Occam's Razor[1]

Occam's razor, not to multiply causes unnecessarily, is the pruning hook of science. Without it, dominant theories would just grow more dominant over time. The current dominant theory, physical realism, was simple enough a hundred years ago, but what began with mass and charge now needs isospin, hypercharge, color, chirality, flavor, anti-matter and other esoteric properties to work. The standard model today is an ad-hoc theory of sixty two core particles[2] with dozens of data-derived parameters. If it were a machine, one would have to hand-set over two dozen knobs just right for it to light up. So if the standard model is preferred now, it isn't because of its simplicity.

For all this complexity we might expect completeness, but the standard model can't explain dark energy, gravity, proton stability, dark matter, anti-matter, quark charge, neutrino mass, neutrino spin, family generations, quantum randomness or inflation, none of which are minor issues. In addition, it can't explain dark energy and dark matter, i.e. *most of the universe*. And worse, each time it explains something new, *it grows*, so to explain inflation it will need an inflation field, and to explain neutrino mass will need another 7-8 arbitrary constants:

> "*To accommodate nonzero neutrino masses we must add new particles, with exotic properties, for which there's no other motivation or evidence.*" (Wilczek, 2008) p168.

Like the plant in The Little Shop of Horrors movie, each time the standard model does something, *it gets bigger*.

Wilczek, F. (2008). *The Lightness of Being: Mass, Ether and the Unification of forces*. New York: Basic Books.

[1] This is section 4.5.3 from Chapter 4 The Matter Glitch, of the book Quantum Realism by Brian Whitworth, currently under development. The link gives a free early access to the whole chapter.

[2] Two leptons with three generations plus anti-matter variants is 12. Two quarks with three generations plus anti-matter variants and three colours is 36. Plus one photon, eight gluons, three weak bosons, one graviton and the Higgs is another 14. The total is 62.