



Illustration by Jim M'Guinness

The observable universe

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I've been listening while I've been driving, and I've lost the thread. Frequently he mumbles when he talks. His volume knob is wiggly. He's not a big talker, particularly with me. I'm enjoying him opening up. He's talking about a topic he's comfortable with so his speech is more confident and fluid than normal. Despite this confidence, he has sporadic enough mumbles and pitch drops that, coupled with afternoon traffic and his tendency not to look at people when he talks to them, I'm a bit lost.

He was talking about the ramifications of an infinite universe, comparing it to a potential finite universe. He was talking about Michio Kaku, Carl Sagan, and Neal de-Grasse Tyson. He unabashedly admires them, often quoting them directly. He uses terms like "observable universe," "dark matter distribution," and "galactic clusters." He loves working through grand ideas. I really like it when he talks about grand ideas as it's one of the few times he really seems fully engaged and confident.

The daily reality, the mundane, is more problematic for him. Like a lot of double physician parents, we haven't done a great job of building a routine around the mundane. Even small homework assignments are an all-evening affair. I sympathize. Long ago, I went into transplant care because I was interested in immunological tolerance—one of the Big Questions. Now, I spend my time working out the Centers for Medicare & Medicaid Services' rules for billing of transplant immunosuppression in the postoperative

period, or how to tie in the outreach efforts of our transplant and dialysis access centers.

Careers—jobs—are like that. The mundane is important. The mundane is vital; it gets things done. The mundane pays the bills, puts stamps on the envelopes, and remembers to mail them. The mundane prepares for the future and takes care of today. Building a routine around the mundane was particularly important for him, but we never really did that consistently. We can't be the only physician-parents who have failed at this parenting task.

Now, he's talking about what happens if the universe continually expands without limit, the Heat Death of the Universe, which is what happens when there is very little energy gradient left in the universe and energy and matter can no longer productively interact. He seems to have a good grasp of the concepts behind thermodynamics and scale. He's hoping the universe has enough mass, and therefore gravity, to contract at some point, and not continually expand. He's talking about whether or not that would result in a Big Crunch, or repeated cycles of expansion and contraction.

He understands that this question doesn't effectively impact his life, but he sees it as a vital question that requires an eventual answer. I make a joke about a Big Crunch really being a Gnab Gib, but he doesn't catch the Douglas Adams reference. He's not a big fan of fiction, even if it's science fiction. He likes the sciences, particularly physics. His public school special education program has been encouraging him to follow his dream of becoming an Air Force pilot. But, other than Alexander the Great, all of his heroes are physicists, rather than generals or soldiers.

He can't lie well, and he assumes others can't either. He doesn't catch obvious lies, particularly if the teller seems sincere. I dread the recruiter who promises him a shot at a cockpit, ignoring the fact that the military doesn't view the frequent need for fidgets, in his case, running back and forth in a certain pattern if he has the space to do it, or jerking his head a certain way repeatedly if he doesn't. That's not the sort of thing that is "officer material," let alone behavior that is safe enough for flight school. Executive function probably means something much different to the military than it does to families like mine. In addition, formalized social interactions particularly baffle him. He doesn't see why social interactions should be regimented, and even formal table manners are suspect. What would a hierarchical social group like the military—or medicine—do with him?

These cosmological topics seem big for ninth grade science. I ask him if he's been learning about the thermodynamics of the universe in school. He ignores the question. When I ask him again, he says, "No." I ask him if he knows about all the math behind these topics. He turns it around and asks me what I think of String Theory. I tell him I don't have an opinion. He's somewhat incredulous that I don't have an opinion on something so important to the universe. I say that sort of thing doesn't usually come up for me.

He looks at me quizzically, a rare direct gaze at my face expresses his disbelief that something so fundamental to the universe wouldn't also be fundamental to me. I go on to tell him I don't have an opinion because I don't understand the math needed to truly understand the theory. He stops talking somewhat abruptly, looks out the passenger-side window, and fiddles with a binder clip. He doesn't like talking about math, particularly with me. Talking about math hints at the uncomfortable nightly subject of unfinished homework.

We're on the way home, so I go for broke and try to tie these big physics ideas in with mundane math homework. He's not game for that. He's always struggled to remember to ask others about their day, but after a long pause, he takes the opportunity to change the subject by asking me what I did at work today. In a lot of ways, it's a small victory, as he struggles with the Theory of Mind. I wish I could truly get him to embrace the practical and concrete aspects of the world we have to function in, and the mundane of work.

I can't say I did anything particularly cool today. I didn't do a transplant today, or any other surgery. I didn't do anything with my research projects. Today was an office day.

I spent the day catching up on electronic medical record notes and queries, working through some call coverage logistics, signing home care attestation faxes that I had already signed electronically weeks ago but are labeled "STAT/ASAP" for no clear reason, completing more mandatory online compliance training, trying to contact his lead teacher about his upcoming individual education plan (IEP) meeting, and working through some system-specific protocols for dialysis access patients.

Today was filled with a million small things that were all declared time-sensitive and mandatory by someone without regard to the rest of the million small things with similar declarations, let alone the one or two truly important tasks that were actually vital. Each small task was carefully designed to just take a moment. And, since zero multiplied by any number of these little things is still zero, they should take no time at all. None of the tasks were hard to do, but they took all day and I missed the return call from his teacher while I was on the phone with a different task. In addition to helping people, I went into this field to address big questions and fix big problems. That didn't happen today—perhaps tomorrow.

I ask him if he talked to his teacher today, but his response tells me that talking about school is not the best way to rekindle the conversation. I ask him about what's outside the observable universe. He looks at me suspiciously, but takes the bait. He slowly warms up, talking of how the speed of light and the direction our galaxy is traveling are the determinants of which parts of the universe we can observe.

While he talks, I start thinking about the upcoming IEP meeting and I lose the thread again. He draws my attention back by somewhat awkwardly interrupting himself mid-sentence to ask if I thought it was possible to travel faster than the speed of light to get to the parts of the universe that aren't observable. He waits for an answer, which makes me smile. Waiting for a reply is not something he can reliably do and it feels like progress. I tell him I hope so. He responds that he hopes so too. He says he thinks that part of the universe would be similar to ours, but it might not be if the Big Bang was asymmetrical for some reason.

We're about five minutes from home and his homework awaits. Perhaps he will take on the mundane today—or at least someday. We have about five more minutes to chat about grand ideas.

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