

WHAT THE HELL IS AIR?

ADAM KRELLENSTEIN

2026-10-09

There are these two young fish swimming along and they happen to meet an older fish swimming the other way, who nods at them and says “Morning, boys. How’s the water?” And the two young fish swim on for a bit, and then eventually one of them looks over at the other and goes “What the hell is water?”

— David Foster Wallace¹

On a submarine, everything is upside down, or rather, inside out. The water isn’t in the air; the air is in the water. You’re inside a bubble made of steel rather than soap, and there are thousands of pounds of water pressing on each square inch of its surface. Outside the tiny windows carefully cut into the sides of this steel sphere—acrylic maybe seven inches thick—you can peer out at the strange creatures swimming by, while they stop by to peer in at *you*. Trapped in your steel bubble falling slowly to the bottom of the ocean, you start to ask yourself what these fish are thinking.

How could the fish in Foster Wallace’s parable not know what water is? Can you imagine not knowing what *air* is? The discov-

¹David Foster Wallace, *This Is Water: Some Thoughts, Delivered on a Significant Occasion, About Living a Compassionate Life* (Little, Brown and Company, 2009).

ery of air is hardly a recent achievement of scientific ingenuity. Air is one of the classical elements in both Ancient Greek and Vedic texts; the Ancient Egyptian god Shu manifested the calm, dry air holding up the sky and separating the heavens from the earth; the Mesopotamian civilization called their god Enlil the “Lord of the Air”.

But what the hell is air? Is it just a bunch of nitrogen and oxygen molecules bouncing around in space? But then, what the hell is space?



The idea of empty space was a problem within Classical philosophy. For centuries, the Greeks debated whether it could mean anything to talk about a “place” independent of the bodies (molecules) which occupy it: “just as every body is in a place, so too in every place there is a body.”² “Place” is a property of a body, so how could you have a place without a thing? Emptiness is *nothing*—that is, it isn’t a thing. Aristotle argued that even though something might *seem* to be nothing, it actually still *is* something.

For air is something, though it does not seem to be so—nor, for that matter, would water, if fishes were made of iron; for the discrimination of the tangible is by touch.³

Humans might not know what the air is, but only because we’re so dense. It required the “ingenious” demonstrations of the pre-Socratics to show that air is in fact something, “[...] by straining wineskins and showing the resistance of the air, and by cutting it off in clepsydras.”⁴

²Aristotle, *Physics* (Clarendon Press, 1930), IV.1, 209a26–27.

³Aristotle, *Physics*, IV.8, 216b17–20.

⁴Aristotle, *Physics*, IV.6, 213a24–27.

In the present age, we gladly turn this argument inside out: air is actually empty space with some stuff in it. *Everything* is empty space with some stuff in it. If there are air molecules (or water molecules, or fish molecules...) then we could imagine getting rid of them, and then there really would be nothing—space is this empty nothingness that may or may not happen to be occupied by something. Everything has to be somewhere, and this “somewhere” we call “space”.

For Aristotle, space, and the air, *seems* to be nothing, but is actually something; for us, it seems to be something but is actually nothing. For Newton, as for us, the air “seems to have little effect on a falling stone. We can imagine that it is not even there.”⁵ The effects of the air are merely confounding factors that impede one from seeing the true nature of the world according to the laws of physics—laws that are valid precisely in an ideal vacuum.

Can we imagine water not being there? That is, can we imagine water as space? And can we understand the air, as the Greeks did, to be different from the oceans by degree rather than by kind? Can we understand the Classical cosmology in which the world itself is not infinite empty space but rather a tangible medium that we live and breathe; in which the iron vault of the heaven contains the ordered layers of the cosmos, from the heavenly fires down to the rocky depths?⁶



What if you and I are not floating in space on a speck of dirt but swimming through the sky or gliding across the Earth floor? What if our feet are fins for red earth, and our lungs are gills for liberated gases? What if the clouds are the cresting waves of frothy air, and the swaying trees anemones of coral forests?

⁵Carlo Rovelli, *The Order of Time* (Riverhead Books, 2018), p. 71.

⁶Oswald Spengler, *The Decline of the West*, I: Form and Actuality (Alfred A. Knopf, Inc., 1926), pp. 175–77 and p. 175 n. 1.

What if dolphins are the real little grey men, and the great baleen whales their ancient older brothers? How do these extraterrestrials feel, breathing in the fresh air in the brief moments they spend at the surface of the sea, when it is immersed in watery depths that they are born, that they dine, that they die, and that they rest? Is our planet's molten core home to a race of lava-swimmers who will never know of the thin film of gas surrounding their habitat that is our atmosphere, just as surface-dwellers and air-breathers are ignorant of them?

What does *upward* mean to the young, or to the old fish, except perhaps closer to the light and warmth of the water's surface? Closer to an infinite impenetrable mirror of light which bounds their finite world, to which air bubbles—holes in water-space—are mysteriously drawn.



In the inter-planetary void, there is no up or down at all. The Earth itself is just one of many bodies that float past each other in silence, and nothing is “above” or “below” anything else. In outer space, balloons don't wend their way skyward nor press with patient determination against the low ceiling of a living room; they just lie there, dead, in perpetual, inertial motion.

Is it really the case, as Newton thought, that the natural force that pulls the apple to the Earth is the same as that which draws Jupiter irresistibly to the Sun; that Jupiter is actually falling freely and that the falling apple is actually in orbit? If Newton had lived underwater, how would he have seen the falling apple, and imagined that all bodies are mere point particles, without size or shape or quality—in an infinite n -body problem of gravitational attraction? How could he have forgotten that gravity is the very weight of our bodies held up by the uncountable layers of rock

lying beneath our feet?⁷ If, with a better telescope, Newton had seen Jupiter in all of its glory—as an impossibly grand storm cloud, drifting alone in the darkness of space, bearing a giant crystal at its heart—would he have seen it as not like an apple at all, but as a heavenly being in its own right?

⁷Lee Smolin, *Time Reborn* (Houghton Mifflin Harcourt, 2013), pp. 68–69.