4. Astronomical Computations in Newton's Principia

These are the relevant astronomical computations that Newton claimed that proved his dynamical doctrines: Proposition III.4 – The Moon test, Proposition III.8 and Propositions I.57, I.58, I.59 and I.60. Newton is lying because none of these computations prove his dynamical doctrines, because as shown below, these are simple algebraic manipulations of Kepler's Rule. See Commentary below.

Proposition III.4 – The Moon test

In proposition III.4 Newton merely confirms that Kepler's Rule is valid for the earth-moon system. Given the unit period t at unit radius r , the period T at any radius R is given by Kepler's law:

$$\frac{r^3}{t^2} = \frac{R^3}{T^2} = k$$

Plugging in the numbers Newton finds that the moon moves according to Kepler's Rule as expressed in the above equation. No law other than Kepler's Rule is used in this equation and the proposition only proves that Kepler's Rule is valid for the earth-moon system.

Using Kepler's Rule Newton compares the mean motion of an earth satellite near the earth's surface and at 60 earth radii. Newton uses a pendulum to obtain the orbit of an earth skimming satellite but let's use the modern value of 5054.75 seconds. By Kepler's Rule,

$$\frac{r^3}{t^2} = \frac{R^3}{T^2} = \frac{1}{5054.75^2} = \frac{60^3}{T^2}$$

where, r is the radius of the earth and it is unity, t is the mean motion of a satellite at r, R is the earth-moon distance which is taken as $60r$, T is the mean motion at R which is

$$T = 27.19 \text{ days}$$

and Kepler's Rule is confirmed.

This proposition proves just this, that Kepler's Rule is valid for the earth-moon system. No law other than Kepler's Rule is used in the computations.

Similar calculations existed in Streete's Astronomia Carolina where Newton first saw Kepler's Rule. He just copied them and added his own scholastic labels to it.

Proposition III.8

The mathematical content of the proposition III.8 consists of an algebraic transformation of Kepler's Rule.

Let t be the unit period at unit radius r and T the period at any radius R, then Kepler's Rule is,

$$K = \frac{R^3 t^2}{T^2 r^3}$$

Let $R = r$, and then,

$$K = \frac{t^2}{T^2}$$

This ends the first algebraic transformation of Corollary 1. This is it. This is the calculation Newton sold to the world as Newton's law of universal gravity.

Let's continue to study how a genius does simple algebra: By Kepler's Rule

$$k = \frac{R^3}{T^2} = \frac{R'^3}{T'^2}$$

and

$$k' = \frac{r^3}{t^2} = \frac{r'^3}{t'^2}$$

and

$$\frac{k}{k'} = \frac{R^3 t^2}{T^2 r^3} = \frac{R'^3 t'^2}{T'^2 r'^3}$$

Rearranging,

$$\frac{R^3 t^2 r'^2}{T^2 r^3 R'^2} = \frac{R' t'^2}{T'^2 r'}$$

This is the second result of Corollary 1. Newton is considered by the Newtonist propaganda to be the greatest mathematician ever lived and his work here proves that he can do simple algebraic manipulations.

The third result is just:

$$D = \frac{Sr'}{R'}$$

There are no Newtonian laws used here. Proposition III.8 is not an application of "Newton's law of gravitation," as Newton claims, but a simple algebraic transformation of Kepler's Rule.

None of the propositions Newton proves in the previous books is used to make any of these calculations. This is important to note.

Propositions I.57, I.58, I.59 and I.60

Propositions I.57, I.58, I.59 and I.60 also consist of simple algebraic manipulations of Kepler's Rule that Newton is trying to sell us as dynamical calculations.

Newton writes Kepler's Rule as

$$\frac{W(R)\sqrt{R}}{W(R')\sqrt{R'}} = \frac{R'}{R}$$

where *R, R' = (R + r), W(R), W(R')* are the given radii and angular motions of two points *P* and *P'*.

To make our first algebraic transformation let

$$R' = R''$$

The first equation becomes

$$W(R') = W(R)\frac{\sqrt{R}}{\sqrt{R'}}$$

The conclusion of Proposition 58 is: to satisfy Kepler's Rule at equal distances the angular motion of the greater radii must be reduced by the ratio

$$\frac{\sqrt{R}}{\sqrt{R'}}$$

For the second transformation, let

$$\frac{W(R)}{W(R'} = 1$$

The first equation becomes

$$\frac{\sqrt{R}}{\sqrt{R'}} = \frac{R'}{R}$$

But since Newton altered the constant ratio of angular motions by equating them to unity, Kepler's proportionality is no longer valid. To satisfy Kepler's Rule again we must have

$$\frac{W(R)}{W(R')} = \frac{R}{R'}$$

Making this substitution the first equation becomes

$$\frac{R\sqrt{R}}{R'\sqrt{R'}} = \frac{R'}{R}$$

or as Newton puts it:

> The axis of the second ellipse – that is, *R'* – must be decreased by 1.5 power of the former ratio – that is, $(R/R')^{1.5}$.

Commentary

The mathematics in these propositions, which take up four solid pages in the Cohen translation, amounts to simple algebraic manipulations of Kepler's Rule, the rest is Newton's dynamical propaganda expressed with labels attached to Kepler's Rule. The propositions prove none of Newton's dynamical and occult claims. Instead they show how Newton corrupted the old science of astronomy by introducing into astronomy occult qualities such as force and mass. Newton

Newtonized astronomy, i.e. he turned astronomy into scholasticism.

Scholasticism did not disappear after Galileo. Newtonian revolution was not a scientific revolution but a counter-revolution against Galileo to establish a scholastic monarchy under Newton's name. This became the Newtonist cult whose members now call themselves physicists. This is why physicists insist on using Newtonian occult terms in astronomy even though none of the Newtonian terms are used in calculations of orbits.

After about 300 years of asserting the absolute truth of the Newtonian force physicists finally – but only nominally – deprecated this fundamental dogma of Newtonian physics.

A physical quantity whose unit is named after the founder of the profession can never be eliminated. But physics is infinitely flexible and semantic and physicists have been claiming that force has been subsumed by General Relativistic geodesic or, depending on the case, by force carrying particles or, depending on the case again, by force creating fields.

Instead of letting force die a peaceful death physicists has been resurrecting it under various names. And Newtonism is still taught the first few years of physics education as truth and students routinely measure

Newtonian force moving pendulum arms.

Therefore, physicists' party line that they teach Newtonian mechanics for pedagogical reasons does not hold. Physicists still believe that Newtonian force exists as needed.

5. Kepler's Rule is the definition of density

Newton defined density as

> Quantity of matter is a measure of matter that arises from its density and volume jointly.

(Definition 1, *Mathematical Principles of Natural Philosophy*, 1687, Isaac Newton; referred to hereinafter as the "Book".)

Newton's definition of density is a statement of Kepler's Rule which is written in its fundamental (proportional) form, as

$$\frac{R_0^3}{T_0^2} = \frac{R^3}{T^2}$$

which is equivalent to "Quantity of matter is density times volume" (by "density" Newton means "square of frequency"):

$$\frac{R_0^3}{T_0^2} \equiv \text{Quantity of Matter } \equiv \text{Mass}$$

$$\frac{1}{T^2} \equiv \text{Density} \equiv (\text{Frequency})^2$$

$$\frac{R^3}{1} \equiv \text{Volume}$$

or

$$\text{Mass} = (\text{Frequency})^2 \times \text{Volume}$$

Newton discovered that Kepler's Rule is the definition of density.

This is a discovery of historic proportions that forces us to question the Newtonian occult world view which defines nature as

- atomic
- material
- forceful

Why did Newton choose to hide his greatest discovery as a secret code and did not reveal it to the world?

Probably because this discovery is at odds with Newton's religious beliefs as expressed in Newton's Zeroth Law that

> God in the beginning formed matter in solid, massy, hard, impenetrable movable particles.

(Isaac Newton, *Optics*, 1704, Book III, page: 375)

Newton's realization that Kepler's Rule is the definition of density refutes the dynamic system of the world Newton defined in his Book. This dynamic and occult Newtonian world view based on Newton's Zeroth Law has become the standard and generally accepted and allegedly self-evident official world view of humanity.

Now, we see that Newton's own true discovery refutes the system of the world Newton defined in his Book.

To understand why, let's start by writing some undisputed facts:

Undisputed fact 1:

Kepler's Rule describes orbits with only 2 terms, R and T. R is the radius of the orbit and T is the period of the orbit.

Undisputed fact 2:

By Undisputed fact 1, orbits are not forceful, but geometric; no force term is needed or used to compute orbits.

Observation 1:

Newton claimed that the world is atomic, material and forceful because he allegedly computed orbits by using force and mass. Now we know that Newton used only Kepler's Rule to compute orbits. He did not use force to compute orbits.

Question 1:

Is the world Newtonian, i.e., atomic, material and forceful as Newton claimed?

Answer 1:

No. If, following Newton as example, we base our definition of the world on the calculation of orbits; we must conclude that the world is not atomic, material and forceful. We must conclude that

> the fundamental unit of nature is not matter but density.

The world is matterless as proved by Kepler's Rule. The system of the world defined by Newton is no

longer supported by any observational or experimental evidence.

And it was Newton who discovered that we are living in a matterless world! I find this ironic and amazing.

So, please adjust your world view accordingly.

6. Kepler's Rule and Newton's Laws

What is the difference between

$$\frac{1}{R^2} = \frac{R}{T^2}$$

and

$$\frac{GM}{R^2} = a$$

To me GM/R^2 = a is Kepler's rule

$$\frac{R^3}{T^2} = \frac{R_0^3}{T_0^2}$$

written with Newtonian units where

$$\frac{R_0^3}{T_0^2} = GM$$

The symbol a is a proxy for R/T^2. Therefore, we can equally ask, what is the difference between

$$\frac{1}{R^2} = \frac{R}{T^2}$$

and

$$\frac{GM}{R^2} = \frac{R}{T^2}$$

Let's combine like terms on one side

$$GM = \frac{R^3}{T^2}$$

If we define R_0^3/T_0^2 as the constant term in Kepler's Rule then we have

$$\frac{R_0^3}{T_0^2} = \frac{R^3}{T^2} \quad (1)$$

$$GM = \frac{R^3}{T^2} \quad (2)$$

Therefore (1) and (2) are the same Kepler's Rule. In (2) the unit term is

$$\frac{R_0^3}{T_0^2} = GM$$

We can also set the unit term to unity

$$\frac{R_0^3}{T_0^2} = GM = 1$$

and then we would have

$$1 = \frac{R^3}{T^2} = \text{Kepler's Rule}$$

I see

$$GM = \frac{R_0^3}{T_0^2} = \frac{R^3}{T^2}$$

as Kepler's Rule written with the conventional unit GM.

Physicists read the same in two ways

$$GM = \frac{R^3}{T^2} = \text{Newton's laws}$$

$$\frac{R_0^3}{T_0^2} = \frac{R^3}{T^2} = \text{Kepler's Rule}$$

They then substitute

$$GM = \frac{R_0^3}{T_0^2}$$

in Kepler's Rule and call this substitution "deriving Kepler's law from Newton's laws."

So in physics writing Kepler's Rule with a unit called "Newton's constant G" turns Kepler's rule into Newton's law.

But the way I see it

$$GM = \frac{R_0^3}{T_0^2} = \frac{R^3}{T^2}$$

is one expression. This is Kepler's Rule. This expression has nothing to do with Newton's laws or Newtonian mechanics.

All evidence shows that Kepler's Rule came first. Kepler's Rule was discovered in observations. Physicists agree on this.

The claim physicists make is that Newton discovered the underlying dynamic law in Kepler's geometric rule.

But this is not true.

Even if Newton made the claim that the Newtonian force was the underlying dynamical quantity of the geometric Kepler's rule today physics tells us that Newton's force is unphysical and does not exist.

If Newton's force has been shown to be unphysical by physicists themselves why do they still talk about a dynamical foundation of Kepler's rule discovered by Newton?

The only claim for dynamical terms must be *G* and *M*.

But neither *G* nor *M* nor *GM* are dynamical quantities.

G was not written by Newton. Newton did not use constants, he worked with proportions, not with equations.

Mass is the constant term R_0^3/T_0^2. This is how Newton defined mass.

$$\text{Mass} = \frac{R_0^3}{T_0^2}$$

R and *T* are geometric therefore mass as defined by Newton is the name of the unit term in Kepler's Rule.

Once again we see that Newton labelled Kepler's Rule with Newtonian labels and his followers reified Newton's labels.

My conclusion is that Newton's followers to this day insist on copying Newton's labels blindly.

Then what to do?

What is the correct way to read

$$GM = \frac{R_0^3}{T_0^2} = \frac{R^3}{T^2}$$

Is this a dynamic or geometric expression?

Is this Kepler's Rule or Newton's laws?

How can we decide?

Is there an independent authority outside physics who can evaluate this expression independent of Newtonian dogma?

Why is it that writing Kepler's rule with a conventional unit turn it into Newton's dynamical law?

If the Newtonian force has been shown to be unphysical why is it that physicists still insist that Newton's force is the dynamical and true law, not Kepler's geometric rule?

The stakes are very high. Physicists will never concede that orbits are independent of Newton's force and therefore orbits are independent of force with no ifs and buts. Physicists will always come up with rationalizations to keep Newton's force associated with

orbits at least on pedagogical level. Otherwise that would be the end of Newtonian physics. Physicists is not ready for that yet.

But suppose that the last paragraph is my opinion. What kind of evidence is needed so that physicists will finally stop calling Kepler's Rule Newton's law? Is that possible?

What evidence do we need to offer to prove that orbits are independent of Newtonian force?

Is it possible that physicists will stop arguing both that orbits are independent of force and not? At present they use sophistry to argue that orbits are defined by general relativity and therefore independent of Newtonian force and that orbits are dependent on force as needed.

The sophistry doesn't work because if orbits are independent of force than physicists must accept that there are no dynamical terms in Kepler's Rule.

What is curious to me is that Newton's laws, Newton's mechanics, force, mass are no longer used in astronomy. Yet physicists are unwilling to give up their absolute faith in Newton's authority. Doesn't make sense.