

>> An Ever-Reddening Glow
By David Brin

We were tooling along at four nines to c, relative to the Hercules cluster, when our captain came on the intercom to tell us we were being tailed.

The announcement interrupted my afternoon lecture on Basic Implosive Geometrodynamics, as I explained the principles behind the Fulton's star drive to youths who had been children when we boarded, eight subjective years ago.

"In ancient science fiction;" I had just said, "you can read of many fanciful ways to cheat the limit of the speed of light. Some of these seemed theoretically possible, especially when we learned how to make microscopic singularities by borrowing and twisting spacetime; Unfortunately, wormholes have a nasty habit of crushing anything that enters them, down to the size of a Planck unit, and it would take a galaxy-sized mass to 'warp' space over interstellar distances. So we must propel ourselves along through normal space the old-fashioned way, by Newton's law of action and reaction ... albeit in a manner our ancestors would never have, dreamed."

I was about to go on and describe the physics of metric-surfing, when the captain's voice echoed through the ship.

"It appears we are being followed" he announced. "Moreover, the vessel behind us is sending a signal, urging us to cut engines and let them come alongside."

It was a microscopic ship that had been sent flashing to intercept us, massing less than a microgram, pushed by a beam of intense light from a nearby star. The same light (thoroughly red-shifted) was what we had seen reflected in our rear-viewing mirrors, causing us to stop our BHG motors and coast, awaiting rendezvous.

Picture that strange meeting, amid the vast, yawning emptiness between two spiral arms, with all visible stars crammed by the Doppler effect into a narrow, brilliant hoop, blue along its forward rim and deep red in back. The Fulton was like a whale next to a floating wisp of plankton as we matched velocities. Our colony ship, filled with humans and other Earthlings, drifted alongside a gauzy, furled umbrella of ultra-sheer fabric. An umbrella that spoke.

"Thank you for acceding to our request," it said, after our computers established a linguistic link. "I represent the intergalactic Corps of Obligate Pragmatism"

We had never heard of the institution, but the captain replied with aplomb.

"You don't say? And what can we, do for you?"

"You can accommodate us by engaging in a discussion concerning your star-drive."

"Yes? And what about our star drive?"

"It operates by the series-implosion of microm-singularities which you create by borrowing spacetime-metric, using principals of quantum uncertainty. Before this borrowed debit comes due, you allow the singularities to re-collapse behind you. This creates a spacetime ripple, a wake that propels you ahead without any need on your part to expend matter or energy."

I could not have summarized it better to my students.

"Yes?" The Captain asked succinctly. "So?"

"This, drive enables you to travel swiftly, in relativistic terms, from star system to star system. -

"it has proved rather useful. We use it quite extensively."

"Indeed, that is the problem," answered the "py star probe. "I have chased you across vast distances in order to ask you to stop."

No wonder it had used such a strange method to catch up with us! The C.O.P. agent claimed that our BHG drive was immoral, unethical, and dangerous!

"There are alternatives," it stressed. "You can travel as I do, pushed by intense beams cast from your point of origin, Naturally, in that case you would have to discard your corporeal bodies and go about as software entities. I contain about a million such passengers, and will happily make room for your ship's company, if you wish to take up the offer of a free ride."

"No, thank you," the Captain demurred. "We like corporeality, and do not find your means of conveyance desirable or convenient."

"But it is ecologically and cosmologically sound! Your method, to the contrary is polluting and harmful"

This caught our attention. Only folk who have sensitivity to environmental concerns are allowed to colonize, lest we ruin the new planets we take under our care. This is not simply a matter of morality, but of self-interest, since our grandchildren will inherit the worlds we leave them.

Still, the star probe's statement confused us. This time, I replied for the crew.

"Polluting? All we do is implode temporary micro black holes behind us and surf ahead on the resulting recoil of borrowed space-time. What can be polluting about adding a little more space to empty space?"

Consider, - the GOY probe urged. "Each time you do this, you add to the net distance separating your origin from your destination!"

"By a very small fraction," I conceded. "But meanwhile, we experience a powerful pseudo-acceleration, driving us forward nearly to the speed of light"

"That is very convenient for you, but what about the rest of us?"

"The ... rest ... the rest of whom?"

"The rest of the Universe!" the probe insisted, starting to sound petulant. "While you speed ahead, you cause the distance from point A to point B to increase, making it marginally harder for the next voyager to make the same crossing."

I laughed. "Marginally is right! It would take millions of ships ... millions of millions ... to begin to appreciably affect interstellar distances, which are already increasing anyway, due to the cosmological expansion-"

The star-probe cut in.

"And where do you think that expansion comes from?"

I admit that I stared at that moment, speechless, until at last I found my voice with a hoarse croak.

"What ..." I swallowed. "What do you mean by that?"

The C.O.Rs have a mission. They speed around the galaxies - not just this one, but most of those we see in the sky-urging others to practice restraint - Beseeching the shortsighted to think about the future. To refrain from spoiling things for future generations.

They have been at it for a very, very long time.

"You're not having much success, are you?", I asked, after partly recovering from the shock.

"No, we are not," the probe answered, morosely "Every passing eon, the Universe keeps getting larger Stars get farther apart, making all the old means of travel less and less satisfying, and increasing the attraction of wasteful metric-surfing. It is so easy to do. Those who refrain are mostly, older, wiser species. The young seldom listen."

I looked around the communications dome of our fine vessel, thronging with the curious, with our children, spouses and loved ones - the many species of humanity and its friends who make up the vibrant culture of organic beings surging forth across this corner of the Galaxy, The C.O.P was saying that we weren't alone in this vibrant enthusiasm to move, to explore, to travel swiftly and see what there is to see. To trade and share and colonize. 'to go!

In fact, it seemed we were quite typical.

"No," I replied, a little sympathetically this time. "I don't suppose they do.

The morality-probes keep trying to flag us down, using entreaties, arguments and threats to persuade us to stop. But the entreaties don't move us. The arguments don't persuade. And the threats are as empty as the gaps between galaxies.

After many more voyages, I have learned that these frail, gnat-like C.O.Rs are ubiquitous, persistent, and futile. Most ships simply ignore the flickering light in the mirror, dismissing it as just another phenomenon of relativistic space, like the starbow, or the ripples of expanding metric that throb each time we surge ahead on the exuberant wake of collapsing singularities.

I admit that I do see things a little differently, now. The universal expansion, that we had thought due to a "big bang" is, in fact, at least 50% exacerbated by vessels like ours, riding along on waves of pollution, filling space with more space, making things harder for generations to come.

It is hard for the mind to grasp-so many starships. So many that the Universe is changing, every day, year, and eon that we continue to go charging around, caring only about ourselves and our immediate gratification. Once upon a time, when everything was much closer, it might have been possible to make do with other forms of transportation. In those days, beings could have refrained. If they had, we might not need the BUG drive today. If those earlier wastrels had shown some restraint.

On the other hand, I guess people will say the same thing about us in times to come, when stars and galaxies are barely visible to each other, separated

by the vast gulfs that we of this era shortsightedly create.

Alas, it is hard to practice self-control when you are young, and so full of a will to see and do things as fast as possible. Besides, everyone else is doing it. What difference will our measly contribution make to the mighty expansion of the universe? It's not as if we'd help matters much, if we alone stopped.

Anyway, the engines hum so sweetly, it feels good to cruise along at the redline, spearing the starbow, pushing the speed limit all the way, against the wall.

These days we hardly glance in the mirror anymore ... or pause to note the ever-reddening glow.