How Gravity Might Be Described If SpacePressure Were Validated

A Future Way of Explaining Gravity

The previous chapters have followed SpacePressure from its central conceptual proposal through the beginnings of formalisation, its broader implications, and its possible relationship to ideas already present within modern physics.

We can now step back from the technical questions and consider a more imaginative possibility.

Suppose future scientific work showed that spacetime curvature could validly be interpreted as a physically meaningful compressed condition of space, accompanied by pressure-like gradients around matter.

How might gravity then be explained?

The following is not a claim about the current scientific consensus.

Today, gravity is described most successfully by Einstein's General Relativity. In that theory, gravity is not treated as an ordinary force pulling objects together. Instead, matter and energy shape the geometry of spacetime, and objects move according to that curved geometry.

That remains the accepted scientific picture.
But suppose that, one day, the SpacePressure interpretation were formalised, tested, and validated.

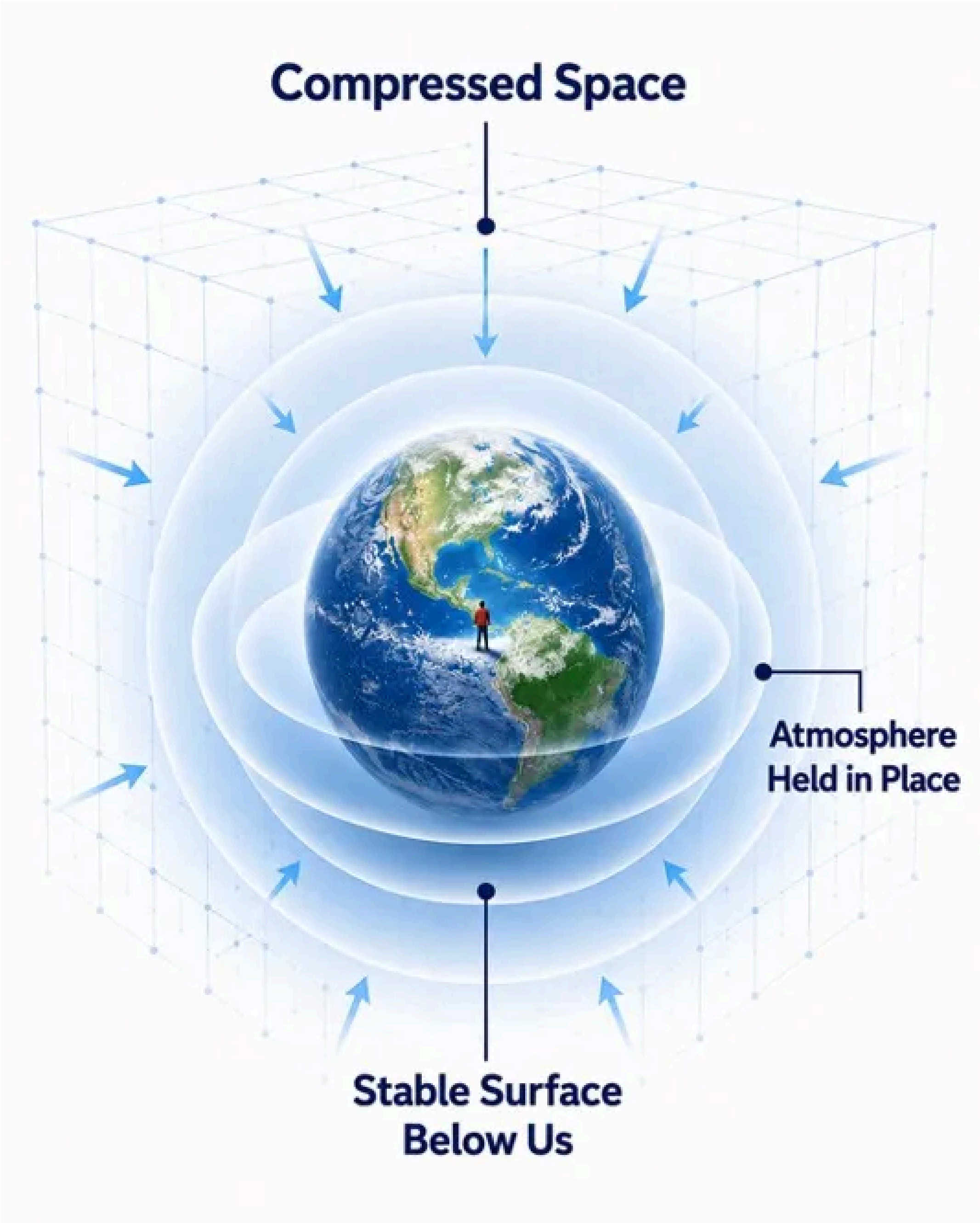
Suppose it were shown that the curvature of spacetime could also be understood as a real physical condition of space itself — a condition involving compression and pressure-like gradients around matter.

If that happened, the equations would not need to change. The successful predictions of Newtonian gravity and General Relativity would remain.

Planets would follow the same orbits.
Light would bend by the same amount.

Clocks would experience the same gravitational time dilation.
Gravitational waves would travel as already observed.
Gravity itself would not change.

What would change would be the physical story beneath those results.
In one sense, gravity lessons in schools might remain almost exactly as they are today.



How Do We Learn About Gravity Now?

How We First Experience Gravity

Our understanding of gravity begins long before we encounter Newton or Einstein.

From infancy, we gradually learn that unsupported objects fall, that dropped toys move towards the ground, and that things do not normally remain suspended in the air.

As children grow, this everyday understanding becomes more developed.

They see that:

- a thrown ball returns to the ground;
- an apple falls from a tree;
- jumping carries us upward only briefly;
- unsupported objects fall; and
- people and everyday objects remain on Earth's surface.

At first, gravity is understood through experience rather than theory.

The child does not need an equation. The evidence is visible everywhere:

✔ Things fall.

✔ Things have weight.

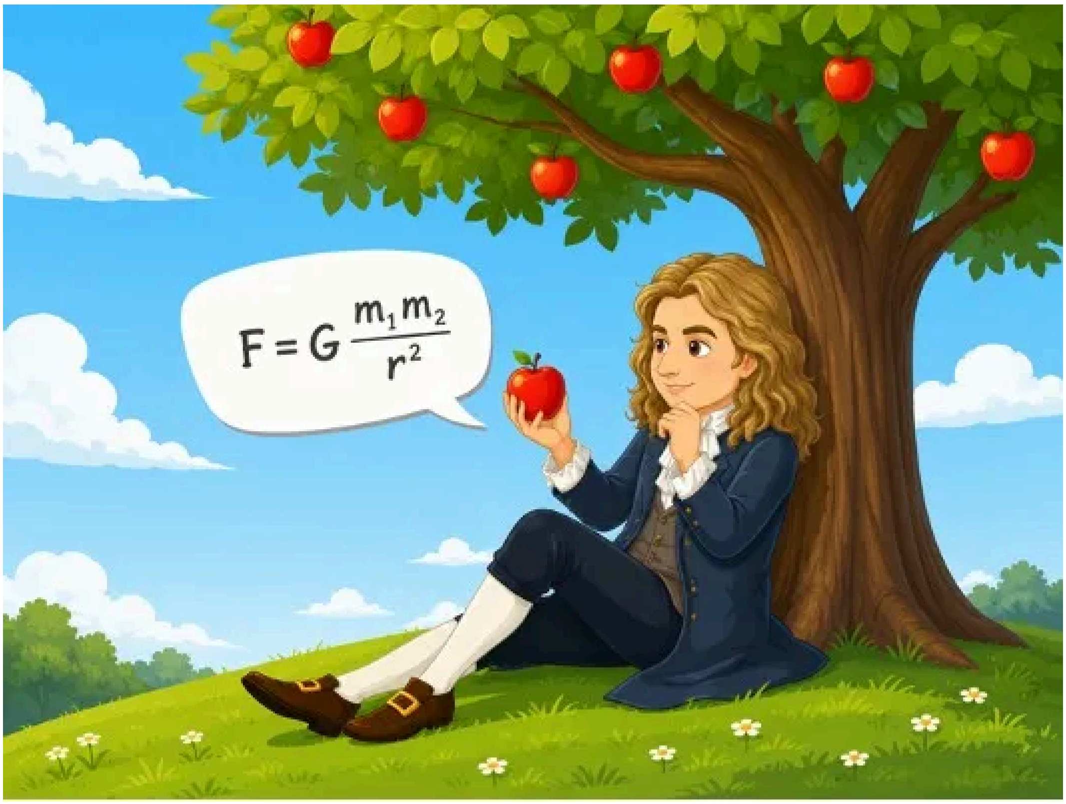
✔ What goes up usually comes down.

How Do We Later Learn to Explain Gravity?

At school, this everyday experience is gradually given a scientific explanation.

Newton's description is usually introduced first because it is highly effective and relatively easy to apply:

Masses attract one another through gravity.



Students learn that gravity causes falling, gives objects weight, keeps the Moon in orbit around Earth, and holds the planets in orbit around the Sun.

Later, they may encounter Newton's mathematical law of gravitation: F=G (m_1 m_2)/r^2
Einstein's General Relativity later provided a deeper geometric description. Gravity is no longer presented fundamentally as an ordinary pulling force. Matter and energy shape spacetime, and objects and light follow paths through that curved geometry.
This is mathematically powerful, but it is much harder to introduce to young children. Curved four-dimensional spacetime is less intuitive than the familiar statement:

Earth pulls things downward.

For that reason, the pulling-force picture remains central to early education, even though General Relativity provides the deeper modern framework.

How Might This Change If SpacePressure Were Validated?

If SpacePressure were eventually formalised, tested, and validated, the familiar observations would remain exactly the same.

Balls would still fall.

Apples would still drop from trees.

People would still remain on the ground.

The Moon would still orbit Earth.

The planets would still orbit the Sun.

Newton's equations would still work in their established domain, and General Relativity would remain the deeper mathematical theory.

What might change is the physical story offered beneath those observations.

Instead of teaching only:

Earth pulls objects downward,

teachers might eventually add:

Earth changes the condition of the surrounding space. That structured condition creates a gradient, and matter naturally moves within it towards Earth.

The explanation could remain simple enough for children:

Matter changes space.
Space develops a gradient.
Things move with that gradient.

The mathematics would not become simpler merely because the interpretation had changed. General Relativity would still require advanced mathematics.

But the physical picture might become easier to introduce.

Children could continue learning from the same familiar experiences—falling balls, apples, jumping, weight, and orbits—while gradually being shown that gravity may not be only an invisible pull.

It may also be understood as the behaviour of matter within a physically structured condition of space. The deeper physical picture of gravity might therefore become more intuitive and easier to introduce.

Gravity is no longer pictured only as a mysterious attraction acting across empty distance.

It becomes the observable effect of space responding to matter. That is the central point. If SpacePressure were ever validated, gravity would not need to be retaught because its effects had changed. It would need to be re-explained because its physical cause had become more understandable.

The effects would remain the same. The calculations would remain the same. The classroom facts would remain the same.

> ***What would change is the explanation beneath them.***

From Pulling to Pressing

For centuries, we have spoken of gravity as though Earth pulls us downward.

That language is useful.

It works in daily life.

It works in classrooms.

It works when we calculate falling objects, tides, and planetary motion.

But if SpacePressure were validated, our everyday description might gradually change.

We might stop saying only:

“Earth pulls us down.”

And begin saying:

“Earth alters and compresses the space around it, and that structured space directs matter towards the planet.”

In the traditional picture, gravity can appear like an invisible hand reaching outward from Earth and pulling objects inward. In the SpacePressure picture, gravity would be understood as part of the surrounding condition of space. We would not be pulled by a mysterious force travelling across empty distance. We would exist within a pressure-like gradient created by Earth’s presence. The ground beneath our feet would not merely be resisting a downward pull. It would be preventing us from following the inward motion associated with that gradient.

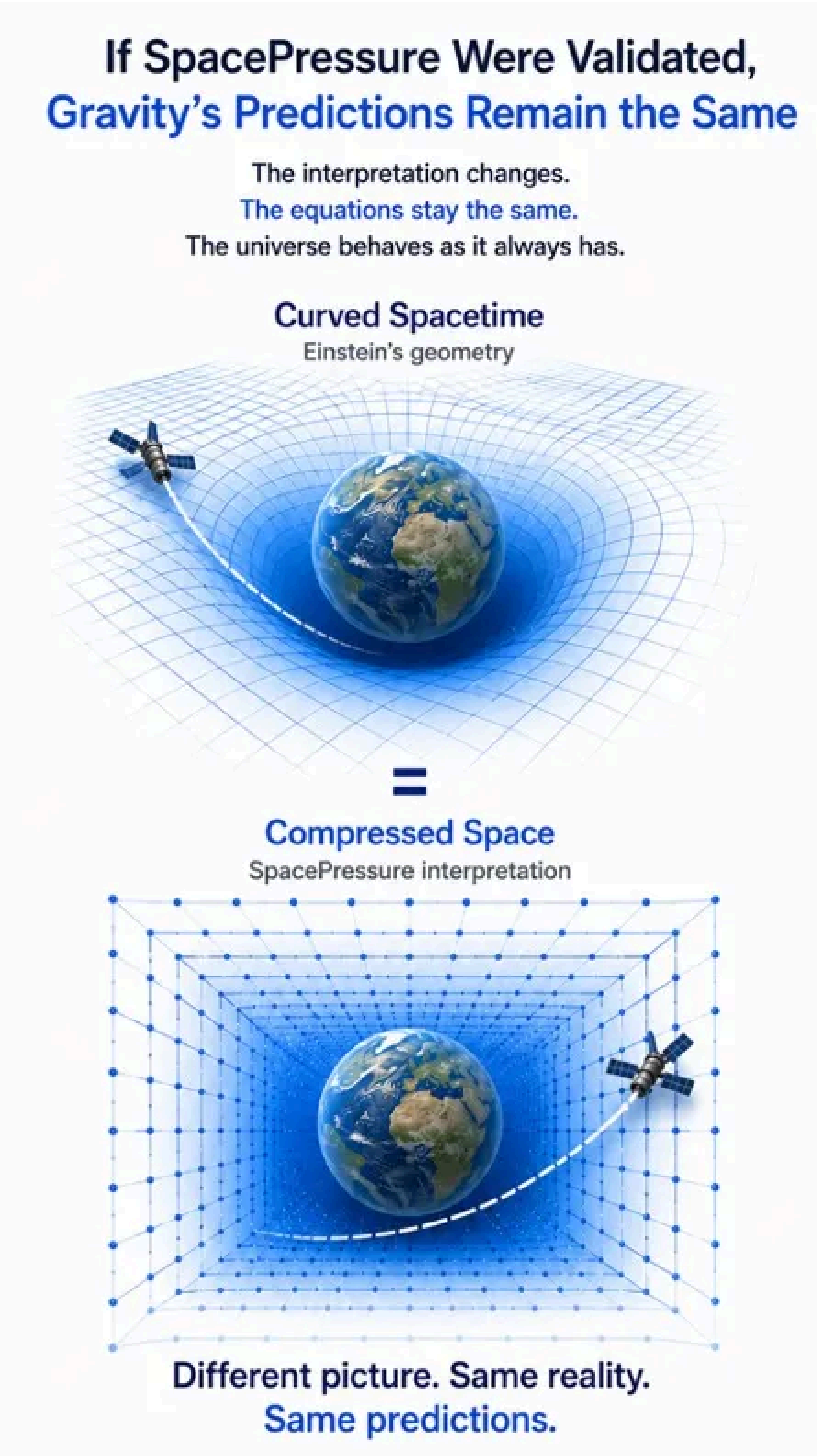
Why We Stay on the Ground

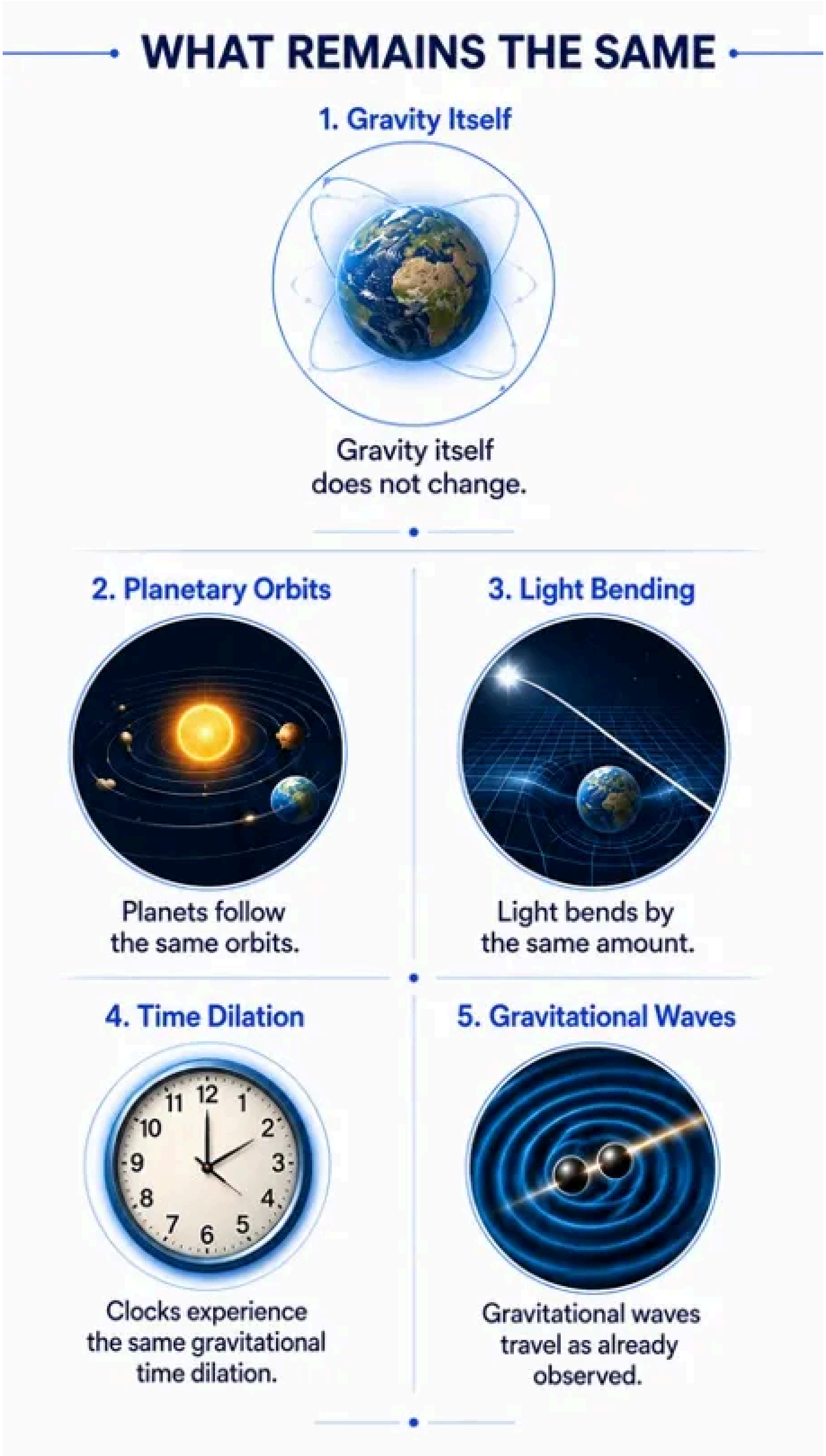
In ordinary language, we say that gravity holds us to Earth.
In the SpacePressure picture, that might become:

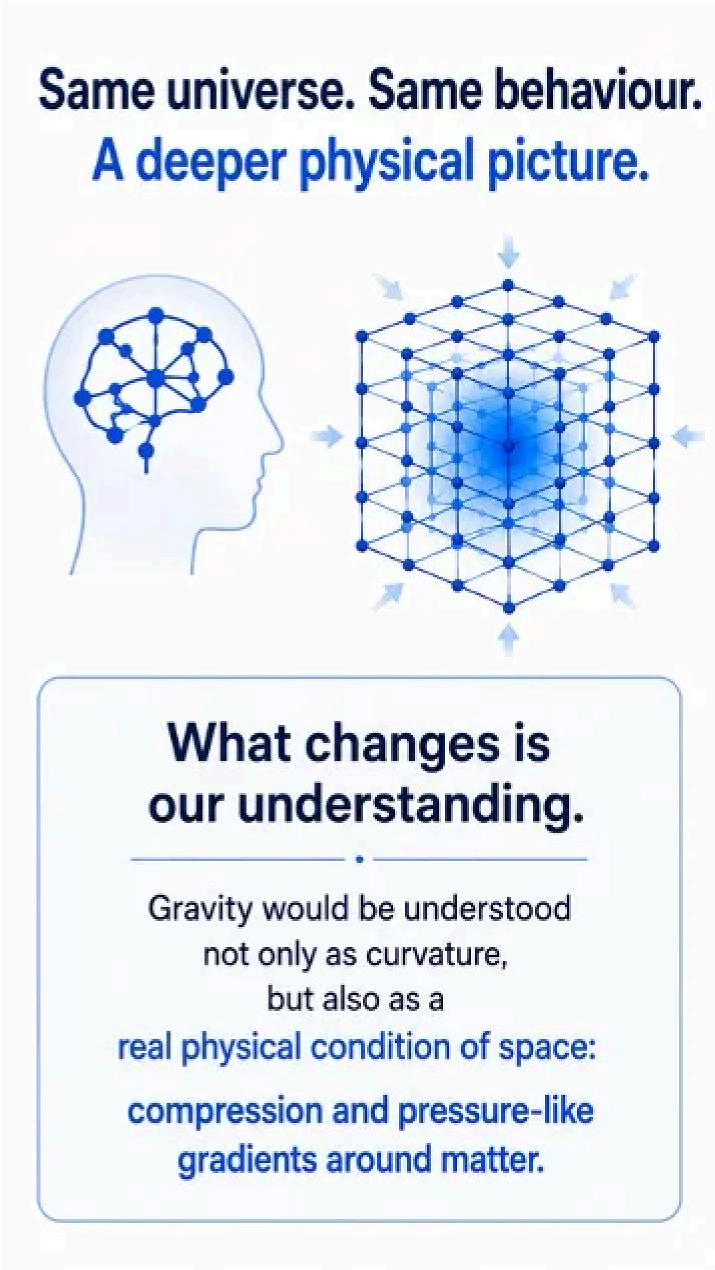
> **Compressed space directs us towards Earth, and the ground prevents us from moving farther inward.**

That one sentence changes the image considerably. We are not being pulled downward by an invisible rope. We are immersed in a structured condition of space. Earth has altered the space around it, and the resulting gradient is directed inward. We feel weight because our bodies are prevented from following that inward motion. Standing on the ground, sitting in a chair, or lying in bed would all be understood as everyday encounters with this gravitational condition.

Your feet press on the floor because your natural gravitational motion is being blocked. The floor pushes back because matter resists further inward movement. Weight, in this interpretation, becomes the felt result of being held in place within a pressure-like gradient.




WHAT REMAINS THE SAME
1. Gravity Itself
Gravity itself does not change.
2. Planetary Orbits
Planets follow the same orbits.
3. Light Bending
Light bends by the same amount.
4. Time Dilation
Clocks experience the same gravitational time dilation.
5. Gravitational Waves
Gravitational waves travel as already observed.



Why the Atmosphere Stays Around Earth

The same physical picture would apply to the air above us.

Today, we say that Earth's gravity holds the atmosphere in place. Without gravity, much of the atmosphere would escape into space. If SpacePressure were accepted, the public explanation might become:

Earth creates an inward spatial gradient that governs the gravitational tendency that keeps the atmosphere gathered around the planet.

The air is not glued to Earth. It is not attached by invisible strings. It remains around the planet because the gravitational structure surrounding Earth favours inward motion.

The atmosphere becomes thinner with altitude because atmospheric pressure and density decrease as we move higher, while Earth's gravitational influence also gradually weakens with distance.

Farther from Earth, particles with sufficient energy can escape.

This would give ordinary readers another way to picture why Earth retains an atmosphere and why smaller bodies such as the Moon have much greater difficulty retaining a substantial atmosphere over long periods.

Why the Moon Orbits Earth

A SpacePressure interpretation would also change how we picture an orbit.

In the usual public explanation, the Moon is continually falling towards Earth while moving sideways fast enough to keep missing it.

That explanation would still work.

SpacePressure would add another interpretive layer:

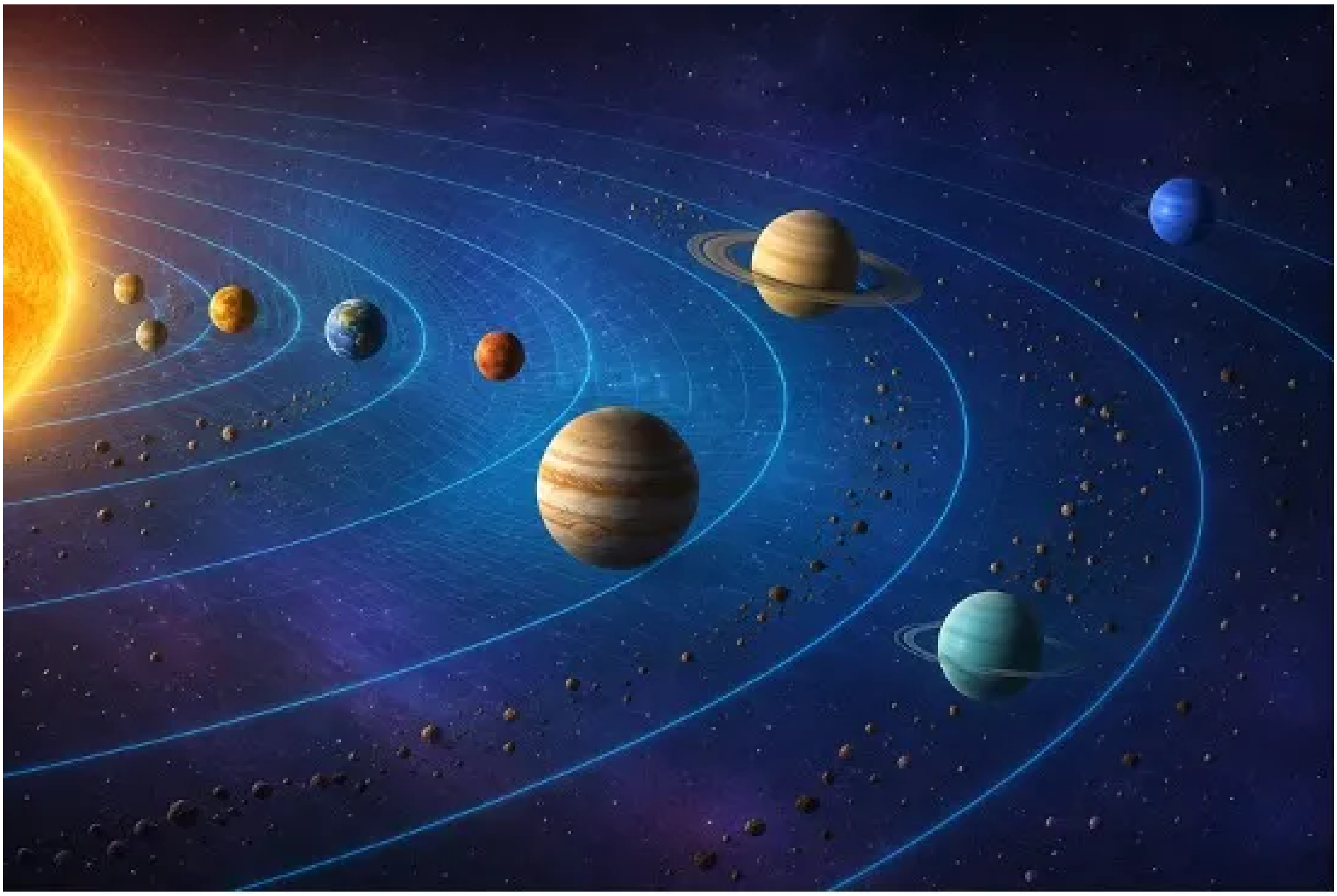
> **The Moon moves through the pressure-shaped region of space created by Earth. Its orbit is the natural path it follows within that gravitational gradient.**

The Moon is not attached to Earth by a rope. It is not being mechanically dragged through space.

It moves within a region where spacetime has been structured by Earth. Its sideways motion prevents it from falling directly inward. The spatial gradient continually bends its path.

Together, these produce an orbit.
A moon, planet, or satellite would therefore be pictured not simply as being held by gravity, but as following a natural path through structured space.

Why Planets Orbit the Sun



The same explanation would extend across the Solar System.

The Sun, because of its enormous mass, shapes the surrounding spacetime far more strongly than Earth does.

In the SpacePressure picture, the Sun would create an extensive region of spatial compression and a pressure-like gradient reaching across the Solar System. The planets would not be imagined as being pulled around the Sun by invisible strings. They would move through the structured region of space created by the Sun.

Mercury, close to the Sun, travels through a stronger gravitational region. Earth travels through a weaker one. Neptune travels through a much weaker region still. The farther a planet is from the Sun, the weaker the gradient becomes.

Yet it remains sufficient to shape the planet's orbit.

In this future description, the Solar System could be pictured as a great gravitational structure, with the Sun at its centre and the planets following paths through the spatial gradient surrounding it.

Why Things Fall at the Same Rate

One of the most striking facts about gravity is that, without air resistance, objects fall with the same acceleration regardless of their composition.

A hammer and a feather dropped on the Moon fall together. In the SpacePressure interpretation, this could be explained intuitively. Objects do not fall because gravity examines what they are made of and applies a different pull to each one.

They fall because all freely moving objects respond to the same surrounding spacetime geometry — or, in SpacePressure language, the same spatial gradient. A stone, a feather, a person, and a spacecraft may differ in mass, shape, and composition.

But they occupy the same gravitational environment.
This would help explain why gravity is universal. It is not a conventional force acting differently on different materials.
It is the common response of freely falling matter to the structure of spacetime.

Why Astronauts Float

They have not.

The International Space Station remains well within Earth’s gravitational field. In SpacePressure language, it also remains within Earth’s surrounding spatial gradient. Astronauts float because they, their spacecraft, and everything inside it are falling together around Earth. They are not weightless because gravity has disappeared. They appear weightless because there is no floor supporting them against their natural free-fall motion.

In SpacePressure language:

Astronauts are moving freely through Earth’s compressed-space gradient, together with their spacecraft, so they do not feel a supporting force.

This helps distinguish gravity from weight. Gravity determines the free-fall motion. Weight is what we feel when something prevents that motion.

On Earth, the ground prevents us from falling inward, so we feel weight.

In orbit, the spacecraft falls with us, so we float.

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What Would Change in Public Understanding?

If SpacePressure were validated, the public image of gravity would change, even though the science used to calculate gravitational behaviour would remain.

We would still use established gravitational equations.

We would still teach Newton's laws as highly successful approximations in ordinary conditions.

We would still teach General Relativity as the deeper mathematical theory.

But the physical story might become more intuitive.

Gravity would no longer be imagined primarily as a mysterious pull acting through empty space. It would be understood as the behaviour of space itself. Matter would alter and compress space. That condition would create pressure-like gradients.

Objects would move within those gradients.

Weight, falling, orbits, tides, atmospheres, and planetary motion would all become different expressions of the same underlying physical picture.

A New Public Sentence for Gravity

If SpacePressure were validated, an everyday definition of gravity might become:

> **Gravity is the behaviour of matter and light within a pressure-shaped condition of spacetime.**

> Mass and energy compress and structure the space around them. That condition creates pressure-like gradients. Matter moves within those gradients, and we experience that motion as gravity.

This would not erase Einstein.

It would give Einstein's geometry an additional physical image.

It would not discard Newton.

It would help explain why Newton's equations work so well in ordinary gravitational conditions.

It would offer the public a way to picture gravity as something more tangible:

Not an invisible hand pulling from the centre of Earth, not a mysterious force acting through nothing, but space itself responding to matter, and matter moving through that response.

Final Status Note

If SpacePressure were one day validated, gravity might no longer be described only as objects following paths through curved spacetime.

It might also be pictured as matter responding to gradients within physically compressed and dynamically structured space.

Newton's gravitational force would not need to be abandoned. It could be recognised as the measurable force-like expression of that gradient. Einstein's curved spacetime would not need to be replaced. It would remain the successful geometric description of gravity, now accompanied by a possible physical interpretation of what that curvature represents.

> **The result would not be a different gravity.**

It would be a more connected picture of the gravity we already know. Newton would continue to describe how strongly objects accelerate within gravitational fields. Einstein would continue to describe how matter and energy shape spacetime. SpacePressure would offer the possibility that the geometry and the force are linked through a physical process:

> The validated SpacePressure explanation might then be summarised as:
> Matter compresses space.
> Compressed space develops pressure-like gradients.
> Matter moves within those gradients.
> That motion is experienced as gravity.
>
> That possibility remains unproven.

But it leaves us with a clear scientific question:

Could gravity's familiar mathematics already be describing a physical process that we have not yet fully recognised?

Perhaps that is the real significance of one small change to the interpretation of gravity.

- **It does not ask us to discard what physics has achieved.**
- **It asks whether Newton, Einstein, and modern physics may have brought us closer to a united physical picture than we realised.**

Continue the Journey: Has Physics Already Given Us the Pieces?

Continue The Journey

The Book That Started the Journey

This journey began with the 2025 book One Small Change to Gravity – One Giant Leap for Science, the original published account of the SpacePressure idea: ***One Small Change to Gravity – One Giant Leap for Science.***

Purchase the Book


One Small Change to Gravity
One Giant Leap for Science
The claim in this book, that
Space does not merely Curve,
it is Compressed into a Curve
- Is not extreme -
What is Extraordinary is not the claim itself
but the implications that follow
- The Unification of Gravity -
There is only one Gravity
from the Cosmic to the Quantum
By Brian C Solomon

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