

LETTERS TO PROGRESS IN PHYSICS

A Final Note on the Nature of the Kinemetric Unification of Physical Fields and Interactions

(On the occasion of Abraham Zelmanov's birthday
and the near centennial
of Einstein's general theory of relativity)

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A present-day category of approaches to unification (of the physical fields) lacks the ultimate epistemological and scientific characteristics as I have always pointed out elsewhere. This methodological weakness is typical of a lot of post-modern "syllogism physics" (and ultimately the solipsism of such scientism in general). Herein, we shall once again make it clear as to what is meant by a true unified field theory in the furthest epistemological-scientific-dialectical sense, which must inevitably include also the natural kinemetric unity of the observer and physical observables.

Herein, I shall state my points very succinctly. Apart from the avoidance of absolutely needless verbosity, this is such as to also encompass the scientific spirit of Albert Einstein, who tirelessly and independently pursued a pure kind of geometrization of physics as demanded by the real geometric quintessence of General Relativity, and that of Abraham Zelmanov, who formulated his theory of chronometric invariants and a most all-encompassing classification of inhomogeneous, anisotropic general relativistic cosmological models and who revealed a fundamental preliminary version of the kinemetric monad formalism of General Relativity for the unification of the observer and observables in the cosmos.

1. A true unified field theory must not start with an arbitrarily concocted Lagrangian density (with merely the appearance of the metric determinant $\sqrt{-g}$ together with a sum of variables inserted by hand), for this is merely a way to embed — and not construct from first principles — a variational density in an ad hoc given space (manifold). In classical General Relativity, in the case of pure vacuum, i.e., $R_{\alpha\beta} = 0$, there is indeed a rather unique Lagrangian density: the space-time integral over $R\sqrt{-g}$, the variation of which gives $R_{\alpha\beta} = 0$. Now, precisely because there is only one purely geometric integrand here, namely the Ricci curvature scalar R (apart from the metric volume term $\sqrt{-g}$), this renders itself a valid geometric-variational reconstruction of vacuum General Relativity, and it is a mere tautology: thus it is valid rather in a secondary sense (after the underlying Riemannian geometry of General Relativity is encompassed). Einstein indeed did not primarily construct full General Relativity this way. In the case of classical General Relativity with matter and fields, appended to the pure gravitational Lagrangian density are the matter field and non-geometrized interactions (such as electromagnetism), giving the relevant energy-momentum

tensor: this "integralism procedure" (reminiscent of classical Newtonian-Lagrangian dynamics) is again only tautologically valid since classical General Relativity does not geometrize fields other than the gravitational field. Varying such a Lagrangian density sheds no further semantics and information on the deepest nature of the manifold concerned.

2. Post-modern syllogism physics — including string theory and other toy-models (a plethora of "trendy salad approaches") — relies too heavily on such an arbitrary procedure. Progress associated with such a mere "sticky-but-not-solid approach" — often with big-wig politicized, opportunistic claims — seems rapid indeed, but it is ultimately a mere facade: something which Einstein himself would scientifically, epistemologically abhor (for him, in the pure Spinozan, Kantian, and Schopenhauerian sense).

3. Thus, a true unified field theory must build the spin-curvature geometry of space-time, matter, and physical fields from scratch (first principles). In other words, it must be constructed from a very fundamental level (say, the differential tetrad and metricity level), i.e., independently of mere embedding and variationalism. When one is able to construct the tetrad and metricity this way, he has a pure theory of kinemetricity for the universal manifold M : his generally asymmetric, anholonomic metric $g_{\alpha\beta}$, connection W , and curvature R will depend on not just the coordinates but also on their generally non-integrable (asymmetric) differentials: $M(x, dx) \rightarrow M(g, dg) \rightarrow W(g, dg) \rightarrow R(g, dg)$. In other words, it becomes a multi-fractal first-principle geometric construction, and the geometry is a true chiral meta-continuum. This will then be fully capable of producing the true universal equation of motion of the unified fields as a whole in a single package (including the electromagnetic Lorentz equation of motion and the chromodynamic Yang-Mills

equation of motion) and the nature of pure geometric motion — kinematicity — of the cosmos will be revealed. This, of course, is part of the emergence of a purely geometric energy-momentum tensor as well. The ultimate failure of Einstein's tireless, beautiful unification efforts in the past was that he could hardly arrive at the correct geometric Lorentz equation of motion and the associated energy-momentum tensor for the electromagnetic field (and this is not as many people, including specialists, would understand it). In my past works (with each of my theories being independent and self-contained; and I do not repeat myself ever), I have shown how all this can be accomplished: one is with the construction of an asymmetric metric tensor whose anti-symmetric part gives pure spin and electromagnetism, and whose differential structure gives an anholonomic, asymmetric connection uniquely dependent on x and dx (and hence x and the world-velocity u , giving a new kind of Finslerian space), which ultimately constructs matter (and motion) from pure kinematic scratch. Such a unified field theory is bound to be scale-independent (and metaphorically saying, "semi-classical"): beyond (i.e., truly independent of) both quantum mechanical and classical formalisms.

4. Such is the ultimate epistemology — and not just methodology — of a scientific construct with real mindful power (intellection, and not just intellectualism), i.e., with real scientific determination. That is why, the subject of quantum gravity (or quantum cosmology) will look so profoundly different to those rare few who truly understand the full epistemology and the purely geometric method of both our topic (on unification) and General Relativity. These few are the true infinitely self-reserved ones (truly to unbelievable lengths) and cannot at all be said to be products of the age and its trends. Quantizing space-time (even using things like the Feynman path-integrals and such propagators) in (extended) General Relativity means nothing if somewhat alien procedures are merely brought (often in disguise) as part of a mere embedding procedure: space-time is epistemologically and dialectically not exactly on the same footing as quantum and classical fields, matter, and energy (while roughly sharing certain parallelism with these things); rather, it must categorically, axiomatically qualify these things. Even both quantum mechanically and classically it is evident that material things possessed of motion and energy are embedded in a configuration space, but the space-time itself cannot be wholly found in these constituents. In the so-called "standard model", for example, even when quarks are arrived at as being material constituents "smaller than atoms", one still has no further (fundamental) information of the profounder things a quark necessarily contains, e.g., electric charge, spin, magnetic moment, and mass. In other words, the nature of both electromagnetism and matter is not yet understood in such a way. At the profoundest level, things cannot merely be embedded in space-time nor can space-time itself be merely embedded in (and subject to) a known quantum procedure. Geometry is ge-

ometry: purer, greater levels of physico-mathematical reality reside therein, within itself, and this is such only with the first-principle construction of a new geometry of spin-curvature purely from scratch — not merely synthetically from without — with the singular purpose to reveal a complete kinematic unity of the geometry itself, which is none other than motion and matter at once. Again, such a geometry is scale-independent, non-simply connected, anholonomic, asymmetric, inhomogeneous: it ultimately has no "inside" nor "outside" (which, however, goes down to saying that there are indeed profound internal geometric symmetries).

5. Thus, the mystery (and complete insightful understanding) of the cosmos lies in certain profound scale-independent, kinematic, internal symmetries of the underlying geometry (i.e., meta-continuum), and not merely in ad hoc projective, embedding, and variational procedures (including the popular syllogism of "extra dimensions").

"There are few who swim against the currents of time, living certain majestic smolderings and alien strengths as if they have died to live forever. There are so few who are like the vortex of a midnight river and the slope of a cosmic edge, in whose singularity and declivity the age is gone. There are fewer who are like a solid, unnamed, stepping stone in the heavy currents of the age of false light and enlightenment; as a generic revolutionary praxis goes, they'd rather be so black and coarse — solidly ingrained and gravitating — than smooth and merely afloat. But fewer still are those who are the thunder for all ages and in all voids: they are not grounded and sheltered on earth — they terrify it, — nor do they hang and dwell in the sky — they split it: — that light, so very few can witness its pure blinding longitude and touch its brief sublime density, is the truest Sensation (Sight-Sense, Causation-Reason) for real humanity to be the exact thing at the exact time in the Universe: itself."

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