

**Discovered: the Earth moves: now discovered why.**

**“The reason *why* the Earth moves in the Solar System, in the Milky Way Galaxy, in the Cosmos has never been discovered.**

- **The motion to keep the planet(s) going in a straight line (for ever) has no known reason.**
- **The reason why things coast (for ever) has never been found out.**
- **The law (inertial movement) has no known \*origin.”**  
Richard Feynman. Character of Physical Law. 1965.

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**. Starting from 1st Principle.**

**Without the physical movements of physical bodies or material ALL would be '*stuck at origin*', inert, unmoving, at absolute rest. No action, reaction, or interaction.**

**No physical movements from \*origin in the material Universe, no change, past, present, or future; no revolutions, evolutions of atoms, stars, galaxies, for life on Earth or life anywhere in the Cosmos.**

**“I think therefore I am’ Rene Descartes, mathematician and philosopher. Without physical movement he couldn’t think because thinking requires the physical movement of particle bodies or material from some part of the brain to another. Neither, for the same reason could he do any mathematical sums, compute a single algebraic equation or discover a single physical law to *govern* Nature.**

**For the same reason philosophers and politicians would be stuck in dumb silence: unable to communicate. No last dance with me because there couldn’t be any first dance.**

**The 1<sup>st</sup> Principle of Physical Movements.**

**For ALL physical bodies and materials including us & Earth there are at base only three ways of moving or being moved – push/repulse: pull/attract: internal engine.**

**Note1. Spin on the spot is not a primary because it can be gained from one or more of the 'bases in action.'**

**Note2. There are only two fundamental and Universal underlying & enabling engines/energies as validated NOW, by millions of experiments – without exception.**

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**Two enabling engines/energies: each with contrasting physical properties, quantities, and ways of measuring.**

**Pe) of perpetually moving inertial bodies (Galileo, Newton Laws, Einstein, & particle physics)-measured in mass/speed.**

**Te)of thermal (heat) energy enabling transformations/phase transitions such as solid ice > liquid water > water vapour, nuclear synthesis in stars or in labs, thermal imaging, & dark energy in the vacuums of space–measured in degrees.**

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**Genesis "Let there be light" is incomplete. "Let there be many quantum packets (light photons) with **both** P energy the inertial properties of moving bodies" and T energy of differing degrees of thermal heat energy".**

**"Let there be neutrinos, quarks, electrons and other packets of the two energies  $P_e > T_e$ .**

**Note: Max Planck's quantum packet of energy/action was discovered from observing & measuring radiation emitted from a 'hot oven' in the German Empire (as it was then in 1900 AD).**

**Note: another quantum packet of energy/action was gained from observations & measurements during the Golden Age of American Space Discoveries emitted from what has been called... The Dawn of Creation...the Origin of the Big Bang expanding, cooling, creatively evolving Universe.**

**"Science thrives best when observation overcomes pre conception". Vera Rubin an American Astronomer.**

Max Planck's new observation took several years before it became part of mainstream science & technology.

Par for the course - it usually takes several years, sometimes generations, for the consequences of a new observation to become a part of mainstream science & technology.

The reason why the Earth is able to move is the same as why any physical body or material, of what ever scale size in volume moves - the two fundamental & Universal engines/energies.

Once we have the two base energies  $P_e < T_e$  20<sup>th</sup> century idea - atomic matter is frozen energy (but not absolutely frozen energy or all movement would cease), can be explored.

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### Origin of all Physical Movements.

1989-92 Nasa Launches COBE satellite to confirm George Gamow's now widely accepted, state of Big Bang Origin.

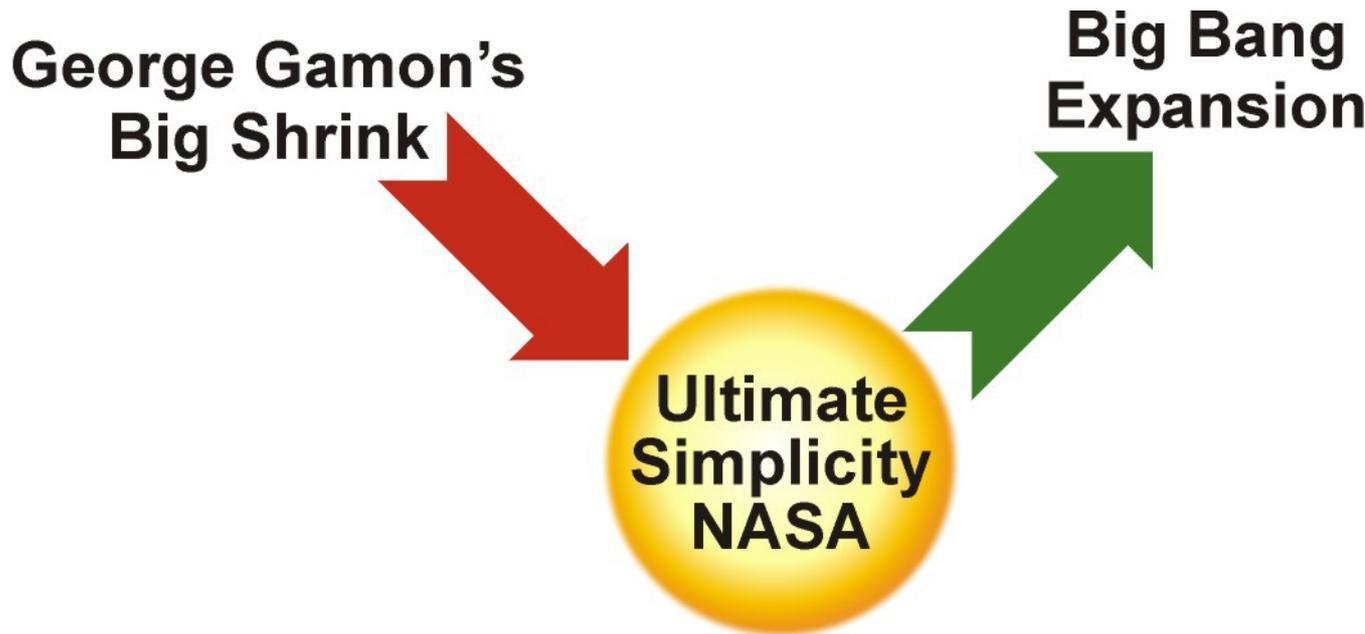
Diagram 1.



A **Fireball of Origin**, where everything physical was reduced by extreme thermal *heat* energy and high speed collisions of *densely* packed particle mass to a state of *thermal equilibrium* (everything at the same temperature) & - *Ultimate Simplicity*.

From such an *unpromising* Big Bang Origin the entire physical Universe including Earth, life on Earth us has subsequently evolved – enabled by way of physical and life processes which we have barely begun to understand.

Diagram 2.



**Error** it should be **George Gamow**, the Russian American scientist 1948 who 1<sup>st</sup> forwarded the idea that if the entire physical Universe could be shrunk back in time and space volume we would gain knowledge of the Ultimately Simple - 'fundamentals of physical existence'.

**Note:** temperature is an 'average norm' of a collective of individual variations'. Any teacher can gain the 'average norm height' of a class (collective) of children even though all the heights will individually vary.

So a temperature at same thermal temperature doesn't mean – individually exact – exactly equal.

Nature, physical, bio, human is not individually exact but individually varied.

**Individual variation is built into the fabric of our Reality.**

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