

## The Propagation of Light in a Vacuum

James Patrick Kelly

### Introduction

"The Propagation of Light in a Vacuum" is probably my favorite James Patrick Kelly story that no one knows about. I was quite thrilled to sell it to Bob Silverberg and Karen Haber back in 1990 for the revival of the Universe series of original anthologies, edited by Terry Carr. Unfortunately, Universe collapsed.

The story is a stylistic experiment: magic realism hitching a ride on a hard science starship. I freely admit to committing a circular plot, playing with punctuation and jumping off the page to throttle the reader. Also, this is the only story of mine to include a recipe.

Disappointed that "The Propagation of Light in a Vacuum" did not immediately find its audience, I took to reading it in public. It proved an interesting piece to perform; audiences seemed to like it. In 1996, I rewrote it as a one act play; it has received several staged readings and will get its first full production in May of 1998.

## The Propagation of Light in a Vacuum

Women have served all these centuries as looking-glasses possessing the magic and delicious power of reflecting the figure of man at twice its natural size.

Virginia Woolf, *A Room of One's Own*

Maybe you think I'm different, but I've got the same problems everyone has. Just because I'm on a starship traveling at the speed of light doesn't mean my feelings can't be hurt. I still get hungry. Bored. I just like any other man. When a bell rings, I jump. I don't much like uncertainty and I have to clip my toenails every so often. I want my life to have a purpose.

(You're nattering, dear. This is about us, so go ahead and tell them.)

Ah.

Yes.

My imaginary wife and I are much happier these days, thank you. We've come through some tough times and we're still together. So far. But we still have a way to go. Exactly how long, I'm not sure. When you attempt to exceed 299,792.46 kilometers per second, here and there are only probabilities. Relative to you, I am no place. I do not exist.

I used to think that she was a hallucination, my sweet imaginary wife. Proof that I'd gone mad. Not any more. If I ask her whether she exists, she just laughs. I like this about her. We often laugh together. She keeps changing

though; I'm afraid she aspires to reality. I had a real wife once but it wasn't the same.

(You're an artist. She didn't understand you.)

I don't want to paint too rosy a picture. Like any couple, we have our ups and downs. Then again, down and up are relative terms which vary with the inertial frame of the observer. Einstein warned that  $c$  is the ultimate limit within spacetime. Exceed it and you pass out of the universe of logic. Causality loops around you like a boa; the math is beyond me. Of course, logic and causality are hardwired into our brains. It makes for some awkward moments.

I was a hero when I began this grand voyage of discovery. Like Columbus. In his time, the world was flat. People believed that if you sailed too far in any one direction, you would fall off the planet. My imaginary wife informs me that we have sailed off the edge of reality. Perhaps that explains our predicament.

(Predicament? Opportunity. Nobody has ever had a chance to invent themselves like this.)

The problem was that the theoretical framework supporting faster-than-light travel stopped at  $c$ . No one really knew what was beyond the absolute. Oh, there was extensive testing before any humans were put at risk. The robots, unburdened by imagination, functioned exactly as expected. The design team accelerated an entire menagerie: spiders and rats and pigs and chimps. They all came back; the ones that weren't immediately dissected lived long and uneventful lives. So I suppose there's hope.

(What he hasn't told you yet is that it wasn't just him. He's embarrassed, but it's not his fault. There were fifty-one people on this ship. Crew and colonists. His real wife was one of them. Her name was Varina .)

I remember once Varina made a joke about it. She said that science ended at c.

The other side was fiction. It's not so funny anymore.

I don't know what happened to the others. All I can say is that when the ship warped, I blacked out. I have my theories. Perhaps there was a malfunction. I could be dead and this is hell. Maybe the others had reasons for stranding me here-- maybe they had no choice. When I woke up there was no one else but her and she's imaginary.

I have no idea how to save myself, or, indeed, if I even need saving. My grasp of the technology that surrounds me is uncertain at best. Do any of you understand the dynamics of a particle with a mass of  $10^{19}$  GeV? You see, most of us were specialists. Aside from the crew, there were programmers, biologists, engineers, doctors, geologists, builders. Only the least important jobs went to people with multiple skills. I'm down on the organization chart as Nutrition Stylist, but I'm also in a box labeled Mission Artist. Corporations pledged money, school children sold candles and the arts lobby worked very hard to create a place for me on the roster. Of course, it didn't hurt my cause to be married to a civil engineer. My speciality has always been dabbling. I've spent a lot of time in front of image processors. It says on my resume that I throw pots but I haven't spun a wheel for years and who knows if there'll be clay where I'm going. I write my own songs for the voice synthesizer and can even pluck a few chords on the guitar. I do some folk dancing and tell stories and can juggle four balls at once. And now I style food. After I got into the starship program they sent me on a world tour of cooking schools. Budapest, Delhi, Paris -- more dabbling. You know, I used to hate to cook; now dinner is all that matters.

What's the point to doing art when you have no audience?

(You've uploaded some beautiful vids . Your stills were hanging in galleries.)

They were on late at night on back channels. All right, I'm better than some, but not as good as others. A journeyman. Yes, that sums up my condition nicely. My condition. Should I describe a typical day? But then the notion of day is another fiction. The laws of science do not distinguish between past and future. Here the arrow of time spins at random, as in a child's game. I'm never sure when I fall asleep whether I'm going to wake up tomorrow or yesterday. Fortunately, the days are very similar. For purposes of sanity, I try to keep them that way. Artists make patterns; we impose order even where there is none. Maybe that's why I'm still here and the others are gone.

Today, then. She snuggles next to me as I wake up. Her warm breasts nudge my back. Her breath tickles my neck. I roll over and we kiss. Her hair is the color of newly-fired terra cotta. When she opens her eyes, they're green. She has wide shoulders and I can see unexpected muscle beneath her pale skin. She can appear to be any woman I can imagine. Today she is large. Magnificent. There's a kind of music to her voice. When she talks, I hear bells. She's not perfect, though: the skin under her jaw is loose, there's a mole on her temple. Clever touches. Another time she may be petite. She could have big hips. Long fingers. I think the reason she keeps changing is that, like so many women, she has a poor body image. She's far too critical of her appearance. But no matter how she looks she can't help but become herself.

We make love. That shouldn't surprise you. Sex mostly happens between the ears, not between the thighs. Sometimes I lose myself and skip ahead in time to find I'm caressing a different body. But today she remains the same; it's what we both want. I take pleasure from the way her lips part, the bloom on her cheeks. At the end a moan catches for a moment in her throat, and then she draws breath

again.

(And you?)

I can't help but love her. That's the biggest problem with our marriage. I love her even though she wants to separate from me -- don't deny it! Go her own way.

I hold her until the blood stops pounding; she plays with the hair on my chest.

Finally I kiss her and get up. I'm hungry. There's french toast and orange juice. As always. Just once I'd like to serve her breakfast in bed but she doesn't eat. The high price of being imaginary. She watches, though.

Afterwards we visit the fix lounge. She chooses Trunk Bay on St. John: bone white Caribbean beach, palms tilting toward water the color of the sky. This is part of our imaginary past. Our honeymoon, I suppose. She keeps the temperature set at 29° Celsius. Invisible fans waft a breeze laden with her own homemade brew of coconut oil, female pheromones and brine. She's convinced that the way to a man's heart is through his nose. The floor looks just like sand except it doesn't sift between the toes, more's the pity. We spread blankets and soak up UV in the nude. Sometimes I wish she'd program the surround to show other people on the beach, but we're alone. Always alone.

(Other women kept staring at you. You were so handsome and everyone knew you'd be famous someday. I didn't like the way you looked back. I wanted you to see me. Only me.)

I never stay in the fix lounge very long. I want to relax but I can't. I hear things, even over the ocean soundtrack. The hull creaks under the stress of whatever is outside. If I rest my head on the floor, I can feel the vibration of the ship in my molars. My imaginary wife tries to make conversation, divert me with her memories of what might have been. But somewhere on board a thermostat clicks and a vent opens. What machine makes a sound like a cough? I have to get

up and see. Either the ship or my imagination is haunted. I miss Varina .

(I can be her for you. Anyone you want. Where are you going? Wait. At least get dressed first.)

Here's a theory. Say you're travelling at 299,792.46 kilometers per second and for some unknown reason you want to go faster. You would then exceed the speed of light propagated in a vacuum. But what if spacetime does not yield up its absolute so easily? You attempt to accelerate beyond  $c$  to, say,  $c+v$ , the smallest, the most infinitesimal increment in velocity you can imagine. However, there's still a little infinity lurking between  $c$  and  $c+v$ , no matter what value you assign to  $v$ . What if it takes forever to achieve  $c+v$ ? What if the speed of light is not a limit, only a barrier? You could spend all time crossing it -- probability's revenge.

(But that doesn't explain where everyone went.)

Maybe they realized what was happening. That we were trapped. So they step into the airlock, cycle through and leap into eternity.

(All of them? What about you?)

I see them going one by one at first. Later in groups. They ask me; I can't bring myself to make the leap. Because I have you. Obviously. I'm traumatized; I blank out. And I only am escaped alone to tell thee.

(Very dramatic; it fits you. You've always had a bigger ego than you cared to admit. But please don't go in there. It always upsets you.)

A typical day, my sweet. This is the control room of a starship . The bridge between reason and the irrational. Not what you expected? Every surface here is a screen, just like in the *fx* . I can black the entire room out or put on a light show of instrumentation. From here I can access the computer, view just about

any corner of the ship, cook pizza for fifty-one, fiddle with the internal gravity, even vacuum-flush the toilets. If there was a god in this machine, that couch would be his throne. Once I cranked up the humidity until the air was just about saturated and then dropped the temperature twenty degrees in two minutes. My own rainstorm. A one-time miracle, though. Hell of a mess.

Unfortunately, while I can examine the inside of the ship in almost microscopic detail, I have no idea what's outside. Try the sensors and what do we get? Blank screen. Here's external telemetry ... every readout is flat. It's maddening. I actually used to punch the walls after I brought this display mode up. Wham, just like that. The cursors jump into the red for a second before dropping back. Most of the time I don't even know what's being measured; all I want is a reaction. It must have shaken them, the scientists and engineers and programmers. No data across eternity -- nothing but the uneasy play of imagination. Well, it took a while but I'm resigned to blindness now. Whatever's out there can't be observed from in here, at least so long as reason holds its tenuous way. It has to do with the Uncertainty Principle, I think. The only way to truly understand is to participate in the phenomenon, become one with the event itself. Through the airlock, what do you say? The leap of faith.

(There's no way of knowing.)

No, I suppose not. Sometimes I wish the screens would show Varina's ghost or burning babies on meat hooks or Jesus Christ transfigured. I could accept any of those. Because I don't believe that there's nothing out there. Maybe the instruments aren't sensitive enough to register the absolute, but that doesn't mean it doesn't exist. We have to find a way to go beyond our limitations.

But first, let's eat.

(Will you put some clothes on? You shouldn't be walking around naked. They'll



get the wrong impression.)

Yes, my sweet. See how she clings to convention? But I love her anyway. We can stop by the room on the way to the galley. I do feel a chill.

Dinner is always the highlight. Stimulate the senses with food stylings and the mind with sharp wit. I allow myself two meals a day, breakfast and dinner. I have to watch my weight; I really don't get enough exercise prowling around the ship. Since she doesn't eat, my imaginary wife usually tells funny stories during dinner. My favorite is the one about the whitewater canoeing course we took. She laughs about it now, but apparently we were almost drowned. What a disaster! And then there was the time she played that joke on her sister with the wasps' nest.

(I don't think she ever forgave me for that one.)

I'm going to make my specialty again. I hope you like meatloaf. I can't remember, have I shown you my room yet? It's not as big as the project manager's, not as tech as the captain's quarters. I suppose I could move, but this place has sentimental value. Besides, maybe they'll come back someday; I wouldn't want you to think I doubted them. I still keep Varina's clothes in the locker. And this is a picture of us on our fifth anniversary. Let's see, I was thirty-four then, which would make her thirty-eight. We married late. And the bed that we never slept in. When I look at it now, I wonder how we both could have fit. We would have been at each other's throats before long; I like to stretch out at night. All right. Shirt, pants, I'm even wearing slippers.

Satisfied?

(You look wonderful.)

I'll run ahead and start cooking then. Keep them busy for a few minutes, will

you? I'll see you all in the mess.

(How does he seem to you? I'm worried about him. He's been brittle lately, like a glass angel. Nothing I do makes him happy. Not like before. He was very upset at first, but at least he'd let me comfort him. When he stopped trying to remember what happened, I thought that was progress. He wanted to accept our situation-- make the best of it. But month after month passed and there was no relief. I know that depressed him. And then he lost control of time. He started swinging back and forth, skipping ahead to see if anything had changed, going back to the moment he woke up alone and reliving it all again. I don't know what he needs anymore. I do my best to keep smiling. I tell him how wonderful he is. And it's whatever he wants in bed. Sometimes I worry he takes me for granted. It's not easy for me, either. I have nightmares, you know. About them. Her, especially. The real one. There's a beautiful chef's knife in the galley, twenty centimeters long, high-carbon stainless, forged in Germany. It's his favorite. Uses it for everything; he probably has it in his hand right now. In the nightmare I'm holding his knife, prowling the halls. The handle is blood-hot. When I listen at doors, I hear them breathing. I rub the flat of the blade across my lips and think of her kissing him. They all have reasons for being on board. Important things to accomplish. Why am I here? To chatter, to amuse? Any one of them could tell stories and still do something worth doing. Sleep with him? She did it and had responsibility for water distribution and sewage treatment besides. I think she was cheating on him. I know she took him for granted. It would have killed him to find out; he was in love. In my dream the knife is long and hot. I can hear her breathing. My throat feels thick. That's all.)

Are you still here talking? I swear, there's no keeping you quiet. Come on then,

come on. Dinner is on the table!

Funny that the mess should seem so empty now, because before it wasn't big enough to seat everyone at once. We were supposed to go in shifts. Those little past things are spaetzle. From Switzerland. They're great with butter, or try them with gravy. And here's salad, produce fresh from the tanks. And this is the famous meatloaf, my very own culinary masterpiece. In fact, it's about the only work of art I've created since the ship warped.

(Except for me.)

Would you like the recipe? It's really good eating.

#### Faster-Than-Light Meatloaf

500 grams ground meat

2 grams salt

1 gram pepper

1/2 small onion, chopped (about 50 grams)

50 grams powdered ovoid binder or 1 egg, beaten

30 grams stale bread, crumbled

1/2 green pepper, chopped (about 50 grams)

200 grams creamed corn

Preheat oven to 190° Celsius. Mix all ingredients, holding back half the creamed corn. Form into loaf and bake 50 minutes. Heat extra corn and pour over finished loaf.

Serves two.

You can substitute whole corn if necessary but then you lose the topping.

Creaming the corn is well worth the extra trouble, in my opinion. You know how memories attach themselves to certain aromas? I smell creamed corn and I'm in Grandma's dining room at Thanksgiving and I'm a happy little kid again. I missed creamed corn in my first marriage; Varina used to say it looked like vomit.

Ground meat is, of course, rather hard to come by on this side of c. Luckily, there was an ample supply on board.

After dinner we usually go back to the fx and run simulations; sometimes we put on one of my vids. My imaginary wife enjoys them, or pretends to. Then we go to bed.

(Why don't you show them Mr. Boy? It's so layered. Every time I watch it, I see things I'd missed before.)

Truth to tell, I'm awfully sick of my old stuff, so why don't we just skip to the bells? It's an advantage I have: I don't necessarily have to stick around through the boring parts. From my inertial framework, I can clearly see that sequence is an illusion. At reasonable speeds, time's arrow appears to travel in one direction only, from the past to the future. But I'm moving at an irrational velocity.

So the bells wake me. I thought I knew every noise the ship could make but I've never heard this before. My imaginary wife is confused too. We query the computer from bed. It responds that all internal systems are green; it detects non-usual sounds. The blood stirs within me as I listen to the bells contradict its dry report. I can feel neurons firing in my fingertips; tears burn my eyes.

You don't realize what this means: after all the deadening sameness, a life-giving mystery! I roll out of bed and run naked to the control room.

Nothing here has changed. The external screens are still blank. The instrumentation is conspiring with the computer. I notice that the bells are harder to hear on the bridge. They're coming from elsewhere on the ship. The ringing reminds me of church bells that call the faithful to service.

My imaginary wife wants us at the airlock. You don't have to wait for me, I'll get there as soon as I can.

(It's not my fault. When he imagined me, he did better work than he thought. Exceeded his limitations. He needed more than a mirror, so now I love him for my own reasons. I do love him; you must understand that. It's just that we can't go on like this. He's afraid to change because that might unblock his memory. But he wants me to change -- and I have to remember. It wasn't just him, they did it too one another. The halls reeked of blood. At the end he was able to pull back from the madness. He found a way to survive. I have to do the same.)

What have you told them?

(Listen.)

This is the place, isn't it? The bells are ringing just outside the hull.

(Do you understand what they're saying? They're calling me to become real. I can't stay anymore. I've reached my destination.)

I wonder if this is how the others went. Varina. They answered the call of the bells. The bells. The bells are very loud here. You can't ignore them.

All right, I'll admit I'm scared. But when she turns her face up toward me, it doesn't matter. I love her. I don't want to lose her too.

(Will you come with me? I can't live without you.)

The ship seems different; the computer must have missed something. I'm sure of it. I can feel a stillness in the deck beneath my bare feet. The vibrations have stopped. I'm shivering, as if the cold of space has breached the seals of the airlock.

(It's not space out there. It's nothing you can imagine. That's why we have to go. To see for ourselves. It's why they went. Maybe they're waiting out there for us.)

Varina, waiting. How will I explain my imaginary wife to her? What will they think of one another? It's impossible.

(Everything here is impossible and yet you've created it. Make me another, a better world. I believe in your abilities.)

She reaches up and cycles open the exterior hatch. Now there's only the interior hatch left. A single barrier between me and the absolute. The bells are deafening. The ship's hull rings like a bell.

(You can do whatever you set your mind to.)

I watch my finger extend toward a flashing blue button. I no longer control my actions. Her trust sings down my arm. My muscles twitch with her faith in me.

But you, you've already decided what's beyond the hatch. Majority opinion wants me to pull back. Don't touch that button, you say, don't kill yourself. But what if you're wrong? You're seeing this from a different point of view; you're still locked in the logic of spacetime. String theory tells us that the dimension of the observer is all important. How can you possibly hope to know what is happening outside a starship that has exceeded the speed of light? You can't hear these incredible bells. And despite everything I've said, you still don't accept my imaginary wife. Has anyone ever believed in you as much as she believes in me?

When I press the button, the hatch irises open. My imaginary wife and I go together.

At first, I don't understand what's happening. I'm sprawled flat on the floor of my room and I'm disoriented, groggy. I must've fallen out of bed. I can feel the ship's vibration in my cheekbone. It's as if the decks were ringing, except there's no sound. Something's wrong.

"Varina?"

She's not where she's supposed to be. My face is stiff, as if I've been crying.

I notice the scratches on my wrist. Four sticky scabs that look like bad body makeup. Blood hammers in my head as I pull myself back onto the bed. I toggle the intercom. Silence.

The rooms on either side are empty. No one in the library or fix. The control room: abandoned. There's an odd animal stink in the air. I race through the ship, bouncing off walls like a madman.

(You're not crazy.)

I find her standing beside the airlock. I don't recognize her at first. She's pale. Dazed. Her chin trembles and she comes into my arms.

(Please, please tell me you're not crazy.)

I always hated it when Varina cried. She used her tears as a lever to move me. I wouldn't be here if she hadn't sobbed. Now I realize that if I don't help this one, she'll fall apart too.

"Who are you?"

She pulls away from me and sniffs. I've said the right thing.

(Who do you want me to be?)

She smiles then and I fall in love. It makes no sense, but there it is.

Impossible things happen, she tells me. There's a kind of music to her voice.

When she talks, I hear bells.

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This story first appeared in *Universe*, edited by Robert Silverberg and Karen Haber.