14th October 2025

Wonderful

"And I think to myself,
What a wonderful world."

George Douglas and George David Weiss, *What a Wonderful World*

One of astronomy's most-often quoted affirmations, popularized by the astronomer Carl Sagan, is that there are more stars in the universe than grains of sand on all the beaches on Earth. Figuring that out requires imagination – and a fair bit of complicated maths!

It is *really* hard to grasp – which is the point. When you stand on a beach, you see a *lot* of sand. Extrapolating from that to the entire planet multiplies that sum immensely. Yet according to the adage, the number of stars in the cosmos is even larger – truly an unfathomable amount.

The answer to Sagan's theory is, annoyingly, "probably not". It depends on a whole lot of assumptions, some of which are hard to pin down – including a "margin for error", fundamental to calculating huge numbers anyway. Our Milky Way is a large galaxy containing hundreds of billions of stars. We could just multiply that by the number of galaxies in the observable universe. A team of astronomers working on this published its results in 2016 and stated that there are approximately two trillion galaxies in the universe. So we can multiply 200 billion by 2 trillion and Bob's your veritable uncle, right?

Well, maybe …But then I'm told that estimating the number of grains of sand on earth's beaches is even more complicated. *More* complicated? Oh, goodness! My head hurts!

But despite my headache, I'm left with three conclusions:

- There are some things we simply don't know. We can attempt to figure them out, but, in the end, my guess will be no better that yours – or at least the scientists of 2016.
- We live in an amazing, complex and mysterious universe. Hard to figure it all? Of course. But still remarkable? You bet!
- I'll look up at the wonder of a clear, Autumn sky – and be amazed. I'll go down to the beach and run the sand through my fingers – and be amazed. In fact, I'll just be amazed sitting here at my desk "as I think to myself, what a wonderful world! – and say "thank you" to my God.

A prayer for today

Too much in the world for me to figure? Yes, indeed. Too big a God? Not at all!

An original reflection © Tom Gordon