

All energy, matter, forces and fields comprising the physics of material expression, are functions of an abstract geometry. The discipline of physics has *tended* toward the expression of its elements in terms of pure geometry, and quantum mechanics only furnished a momentary break in the continuity maintained by general relativity when it detoured into statistical probability. That continuity was resumed when emphasis shifted to gauge theory, and the resolving allure of *symmetries*.

Despite the notorious "fuzziness" of quantum states, they're expressed in terms of spin, interval, charge and moment which are in fact *quantised*, i.e. assigned discrete properties - integer and half-integer values, rational fractions and ratios or non-constructable numbers functioning as constants. Though physics may not order itself macroscopically in takeout, styrofoam geometries as with Kepler's harmonics of planetary orbits styled after Pythagorean intervals, it exhibits a deep relationship with ideal properties in the Euclidean sense. Mapped schematically, it displays the types of integral values generated through those *most* schematic of "solid objects", the sacred polyhedra.

These stable lineform volumes gestated into being on the basis of an "organically" frugal Noesis (through parity, axial rotation and mutually inverse symmetries) dice up their common internal spaces by angles, axes and edges so as to render the kinds of submultiples and constants operating in the abstract harmonies of elementary particles and fields. The counterchanging equivalents of particles and fields may not show in overt geometries or radial symmetries, from the trace-impressions registered across the uniform perceptual plane; by mass, weight, coupling constant, spin angular momentum and charge they may seem quite distinct. Yet these "differences" can testify to a deeper identity when their elements are schematically analysed and rearranged.

The plotted relations of quarks and leptons on a horizontal plane, displaced *vertically* proportional to their respective charges, polarise the angular coordinates of an ideal *cube*; the requirement of square-summing the "real" and "imaginary" parts of a field specifying spin states of particles and resonances in measuring angular momentum, plots a *straight line* in the Regge trajectory; the rotational identity of particles is established by the abstract operation of right-angled reflection through the space of "strangeness" and "isospin" mirrors, producing highly defined symmetry correlations. In the same way, conceptual rotations performed on the double-valued quality of fermions (matter particles) in an abstract "super-space" with anti-commutators, demonstrates deep angular identity with the class of bosons or force-particles (showing that, in theory, one is the self-same entity as the other only working the hyper-dimensional "nightshift")

In "heterotic string" theory, the summary familial group designated $E_8 \times E_8$ reflects a generalisation of *crystal* symmetries, so that a strictly "abstract" pattern produced by categorial requirements applies directly to the macroscopic (observable) order of structures. Euclidean geometries peep from the apparent chaos of nature as

occasional observables, sifted from the scales of micro-information to obtain some reflection of the abstract form governing all contributory processes: salts, honeycombs, seashells, pinecones, galaxies, viruses. As above, so below; the planning boards of those macro-forms may be observed by purely noetic reconstruction. Thus the field of perception and the field of cognition bear a deep relation. Thetic geometries in purely abstract space inform real constituents of experience, and are inseparable from them.

The inevitable conclusion is built *into* the very process whereby the evidence is collected, at the quantum-physical level. Physicists have however been reluctant, by specialisation, to perceive the *ontologic* implications of their routine operatives. In order for example to make their predictive determinations (i.e. locating an electron in a specified spin state at a given moment), measurement must give the *differences* in the phase fields - parallel and antiparallel components of spin etc.- rather than specify some "absolute" phase. The "real" and "imaginary" parts of the wave-amplitude must be indistinguishable, i.e. they are constitutionally incapable of being separated in some absolute way. This doesn't point up a *defect* intrinsic to our relative perspective (as if there were fixed "real" signs that our perspective prevents us from determining). Such measurements aren't *constrained* by the presence of observer-consciousness; they are *functions* of it. There is (what physicists call) a deep *gauge symmetry* at work in the fact that adopted conventions specify the "signs" of complementary values. This is equivalent to the phenomenological circumstance that - for example - the foreground and background projections of a Necker cube are an arbitrary convention of focal alignment.

The comparison is in fact profound, for it involves common elements that give away the game as to exactly what we're dealing with in all cases; the reason it hasn't been universally recognised to date, is that physicists have adopted their conventions as practical tools without wanting to, believing they could, or *trying* to know what they mean.

The common denominator in our comparative example above, is *observer perspective* (electrons always align with the axis of the observer, no matter what conventions are adopted or angles selected). The relative ascription of plus and minus signs (i.e. in defining oscillations of wave amplitudes) requires the component of $\text{SQRT}(-1)$, i.e. the imaginary value i . All such operations enlist the quadratics of complex numbers, those having real and imaginary components perpendicularly plotted such that the "negative" domains of the horizontal x-axis are obtained by squaring the coordinate points of the vertical iy axis; such square-root relationship differs from the Cartesian coordinate-plane as a *dimensional perpendicularity* (i.e. a rotation of 90°). Such a dimensional relationship with respect to the negative, real-number axis resembles the mutually negating inversion-values belonging to the Necker cube, where the dimensionality of the object positively defined in "real" (preferred) space depends on the fluxing negative invagination occurring through that space (i.e. turning negative spaces, shaped by common boundaries, inside-out relative to each other). The

arbitrary "relief" of one set of coordinate planes or the other as a function of the "negative" potential assigning respective values, demonstrates the existence of those ambiguously-"doubling" coordinates as $x = \pm \sqrt{-1}$. They are interpretable as a function of i .

The value i represents "imaginary"; by implication it's the *idea* of the "thing", for it posits both a "thing" and its absence. It's easy for us to believe that a perceived "thing" exists *out there*, in itself independent of the observer; but the posited "absence" of a thing is self-evidently an expression of *consciousness*, an operation of the *ideoform* character of experience. That a "thing" and its negating ob-verse are given *together* in the Necker cube despite our tendency to align some angle of bias into preferential relief, shows by example the *ideoform* character of every object.

The relation of abstract to operative spaces, ideal symmetries to functionally differentiated forces, and real to imaginary numbers involves the same conclusion. All energies, forces and fields comprising the physics of material expression, are functions of an abstract geometry.

Abstract geometry, in turn, is a function of *consciousness*.