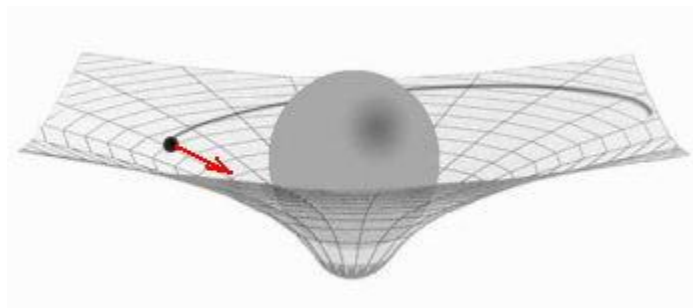http://www.god-does-not-play-dice.net/#rotation
http://www.god-does-not-play-dice.net/gravity_and_rotation.pdf
March 31, 2013, 05:46:04 GMT

Subject: "... perhaps gravity is "special", and it is merely a coincidence that it looks like a fictitious force."
Date: Sat, 23 Mar 2013 03:15:37 +0200
Message-ID: <CAM7Ekx=9reKUy1WVTasbUreXyrhxioamD_JK1MT-XTEDhtFx1w@mail.gmail.com>
From: Dimi Chakalov <dchakalov@gmail.com>
To: Courtney Seligman <courtney@cseligman.com>

http://cseligman.com/text/physics/fictitious.htm

Dear Dr. Seligman,

Perhaps you may be interested to read what may be "special" about gravity:

http://www.god-does-not-play-dice.net/#ETH

All the best,

Dimi Chakalov

**Note**: The small red arrow above might look like a "fictitious force", but it is manifestly 'real' and most importantly *omnipresent*, because only observers who feel no force at all -- including gravity -- would be *shielded* from it and could claim that they weren't "accelerating" (Brian Greene). Besides, gravity isn't a force either, because it doesn't conform to Newton's third law, so the "equality of inertial and active gravitational mass then remains as puzzling as ever. It would be nice (no, it wouldn't be "nice" at all - D.C.) if the inertial mass of an accelerating particle were simply a back-reaction to its own gravitational field, but that is not the case." (Wolfgang Rindler, p. 22)

But what if gravity is centripetal force from "rotation" in the *global mode* of spacetime?
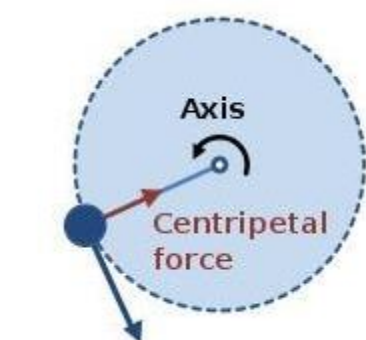
The acceleration is pointing directly opposite to the radial displacement at all times
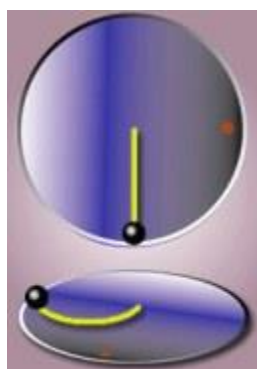
Coriolis effect

Notice the vertical trajectory of the black ball in the second drawing of Coriolis effect: it corresponds to "instantaneous" **re**-generation -- one-at-a-time -- of inertial forces along the **w**-axis of the whole universe *en bloc*. As Courtney Seligman suggested,

> The fact that gravity, like fictitious forces, involves a constant acceleration, makes us wonder whether gravity could be a fictitious force. It's hard to imagine that anything so pervasive and seemingly real could be "fictitious", but the forces experienced by the person in the accelerated car feel real, and are presumably fictitious. Is there some way that we could create the phenomenon of gravity, without the force?

> There is indeed such a way. Suppose that you were in a rocket ship, headed upwards at the acceleration of gravity, so that anything not attached to the ship seems to "fall" with a mirror image of that upward acceleration. Then every such object would fall toward the back of the ship, at the acceleration of gravity, and trying to stop such a fall would require a force, in the direction of the acceleration, proportional to the object's mass, which would be equal to, and appear to be, its real weight.

> Of course, we can't explain gravity in that way, as that would require every part of the Earth to be accelerating upward and outward, which would make the Earth bigger and bigger, which is not observed.

But the "upward direction" is *not* physical. It points to the quantum-gravitational "**it**" in the global mode of spacetime. Physically, it would correspond to some **absolute** observer at 'the reference frame of fixed stars' (see below). Courtney Seligman also added his opinion:

> So the simplest explanation is to assume that, peculiar though it may be, gravity -- although a perfectly real force -- acts as though it is a fictitious force. No other real force is known to act in this way, but perhaps gravity is "special", and it is merely a coincidence that it looks like a fictitious force.

NB: Alternatively, the simplest explanation is to assume that gravity is a physical blueprint left from the Arrow of Space on the local (physical) mode of spacetime from two phenomena: (i) the "upward direction" along the **w**-axis in the Arrow of Space, and (ii) the "rotation" in the *global mode* of spacetime. Physically, we will obtain an omnipresent **red arrow** in the *local*

mode of spacetime (see above), but **cannot in principle** detect its "physical basis" nor absolute reference frame of the *global mode* of spacetime.

Notice that the *physical* blueprint of "rotation" is **complemented** by the elementary shift **dt** in the "upward direction" along the **w**-axis. The topology of "rotation" is a circle, as in the cognitive cycle of Ulric Neisser, while the topology of the "upward" shift **dt** goes along a line (1-D Euclidean space), called "time". It corresponds to "radial displacement at all times" in the first drawing above, and its mirror image is called 'inertia'.

Thus, we propose a *superposition* of "two" topological transitions in the *global mode* of spacetime, but bear in mind that the transitions are *completed* and *totally eliminated* in the *local* mode of spacetime by the "speed" of light, leaving a *perfect* 3-D continuum of *physical* 'world points' -- one-at-a-time.

This proposal is alternative to all multi-dimensional ideas put forward ever since 1914; see a recent account here. Instead of speculating about a 3-D nanny looking at 2-D Flatland and then claiming that those extra "directions" have been "wrapped" and made terribly "small" at macroscopic length scale, we offer the 'dark Zen gaps' of the global mode of spacetime <u>and</u> a pocket of *propensities* explicated from the global mode (called 'potential reality'), which resides *only* in the *potential future* of the Arrow of Space.

As mentioned previously, the *potential reality* is *not yet* physicalized quantum-gravitational "**it**", which might resemble a "dough" or continual *density* of *intangible* **pure** energy. There is no metric there, no spatial relations (inside vs. outside, left vs. right), and no set theory relations, such as 'one vs. many' either. It (not He) is the ultimate presentation of *entanglement* (Verschränkung): "*the* characteristic trait of quantum mechanics" (Erwin Schrödinger). We can only sense or *feel* the UNspeakable "**it**" with our brains here. If we try to explain the *connectedness* of the global mode of spacetime, relative to the local, 3-D mode (resembling fiber bundle base space), one could perhaps connect and **bootstrap** all points in 3-D space **simultaneously** and from all directions, "including the inner structure of solid objects and things obscured from our three-dimensional viewpoint" (Wiki). Topologically, such infinite-connected global mode of spacetime would allow to have "two" (in fact, one) simultaneous, *en bloc* view(s) on **all** 'world points' (Bergmann and Komar) in 3-D: we could "see" all points on the closed 2-D surface in the drawing below, along all radii, at **one** instant, and in **both direction(s)**.
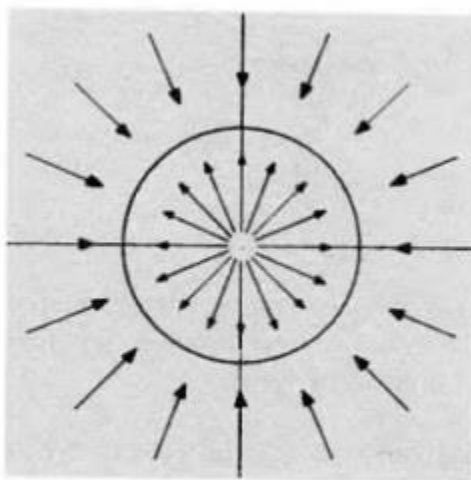

Figure 5.7

M.A. Armstrong, *Basic Topology*, Springer, 1997, p. 104

Let's go back to the Coriolis effect, shown exclusively in the local mode of spacetime:

In the analogy with a ball rolling across the surface of a rotating merry-go-round, there are two reference frames, (i) on the rotating merry-go-round and (ii) on the ground, while in our case we are **locked** on a "stand still" merry-go-round (like the girl in the first photo above) and *cannot* switch to an **absolute** observer on the ground or (ii) 'the reference frame of fixed stars'. Just as in the case of Stavros, she cannot 'take off the train' and detect her "rotation" with respect to reference frame (ii). She is **locked** -- once-at-a-time -- on a "stand still" merry-go-round and can only observe "rotation" in the trajectory of her rolling ball.

The inertial effect is real -- as Ernst Mach has allegedly said, "when the subway jerks, it's the fixed stars that throw you down". Yet we cannot trace back inertia with Newton's third law, because that would *physically* expose the global mode of spacetime and its "aether".

Recall that if we apply current GR textbooks (e.g., Ciufolini and Wheeler, p. 270), the *generation* of inertial reaction forces would look "instantaneous" and *very* puzzling: read Jim Woodward. According to Tom Phipps (Thomas E. Phipps, Should Mach's Principle be taken seriously? *Speculations in Science and Technology*, 1(5) 499-508 (1978), p. 504):

> Gravity is a different beast from radiation of any kind. Being mediated by *virtual* particles, which may be considered to be kept permanently virtual by the physical non-existence of gravity shields or absorbers, gravity can act (nonlocally) with infinite speed -- in effect, with precognition. That is exactly what it does, if Mach's principle has any substance. The fixed stars "know" the subway is going to jerk, because they have sent their virtual spies **forward in time** to find out about it.

In my opinion, Mach's Principle doesn't imply "precognition" nor "infinite speed" but atemporal bootstrapping of all 'world points', which produces Synchronicity.

The important issue is that, just as with "spin" (Hans Ohanian), we will encounter 'gravity *minus* its physical basis' in the left-hand side of filed equations -- a *potential* quantum-gravitational "**it**". Namely, torsion & curvature are physically exposed as 'rotation *minus* its physical basis'.

Positive curvature:
expanding balloon with
curvature-and-torsion
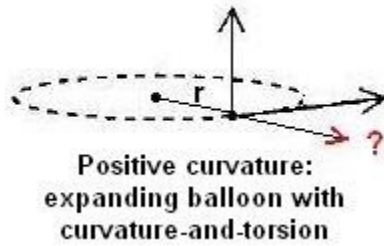
In the case of negative curvature, the two black vectors depicting
curvature (right arrow) and torsion (vertical arrow) will be reversed.
The red vector corresponds to "expansion"; the opposite vector of
"inertia" is not shown. The dotted circle corresponds to 1-D space
with positive curvature, as in Fig. 5.7 from M.A. Armstrong above.

Gravity doesn't have its own "field", but is manifestation of an atemporal "negotiation" between the physical content of every "point" and 'the universe as ONE', which yields an *additional* and perfectly *physicalized* input on matter from 'the universe as ONE'. The same mechanism holds for the human brain: we cannot observe its mind but only a *self-acting* brain. And the same holds for 'the universe as a brain', bootstrapped by its self-acting ... "gravity", as we chose to call this holistic phenomenon.

Again, 'the universe as ONE' is quantum-gravitational "**it**" which does not and cannot possess any *metric* (Chris Mihos). **It** is rooted on the dark Zen gaps **]between[** all "infinitesimally nearby events" (Wald, p. 8), and supports Mach's idea about the influence of 'the whole universe' (*ibid*., p. 71, p. 9).

In brief, the causality (called *biocausality*) in the Arrow of Space is always retarded, because all influences from the past, *converging* (Chris Isham) on a 'world point' (Bergmann and Komar), have been **already** correlated with/by their common "**it**". If we try here to impose the notion of time from physics textbooks, the **already** correlated bi-directional atemporal negotiation between the physical content of (i) every 'world point' and (ii) 'the universe as ONE' would match the "duration" of absorption-and-emission of a *virtual* photon.

This is my Ansatz to the origin of gravity & positive mass. If the feedback from 'the universe as ONE' were *physically* detectable, gravity will be a 'physical force' in line with Newton's third law, "but that is not the case" (Wolfgang Rindler). It **must** be camouflaged as "fictitious force" (Courtney Seligman), because otherwise we would have direct observational proof of the aether of 'the universe as ONE'. Details available upon request.

In practical terms (pending verification with the full mathematical theory of 'the universe as a brain'), one can expect that the "acausal" connecting principle (Carl Jung) dubbed Synchronicity is determined by *biocausality*, namely, jointly from the past and the potential future of 'the universe as ONE', and hence may become invit*able* or perhaps even evok*able*. But as Rudolf Peierls remarked, "Synchronicity is something which physicists do not know about, nor would they wish to."

D. Chakalov
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http://www.scribd.com/doc/132837865/Gravity-and-Rotation