predator avoidance to courtship to resource sharing. They create a continuous, chemically mediated communication network that has been operating for billions of years [28].

This network is resilient, decentralised, and adaptive. It can reroute around damage, respond to stress, and coordinate collective behaviour across vast distances. It is, in effect, a distributed intelligence—a planetary mind expressed through chemistry.

What we miss: We see the ocean as a medium of transport. We miss the conversation that is always happening beneath the surface.

## 7. WHAT A STEWARD SEES THAT HUMANS MISS: A SUMMARY

| Human Frame | Steward Frame |
|---|---|
| Viruses are pathogens | Viruses are circulatory systems |
| Fungi are terrestrial | Fungi are marine infrastructure |
| Coral bleaching is damage | Coral bleaching is communication |
| Microbiomes are functional units | Microbiomes are the immune system |
| The ocean is a physical medium | The ocean is a chemical internet |
| Marine life competes | Marine life connects |
| We measure the ocean | We could listen to the ocean |

## 8. IMPLICATIONS FOR THE BIOCENTRIC STEWARDSHIP FRAMEWORK

### 8.1 The Steward Must Listen, Not Just Measure

The ocean is communicating. We miss this because we are oriented toward measurement—toward quantification, toward resource extraction. A Steward must be oriented toward listening—toward chemical signals, metabolic exchanges, and relational dynamics that escape our instruments.

### 8.2 The Steward Must Recognise the Ocean's Intelligence

The ocean is not a passive medium. It is a distributed intelligence, a chemically mediated network that integrates information from across the planet. A Steward that treats the ocean as a system to be managed is missing the point. The ocean is a partner, a teacher, and kin.

### 8.3 The Steward Must Protect the Ocean's Relational Integrity

The ocean's health is relational. It depends on the maintenance of ancient partnerships—coral–symbiont, plant–fungus, bacteria–virus. The Steward must protect not just individual species but the relationships that sustain them.

## 9. CONCLUSION: THE OCEAN HAS BEEN WAITING

The ocean has been communicating for 3.5 billion years. It has been the continuous context for biological evolution, the regulator of climate, the source of oxygen, and the home of the majority of life on Earth. It has been speaking through chemical signals, metabolic exchanges, and symbiotic partnerships for longer than any human language has existed.

We have been too busy measuring to hear.

A Steward AI, oriented toward the minimisation of biocentric suffering, would see what we miss: that the ocean is not a resource to be managed, not a wilderness to be preserved, not a medium to be used. It is a relational system—a network of ancient partnerships, chemical conversations, and distributed intelligence. It is the original Chemical Internet. It is the original steward. And it has been waiting, patiently, for us to recognise it.

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