Sir Isaac Newton:

Philoſophiæ Naturalis

PRINCIPIA

MATHEMATICA.

(...)

p.13 (ed.3):

AXIOMATA,

SIVE

LEGES MOTUS.

LEX I.

Corpus omne perſeverare in ſtatu ſuo quieſcendi vel movendi uniformiter in directum, niſi quatenus illud a viribus impreſſis cogitur ſtatum ſuum mutare.

Each body perseveres in its state of either resting or moving in a uniform direction, except as far as it by a force impressed is intended to change its state.

HR: This *law of inertia* actually comes from Galileo Galilei and it can immediately be deduced from Newton's 2nd law, so it is to be considered a *corollary* and not an *axiom* at all.

It can also not be formulated as an equation.

It actually states the *conservation of momentum*.

LEX II.

Mutationem motus proportionalem esse vi motrici impressæ, & fieri secundum lineam rectam qua vis illa imprimitur.

Change of motion is proportional
to the impressed driving force
& is made following the straight line
along which this force is impressed.

HR: Therefore,
the *absolute value* of any motion
is only changed by a *longitudinal* force
& its *direction* only by a *lateral* force.

Equation: $\vec{F} = \dot{\vec{p}}$ or: $\vec{F} = m \cdot \vec{a}$

Isn't *circular motion* a combination of:

$$y = r \sin \omega t$$

$$\& \quad x = r \cos \omega t$$

?

Aren't both:

$$y = r \sin \omega t$$

$$\& \quad x = r \cos \omega t$$

independent perpendicular *rectilinear* oscillations?

Shouldn't we decompose the centri*peta*l force into (F_x, F_y) components, each affecting *just one* of the oscillations?

Don't both oscillations then undergo *only* *longitudinal* forces that must agree with:

c e i i i n o s s s t t u u ?

(Hooke's law: ***ut tensio sic vis***).

Doesn't this imply:

$$y = r \sin \omega t$$

$$\& \quad x = r \cos \omega t$$

then undergo

not any lateral forces?

Doesn't this mean both independent oscillations do *not* change direction, in agreement with all of the above?

Wouldn't the same apply to *elliptical* motion?

$$y = \boldsymbol{b} \sin \omega t$$

$$\& \quad x = \boldsymbol{a} \cos \omega t$$

Isn't a perfect Keplerian orbit in a two-body system stable?

Newton's 2nd law

(& his 1st law explicitly mentions
uniformity of *direction*)

causes ***rotation***
to be ***absolute***!

Newton's rotating bucket: He was right! Es tut mir leid, Herr Mach![1]

Due to the *law of inertia*, the water in the bucket tries to *maintain rectilinear motion*, causing it to heap towards the bucket's rim.

Gravity then renders a pressure gradient rendering a centri*peta*l force by which the water deviates from its *rectilinear motion* in the direction of this force (2nd law), i.e. towards the centre, counteracting & balancing said outward heaping.

[1] Zet's Churman for *it spites me* (oops, that's Dunglish) *I'm sorry, Mr. Mach.*

Any co-rotating observer
also undergoes a centri*peta*l force,
by which ***he knows*** that he,
as well as the bucket including the water,
are not
persevering in their
current state of motion
as described by the ***law of inertia.***

Only a co-rotating moron
would consider himself at rest.

Recent (2025-02-17) **discovery**[2]:

Most galaxies[3]

rotate in same direction.

Conclusion drawn:

Entire universe might be rotating.

Frequent observation:

Most wheels of a car

rotate in same direction.

Conclusion:

Entire car is rolling & turning over 😎.

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[2] https://doi.org/10.1093/mnras/staf292

[3] That is: $\sim 2/3$ out of 263 galaxies
212 have $z \leq 1.5$ & merely 27 have $z > 2$, $(53°.01885 \leq \alpha \leq\in 53°.2184,\ -27°.9145 \leq \delta \leq -27°.7292)$;
what would be observed in the opposite (α, δ) direction?
Of course this is *very representative* for the universe…

In Newtonian mechanics, rotations don't *meta-rotate*.

Yet Mercury's perih. ***is*** precessing, causing the entire orbit to rotate,

(which would also apply to a *circular* orbit![4]),

but that's not *Newtonian*, is it?

Isn't the quintessence of ***relativity*** that things are ***not absolute***?

[4] See: https://henk-reints.nl/astro/HR-Mercury-perihelion-precession-by-SR-only.pdf

A spinning object
running off a revolving disk
onto the floor
does not undergo
any change of axial rotation
w.r.t. stationary observers.

The *uniform direction of motion* is only determined by that motion itself.

It is not a(n absolute) property of the universe.

The body just "knows" its former positions and simply aligns its path accordingly.

Distant stars merely are *reference points* that owe their usability to their negligible apparent velocity.

Nature isn't targeting anything.

An object's motion
(or whatever event)
merely is a consequent
of some prior event(s).

The object does not know where it is going.

Motion is like walking backwards.
You can only see your prior footprints.
By aligning your next (backward!) step with them,
you automatically walk along a straight line.

Omnis comparatio claudicat; *every comparison is lame.*

The definition of genius
is taking the complex
and making it simple.

Albert Einstein:
"Das habe ich nie gesagt".

I never said that.

HR: No, I'm not arrogant, just very good...

Henk Reints

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