

Re: The Laws of Intelligence Examined

Source: <http://sci.tech-archive.net/Archive/sci.physics.relativity/2006-05/msg00340.html>

- *From:* "Tom Van Flandern" <tomvf@xxxxxxxxxxxxxxxxxxxx>
 - *Date:* Thu, 4 May 2006 10:31:17 -0700
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[TomVF]: I
was
explaining
that there is
more than
one
physical
interpretation
of GR.

[Bilge]: No, there is not, tom.
General relativity is a
geometric
theory of spacetime – by
design.

[TomVF]: [examples of more than one
physical interpretation]

[Bilge]: As I've pointed out, general relativity is a geometric
theory
by design. What precisely do you think the metric is for?

[TomVF]: I notice that your response ignores the point of the exchange.

[Bilge]: What you've noticed is that I have no intention of following one
of your irrelevant tangents.

Re: The Laws of Intelligence Examined

Concession noted.

[TomVF]: Is it your habit to change the subject when someone counters a claim you have made?

[Bilge]: You haven't countered anything.

Frustration noted.

[TomVF]: Specifically, are we now agreed that there is more than one possible physical interpretation of GR, each having the same basic math? Why or why not?

[Bilge]: No. The issue is whether or not your cartoon notion of general relativity resembles general relativity. It does not.

New diversion noted.

[Bilge]: General relativity is not a classical force.

[TomVF]: When working in the astronomers' Euclidean 3-space, where the observations are made and where GR has been tested, GR is a classical force by definition of force: the time rate of change of (3-space) momentum. Surely you are aware that space curvature is not what causes basic Keplerian orbital motion! If not, see <http://metaresearch.org/cosmology/gravity/spacetime.asp> and the reference therein to MTW for a quick refresher. In fact, the lack of a physical mechanism to initiate motion is one of the main reasons for favoring alternatives over the geometric interpretation.

Re: The Laws of Intelligence Examined

[Bilge]: So, is it your contention that the general theory of relativity states that the earth is the true center of the universe and that the universe is Euclidean?

[TomVF]: Again, you made an unsupported claim, I refuted it, and you your respond with a change of subject. First, on the original point and in light of my response, are we now agreed that, in 3-space, gravity is a classical force? Why or why not?

[Bilge]:

Absence of response noted.

[TomVF]: You seem unfamiliar with GR equations of motion, the equations for gravitational force that determine the principal orbital motions of bodies in the real world astronomer's Euclidean 3-space. I referred to these above as "translations from 4-D to 3-D".

[Bilge]: Do you disagree that the covariant derivative of a vector, D_a

V^i is given by, $d_a V^i + C^i_{ba} V^b$ and that the curvature is given

by,

$[D_a, D_b]V^i = R^i_{jab} V^j$? If not, then your comment is nothing but

hot

air.

[TomVF]: Once yet again, you ignore my point and try to change the subject to something completely irrelevant here. Are we agreed that the GR equations of motion (as developed by Einstein, Infeld, Hoffman, Roberston, and Noonan and described in MTW p. 1095) are expressions for the force of gravity in the astronomer's Euclidean 3-space? And are we agreed that these are the equations used by astronomers to compare

Re: The Laws of Intelligence Examined

theoretical GR to real-world observations? Why or why not?

[Bilge]:

Absence of response noted.

[TomVF]: These equations of motion represent the field of modern relativistic celestial mechanics. It would broaden your knowledge and perspectives if you became familiar with its basics. "Adventures in Celestial Mechanics" by Victor Szebehely (U. Texas Press, Austin, 1989) is very readable by anyone familiar with GR ...

[Bilge]: I'd be happy to make a comparison to see which one of us is more broadly versed in any or all aspects of physics. Personally, I don't think you have the slightest idea what a field theory is, classical or quantum. You simply use the words because they look nifty.

[TomVF]: I pointed you to a citation to help you fill in gaps in your knowledge and understanding. Your response is again off-topic and a change of subject. This is not a competition between the two of us, but an attempt to develop a better understanding of nature for everyone. Your participation in achieving that goal would be appreciated.

[Bilge]:

Absence of response, especially to last sentence, sadly noted.

[TomVF]: ... assuming of course that familiarity with 4-space does not inhibit one from thinking of the world in everyday Euclidean 3-space

Re: The Laws of Intelligence Examined

terms once again.

[Bilge]: Nothing inhibits from thinking in 3-d, but apparently something inhibits you from recognizing the difference between a theory and a particular approximation to a theory.

[TomVF]: Again, you missed or ignored a point in my message and changed the subject. I repeat the relevant remark: "Yes, these equations of motion are approximations, just as the trig equations we use in our calculators and computers are approximations. Like them, the equations of motion can be made as accurate as any particular problem demands by expanding the series used to make the approximation. In practice they are calculated to more precision than our ability to measure the observational data for the problem in question. These arbitrarily accurate approximations are the only means we have for verifying GR. If you do not believe they are good enough, then you do not believe GR has been verified against observation." Do you agree? Why or why not?

[Bilge]:

Absence of substantive responses to most points is most regrettable. As to what "the issue" is, you were the one who jumped into this thread by taking issue with several of my points. I explained and defended those points. Now you insist on changing the subject. My views cannot be that cartoonish if you cannot explain or defend any of your own objections to them. -[Tom]-

Summary of discussion up to now:

- ** GR has more than one physical interpretation.
- ** Astronomers must translate solutions to GR field equations back to 3-space in order to compare the theory with observations made in the astronomer's Euclidean 3-space.
- ** Even in a relativity context, gravity in 3-space is a classical force by definition of "force".
- ** The GR equations of motion are equations for the force of gravity in 3-space, and utilization of these equations is the subject of the field of celestial mechanics.
- ** While the equations of motion are only approximations, they can be developed to arbitrarily high precision and are in any case the main aspect of GR that has been tested against observations. Without them, we wouldn't know that GR had any applicability to the real world.

Re: The Laws of Intelligence Examined

Tom Van Flandern – Sequim, WA – see our web site on replacement astronomy research at <http://metaresearch.org>