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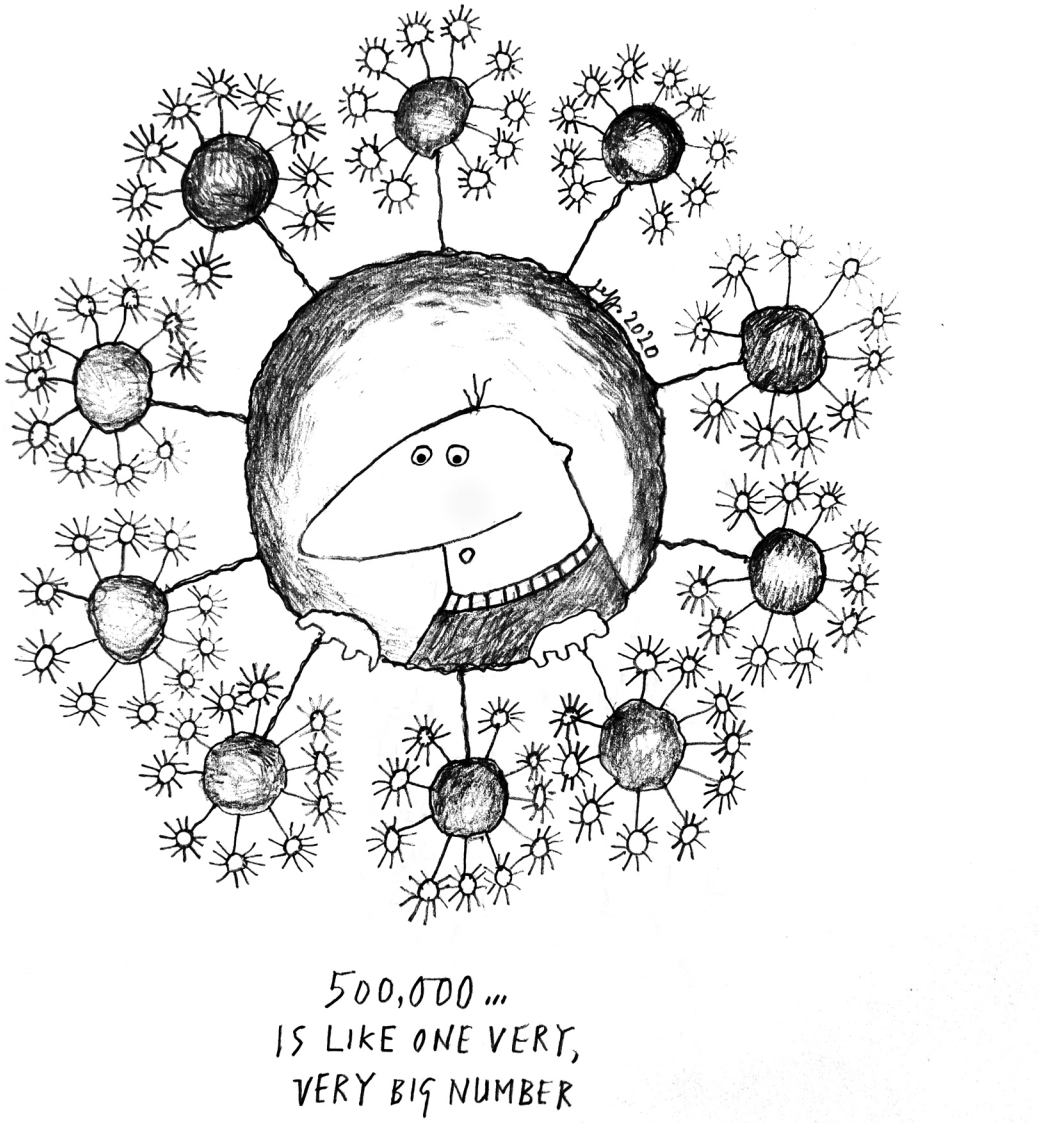
STICKY WICKET

Corona XXVI – three laws

Mole



Original artwork by Pete Jeffs - www.peterjeffsart.com

"'Curiouser and curiouser!' cried Alice (she was so much surprised, that for the moment she quite forgot how to speak good English)." Like Alice, I feel like I'm "opening out like the largest telescope that ever was. Good-bye feet!" I just heard the news: in the past week (one *week*), my country, the one helmed by a Looney-Tunes character (and not Bugs Bunny, who is very smart), has reported 500,000 new cases of the Terrible Pandemic (or TP, as faithful readers know).

Here's the thing about big numbers: we can't quite grasp them. A million doesn't seem so huge, when we talk about billions and trillions and *gazillions*. And half a million? Well, it's only half. But sometimes a little perspective is in order. If I write each number as a 'dot', as in…, it would require a book of roughly 300 pages to contain them. Or if I counted to 500,000 as quickly as I can (about five per second), I would not reach the end for *more than twenty-seven hours.* Do the math. Half a million is a *very* big number. And we got there in only one week.

Meanwhile, we were just told that we are "seeing the light at the end of the tunnel," on this awful thing. This is a strange choice of analogy. I recall that this was said in 1967, by General William Westmoreland, the senior American military commander in Vietnam, describing the pending end of that war; the next year was the Tet Offensive, Lyndon Johnson did not run for re-election, and General Westmoreland was fired. So, yes, we are seeing the light at the end of the tunnel, but it is an oncoming train.

It isn't only my own country, of course. The TP is surging in Europe and South America as well.

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What, exactly, is going on? A couple of things, of course. One is the colder weather, where people are gathering indoors and not taking suitable precautions. But another relates to human nature; when given an apparent choice between what people would *like* to believe and what they would prefer *not* to believe, most will opt for the former. And people are loudly being given the choice to believe that scientists are over-hyping the dangers, and that really, it's not a big deal.

Which brings me to Isaac Asimov, the science fiction writer and all-around Renaissance man. He wrote or edited over 500 books, including works on the Greeks, Romans, Egyptians and Near East; a guide to Shakespeare (which is excellent); heavily annotated editions of *Don Juan*, *Gulliver's Travels*, *Paradise Lost* and the works of Gilbert and Sullivan; and guides to the Bible (Old and New Testaments). As a child, I inhaled two of his books on chemistry, neither of which seem to appear in bibliographies of his work that I can find (I *think* these were *C is for Carbon* and *N is for Nitrogen*, but it was a long time ago). But that isn't what made me think of him. It was Asimov's Corollary to Clarke's Law.

It goes like this: "When the lay public rallies round an idea that is denounced by distinguished but elderly scientists, and supports that idea with great fervor and emotion – the distinguished but elderly scientists are then, after all, probably right."

The Clarke he was referring to is Arthur C. Clarke. I'll get to him in a bit. Asimov wrote his corollary in 1977, in *The Magazine of Fantasy and Science Fiction* (he was first and foremost a celebrated science fiction author, and I was a huge fan). And since then, we have seen a great many examples of the public at large supporting such denounced ideas "with great fervor and emotion." Vaccines cause autism, cell phones (and apparently windmills) cause cancer, humans are not responsible for global warming (or it doesn't even exist), the decline of pirates is responsible for the decline of magic, the virus is going away. Okay, that next to last one doesn't count (it is the plotline of a book by Tim Powers, *On Stranger Tides*, which was the basis for one of the Pirates of the Caribbean movies – the fourth one I think – but the book was much better. Actually, most of his books are great. But I digress. "Really, Mole?" Yeh, yeh, yeh. Where was I?). We seem to be in an era in which belief in science is a life choice, like rock versus jazz. Believe what you want to believe, it is up to you.

Until, of course, what you believe threatens other people's lives. If you choose to stare at a cell phone while crossing a street, you risk your own life (mostly); if you choose to drive while texting, you risk the lives of others. You shouldn't get to make that second choice. Choosing not to take precautions during the TP falls into the latter category, and most distinguished (and really, virtually all, "distinguished" or not) scientists are right about disagreeing with that choice (the "elderly" part isn't really necessary here, but then again, Asimov was writing in the '70s). But we are regularly countered by Upton Sinclair's maxim that, "It is difficult to get a man to understand something, when his salary depends on his not understanding it." (Here, the gender-insensitive use of "man" might be appropriate, as women do not seem to be quite as intransigent, but I might not be seeing things that I would prefer not to see.)

Okay, I know you know all this stuff (the last bit, not necessarily the part about Asimov writing the voluminous *Asimov's Annotated Gilbert and Sullivan*). But this all leads us to Arthur C. Clarke and his three laws.

If you don't know, Arthur C. Clarke was another iconic sci-fi author, who among his many books and stories brought us the one that Stanley Kubrick re-imagined as *2001: A Space Odyssey*. Over the course of ten years (1963–1973) Clarke developed his 'laws' in various pieces he published, ultimately settling on three (he wrote, "As three laws were good enough for Newton, I have modestly decided to stop there").

His third law was this (I am not going to take them in order, you'll see why): "Any sufficiently advanced technology is indistinguishable from magic." It is probably his most famous, and is often quoted (and misquoted) in various contexts. And it is illuminating. It is also true. For the vast majority of people (most of the exceptions include many of you), it is enough that something works to use it; knowing how it works is irrelevant. The fact that your cell phone is a highly sophisticated device that integrates tremendous computational power with a network of telecommunication systems is irrelevant to using it to tweet or retweet a thought; it might as well work by magic. And if you don't think it *is* magic, why does 'power it off and then turn it back on' generally solve any problems you're having? (Don't flame me – I suspect some of you know, but I'm making a point here.) If cell phones (and televisions, and laptops, and microwave ovens) are magic, surely there is a 'spell' to make this virus go away? Scientists tell me to wear a mask and socially distance, and that this can help, but others tell me that the magic is being unleashed as we speak, so I don't really need to do what the scientists say (since we are just magicians, and magicians use tricks at birthday parties for kids, so what do we know anyway?).

Clarke's first law was this: "When a distinguished but elderly scientist states that something is possible, he is almost certainly right. When he states that something is impossible, he is very probably wrong." Okay, the elderly thing again, but still, you get the point. We do know that it is possible to get the TP under control, and again, many smart people (not only distinguished, elderly scientists, but them too) assert this. And the second part is important for scientists to keep in mind – we have seen many "impossible" things happen since Clarke wrote this more than fifty years ago. But this is all very confusing to the public; as is all scientific controversy. We understand that science *needs* controversy, but those who are following the science (and many, many people are closely following science these days) find it very unsettling when we disagree. We are not doing enough to explain things we disagree about.

All of which makes Clarke's second law important. "The only way of discovering the limits of the possible is to venture a little way past them into the impossible." Of course, this (as well as the other two laws) goes way beyond finding a way through the TP. It is something that makes great science, well, great. It takes us from "nice work" to "amazing." I have scoured the unpublished literature on the TP for hints of any ventures past the "limits of the possible," and I haven't found them (undoubtedly my fault), but I hope they are out there.

Clarke produced much more than his three laws, and much of it is worth reading. But right now, in the wake of our big numbers, I'm reminded of one of his short stories, *The Nine Billion Names of God* (spoiler alert – I'm going to tell the story; stop here if you want to read it yourself). It is about two technicians who are hired by a Tibetan lamasery to install a computer to help them (the lamas) complete a task they undertook many centuries ago. The monks had devised an alphabet that would enable them to list all of the names of God, estimated to be about nine times ten to the ninth, and they believed that following the completion of their task, God would end the universe (this being the reason for the universe's existence). The computer would allow them to do so in months rather than the 15,000 additional years it was going to take by more traditional means. The technicians stall, not wanting to face the monks' ire when nothing happened upon completion, and head to their

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awaiting plane shortly ahead of that event. But as they approach the airfield, they look up, and see that "overhead, without any fuss, the stars were going out."

I think we need more than "possible" if we don't want the stars to go out. I think we need to test its limits and venture into the seemingly impossible. We can do that. But it is going to take all of us to loudly (and to proudly) take up the banner of science and make ourselves heard over the din of misinformation. This is not going to go away, "like a miracle." We have to do magic. And I know we can.