

Empty space is full¹

If empty space was really empty it would be empty of energy, but in quantum theory:

“... *space, which has so much energy, is full rather than empty.*” (Bohm, 1980) p242.

In this model, empty space is the same processing power that runs a black hole but running a null cycle, just as a computer in sleep mode reduces its power usage but still actively runs a null cycle many times a second. Likewise, the apparently empty points of space just run a quantum null cycle (Figure 2.7a). A grid that never stops processing implies that empty space is not empty (Cole, 2001), which is illustrated by:

1. *The Casimir effect.* Two uncharged flat plates put very close in a vacuum experience a force pushing them together. Current theory attributes this “vacuum pressure” to zero-point variations in the field between the plates or to virtual particles in the vacuum around the plates pushing in. So the vacuum is not nothing. In this model space is a grid of quantum harmonic oscillators that can exert pressure if the closeness of the plates interferes with their oscillations to give the observed force.
2. *Vacuum energy.* What physicists call the energy of the vacuum arises in quantum theory because a point can't have a fixed energy, i.e. exactly zero energy. It can only average zero. A null processing cycle, of equal positive and negative values, likewise *averages* zero, but isn't a constant null value. A space that was truly nothing would not have this property, but null processing does.
3. *The medium of light.* How can light exist as a vibration in a vacuum that is nothing? Space itself as the medium of light can't be nothing. It may look like nothing to us as it isn't matter or energy, but what mediates light can't actually be nothing. Space as null processing lets it *appear* as nothing but still *mediate* light and matter. Empty space is then like a screen that can show images but is currently blank.

This seems to imply an ether, but a physical substance permeating all space would give a standard reference frame to all movement, which the Michelson–Morley experiment denied. Yet Einstein himself concluded that without some sort of ether, relativity was unthinkable:

“...*there is a weighty argument to be adduced in favour of the ether hypothesis.*” (Einstein, 1920).

What is proposed here isn't a physical ether but a non-physical *quantum ether*:

“*The ether, the mythical substance that nineteenth-century scientists believed filled the void, is a reality, according to quantum field theory*” (Watson, 2004) p370.

In quantum realism the ether is a processing quintessence grid and the physical world is its output.

We only call empty space nothing only because it is nothing *to us*, but in this model empty space should be called “the fullness” because it is the Planck program that is the basis of everything we see. A grid network node is like a diamond that perfectly transmits light and matter. When one looks at a glass window one sees the light behind, not the medium transmitting it. One only knows of the glass if it has imperfections, if a frame surrounds it or by touching it. Now imagine space as a perfect transmitter of both light and matter that has no imperfections so it can't be seen, it is all around so it has no frame, and transmits matter too so we can't touch it. Space as a medium fills every direction, so we can't see around it. And if we try to touch it, it just passes on the matter of our bodies as it does light. This grid, *like a network of perfect diamonds*, continuously and flawlessly reflects the images of physical reality within itself.

Bohm, D. (1980). *Wholeness and the Implicate Order*. New York: Routledge and Kegan Paul.

Cole, K. C. (2001). *The hole in the universe*. New York: Harcourt Inc.

Einstein, A. (1920). *Ether and the Theory of Relativity*. University of Leiden. Retrieved from http://www-history.mcs.st-and.ac.uk/Extras/Einstein_ether.html

Watson, A. (2004). *The Quantum Quark*. Cambridge: Cambridge University Press.

¹ This is section 2.5.5 from Chapter 2 [Simulating Space and Time](#), of the forthcoming book *Quantum Realism* by Brian Whitworth. The link gives a free early access to the whole chapter. This work is ©Brian Whitworth 2014 but shared under a [Creative Commons Attribution-Noncommercial license](#).