

Problematic element in chronology

The Urth list — 52 messages, 12 voices, 27 May 2011

<https://urth.darkrealm.vip/thread/urth/6029>

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Gerry Quinn — 27 May 2011, 23:53

I got to thinking about the distance from Urth to Blue today and after looking up some stuff I found a problem.

On Blue, SilkHorn explains to prospective astral travellers that they can, if they peer for some time, see a dim red star - this is of course Sol, etiolated by the black hole inside it.

I looked up some stuff, and as near as I can tell, they following is true: Sol (currently) has an absolute magnitude of 5. That means it would be barely visible from 50 light years away. Red Sol will be even dimmer.

But if the Whorl only travelled 50 light years, relativistic time dilation will have been fairly insignificant. Specifically, there's no reasonable way that you could 'lose' more time than the distance you travelled in light years. On this basis, the Whorl was launched no more than 350 or so years ago in Urth time.

On the whole, I put this down to Wolfe not fretting too much about the details - I still think there is supposaed to be a relativistic time dilation factor of up to five or six, even if it is contradictory in some ways (it also fails because the energy needed to accelerate the Whorl to such a velocity would have been more than enough to replace the solar energy deficit, and Typhon would surely have repurposed the Whorl drive for this).

But if the physics is correct, the Whorl has little in the way of time dilation, and Typhon lived only about 350 years before Severian.

- Gerry Quinn

António Marques — 28 May 2011, 09:08 · in reply to Gerry Quinn

Gerry Quinn wrote:

On Blue, SilkHorn explains to prospective astral travellers that they can, if they peer for some time, see a dim red star - this is of course Sol, etiolated by the black hole inside it.

But we only have the narrator's word for it, and the narrator isnt omniscient.

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I don't think it's that.

I think GW fretts paranoily about the details when the details matter.

When the details are unimportant I think he nontheless handles them with some care.

When, as in this case, the details depend on knowledge no one has within the story, he's free and willing to improvise.

When the details depend on knowledge no one has period, he's almost obliged to improvise. One of the things that makes 'hard' sf so ridiculous is its datedness. As-of-time-of-writing scientific consensus dates a work even more than cassette tapes do. Constraining a story by

scientific boundaries is not different from constraining it by technological ones.

Of course, it's one thing not to be limited by science, and another to contradict it too much (cf. a story I've read recently which places Sanskrit 11k years in the past). Unless it's got a good reason behind it, it comes across as just uninformed.

David Stockhoff — 28 May 2011, 18:36 · in reply to António Marques

I think the main reason the NS/LS/SS universes differ slightly (maybe) is that Wolfe is too busy paying attention to the stories themselves to rack his brain to try to recall some detail from a previous book.

You can only keep that stuff in your head for so long, and if you are engaged with a new story and new characters, there is no real need to.

On 5/28/2011 5:08 AM, António Marques wrote:

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Gerry Quinn — 28 May 2011, 18:42 · in reply to António Marques

From: "António Marques" <antonio at gmail.com>

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But we only have the narrator's word for it, and the narrator isn't omniscient.

True enough... but in most Wolfe including all of the Solar Cycle, we only have the narrator's word for *everything*. One has to ask why he should lie, or make a mistake? And if he hasn't seen the star, why should he say it is visible, whereas if he has, why should he mistake a particular star for Sol?

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But SilkHorn must have chosen the star for some reason - he hardly picked it at random. If he incorporates some of Pas, albeit not yet fully assimilated, it may be that he has access to full knowledge with respect to the Whorl's trajectory..

When the details depend on knowledge no one has period, he's almost obliged to improvise. One of the things that makes 'hard' sf so ridiculous is its datedness. As-of-time-of-writing scientific consensus dates a work even more than cassette tapes do. Constraining a story by scientific boundaries is not different from constraining it by technological ones.

The speed of light and the distance from which the Sun is visible aren't going to change with tomorrow's research. Some science is permanent.

I think he either (1) didn't think of this point, (2) supports a 350-year chronology between Typhon and Severian, or (3) thought it would be cool to have Sol visible even if the physics doesn't work. I think Wolfe is quite happy to gloss over lots of dodgy science if it fits the story (realistically, it's obvious - leaving aside physics for the moment, absorbing not just memories but *memories coordinated into a personality* by eating corpses is obviously impossible.

- Gerry Quinn

Sergei SOLOVIEV — 28 May 2011, 20:51 · in reply to Gerry Quinn

Dear Gerry,

please, have a look at Red Giants (final stage of evolution of sun-like stars). Obviously, the sun in the "BotNS" entered this stage - the atmosphere of the star becomes very large and red (the temperature drops, but the total luminosity is much greater). There are many such stars in our vicinity. The dim star mentioned by Silkhorn maybe thousands light years away. (Red giants, like Aldebaran, that are 50 - 60 light years from here, are among the most bright stars.)

It does pose other problems, I agree. Red giant may have a diameter like Venus orbit, and if Urth were at the same distance as Earth, it would be burned (even if the temperature of the surface of the star is less). I don't know whether Gene Wolfe did take all this physics into account, maybe not, but I am sure he did know about red giants.

Possible explanation. In Typhon's time or earlier the technical power of humanity seems to be

sufficient to make the distance of Urth from the Sun greater, to prevent its burning or swallowing by the Sun. Maybe it was done. Notice that in the BotNS there is no clear indication how long is their year, I don't remember anything about the names of the months, that there is 12 months (or other number, maybe 17), how much days is in one month, how much days in a year, how much hours in one day. There are watches - yes - but I think all concrete indications are eliminated (deliberately?) by GW. The mass of the sun when it becomes Red Giant doesn't change, so the orbital period for more distant orbit has to be longer. By the way, if their year is longer, it may explain the "too rapid" ascension of Severian to power.

After the end of the rule of Typhon the technical might dropped considerably, and the humans could probably do nothing any more about the orbit of Urth etc. The energy output of Red Giants is very unstable, so, if later it got weaker, the Urth may become cold place threatened by glaciers, and nobody had energy or knowledge to do anything.

I think (I repeat myself) that GW tried to be very careful about scientific details. Do not take for granted the idea that inside the old sun there is a black hole. It is something that is presented as common idea in Severian's times, but I don't see from the text that GW himself thinks that. It sounds "mythologically" beautiful, but it was easily accessible information to GW in 70-es, and even more easily later, that black hole will swallow very quickly all the atmosphere of the red giant. It would by the way be an explosive process that would burn everything a couple of light years around (kind of supernova). An encounter of a real black hole with a white fountain would be also extremely explosive - not just tides.

Remark. I think that my views about the importance of human and psychological side are slightly distorted on the list, I do not reject mythological and "gnostic" meaning at all, I just don't agree when the abstract symmetry of these schemas does contradict the truth of characters described by GW as I see it from the text. (I'll try to develop it in another mail.)

Best regards

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Jeff Wilson — 29 May 2011, 09:51 · in reply to Sergei SOLOVIEV

On 5/28/2011 3:51 PM, Sergei SOLOVIEV wrote:

Dear Gerry,

please, have a look at Red Giants (final stage of evolution of sun-like stars). Obviously, the sun in the "BotNS" entered this stage - the atmosphere of the star becomes very large and red (the temperature drops, but the total luminosity is much greater).

This is not obvious to me. Details of shadows' boundaries and of dawn and dusk (the same thing, since they are the boundaries of the earth's shadow) are much as they are today. The solar disc might even have shrunk slightly if the "50,000 leagues" turns out to be a misinterpretation of the moon appearing larger than the sun instead of being roughly equal as they do today.

It does pose other problems, I agree. Red giant may have a diameter like Venus orbit, and if Urth were at the same distance as Earth, it would be burned (even if the temperature of the surface of the star is less). I don't know whether Gene Wolfe did take all this physics into account, maybe not, but I am sure he did know about red giants.

And we are equally sure that Skuld still appears in the sky of Severian's time.

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Not if it is a quantum or merely small black hole, or a swarm of several suggested by the black beans. They are too small to eat much even in the impressively dense core of the sun, but their gravitation could disturb the sun's burn rate by suppression of light element fusion via gravitational containment and/or premature instigation of heavy element fusion in an asymmetrical pattern, cutting down on overall energy output.

It can also keep the intermediate layers disrupted so that energy transfer to the outer layers is decreased, or possibly increased then decreased. Stars are amazingly complex and contrary that way, like when supernova explosions turn out to be primed by the collapse of the core and the end of fusion there.

It would by the way be an explosive process that would burn everything a couple of light years around (kind of supernova). An encounter of a real black hole with a white fountain would be also extremely explosive - not just tides.

Er, the white hole is already extremely explosive. Anything that comes out arrives at escape velocity for the entire universe, and the energy is blue-shifted accordingly. But the White Fountain is almost much smaller than the sun, with which the earth cohabitates already.

Jeff Wilson - jwilson at io.com
Computational Intelligence Laboratory - Texas A&M Texarkana
< <http://www.tamut.edu/CIL> >

Gerry Quinn — 29 May 2011, 16:41 · in reply to Sergei SOLOVIEV

From: "Sergei SOLOVIEV" <soloviev at irit.fr>
Dear Gerry,

please, have a look at Red Giants (final stage of evolution of sun-like stars). Obviously, the sun in the "BotNS" entered this stage - the atmosphere of the star becomes very large and red (the temperature drops, but the total luminosity is much greater).

I agree with Jeff that the red giant idea has a lot of problems, especially when really the only thing it is needed to fix is a likely small slip by Wolfe with regard to the visibility of Sol from Blue. There is no evidence that the Sun looks especially large as seen from Urth, and we have Typhon's assertion that the solar output decreased rather than increased.

Possible explanation. In Typhon's time or earlier the technical power of humanity seems to be sufficient to make the distance of Urth from the Sun greater, to prevent its burning or swallowing by the Sun. Maybe it was done. Notice that in the BotNS there is no clear indication how long is their year, I don't remember anything about the names of the months, that there is 12 months (or other number, maybe 17), how much days is in one month, how much days in a year, how much hours in one day. There are watches - yes - but I think all concrete indications are eliminated (deliberately?) by GW. The mass of the sun when it becomes Red Giant doesn't change, so the orbital period for more distant orbit has to be longer. By the way, if their year is longer, it may explain the "too rapid" ascension of Severian to power.

Wolfe is indeed vague about time but mostly with regard to long times (he even says so in an appendix - arguably defending himself neatly in advance against threads such as this!) Children

don't seem to age in a matter of a few years, though I cannot think of any specific proff that years are much longer than now. Nobody mentions it, though.

I think (I repeat myself) that GW tried to be very careful about scientific details. Do not take for granted the idea that inside the old sun there is a black hole. It is something that is presented as common idea in Severian's times, but I don't see from the text that GW himself thinks that. I sounds "mythologically" beautiful, but it was easily accessible information to GW in 70-es, and even more easily later, that black hole will swallow very quickly all the atmosphere of the red giant. It would by the way be an explosive process that would burn everything a couple of light years around (kind of supernova). An encounter of a real black hole with a white fountain would be also extremely explosive - not just tides.

Jeff has proposed some alternatives. Personally I think the simplest thing is to believe that there is indeed a black hole in the sun, as everyone in the story agrees. It may not be swallowing the sun rapidly due to the formation of an accretion disk which pushes infalling matter away from it. On first principles, one might expect such a black hole to make the sun hotter, but it would be hard to prove that no mechanism exists that could cause a reverse effect!

As for the white hole, one might expect an explosive encounter, but since white holes don't actually exist it is hard to be sure of one's predictions in that regard. Wolfe has also referred to a form of anti- matter which is repulsive to gravity. If such anti-matter exists, it seemingly has negative energy, and it might be that the White Fountain also does, in which case it might conceivably just cancel out the black hole.when it collides, leaving only second-order perturbatory effects.

Remark. I think that my views about the importance of human and psychological side are slightly distorted on the list, I do not reject mythological and "gnostic" meaning at all, I just don't agree when the abstract symmetry of these schemas does contradict the truth of characters described by GW as I see it from the text. (I'll try to develop it in another mail.)

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David Stockhoff — 29 May 2011, 17:00 · in reply to Gerry Quinn

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Is there wiggle room (in terms of Popular Mechanics-level 1970s theory) for a theory of black holes that makes them basically a reverse of (nonexistent) white fountains? That is: can a black hole be thought of crudely as primarily a "drain"?

Keeping in mind that any set of beings capable of "bringing" a white fountain ought to be able to pull off the reverse. As far as we know, every star has a pair of sealed pipes (labeled IN and OUT) that can be opened and hooked up to a pump and an energy source or drain. You just have to know your way around the sub-basement and interior walls as well as the local building codes and approval processes. ;)

Or, just ignore the accretion disk and other effects because they interfere with the story. Done.

I might note that Typhon referred to the effect on solar output as amounting to a few percent at most. If you "figure" (calculate or assume) that that's enough to cool Urth, you don't really need to calculate the effect of processes that are poorly understood anyway and probably have a margin of error larger than that few percent.

Sergei SOLOVIEV — 29 May 2011, 18:53 · in reply to Gerry Quinn

You say it is not obvious - let me quote Wolfe (from "Return to the Whorl", chapter "He took me with him" - written by Hoof -)

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Severian may be so acquainted to his Red Sun that he does not think it anything special. Hoof comes from the planet with ordinary yellow sun, and he is immediately impressed. (It is possible, of course, that GW didn't think too much about the size of the sun when he wrote TBotNS, and decided to be more precise later - but I think this quotation proves that he represents the Red Sun as a Red Giant.)

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A /Brief History of Time/ (written by Stephen Hawking, subtitled "From the Big Bang to Black Holes", but the author and subtitle are not mentioned by Wolfe). One of artefacts of our place and time in Wolfe's Solar cycle. (I would make a list of such curiosities.) It means that Wolfe himself knew the book, and probably knew well the science of black holes of our time.

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Fernando Gouvea — 29 May 2011, 19:44 · in reply to Sergei SOLOVIEV

Alas, /A Brief History of Time/ was published in 1988, while BotNS was 1980-83 and even /Urth
of the New Sun/ was 1987.

Fernando

On 5/29/2011 2:53 PM, Sergei SOLOVIEV wrote:
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Fernando Q. Gouvea <http://www.colby.edu/~fqgouvea>
Carter Professor of Mathematics
Colby College
5836 Mayflower Hill Editor, MAA Reviews
Waterville, ME 04901 <http://www.maa.org/maareviews>

Secularists, humanists and quiet worshipers of an unpoliticized God have felt beleaguered, frustrated and unfairly disrespected. There's no energy on the non-zealot side of the cultural debate. There's no Voltaire, no Clarence Darrow, not even a Lenny Bruce to balance the stifling, censorious religiosity -- not even a Bill Clinton or a Jimmy Carter to show that religion doesn't have to resemble some Tom DeLay combination of contempt and pious hypocrisy. So the prayer, so to speak, was that the new pope might miraculously turn out to be a shot in the arm not just for anti-materialism but also for anti-religious humbug, anti-medievalism and anti-repressive orthodoxy.
-- Tina Brown, in The Washington Post, 4/19/2005

Sergei SOLOVIEV — 29 May 2011, 20:14 · in reply to Fernando Gouvea

Maybe it's my error, but it was some very similar title mentioned by Wolfe, I will try to find what it was exactly. More special books by Hawking appeared earlier, I've read Hawking and Ellis on black holes in 70-es - /Hawking/, S.W.; /Ellis/, G.F.R. (/1973/). The Large Scale Structure of Space-Time. Cambridge: Cambridge University Press.

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Interesting quote, but I don;t think it really proves anything about the size of the sun. It looks big on the horizon, just as the Moon does. But Hoof hasn't really said anything about its actual apparent size here.

- Gerry Quinn

Jeff Wilson — 29 May 2011, 22:50 · in reply to Sergei SOLOVIEV

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I'm also sure that Wolfe read Hawking in the 70's, because Hawking discovered that small black holes evaporate in 1974, disappearing in a final burst of radiation. They could be formed in the big bang, but wouldn't have lasted until the present day, unless they happened to find their way to a place of high density matter to increase rate elementary particles managed to hit their tiny event horizons. A place like a stellar interior.

Gerry Quinn — 30 May 2011, 00:48 · in reply to Jeff Wilson

From: "Jeff Wilson" <jwilson at io.com>

On 5/29/2011 3:14 PM, Sergei SOLOVIEV wrote:

Maybe it's my error, but it was some very similar title mentioned by Wolfe, I will try to find what it was exactly. More special books by Hawking appeared earlier, I've read Hawking and Ellis on black holes in 70-es -
/Hawking/, S.W.; /Ellis/, G.F.R. (/1973/). The Large Scale Structure of Space-Time. Cambridge: Cambridge University Press.

I'm also sure that Wolfe read Hawking in the 70's, because Hawking discovered that small black holes evaporate in 1974, disappearing in a final burst of radiation. They could be formed in the big bang, but wouldn't have lasted until the present day, unless they happened to find their way to a place of high density matter to increase rate elementary particles managed to hit their tiny event horizons. A place like a stellar interior.

I don't think the issue of small black holes matters to BotNS - the black hole described is absorptive, and thus large enough to have a low temperature. In the context of black holes, there's actually not much margin between the temperature of a stellar interior and that of outer space. They are either colder or hotter than either, and those that persist are certainly colder.

- Gerry Quinn

António Pedro Marques — 30 May 2011, 01:21 · in reply to Gerry Quinn

No dia 28/05/2011, às 19:42, "Gerry Quinn" <gerryq at indigo.ie> escreveu:

From: "António Marques" <antonio at gmail.com>

Gerry Quinn wrote:

On Blue, SilkHorn explains to prospective astral travellers that they can, if they peer for some time, see a dim red star - this is of course Sol, etiolated by the black hole inside it.

But we only have the narrator's word for it, and the narrator isn't omniscient.

True enough... but in most Wolfe including all of the Solar Cycle, we only have the narrator's word for *everything*. One has to ask why he should lie, or make a mistake? And if he hasn't seen the star, why should he say it is visible, whereas if he has, why should he mistake a particular star for Sol?

I think it's reasonably obvious: he visited a red sun, he saw a red sun in the sky, bingo, he thinks they're the same. That's just one possible explanation which I find more plausible than a GW oversight.

On the whole, I put this down to Wolfe not fretting too much about the details (...)

I don't think it's that.

I think GW frets paranoically about the details when the details matter.

When the details are unimportant I think he nonetheless handles them with some care.

When, as in this case, the details depend on knowledge no one has within the story, he's free and willing to improvise.

But SilkHorn must have chosen the star for some reason - he hardly picked it at random. If he incorporates some of Pas, albeit not yet fully assimilated, it may be that he has access to full knowledge with respect to the Whorl's trajectory..

Interesting, but I don't recall his having access to special knowledge anywhere else.

When the details depend on knowledge no one has period, he's almost obliged to improvise. One of the things that makes 'hard' sf so ridiculous is its datedness. As-of-time-of-writing scientific consensus dates a work even more than cassette tapes do. Constraining a story by scientific boundaries is not different from constraining it by technological ones.

The speed of light and the distance from which the Sun is visible aren't going to change with tomorrow's research. Some science is permanent.

Hence my having said you can't go too much against some basic stuff.

I think he either (1) didn't think of this point,

Not in character.

(2) supports a 350-year chronology between Typhon and Severian,

Makes no sense to me.

or (3) thought it would be cool to have Sol visible even if the physics doesn't work.

...and thought to himself there would be no dearth of possible explanations so let's do it.

Mirrors? Folded space-time?

I think Wolfe is quite happy to gloss over lots of dodgy science if it fits the story (realistically, it's obvious - leaving aside physics for the moment, absorbing not just memories but *memories coordinated into a personality* by eating corpses is obviously impossible.

So we think, but then again it's not like we've much of a portfolio to show as a species.

Jeff Wilson — 30 May 2011, 02:56 · in reply to Gerry Quinn

On 5/29/2011 7:48 PM, Gerry Quinn wrote:

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Where is it described?

Jeff Wilson - jwilson at io.com

Computational Intelligence Laboratory - Texas A&M Texarkana

< <http://www.tamut.edu/CIL> >

Gerry Quinn — 30 May 2011, 18:21 · in reply to Jeff Wilson

From: "Jeff Wilson" <jwilson at io.com>

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Where is it described?

Standard theory (you can find it in Wikipedia etc.) has the temperature of a black hole inversely proportional to its mass. A solar mass black hole has a temperature of about a ten millionth of a degree. An earth-mass black hole has a temperature of a fiftieth of a degree. A black hole massing a million tons would have a temperature of 10^{14} K.

Ignoring mass transfer, a black hole with a mass of a million million tons would be in thermal equilibrium with the Sun's core, at a temperature of 10^8 K. Such a black hole would have an event horizon only one micron in diameter, so it wouldn't find it too easy to swallow a lot of matter.

Multiply the mass by another factor of 200000, and the black hole is finally black, with a temperature of 500 K, and a diameter of 20 cm.

Any larger black hole would be colder and larger, both in proportion to its mass. I think we are to assume that the black hole in the Sun is cold and reasonably large. In truth it's hard to imagine that it would have the effects described in BotNS; I assume Wolfe is winging it.

- Gerry Quinn

Gerry Quinn — 30 May 2011, 18:36 · in reply to António Pedro Marques

-

From: "António Pedro Marques" <antonio at gmail.com>

No dia 28/05/2011, às 19:42, "Gerry Quinn" <gerryq at indigo.ie> escreveu:

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Not in character.

I disagree, it is not a very obvious point.

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Makes no sense to me.

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So we think, but then again it's not like we've much of a portfolio to show as a species.

I think that Wolfe knows this is not really possible but happily wrote it anyway. I think he strives for scientific verisimilitude when he can, but such verisimilitude is far from perfect. And why should it be - he is writing science fiction stories, not science textbooks. If the science were correct readers could reasonably ask for their money back!.

- Gerry Quinn

Jeff Wilson — 30 May 2011, 21:32 · in reply to Gerry Quinn

On 5/30/2011 1:21 PM, Gerry Quinn wrote:

From: "Jeff Wilson" <jwilson at io.com>

On 5/29/2011 7:48 PM, Gerry Quinn wrote:

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Where is it described?

Standard theory (you can find it in Wikipedia etc.)

I mean, where is the black hole described in BotNS? How is it characterized sufficiently to make those proceeding inferences?

of a black hole inversely proportional to its mass. A solar mass black hole has a temperature of about a ten millionth of a degree. An earth-mass black hole has a temperature of a fiftieth of a degree.

Something on the order of an earth-mass black hole with hand-sized event horizon is what I had in mind. This would imply that the White Fountain would be of a similar magnitude and why it would do such a job on Urth as it passed along.

In truth it's hard to imagine that it would have the effects described in BotNS; I assume Wolfe is winging it.

Oh, of course. I'm just saying that a hypermass of a vague order of magnitude can have effects that qualitatively resemble what's in the book.

Jeff Wilson - jwilson at io.com
Computational Intelligence Laboratory - Texas A&M Texarkana
< <http://www.tamut.edu/CIL> >

Jeff Wilson — 30 May 2011, 21:39 · in reply to Gerry Quinn

On 5/30/2011 1:36 PM, Gerry Quinn wrote:

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Right on! Science fiction is so called because it appeals to the authority of science to suspend disbelief. However, appeals to authority aren't scientific, so science fiction inherently diverges from scientific accuracy. Ergo, accuracy in the science is nice but absolute correctness (another unscientific concept) is not required.

Jeff Wilson - jwilson at io.com

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Gerry Quinn — 30 May 2011, 23:23 · in reply to Jeff Wilson

From: "Jeff Wilson" <jwilson at io.com>

On 5/30/2011 1:21 PM, Gerry Quinn wrote:

From: "Jeff Wilson" <jwilson at io.com>

On 5/29/2011 7:48 PM, Gerry Quinn wrote:

I don't think the issue of small black holes matters to BotNS - the black hole described is absorbtive, and thus large enough to have a low temperature. In the context of black holes, there's actually not much margin between the temperature of a stellar interior and that of outer space. They are either colder or hotter than either, and those that persist are certainly colder.

Where is it described?

Standard theory (you can find it in Wikipedia etc.)

I mean, where is the black hole described in BotNS? How is it characterized sufficiently to make those proceeding inferences?

It's described as black. That gives it a minimum mass of something like 10^{18} tons and a temperature under (say) 500 C. So it's not what we think of as a mini black hole, and it will last for billions of years (except maybe if it interacts with a White Fountain).

of a black hole inversely proportional to its mass. A solar mass black hole has a temperature of about a ten millionth of a degree. An earth-mass black hole has a temperature of a fiftieth of a degree.

Something on the order of an earth-mass black hole with hand-sized even horizon is what I had in mind. This would imply that the White Fountain would be of a similar magnitude and why it would do such a job on Urth as it passed along.

In truth it's hard to imagine that it would have the effects described in BotNS; I assume Wolfe is winging it.

Oh, of course. I'm just saying that a hypermass of a vague order of magnitude can have effects that qualitatively resemble what's in the book.

I too think that it is supposed to be that size. Realistically I find it hard to imagine a black hole injected into the Sun doing anything other than age it prematurely, which will make it hotter,

rather than colder. For the purposes of the story, I ignore that - and I would not expect the majority of readers to even have an opinion on the subject. My physics may be wrong or right, but even to have such an opinion I probably need to know more physics than most. If one doesn't think about it too much, a cooling effect is plausible.

And maybe, as David Stockhoff suggests, it is intended just to act like a drain. Perhaps the Hieros can make it work that way.

- Gerry Quinn

Jeff Wilson — 31 May 2011, 00:37 · in reply to Gerry Quinn

On 5/30/2011 6:23 PM, Gerry Quinn wrote:

From: "Jeff Wilson" <jwilson at io.com>

On 5/30/2011 1:21 PM, Gerry Quinn wrote:

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Where is it described?

Standard theory (you can find it in Wikipedia etc.)

I mean, where is the black hole described in BotNS? How is it characterized sufficiently to make those proceeding inferences?

It's described as black.

And this description is to be found where?

Jeff Wilson - jwilson at io.com
Computational Intelligence Laboratory - Texas A&M Texarkana
< <http://www.tamut.edu/CIL> >

António Pedro Marques — 31 May 2011, 14:21 · in reply to Gerry Quinn

Gerry Quinn wrote (30-05-2011 19:36):

From: "Ant?nio Pedro Marques" <antonio at gmail.com>

No dia 28/05/2011, ?s 19:42, "Gerry Quinn" <gerryq at indigo.ie> escreveu:

From: "Ant?nio Marques" <antonio at gmail.com>

Gerry Quinn wrote:

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But we only have the narrator's word for it, and the narrator isnt omniscient.

True enough... but in most Wolfe including all of the Solar Cycle, we only have the narratopr's word for *everything*. One has to ask why he should lie, or make a mistake? And if he hasn't seen the star, why should he say it is visible, whereas if he has, why should he mistake a

particular star for Sol?

I think it's reasonably obvious: he visited a red sun, he saw a red sun in the sky, bingo, he thinks they're the same. That's just one possible explanation which I find more plausible than a GW oversight.

I find it hard to see why he would pick on a particular red star.

How many are there, recognisably red, in his sky?

I think he either (1) didn't think of this point,

Not in character.

I disagree, it is not a very obvious point.

I find it obvious as can be in context.

(2) supports a 350-year chronology between Typhon and Severian,

Makes no sense to me.

Hard to know. I don't think he does either, but then again 350 years is plenty time for a lot of autarchs. Overall I do think the Whorl was intended to travel relativistically, and the Urth time since launch is between 1000 and 2000 years, but I don't think 350 years is impossible (and it would solve the problem of why Typhon, with the energy to drive the Whorl relativistically at his disposal, did not use a fraction of this energy to replace the diminished heat of the Sun!)

I do find the relativistic speed of the Whorl troubling *if* it comes from the Whorl's technology alone.

or (3) thought it would be cool to have Sol visible even if the physics doesn't work.

...and thought to himself there would be no dearth of possible explanations so let's do it. Mirrors? Folded space-time?

There's quite a dearth of explanations arising naturally out of the story!

This is the guy who thinks there's an obvious explanation in the story for Apu Punchau's miracle.

We know of sun-like stars that we just happen to see at twenty times the distance they would normally be visible.

Sorry, I didn't get this sentence.

I think Wolfe is quite happy to gloss over lots of dodgy science if it fits the story (realistically, it's obvious - leaving aside physics for the moment, absorbing not just memories but *memories coordinated into a personality* by eating corpses is obviously impossible).

So we think, but then again it's not like we've much of a portfolio to show as a species.

I think that Wolfe knows this is not really possible

But how do you know it isn't? Of course it isn't given our understanding of how it works in our universe, but what have we got to show for ourselves that gives us the authority to say 'this is impossible'?

but happily wrote it

anyway. I think he strives for scientific verisimilitude when he can, but such verisimilitude is far from perfect. And why should it be - he is writing science fiction stories, not science textbooks. If the science were correct readers could reasonably ask for their money back!.

The more so since correct science is something that hasn't been observed in the wild.

Gerry Quinn — 31 May 2011, 14:59 · in reply to António Pedro Marques

From: "Ant?nio Pedro Marques" <antonio at gmail.com>

Gerry Quinn wrote (30-05-2011 19:36):

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I find it hard to see why he would pick on a particular red star.

How many are there, recognisably red, in his sky?

I don't know. There are twenty or so dim red stars in our sky, but most are variables. Still, even if there is only one, I don't see why he should assume that that particular star must be Sol without having some reason to do so other than its colour. And why would Wolfe deliberately have him make this mistake?

I think he either (1) didn't think of this point,

Not in character.

I disagree, it is not a very obvious point.

I find it obvious as can be in context.

We must agree to differ then. I didn't think of it immediately at all. One has to make a link between relativistic time dilation and the distance travelled, which isn't the direct link usually made in popular accounts. I don't remember anyone bringing the matter up.

(2) supports a 350-year chronology between Typhon and Severian,

Makes no sense to me.

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and 2000 years, but I don't think 350 years is impossible (and it would solve the problem of why Typhon, with the energy to drive the Whorl relativistically at his disposal, did not use a fraction of this energy to replace the diminished heat of the Sun!)

I do find the relativistic speed of the Whorl troubling *if* it comes from the Whorl's technology alone.

Where else would it come from? There's no indication that it was anything other than a personal project of Typhon's. Besides, if he could have called in favours from aliens to build or drive it, why could he not have done the same with regard to building a modest orbital space heater? (Could double as a weapon, frying enemies like ants - Typhon would have loved it!)

or (3) thought it would be cool to have Sol visible even if the physics doesn't work.

...and thought to himself there would be no dearth of possible explanations so let's do it. Mirrors? Folded space-time?

There's quite a dearth of explanations arising naturally out of the story!

This is the guy who thinks there's an obvious explanation in the story for Apu Punchau's miracle.

I don't remember talking about Apu Punchau, or whatever this miracle is. But anyway, if you can think of an obvious explanation, by all means let's hear it!

We know of know sun-like stars that we just happen to see at twenty times the distance they wuld normally be visible.

Sorry, I didn't get this sentence.

The second 'know' should have been 'no' (I don't no why I make such typos, but I am often catching them!)

I think Wolfe is quite happy to gloss over lots of dodgy science if it fits the story (realistically, it's obvious - leaving aside physics for the moment, absorbing not just memories but *memories coordinated into a personality* by eating corpses is obviously impossible.

So we think, but then again it's not like we've much of a portfolio to show as a species.

I think that Wolfe knows this is not really possible

But hoe do you know it isn't? Of course it isn't given our understanding of how it works in our universe, but what have we got to show for ourselves that gives us the authority to say 'this is impossible'?

If we can't say this is impossible, we know nothing at all, and I don't accept that.

but happily wrote it anyway. I think he strives for scientific versimilitude when he can, but such versimilitude is far from perfect. And why should it be - he is writing science fiction stories, not science textbooks. If the science were correct readers could reasonably ask for their money back!.

The more so since correct science is something that hasn't been observed in the wild.

I disagree. For example, I think "Stars are distant suns" is correct science. They are not holes in a celestial sphere letting in the light of Yesod, or candles held by floating angels, or some such alternative explanation.

Wolfe has said various things like "how do you know a godling cannot be 50 feet tall, and just constructed differently from humans?" And that is fair enough. Nevertheless, I think he misses or decides to ignore scientific facts quite often when the story demands it. One example discussed some time ago was the angular velocity of the Whorl and its effect on floaters. It was generally accepted that these are incompatible with the size of the Whorl. But Wolfe wanted the Whorl to be big, and he was satisfied with science that had the appearance of possible versimilitude (if that is not a redundant expression, but I think people will know what I mean). He doesn't want anything to scream "this is really impossible", but I, at least, don't think the visibility of Sol from Blue screams that, even if it is an unusually clear difficulty once one spots it.

- Gerry Quinn

Moses made Jews wander 40 years through Sinai. If you take the shortest way, it is at most a few hundred kilometres. What makes you think that the Whorl had taken the shortest path to its destination? It could very well go with relativistic speed and make a detour. It seems also that the plan might include that the Whorl will come back and repeople Urth (Ushas) after the floods etc. - in the end of the Short Sun cycle it is going to be repaired and travel again - to go where? Some hints are also in the end of "The Urth of the New Sun".

Sergei

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James Wynn — 31 May 2011, 15:30 · in reply to Sergei SOLOVIEV

Perhaps the only the Rajan could see the light of Sol's sun. He was only asking the others to imagine it. Perhaps he wasn't seeing it with human eyes. Just sayin'.

There was a discussion on this list between Mantis and (I think) Jerry Friedman some years ago about the distance between Urth and Blue based on 350 years of travel, 500 years of travel, 1000 years of travel.

Don't we know (based on the vase Lemur destroyed) that they've been in transport for just over 500 years? Assuming this all occurs during the time of Severian's childhood., that just suggests an overall time dilation of 2, right? That's fast, mind-blowingly fast, but not impossibly fast.

J.

Jeff Wilson — 31 May 2011, 15:58 · in reply to Gerry Quinn

On 5/31/2011 9:59 AM, Gerry Quinn wrote:

From: "Ant?nio Pedro Marques" <entonio at gmail.com>
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This is the reason why I asked about evidence that the Whorl was all Typhon's doing some time ago. If some salvageable stellar technology was involved, that could explain a lot about the Whorl and perhaps about Jonas' missing port. Spare engines and other gear looted from an orbital dock could make the Whorl go relativistic on their own virtues without the energy being available for warming Urth.

Jeff Wilson - jwilson at io.com
Computational Intelligence Laboratory - Texas A&M Texarkana
< <http://www.tamut.edu/CIL> >

Gerry Quinn — 31 May 2011, 17:33 · in reply to Sergei SOLOVIEV

From: "Sergei SOLOVIEV" <soloviev at irit.fr>
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Some hints are also in the end of "The Urth of the New Sun".

It's not easy to turn a relativistic asteroid! And it doesn't seem like they stopped anywhere en route, so why waste all that energy?

If Typhon wanted to repopulate Urth at a later time (but he says nothing of any such plan when he meets Severian in BotNS) he could have put sleepers on Lune or something. But anyway he had no reason to make any such plan.

My impression is that the Whorl is intended to be repaired and explore further among the stars. Perhaps that was the original plan, derailed by the death of Pas.

- Gerry Quinn

Gerry Quinn — 31 May 2011, 17:39 · in reply to James Wynn

From: "James Wynn" <crushtv at gmail.com>

Perhaps the only the Rajan could see the light of Sol's sun. He was only asking the others to imagine it. Perhaps he wasn't seeing it with human eyes. Just sayin'.

He says it will be visible to everyone.

"Soon it will be evening," he said. "If we still haven't gone, we'll go up onto the roof of this house. Standing on the tiles I will point and you will peer until at last you see a certain dim red star. It's a long, long way from here. Think of it now, the sky like black velvet strewn with diamonds in the bottom of a grave, and among the diamonds a minute drop of blood.

[The grave imagery echoes Silk's dream early in BotLS.]

There was a discussion on this list between Mantis and (I think) Jerry Friedman some years ago about the distance between Urth and Blue based on 350 years of travel, 500 years of travel, 1000 years of travel.

Don't we know (based on the vase Lemur destroyed) that they've been in transport for just over 500 years? Assuming this all occurs during the time of Severian's childhood., that just suggests an overall time dilation of 2, right? That's fast, mind-blowingly fast, but not impossibly fast.

I think there is a fair amount of text suggesting that the journey took in the region of 300 years subjective. I assume the vase was already old when it was brought aboard.

Time dilation factor of 2 or 6, I'm not sure it matters all that much. The energy needed is equal to the Whorl's mass multiplied by the time dilation, and in either case is enormous!

- Gerry Quinn

Sergei SOLOVIEV — 31 May 2011, 18:29 · in reply to Gerry Quinn

By the way, I don't remember any mention of a fuel used by landers. They depend for AI part on "cards" (much like chips nowadays) but... Does any of the personages say/ask/wonder about that? Also, how does the Long Sun work? (The description makes me think about some fusion technology, but I don't think there are any clear indications. And I think that no form of fusion can provide sufficient energy to accelerate Whorl to near-light speed. Roughly, fusion converts about 1% of mass into energy, and the mass of an accelerated body grows - very roughly, if the mass grows twice, you have to spend at least an equivalent of this mass in energy. This with very high efficiency, not as our chemical rockets. Similar for braking. Antimatter? In the beginning of this voyage Whorl had to have about half of its mass in stored antimatter? Gamma-rays if it annihilates in the Long Sun?)

Sergei

Gerry Quinn wrote:

From: "James Wynn" <crushtv at gmail.com>

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- Gerry Quinn

Dan'l Danehy-Oakes — 31 May 2011, 18:34 · in reply to Sergei SOLOVIEV

Sergei SOLOVIEV wrote:

(The description makes me think about some fusion technology, but I don't think there are any clear indications.

I suspect the landers do use fusion technology, but we really don't know.

And I think that no form of fusion can provide sufficient energy to accelerate Whorl to near-light speed. Roughly, fusion converts about 1% of mass into energy, and the mass of an accelerated body grows - very roughly, if the mass grows twice, you have to spend at least an equivalent of this mass in energy. This with very high efficiency, not as our chemical rockets. Similar for braking. Antimatter? In the beginning of this voyage Whorl had to have about half of its mass in stored antimatter? Gamma-rays if it annihilates in the Long Sun?)

I believe the Long Sun is powered by Illudium Fsdex.

Dan'l Danehy-Oakes

António Pedro Marques — 31 May 2011, 21:24 · in reply to Gerry Quinn

Gerry Quinn wrote:

From: "Ant?nio Pedro Marques" <antonio at gmail.com>

Gerry Quinn wrote (30-05-2011 19:36):

From: "Ant?nio Pedro Marques" <antonio at gmail.com>

I think it's reasonably obvious: he visited a red sun, he saw a red sun in

the sky, bingo, he thinks they're the same. That's just one possible explanation which I find more plausible than a GW oversight.

I find it hard to see why he would pick on a particular red star.

How many are there, recognisably red, in his sky?

I don't know. There are twenty or so dim red stars in our sky, but most are variables. Still, even if there is only one, I don't see why he should assume that that particular star must be Sol without having some reason to do so other than its colour. And why would Wolfe deliberately have him make this mistake?

It was my impression he makes a very similar mistake (in structure) somewhere else, but I can't put my finger on it.

I think he either (1) didn't think of this point,

Not in character.

I disagree, it is not a very obvious point.

I find it obvious as can be in context.

We must agree to differ then. I didn't think of it immediately at all.

One has to make a link between relativistic time dilation and the distance travelled, which isn't the direct link usually made in popular accounts. I don't remember anyone bringing the matter up.

I think it was even discussed recently. Not to take anything away from you, but those familiar with astronomy - I'm not - would probably see it at once. That's why I find it so strange that GW would overlook it.

I do find the relativistic speed of the Whorl troubling *if* it comes from the Whorl's technology alone.

Where else would it come from? There's no indication that it was anything other than a personal project of Typhon's. Besides, if he could have called in favours from aliens to build or drive it, why could he not have done the same with regard to building a modest orbital space heater? (Could double as a weapon, frying enemies like ants - Typhon would have loved it!)

Oh, I meant the relativistic voyage could be something for which the Whorl had only provided the ignition, but was then maintained by exploiting some trick of space-time or something.

or (3) thought it would be cool to have Sol visible even if the physics doesn't work.

...and thought to himself there would be no dearth of possible explanations so let's do it. Mirrors? Folded space-time?

There's quite a dearth of explanations arising naturally out of the story!

This is the guy who thinks there's an obvious explanation in the story for Apu Punchau's miracle.

I don't remember talking about Apu Punchau, or whatever this miracle is.

The 'guy' I meant was GW.

But anyway, if you can think of an obvious explanation, by all means let's hear it!

For instance, I find Sergei's speculation - that the Whorl didn't go straight to Green/Blue, which doesn't mean it stopped along the way - just an example of how our assumptions may be too simple.

We know of know sun-like stars that we just happen to see at twenty times the distance they wuld normally be visible.

Sorry, I didn't get this sentence.

The second 'know' should have been 'no' (I don't no why I make such typos, but I am often catching them!)

Ok. I meant there was nothing stopping us finding explanations that don't involve violating science but we just don't have the imagination to do it. It's not unlike the Gordian Knot. '- Oh, no, Alex can't have untied the knot because science tells us it can't be untied.' '- Uh, he cut it.'

I think Wolfe is quite happy to gloss over lots of dodgy science if it fits the story (realistically, it's obvious - leaving aside physics for the moment, absorbing not just memories but *memories coordinated into a personality* by eating corpses is obviously impossible.

So we think, but then again it's not like we've much of a portfolio to show as a species.

I think that Wolfe knows this is not really possible

But hoe do you know it isn't? Of course it isn't given our understanding of how it works in our universe, but what have we got to show for ourselves that gives us the authority to say 'this is impossible'?

If we can't say this is impossible, we know nothing at all, and I don't accept that.

No. We can say red blood cells aren't miniature firemen. What we can say about memories or personality is much weaker.

but happily wrote it anyway. I think he strives for scientific versimilitude when he can, but such versimilitude is far from perfect. And why should it be - he is writing science fiction stories, not science textbooks. If the science were correct readers could reasonably ask for their money back!.

The more so since correct science is something that hasn't been observed in the wild.

I disagree. For example, I think "Stars are distant suns" is correct science. They are not holes in a celestial sphere letting in the light of Yesod, or candles held by floating angels, or some such alternative explanation.

'Stars are distant suns' was science once, nowadays it's data as it can be directly observed. It's being data that makes it 'correct'.

Wolfe has said various things like "how do you know a godling cannot be 50 feet tall, and just constructed differently from humans?" And that is fair enough. Nevertheless, I think he misses or decides to ignore scientific facts quite often when the story demands it. One example discussed some time ago was the angular velocity of the Whorl and its effect on floaters. It was generally accepted that these are incompatible with the size of the Whorl. But Wolfe wanted the Whorl to be big, and he was satisfied with science that had the appearance of possible versimilitude (if that is not a redundant expression, but I think people will know what I mean). He doesn't want anything to scream

"this is really impossible", but I, at least, don't think the visibility of Sol from Blue screams that, even if it is an unusually clear difficulty once one spots it.

Again, I think he goes to great lengths not to contradict basic science, which I think that's how it should be. It appears our only difference is in judging the importance of this specific detail. But even we agree that there is little one can conclude, story-wise, from it.

Jeff Wilson — 31 May 2011, 21:44 · in reply to António Pedro Marques

On 5/31/2011 4:24 PM, Ant?nio Pedro Marques wrote:

Gerry Quinn wrote:

From: "Ant?nio Pedro Marques" <antonio at gmail.com>

Gerry Quinn wrote (30-05-2011 19:36):

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This is the guy who thinks there's an obvious explanation in the story for Apu Punchau's miracle.

I don't remember talking about Apu Punchau, or whatever this miracle is.

The 'guy' I meant was GW.

Is there anyone here who is still puzzled as to how Sev was able to withhold the rising sun, then restore it? It wasn't obvious to me before, but it is obvious in retrospect, the way a good mystery "should."

Jeff Wilson - jwilson at io.com
Computational Intelligence Laboratory - Texas A&M Texarkana
< <http://www.tamut.edu/CIL> >

Andrew Mason — 31 May 2011, 22:03 · follows Jeff Wilson

Sergei Soloviev wrote:

. It seems also that the plan might include that

the Whorl

will come back and repopulate Urth (Ushas) after the floods etc. - in the end of the Short Sun cycle it is going to be repaired and travel again - to go where?

I don't think Typhon knew about the floods when he started the Whorl project - they seem to have been revealed by Severian in the last year of his (Typhon's) reign.

Some hints are also in the end of "The Urth of the New Sun".

Are you thinking of the people landed from the sky? It seems as if they come from Tzadkiel's ship - the line in question is certainly cryptic, but I can't see what it could mean if they didn't. And in any case, I don't think Wolfe knew about the Whorl when he wrote _Urth_ - didn't he say that it was only while he was working on _Long Sun_ that he realised it was about Typhon? Which would imply that it wasn't part of his original plan for Urth.

I wouldn't rule out the possibility that the Whorl is, at the end, returning to Urth - but if so, I don't think it's part of the original plan, Typhon's or Wolfe's.

David Duffy — 01 Jun 2011, 00:36 · in reply to Gerry Quinn

On Tue, 31 May 2011, Gerry Quinn wrote:

I think there is a fair amount of text suggesting that the journey took in the region of 300 years subjective. I assume the vase was already old when it was brought aboard.

Time dilation factor of 2 or 6, I'm not sure it matters all that much. The energy needed is equal to the Whorl's mass multiplied by the time dilation, and in either case is enormous!

I can't remember what evidence we have that the Whorl travelled at relativistic speeds. If not, then a trip of 50-70 light years [rough limit of visibility since we don't know the absolute magnitude of the dimmed sun] at 0.1 c...

CHeers, David Duffy.

Gerry Quinn — 01 Jun 2011, 14:49 · in reply to David Duffy

From: "David Duffy" <davidD at qimr.edu.au>

On Tue, 31 May 2011, Gerry Quinn wrote:

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The only evidence that it travelled at relativistic speeds is the seemingly greater passage of time on Urth since the launch. In BotNS, Severian gives the impression that Typhon lived at least 1000 years ago (though it's a bit vague, and people of that era are vague about time anyway). In the Short Sun trilogy, Rigoglio also gives us the impression that much longer than 350 years has passed at Nessus - it feels like up to 2000 years.

I would argue that one possible reading is indeed that only 350 years passed on Urth - that is time for a lot of history, and nobody really comes out and gives an exact time except maybe Cyriaca says 'chiliads' once. But on Urth maybe they say 'chiliads' like we say 'yonks'. This would solve a couple of physics issues.

I don't really believe the 350 year reading, though, I think Wolfe winged the physics and that the red star being visible was a mistake.

I suppose one could even hypothesise that the dream travellers go to the future and come back, but there's no obvious reason why that should happen.

- Gerry Quinn

António Pedro Marques — 01 Jun 2011, 15:03 · in reply to Gerry Quinn

Gerry Quinn wrote (01-06-2011 15:49):

From: "David Duffy" <davidD at qimr.edu.au>

On Tue, 31 May 2011, Gerry Quinn wrote:

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Can the speed of time, if such a thing exists, be slower the more one goes from Urth to Blue? (Independently of gravity, of course(?); I'm not talking about classical relativity but some workable disuniformity of the speed of time across the universe.)

Gerry Quinn — 01 Jun 2011, 15:12 · in reply to António Pedro Marques

From: "Ant?nio Pedro Marques" <entonio at gmail.com>

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Anything is possible in SF. But it begs the question of why the evolution of stars seems to progress at the same rate everywhere!

- Gerry Quinn

António Pedro Marques — 01 Jun 2011, 15:23 · in reply to Gerry Quinn

Gerry Quinn wrote (01-06-2011 16:12):

From: "Ant?nio Pedro Marques" <antonio at gmail.com>

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Anything is possible in SF.

'Workable', come on.

But it begs the question of why the evolution of stars seems to progress at the same rate everywhere!

Or does it raise it?

But now, seriously speaking, is it really so firmly established that, say, the evolution of stars seems to progress at the same rate everywhere? I don't know, I'm asking. Last minimally serious readings I did on astrophysics were in the very early '90s. I'm not sure the question of uniformity of Physics across the universe (barring singularities) was settled by then.

Gerry Quinn — 01 Jun 2011, 16:27 · in reply to António Pedro Marques

From: "Ant?nio Pedro Marques" <antonio at gmail.com>

Gerry Quinn wrote (01-06-2011 16:12):

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It's still not settled. But here we have the situation of visible stars that are a very short distance away and in the same galactic milieu. If time were going 2-6 times slower for regions 100 light years away, wouldn't we notice considerable anomalies in the ages of stars and star clusters, the distribution of metals etc.

There are also questions of simple mechanics. Wouldn't such an effect disrupt galactic rotation, and perhaps other effects such as doppler and gravitational red shifts from moving gas jets etc.

We are talking about distances that are small in relation to a galaxy - how does galactic formation change as time progresses at radically different rates at arbitrary regions? And if the regions don't move with the galaxy, shouldn't we see interesting effects at the interfaces? It's a whole new SF novel in itself!

Of course Vernor Vinge made radical speculations about the speed of light as a function of distance from the centre of the galaxy in *_A Fire Upon The Deep_*, and nobody called him on the astrophysics. But that's because it's science fiction, not science. We don't need to nitpick such issues, IMO.

- Gerry Quinn

António Pedro Marques — 01 Jun 2011, 16:30 · in reply to Gerry Quinn

Gerry Quinn wrote (01-06-2011 17:27):

From: "António Pedro Marques" <antonio at gmail.com>

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It's still not settled. But here we have the situation of visible stars that are a very short distance away and in the same galactic milieu.

D'oh. Good point.

Dan'l Danehy-Oakes — 01 Jun 2011, 16:59 · in reply to Gerry Quinn

Gerry Quinn wrote:

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You haven't hung around with SF fans very much, I take it.

Let me assure you that if there is any scientific wonkiness in an SF story, there will be someone (quite possibly someone with Asperger's Syndrome*) who will jump up at the author's next convention appearance and whine, "But it doesn't *_work_* that way!"

* Not that I'm denigrating those with AS; I have a nephew and many friends at varying points on the autism spectrum.

Dan'l Danehy-Oakes

Andrew Mason — 01 Jun 2011, 18:33 · follows Dan'l Danehy-Oakes

Gerry Quinn wrote: > The only evidence that it travelled at relativistic speeds is the seemingly

greater passage of time on Urth since the launch. In *BotNS*, Severian gives the impression that Typhon lived at least 1000 years ago (though it's a bit vague, and people of that era are vague about time anyway). In the *Short Sun* trilogy, Rigoglio also gives us the impression that much longer than 350 years has passed at Nessus - it feels like up to 2000 years.

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There is actually one other way of reading it; suppose that Marble is right when she says the decimal point has been misplaced, and the Whorl has actually been travelling for 3000 years.

That way we can overcome a lot of problems - the Whorl has moved relatively slowly, and has gone a relatively short distance from Urth; time has passed at the same rate on Urth and on the Whorl, and there are 3000 years between Typhon and Severian, which looks fairly plausible.

I don't actually believe this, because I can't see any reason why everyone else on the Whorl would be mistaken. But it's a weird passage, which it would be nice to accommodate in some way.

Jeff Wilson — 01 Jun 2011, 19:54 · in reply to Dan'I Danehy-Oakes

On 6/1/2011 11:59 AM, Dan'I Danehy-Oakes wrote:

Gerry Quinn wrote:

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It really doesn't work that way; that is, the *_speed_* of light doesn't particularly change in Vinge's book, but the radical speculative means of transcending it do. Literal observational astrophysics remains largely in tact, which is why the On-Off Star is such a big deal in the second book.

Jeff Wilson - jwilson at io.com

Computational Intelligence Laboratory - Texas A&M Texarkana

< <http://www.tamut.edu/CIL> >

Sergei SOLOVIEV — 02 Jun 2011, 17:38 · in reply to Gerry Quinn

I made some computations (simplified) and it seems to me that indeed GW does not pay too much attention either to physics or to chronology.

Very roughly,

with constant acceleration of 1 m/sec^2 it is needed about 50 years to get to relativistic speed, and the same to slow down. But for the hollow asteroid such as Whorl where inside you have lakes etc, 1 m/sec^2 is already too much - if its rotation imitates ordinary gravity near Viron, the effect will be as if the flatland near the city becomes inclined about 10%. What will become to all liquids? Buildings? What will happen near the poles? The point is, I think, that we should be not very critical to technical details because the "convention" (between the author and the reader) is not very rigorous.

Sergei

Gerry Quinn wrote:

From: "Sergei SOLOVIEV" <soloviev at irit.fr>

Moses made Jews wander 40 years through Sinai. If you take the shortest way, it is

at most a few hundred kilometres. What makes you think that the Whorl had

taken the shortest path to its destination? It could very well go with relativistic

speed and make a detour. It seems also that the plan might include

that the Whorl
will come back and repopulate Urth (Ushas) after the floods etc. - in
the end
of the Short Sun cycle it is going to be repaired and travel again -
to go where?
Some hints are also in the end of "The Urth of the New Sun".

It's not easy to turn a relativistic asteroid! And it doesn't seem
like they stopped anywhere en route, so why waste all that energy?

If Typhon wanted to repopulate Urth at a later time (but he says
nothing of any such plan when he meets Severian in BotNS) he could
have put sleepers on Lune or something. But anyway he had no reason
to make any such plan.

My impression is that the Whorl is intended to be repaired and explore
further among the stars. Perhaps that was the original plan, derailed
by the death of Pas.

- Gerry Quinn

Jack Smith — 02 Jun 2011, 18:07 · in reply to Sergei SOLOVIEV

Here are some comments of the speed of the Whorl:

1

You have to travel very fast to get to any stars because of their great distance. To reach even
the closest star in 300 years, you

would need a speed of about 1.5% of light (10,000,000 MPH)

2

It would take an enormous amount of energy to accelerate as massive an object as the Whorl to
even 1.5% light speed.

We don't know where this energy would come from.

3

A travel speed close to the speed of light would explain why only 300 years have elapsed on the Whorl while 1000 to 2000 years (a chiliad or 2) have gone by on Urth

At 95% of speed of light, Whorl time would be 300 years for 1000 Urth years.

At 99% of speed of light, Whorl time would be 300 years for 2000 Urth years

4

Of course, it's more complicated than that. You have to accelerate the ship up to a high speed, and then decelerate to stop at Blue-Green system.

The rate of acceleration has to be slow, or the cargo would be pressed against the back of the ship.

Acceleration would have to be very low. At an acceleration of 1/100 G, it would take about 97 years to get up to about speed of light.

You could then coast for 100 years, and then decelerate for 97 years, making a total time of about 300 years ship time.

5

I'm not at all sure that Gene Wolfe made any exact calculations. It seems to me more likely that he just relied on time slowing down at speeds close to the speed of light.

On Thu, Jun 2, 2011 at 1:38 PM, Sergei SOLOVIEV <soloviev at irit.fr> wrote:
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with constant acceleration of 1 m/sec² it is needed about 50 years to get to relativistic speed, and the same to slow down. But for the hollow asteroid such as Whorl where inside you have lakes etc, 1 m/sec² is already too much - if its rotation imitates ordinary gravity near Viron, the effect will be as if the flatland near the city becomes inclined about 10%.
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- Gerry Quinn

Jack Smith — 02 Jun 2011, 18:14 · in reply to Jack Smith

I copied most of this from an Excel file, and the formatting came out a little off. I meant to say, "A travel speed close to the speed of light would explain why only 300 years have elapsed on the Whorl while 1000 to 2000 years (a chiliad or 2) have gone by on Urth."

On Thu, Jun 2, 2011 at 2:07 PM, Jack Smith <jack.smith.1946 at gmail.com> wrote:
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2

It would take an enormous amount of energy to accelerate as massive an object as the Whorl to even 1.5% light speed.

We don't know where this energy would come from.

3

A travel speed close to the speed of light would explain why only 300 years have elapsed on the Whorl while 1000 to 2000 years (a chiliad or 2) have gone by on Urth

At 95% of speed of light, Whorl time would be 300 years for 1000 Urth years.

At 99% of speed of light, Whorl time would be 300 years for 2000 Urth years

4

Of course, it's more complicated than that. You have to accelerate the ship up to a high speed, and then decelerate to stop at Blue-Green system.

The rate of acceleration has to be slow, or the cargo would be pressed against the back of the ship.

Acceleration would have to be very low. At an acceleration of 1/100 G, it would take about 97 years to get up to about speed of light.

You could then coast for 100 years, and then decelerate for 97 years, making a total time of about 300 years ship time.

5

I'm not at all sure that Gene Wolfe made any exact calculations. It seems to me more likely that he just relied on time slowing down at speeds close to the speed of light.

On Thu, Jun 2, 2011 at 1:38 PM, Sergei SOLOVIEV <soloviev at irit.fr> wrote:

I made some computations (simplified) and it seems to me that indeed GW does not pay too much attention either to physics or to chronology. Very roughly,

with constant acceleration of 1 m/sec² it is needed about 50 years to get to relativistic speed, and the same to slow down. But for the hollow asteroid such as Whorl where inside you have lakes etc, 1 m/sec² is already too much - if its rotation imitates ordinary gravity near Viron, the effect will be as if the flatland near the city becomes inclined about

10%.

What will become to all liquids? Buildings? What will happen near the poles?

The point is, I think, that we should be not very critical to technical details

because the "convention" (between the author and the reader) is not very rigorous.

Sergei

Gerry Quinn wrote:

From: "Sergei SOLOVIEV" <soloviev at irit.fr>

Moses made Jews wander 40 years through Sinai. If you take the shortest way, it is

at most a few hundred kilometres. What makes you think that the Whorl had

taken the shortest path to its destination? It could very well go with relativistic

speed and make a detour. It seems also that the plan might include that the Whorl

will come back and repeople Urth (Ushas) after the floods etc. - in the end

of the Short Sun cycle it is going to be repaired and travel again - to go where?

Some hints are also in the end of "The Urth of the New Sun".

It's not easy to turn a relativistic asteroid! And it doesn't seem like they stopped anywhere en route, so why waste all that energy?

If Typhon wanted to repopulate Urth at a later time (but he says nothing of any such plan when he meets Severian in BotNS) he could have put sleepers on Lune or something. But anyway he had no reason to make any such plan.

My impression is that the Whorl is intended to be repaired and explore further among the stars. Perhaps that was the original plan, derailed by the death of Pas.

- Gerry Quinn

Jeff Wilson — 02 Jun 2011, 19:29 · in reply to Sergei SOLOVIEV

On 6/2/2011 12:38 PM, Sergei SOLOVIEV wrote:

I made some computations (simplified) and it seems to me that indeed GW does not pay too much attention either to physics or to chronology.

Very roughly,

with constant acceleration of 1 m/sec^2 it is needed about 50 years to get to relativistic speed, and the same to slow down.

I think you are off by a factor of 5 or so.

300,000 km/sec is 300,000,000 m/sec

/1 m/sec/sec is 300,000,000 sec

/60 for 5,000,000 min

/60 for 83,333 hr

/24 for 3472 days

/365.25 for 9.5 years

As a check, the familiar factoid of 1 year at 1 g to reach lightspeed:

9.8 m/sec/sec round up to 10 m/sec/sec

*60 for 600 m/sec/min

*60 for 36,000 m/sec/hr

*24 for 864,000 m/sec/day

*365.25 for 315,576,000 m/sec/year

/1000 for 315,576 km/sec/year

c is actually a little under 300K, so this is more like lightspeed in 50 weeks.

Jeff Wilson - jwilson at io.com

Computational Intelligence Laboratory - Texas A&M Texarkana

< <http://www.tamut.edu/CIL> >

Dan'l Danehy-Oakes — 02 Jun 2011, 19:36 · in reply to Jeff Wilson

Eeeeeyeah, but . The calculations below don't take dilation into account. I'm just sayin'.

On Thu, Jun 2, 2011 at 12:29 PM, Jeff Wilson <jwilson at io.com> wrote:

On 6/2/2011 12:38 PM, Sergei SOLOVIEV wrote:

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Jeff Wilson - jwilson at io.com

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Jeff Wilson — 02 Jun 2011, 19:53 · in reply to Dan'l Danehy-Oakes

On 6/2/2011 2:36 PM, Dan'l Danehy-Oakes wrote:

Eeeeeyeah, but . The calculations below don't take dilation into account. I'm just sayin'.

I'm assuming acceleration remains constant wrt internal Whorl time, on the entirely unfounded assumption that the Whorl's acceration is based on some internal principle. I suppose they could be catching waves on the unseen surf Severian's tender bobs on. This is an area where I would have to defer to Gerry, but I'm pretty sure that viewed externally, acceleration would drop off and time dilation would increase over the external time to prevent acceleration past the speed of light from being observed. There problem for me is that length contraction also comes into play and that's always a pain to account for.

Jeff Wilson - jwilson at io.com

Computational Intelligence Laboratory - Texas A&M Texarkana

< <http://www.tamut.edu/CIL> >

pinlighter — 02 Jun 2011, 20:10 · in reply to Dan'l Danehy-Oakes

----- Original Message -----

From: "Dan'l Danehy-Oakes" <danldo at gmail.com>
To: "The Urth Mailing List" <urth at lists.urth.net>
Sent: Thursday, June 02, 2011 8:36 PM
Subject: Re: (urth) Problematic element in chronology
Eeeeeyeah, but . The calculations below don't take dilation into account. I'm just sayin'.

On Thu, Jun 2, 2011 at 12:29 PM, Jeff Wilson <jwilson at io.com> wrote:

On 6/2/2011 12:38 PM, Sergei SOLOVIEV wrote:

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--

Jeff Wilson - jwilson at io.com
Computational Intelligence Laboratory - Texas A&M Texarkana
< <http://www.tamut.edu/CIL> >

A good rule of thumb is Olga's prayer

$g y = c$

hartshorn

----- Original Message -----

From: "Dan'I Danehy-Oakes" <danldo at gmail.com>
with constant acceleration of 1 m/sec^2 it is needed about 50 years to
get
to relativistic speed, and the same to slow down.

I think you are off by a factor of 5 or so.