Chapter 4
"Getting That Meal Ticket"

On the Disintegration of the Moons of Jupiter.

ABSTRACT

In 1947, my second year in high school, I discovered, by analyzing the pattern of wobbles of Jupiter's orbit, that its moons are not stable physical bodies, but exhibit a very slow resonance. Positive feedback has amplified these oscillations for a billion years or more. My calculations showed that Jupiter's moons will completely disintegrate in a few million years. These oscillations are not yet visible by telescope. For example, the variation in the equator of Ganymede is only a few centimeters per century. Within a thousand years they ought to be visible by telescopes of today's construction, such as Schmidt, Mt.Palomar or Hubble. Provided human beings are around to analyze the data.

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The inspiration for this work did not come from observational astronomy. As a mathematician I was attracted

to the unsolved issues of the classical N-body problem of Celestial Mechanics. Eventually I was led to consider the subject in the greatest possible generality. This led me to invent the Abstract Theory of Solar Systems. Only its mathematical foundations interested me at first, but over the course of my invesrtigation I was drawn from that to concrete situations in our own solar system that could be computed as special cases of a wide rambling theory.

The following dissertation is abridged from an article prepared for Scientific American. As an aside, its publication was cancelled at the last minute because the magazine's editors were afraid that an article predicting the breakup of the solar system could be so disturbing to its readership that subscriptions might be seriously compromised.

Let Λ be some solar system, otherwise unspecified, consisting of a sun S , planets, P_1, P_2 , ... and perhaps some moons, M_1 , M_2 , ... Asteroids and comets may be added as

particular refinements, and nit-picking perfectionists may insist on solar winds, cosmic rays, life, and other irrelevancies. That's their bailiwick.

With each stellar object we associate a little vector space, actually a kind of finite *Hilbert Space* with its own metric and possibly complex coordinates; and equip each of them with a connection Γ . This turns the solar system into a gigantic unmanageable *fibre bundle* ϑ , with the Hilbert Spaces sticking up like candles on a birthday cake. One might also try to play around with quaternions, the Hopf bundle and Dirac magnetic monopoles.[1]

Try to picture the states of Λ as a single point moving through ϑ ; if that proves impossible it's no great matter. Since we will only be talking about ϑ, we may be able to just drop the rest of the universe, U. (*That , in fact ϑ can withstand interference by U is not self-evident and must be proven as a theorem. Mathematicians who want to see the details can consult my thesis. It should still be in the files of*

[1] A certain Dr. Husak at Charles University in Prague has recently extended my model to one in which coordinates take values in an arbitrary Clifford algebra.

the Mathematics Department at Zelosophic U, between the brown-bag lunch of the chairman's secretary and, if I remember correctly, the boot of some colleague, Wiegenlied Wissenschlaf perhaps.)

Next throw in a vacuum potential anti-energy μ, of negligible (but not zero) density almost everywhere suffused through a pure relativistic Robertson-Walker universe Δ.[2] **We define an** ***enucleated planetary simplex*** $\sum$, ***to be a solar system far from equilibrium with the sun removed*** **, and an enucleated planetary** ***chain-complex*** $\sum^*$ **as a loosely homogeneous cluster of enucleated planetary simplexes .**

Ideally: let Θ be a planet , (idealized to a point particle, naturally) traveling through a fluctuating potential well, with non-vanishing potential anti-energy almost everywhere, in a chain-complex $\sum^*$ during the epochal split-second of cosmic inflation. The ***index*** **ρ of Θ with respect to a flat fibration of non-standard orbits, is defined as the ratio of its**

[2]It also works with the Kerr model and in anti-de Sitter space, but not in the Friedman model. No decision has been made on the Gödel model

observed red shift to that of its theoretically calculated bosonic dual.

Definition: The bosonic dual of any material object is obtained by replacing all fermions with bosons and vice versa. [3]

Redefining the stellar main sequence based on the Herzsprung-Russell mass-luminosity relations, our own solar system and sun turn out to be anomalous. In fact, if the current figures on the mass, density and luminosity of the sun are introduced into the Fundamental Equation [4] , there ought to be an enormous hole of anti-matter in the vicinity of Venus. To date no-one has found anything of the kind .

Confronted with this insurmountable barrier I, like Max Planck at the turn of the century, boldly set out to substitute, for

the magnetic field of suns with .367 or higher solar masses, a huge collection of harmonic oscillators. Doing this, however, requires that the Schrödinger probability density (not only

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[3]**There was a long and bitter precedence quarrel between myself and some astrophysicist in Fiji around the invention of this ingenious technique. I conceded defeat only because Hans Mengenlehre, then department chairman at Zelosophic U., convinced me that mathematical physics in Fiji needed all the help it could get.**

[4]**The Fundamental Equation has not been included in this account, which is for the general reader.**

the values of the function per se) comes out as a complex number. Oh well: Feynman and Hawking have done similar things, and who are we to argue with them?

Worse still, the accompanying imaginary magnetic fields cannot be ignored in higher order perturbations. One must therefore force some sort of renormalization onto this glop, that is to say a crude approximation that looks like something recognizable.

One does this in the following way: switch off the magnetic field, diagonalize the energy-inertia tensor and compute eigenvalues. Plugged back into the fundamental equation, one obtains results not yet contradicted by anybody's experience.

The burning question still remains: is the luminosity relation as represented in our theory a complex number or a pure imaginary?

That it is , in fact, the latter, lay the basis for most of the surprising conclusions of my juvenile paper.

The resonance of the moons of Jupiter can be derived directly from this assumption! What, then , are the larger implications of an purely imaginary luminosity?

We first modify the standard Hertzsprung-Russell Mass-Luminosity relationship , which we rewrite in the form

F(I,M,L) = 0 , where

M is the mass ,

L the luminosity ,

I is the red shift of the bosonic dual.

F is a 4^{th}-order tensor which , to this day,has never been written down. It probably can't, which puts it in the company of most Schrödinger wave functions. The important point however is that F must become infinite if one of its arguments falls below the critical threshold. The proof is left as an exercise for the reader.

Although F is unknown, perhaps unknowable, it can be made to yield lots of qualitative information. One starts by making the simplifying assumption that F the, is an exponential of the form

$F(I,M,L)= e^{-(a+ib)t/c}\Psi e^{(a+ib)t/c} + (\varpi+1)(6+\Omega^2)$, where:

a, b are wave numbers

is the Schrödinger wave function

t = time

c = speed of light

ϖ is an anomalous hidden variable propagating an undetectable disturbance through the fibre bundle ϑ with infinite velocity. [5]

Speaking generally, the quantity ω always turns out to be too hot to handle, so whenever possible we suppress it. This in no way alters the infinite potential energy of imaginary stellar anti-matter at great distances. It is in fact a confirmation of same. For the same reason we suppress Ω .

The time dependence of F is of the highest importance . Indeed, with the elimination of ω and Ω , time is the only independent variable in F.

F can now be expanded by ***orthonormal-almost-quasi-everywhere-renormalizable-second-order -Elliptical Harmonics*** **. Inserting selected terms of the series as Lagrangian action under the umbrella of a Feynman Integral, then solving for extremals, one can study their pattern of intersections on a Poincaré surface. This narrows the class of permissible $\sum^{*}$ -chain complexes to those whose orbits cluster around chaotic**

[5] **Private communication with David Bohm**

attractors. This was the part that bogged me down for several months until I realized its irrelevance.

We now flatten the hypothesized solar system to a regular flimsy ring. Flimsy rings are fully treated by Krinskovitch in his epoch-making treatise of 1946, written just before he was sent to a labor camp in the Urals for advocating "theoretical counter-revolution". The necessary and sufficient condition for the enucleation of a flimsy ring is that its detachable substrate remain invariant under annihilation by the cross-section of the canonical co-bundle.

This gives a density of 3.2

By Gauss' Theorem ,the space integral can be transformed into a time integral. In this case the curl of the gauge connection constitutes an involution, not an evolution. The curl of *this* curl is, however, smaller than anticipated, a result which is indeed curious.

At this point in my research I encountered a stumbling block that for a long time appeared insurmountable. If the flimsy ring cannot be enucleated, then the gradient of every semi-stable anti-matter field is consistent only with a nowhere dense anti-matter sun, which is absurd. I began to

review what was known about stationary $\sum^{*}$- chain complexes to see if they possessed toroidal isotropy. The toroidal fibres, parametrized by the pull-back of the Riemannian metric through acausal time, will be called a *global discourse* .

It ought to be clear to the reader by now that this discourse is everywhere disconnected.

Along the way it occurred to me that, if the Cosmological Constant Λ were replaced by an *almost* periodic function ρ of minuscule amplitude, then all my problems were solved. The great advantage in using ρ is that it can be twiddled to fit any set of data. So I adjusted ρ to generate the rings of Saturn. However they turned out to be enucleated rings, that is the rings of Saturn without Saturn in them! Putting Saturn back into the equations causes the whole universe to explode!

What was to be done? With our universe in assumed homeostasis, not very much. But was it not possible that Saturn was a removable singularity? Since Saturn has no privileged position in the solar system, it was but a small step from this assumption, to treating *all* the planets as

removable singularities. I then removed them one by one until nothing was left. Then I reintroduced them one at a time . Whenever the formulae yielded infinite values I replaced them (arbitrarily) by finite ones. Utilizing this approach , only the Jupiterian singularity remained intractable .

Eventually it was realized that the only way to get around this anomaly was by making the assumption that Jupiter's moons were disintegrating at an undetectable rate, far below present observational methods but calculable from the equations.

This saved the theory.