

Metaphysical Problems of the *Star Trek* Transporter

Script

In ^{*}Star Trek^{*}, the transporter moves you from one spot to another almost

instantly — ~~an obviously useful technology that~~ ^{saving} saves on shuttle fuel

(and special effects budgets). In-universe, it's 'the safest way to

travel'. Yes, sometimes, two guys die horrible, mutilated deaths under

rare circumstances *but* trillions of individuals transport to work every

morning without a hiccup.

But, what if the transporter ^{*}isn't ^{*}safe [^] — what if the death rate ^{as safe as claimed} ~~is not~~ ^{isn't}

point almost nothing percent, but one-hundred percent because ~~x~~ the

transporter is a suicide box.

To answer this we need first to answer:

How it works
does

Which

~~Exactly how the transporter works~~ is a bit... fuzzy...

[Blueprint of star trek transporter -- possibly a slide overlaid onto the exact drawing?]

given decades of shows and movies and different writers ~~working on each~~

- but, taking the most common elements:

You step into the transporter are scanned with the delightfully named

'heizenburg compensator' down to the subatomic particle into the pattern

buffer. ~~A temporary storage place of sorts.~~

and Technical
manuals that

write
pages and pages
yet say *so little*

and are contradicted
by later technical manuals,

keeping
the *Star Trek*

Tradition
of *constant*
inconstancy.

The ship make a 'containment beam'

~~There's a containment beam, which contains the matter stream -~~

presumably all the pieces of you - sent to the destination and

reassembled.

Seemingly without problems.

The whole process takes about 5 seconds
and no one complains.

~~But either way, when reassembled, is it you? Because getting pulled~~

apart atom-by-atom sounds a lot like dying.

But

is it you on

the other end?

→ And where were you during those

5 seconds?

~~Well, just who is you'?~~

This brings us to question 2:

"who is you?"

Being good scientists to figure it out, we're going to measure you

before and after, right down to heizenburg compensated subatomic

particle. And we're not going to assume that ~~there's~~ some magic part of

you that can't be seen or heard or touched or measured in any way. Even

there is, by definition

if it did exist, ~~there's~~ no way to know what its properties would be, so

anything about it

we Occam's lazor it away and assume ~~that~~ you are what you appear to be:

a pile {Q:} of atoms arranged ~~in such a way so that~~ they think they're

you.

And, ^{before-you} if the transporter works as advertised then ~~before and after you're~~
^{after-you}
^{one} ~~identical~~ exactly the same. ~~Post-transport you reports to be you - all the~~

~~measurements check out.~~
^{Ans} You report to be you;

~~Everything checks out, right?~~
~~We've already defined the pattern of atoms as you, so it all checks out,~~
~~right?~~

^{But, there is still this nagging feeling}
Your experience of stepping into the transporter might be: a funny
^{that}
^{maybe}
sound, a bright light - then nothingness eternal,
^{while}

~~[View from inside the transporter]~~

~~Meanwhile, down on the planet, a brand-new life~~ [popped into existence,

complete will all your memories right up until the nanosecond before
^{is}
death with no reason to assume anything other than that it ~~was~~ you. And

^{It lives} ^{long}
~~would happily live a life as short as the mission until transporter~~

^{suiciding,}
~~suicide, and a new creature pops into existence with the memories of you~~

both *makes it back to the ship.*

life forms

Multiply by that by all the ~~humans and aliens~~ in all the ships and all

the stars in the galaxy and ~~the number of deaths takes~~ this suicide

creates on a continuous,

machine ~~to the next level; there's an~~ invisible, background holocaust

~~happening constantly~~ in the Star Trek universe.

[This is the commuting image in a new light, or with something added]

This makes your average episode of Trek, rather grim watching. And *I's*

crew members

a small mercy ~~to watch someone~~ wait for the turbolift rather than

site-to-site transporting everywhere

~~suicide transporting up a few decks.~~

But again, the good little scientist says ~~that~~ if ~~all~~ the measurements

you are

check out then it has to be you – and ~~you're~~ just being paranoid and we

need to hurry up to get to rigelon 7 and just step inside there's

nothing to worry about.

Energy Option

But breaking you down by the atom and reassembling you is the *optimistic* version of how the transporter works and can't really be wan't happening because sometimes the transporter turns one crew member into two.

[Kirks]

Or two into one. Which is a problem of atoms: ~~If you have a lego man and~~

Atoms are like lego - if the
~~disassemble him, there's no way to make two out of the pile you've got.~~

Transporter is disassembling a captain
~~Or, combining two into one, there are a lot of lego to ditch. In this~~
and reassembling him later, where did
~~metaphore legos are atoms~~

the extra lego (atoms) come from?

~~So the moving atoms theory seems doubtful now - the transporter must~~

crew doubling make matter transport impossible
work more like the ship's replicators

[Jayneway, black]

which turn energy into matter and recycle matter back to energy. It



takes a lot of energy to make matter

(and later technical manuals say as much)

[$E=mc^2$]

But if you're cruising on an anti-matter drive, there's plenty of energy

to spare ~~in those batteries~~.

So now the transporter is literally annihilating you into ~~nothing~~ energy

[Voyager engine room]

to charge a battery to use later to make new atoms elsewhere

[Transporter connected to battery]

This really feels like death.

~~Does getting annihilated into energy then assembled out of brand new~~

~~atoms kill you?~~

It's not even your atoms

But...

~~Sure feels like it - though~~ the atoms in your body now aren't the same

all your life

ones ~~that were in there years ago~~. You're constantly replacing the parts

that make you - ~~not to be crude~~ but this is what excreting and eating is

- bringing in new atoms to replace the old.

The philosophy majors in the room are ^{now} dying to bring up *The Ship of Theseus*.

~~[Raising arms in class in excitement]~~

Say you take a ship on an adventure and as time goes on and parts get worn, you replace each ~~bit by bit~~ so ~~that~~ eventually no piece is original.

~~[Old fashioned, Greek? Ship with name on side]~~

When you return, is it still the same Ship of Thesis?

Yes?

~~If you think you are still you across time, then the answer is yes.~~

What if instead of replacing the pieces bit by bit you replace them all

at once?

~~For example~~ *The Cutty Sark* an old empire tea ship ~~displayed~~ in London

burned down ~~one day,~~ *and was* ~~but has since been~~ restored.

Is it still *The Cutty Sark*?

There really isn't any difference

~~If you think 'no' then the transporter has to be death.~~

between the two ←

~~While you're~~ *Ship of theising* through your daily life, ~~stepping into~~

You

~~the transporter~~ is getting cutty sarked.

But transporting

~~Philosophically these may not be different,~~ but it sure *feels* different.

~~Though~~ *A* again the good little scientist wants to point out what we

decided before: if everything we can measure is the same then it's still

you. ~~And atoms are exactly the same, there's no way to distinguish one~~

about ships

~~from another.~~ So stop worrying and just get in.

OK but:

If the transporter turns someone into energy on one end and builds them out of energy at the other end, ~~but also, obviously has access to some pretty big batteries~~ then it's possible to step into a transporter with a working assembler, but a broken dissembler.

~~Because if one person thinks it didn't work, and one did - then~~ part of a working transporter is hiding behind a curtain that it kills you.

~~[Guy on the surface calls back saying he made it, tech in the transport room~~

~~looking at 'you' still there. Realizing it broke, then fixing it to~~

~~disassemble you.]~~

It *has* to - otherwise this wouldn't be possible.

The transporter has to be a suicide machine.

OK, so why worry about the metaphysical implications of ~~a~~ fictional

piece of technology?

~~But there's something deeply unsettling with the idea that you could~~

Because it forces confrontation with the
~~have died without anyone noticing. That something about being an alive,~~

a ~~conscious creature might not be measurable.~~

that isn't

*possibility
that there may
be*

~~Because, if you do die, there's a problem; If no one around you can tell~~

~~the difference, and the best machine imaginable measures all your atoms~~

~~down to the spin [Q:] of each quark and confirms that it's you, but~~

if ~~meanwhile, your experience is the end of experience - then there is~~
of transporting is

something in the Universe that's real, but can't be measured.

Or, perhaps, there is something fragile about consciousness
~~But it also raises questions about breaks in consciousness. Maybe~~

knocked out or
~~everyone put under for surgery dies, and the person who wakes up is~~
that breaks in consciousness

die
~~different. Maybe every time we fall asleep we day, each day our last.~~
are all

Replaced every morning with an
~~See why thinking about the transporter can keep you up?~~
death.

identical, indistinguishable mental copy

[Kid in star-trek themed bedroom, looking really tired, transporter thought

bubble above their head]

Maybe
But it may be the case that the Universe is structured in such a way that this kind of paradox just can't occur - like how time travel paradoxes are fun to think about but the Universe might just not have the structure that allows it to happen, in the same way that accelerating past the speed of light is a limit.

Sleep well tonight.

Footnote:

Alternate Universes:

Probably the only really consistent theory about how the transporter

works is the alternate universe theory of ~~transporters~~:

This explains how you end up with two kirks or two rikers, or how Picard

& co, became young, etc.

But while consistent, it's also crazy: the transporter is a tool that pushes and pulls people in and out of neighboring universes? No thank you.

Why don't the writers just say it works like the warp drive? Stretching space to make some parts closer to others? Or maybe it's a tiny wormhole generator.