

THE ANTIGRAVITY EFFECT

GWENDOLEN (*glibly*). Ah! that is clearly a metaphysical speculation, and like most metaphysical speculations has very little reference at all to the actual facts of real life as we know them.

Oscar Wilde (1895)

In 1917, [Einstein] introduced what he called the cosmological constant as a repulsive anti-gravity term into the field equation.

Charles Bennett (2005)

I think she's given up on looking through my notes. It's fine by me. This will cut the worry—not that I worry—about her seeing something that she's not supposed to see. But it also cuts the other way: I get sloppy with the markup and so that's another worry. Frank of course is easy: He sees only what I show him. Sadly, what he sees is not the same as what he gets. But I'm hanging in. Hopefully for longer than the sitcom show.

It should be clear to him—if anything is ever clear to him—that when Einstein coins his constant he starts something that no one can stop. Its purpose is to make a problem go away. A simple concept really: Can't have the universe collapse in a *Big Crunch*. For a throwaway idea it does very well. It fends off crunches for ten billion years or more. In fact, as Hubble tells the world, it keeps expansion going to this day. At least, it keeps it going if it *is* what keeps it going. That's a big *if* in my book. For a while the mainstream view is that it should be zero. In this view the universe expands because . . . well, because it *is* expanding. Which says no more than that it's always been that way. But then, he will soon find it hasn't!

Space expanding is a meal-sized mouthful for anyone to swallow. It's heady stuff for an ex-LAPD cop. I can see he will have problems with it before we are done. So I try to feed it to him in small bites. But today he walks in talking about supernova studies—the ones I *didn't* plan to show him; not yet. Somehow he's found them on the Web. He's not the only one who finds them baffling. They say that gravity's *not* slowing the expansion. That's not the half of it. They say some time ago it started speeding up! Whatever's driving it has put its foot down on the gas.

So now he's like: Hubble's constant isn't constant? What's going on? Well, how should I know? I just move the bits and bytes. He's the one who's being paid to figure this stuff out. Not wanting to be critical—he's okay within his limits—it seems that there are three kinds of people: Those who are *from* somewhere, those who come *to* somewhere, and those who never go far from their village. I'm a

from. He is a villager. He has trouble picturing the continent—forget the cosmos. What *is* she thinking? Even I can see that he's a problem. Not because he won't find anything—although he won't. He isn't credible; one look at him will tell the world this show is phony. If, that is, it gives a damn.

Anyway, what it comes down to now, the physicists are saying, is that Einstein's constant isn't zero. It's for real. It's taken over and it's hurling everything into oblivion. They are not kidding. So, Houston, we have a problem. My problem is he's having problems with this antigravity idea. If someone gave him 25 IQ points and an Energizer battery he'd still be having problems. I haven't mentioned the worst problem. It's the timing. The foot on the accelerator's new. Well, more or less. It begins about six billion years ago. Which takes us to the same old question: Why?

If I had to tell him I would say it is a bit like this: He is sitting on the freeway in his car. A truck rear-ends him. Instantly he's doing 60. He rolls along at 60 for, say, seven miles. Then, coming to his senses, he picks D for drive and hits the gas. Right *there* is the problem. His quest is the Beginning of the universe. He's supposed to show it leads to all the rest. Of course *it* has no car, no gears, no gas. What kind of gadget will he need in his Beginning for its universe to slow for seven billion years and then speed up? Whose foot is on the gas?