

# Intrinsicity

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Abstract: Some of the uses of Intrinsicity, especially in determining and hence eliminating the implicit cognitive dissonances that permeate various disciplines, especially Science, with special emphasis on the advantages of the Reciprocal System of theory.

Traditionally, Man has studied the Physical Universe in such a way, as to fit in with his perceptions, in the main.

Any aspect to be considered outside the realm of perception, was, at least, tinged with Theosophical and/or Metaphysical considerations. Historically, we can see this in the Greeks' reference to their gods in all their writings, and later to the Christians' reference to God and the Church and the Geocentric Universe.

Of course, as technology increased in scope and was refined, perceptions became more acute and diverse, and Galileo, notably, was confronted with the decision of declaring the Truth and in so doing becoming a "heretic," or renouncing the truth and remaining acceptable to the Church and God. So the role of religion, with respect to Science, eventually grew less and less powerful as soon as the breakthroughs were made by Kepler, Galileo and their contemporaries.

Summarily, Man's search for Knowledge and Truth had to always pit itself against the reigning authority, whether it was the Church or traditional beliefs, so we had the Geocentric, Homocentric, Heliocentric, "Vortex centric" and outright Eccentric models, some of which are still with us.

When Einstein published his papers, he was fortunate in not having to buck too much establishment. He merely extrapolated from Galileo, Kepler and Newton, and incorporated, Lorentz, Riemann and Minkowski with a smidgen of originality, no mean part of which were some explicit and implicit assumptions. However, on back analysis, we see that all theories, to date, have been examples of "Scientific Method," combined with Human intuition, which derives, in part, from the nature of the perceptual process.

Now to quote from a paper by Denis P. Poneilly, New York, published in *Speculations in Science and Technology*, 1980.

An examination of these cosmological schemes indicates that, their fundamental characteristics can be summarized in three words:

## **RIGIDITY    ROTATION    HIERARCHY**

The quality of rigidity or solidity, in association with rotation, generates a system, with either spherical or axial, symmetry.

In the Eudoxian and Ptolemaic Cosmological schemes, the solid sphere was the preferred element. The perfection of the heavens seemed reflected in the limitless symmetry of the sphere.

Axially symmetric systems, principally cylindrical and vortical ones, were favorites too, although less compelling. The fundamental element of both sphere and vortex is the ring. The composite ring system, undergoing uniform circular motion, was the element of ingenious hierarchical systems.

So one system may be based on Euclidean Geometry, another on Projective Geometry. Invariants under

transformation are found and interpreted.

This tendency to abstract invariances from visual flow implies that, when observing an object, a change in image size or shape does not imply a different object, rather the observer perceives the object as remaining rigid, and infers from the changes in image-size and image-shape, motion, either translational or rotational or both.

Continuous perspective transformations, when the projection is on the retina, always generate the percept of a moving object, with a constant size and shape, that is, rigid motion in a 3-D Euclidean space. If motions become more complex, the observer perceives a hierarchy of relative motions. The steps in the hierarchy amount to a separation of individual motions by the perceptual system, a kind of vector analysis of the motion.

Referring motion to an external reference frame, can, in special circumstances, be strong enough to mislead an observer, e.g. an observer, sitting in a car of a standing train, knows that he is disengaged from the earth, and expects to move. If a second train, on a nearby track, starts to move smoothly, the observer in the first may experience the sensation of motion, a sensation, based strictly on visual information. This experience does not occur when the observer knows that he is in direct contact with the primary reference frame.

The general scheme of projective geometry, or perspective transformations, and of perceptual vector analysis, in which the observer perceives invariance in shape, motion in 3-D Euclidean space, and a hierarchy of reference frames has implications for the acceptability of a physical theory. The manner in which we receive sensory input data is strongly linked with the degree of satisfaction with an explanatory model.

To incorporate the complex planetary motion into a cosmological model, while strongly influenced by the striking success of the “natural scheme” of the rigid and rotating celestial sphere, the geometers drew on the next level of perceptual understanding, hierarchies of relative motion. Again, shunning the idea of independent motion, models were constructed, which provided the maximum degree of object constancy. A deep sense of the reality of a rotating geocentrism led to the homocentric sphere theory. One viewpoint of the planetary motion supports the construction of a system of epicycles, as when a wheel rolls around a circular path. A weaker geocentrism, coupled with a different percept, yields the vortex systems. Each cosmological system is distinct, yet they are related in terms of their structural forms.

There is, of course, a vast difference in the time scales between the motional elements in a laboratory model, representing planetary motions, and the motions of the celestial bodies. The percepts of the laboratory models are immediate. Geometrical insight into planetary motion is indirect, the actual rates are too slow for the corresponding percept. However, since motion implies a spatial change with time, motion perception implies the integration of the associated visual flow into a percept. Consequently memory functions are required, albeit short term, in any motional percept. The distinction, then, between direct and indirect can be recast as a problem in short and long term memory functions. Once the coherence of stellar motion is fully grasped, (a difficult procedure initially, and one, which would rely on the observer’s knowledge of physical phenomena, his memory and his intuition), it is not difficult to chart stellar motion and then visualise the associated paths. This technique would enable the theoreticians to reconstruct in “the mind’s eye” the various stellar phenomena, and compare them with the model predictions.

With the celestial sphere as a prime example, extrapolation to the planetary situation is realistic. It is not likely that the recall of visual events would occur in a manner at odds with the way, in which one

would directly perceive such events.

The explanatory power of a model is directly associated with the belief that the model is true. The planetary models, (having a structural form, which correlates with the manner, in which we perceive), were believed. The explanations, provided by these theories, were satisfying and compelling; they generated lasting support.

Since perceptual characteristics strongly influence the types of theories, we find acceptable, the nature of the choice between various suggested alternate theories is not unbiased. The tendency of the observer to abstract projective invariances from visual stimuli is a powerful one; under its influence, what seemed to be a free choice between potential alternates, was, in fact, strongly directed. Just as the choice is directed, the duration of the period of “normal science” is enhanced, since any admission of the existence of a “crisis” would tend to be more strongly resisted. The resistance to the abandonment of a fully accepted theoretical construct is great. Even those, who suggest alternates, have difficulty making such a transition. One feature of this transformation is that it does violence to the thought, (supported by human perceptual understanding), which refers motion to the earth. The resistance by those, opposed to shifting the frame of reference, is based on faith, (belief that the older system and their intuition could not have been so wrong).

As science developed and models became further removed from any direct perceptual influence, the fundamental structural forms of the past were not discarded, merely modified to apply to a model of the ether.

e.g. Maxwell and his vortices with interstitial rolling particles.

Rankine with molecular vortices.

Thomson with vortex atoms.

Einstein was quoted, “It is the theory, which decides what we can observe.”

An analytical approach to a paradigm, looking for its intrinsic nature, divides it into three inter-related parts:

- 1) The “Language,” in which it is to be expressed, which has two aspects:  
Linguistic and Mathematical. The combination of these words and symbols gives us the postulates and hypotheses, that describe this model.
- 2) The Syntactic, which develops this language by logical deduction into the assertions and theorems of the paradigm.
- 3) The Semantic, which relates this empirical theory to our observations. This should then give the theory the ability to predict other observations, thereby confirming the theory, if they do predict, as expected. If one prediction is false, then the model is false.

To quote H.L. Mencken, “Nine times out of ten, in the arts as in life, there is actually no truth to be discovered; there is only error to be exposed.”

With the foregoing in mind, when searching through the presentations of various theories, one can find the common ground, and also the different assumptions, some of which are explicitly contradictory, while others are not so obviously dissonant.

A flat earth is fine for land-dwellers, who don’t aspire to great heights.

A nested set of rigid “crystal” spheres, carrying the planets through the heavens is fine for those, who

don't throw stones.

Vorticists end up in a whirl of confusion.

To find those few facts, which are intrinsic to the physical universe, both local and in the far reaches, requires great depth of perspicacity and a moment of enlightenment, which reveals the innermost truth, the *Isness* or *Istigkeit*, universally applicable throughout physics and cosmology. Many have thought that the current theory of their time came as close to this requirement as could be hoped, but on stripping away the extrinsic properties, due to some localized effects, one finds little left to handle new situations, that arise.

The concept of Forces, in particular, having always been narrowly defined in their properties, (always being vectors), precluded most people from considering the existence of other types of force. This is where the Reciprocal System of theory excels, having shown scalar considerations to have much more depth, than was currently believed. Eliminating nuclear "forces" (strong and weak) and replacing them with Gravity and Scalar Spherical Expansion (S.S.E) was a great advance. Through this change in thinking, we can think of a constant force, which acts on a mass, and does not accelerate it in a manner, which is linearly proportional to the reciprocal of its mass ( $a = F/m$ ).

An analogy is a ball, dropped into a current of water, wherein it will accelerate to the speed of the stream in some time interval, which is calculated without recourse to the mass of the ball.

Another analogy is a motor boat trying to head across a flowing river, at some set angle to the river bank, and this problem is solved using velocity vectors in a triangle to obtain the resultant velocity of the boat, independent of the mass, despite the forces of the river against the mass of the boat.

It may well be the case that the photons of light attempting to pass a gravitating mass, such as the sun, during the near eclipse of a distant star, are drawn nearer to the sun, because of the gravitational influence, which can be likened to a "current of space units" approaching the sun, in the opposing direction of the S.S.E., which suggests their lack of mass is not the point, but their occupancy of a space unit is the determining factor.

Intrinsicity is a property to seek in various areas of academia, since its main characteristic is that it filters out extraneous factors, that can confuse an issue.

In mathematics, the intrinsic coordinates are the intrinsic properties of a curve, irrespective of an extrinsic framework, such as Cartesian. Such properties may be curvature, arclength, aberration, (deviation) or spirallation, to name a few. When one manipulates the equations of Intrinsic Geometry, there is no ambiguity.

A vague attempt is made by physicists in their paradigms for the physical universe, wherein they use tensors, whose elements are partial differentials, whose use is to transform from extrinsic coordinates to curvilinear coordinates, whereby there is a moving trihedral at the general point in three dimensions, so the reference frame moves around with the point in space, and similarly in four dimensional Minkowski space for the Einstein paradigm. However, it really is not intrinsic geometry, since Cartesian and Polar coordinates are not far enough away from the action. If one cares to look into the various solutions of the tensor equations, by such people as Einstein, de Sitter & Schwarzschild, one realizes that they all define mathematical models and variously have light beams as straight lines, or null geodesics (closed curves), and the very 4-D space itself is deemed to be curved, and there is no hesitation to "refine" the metrics to artificially maintain signature as 2 and also to maintain spherical symmetry, all in the name of "pure science." This is extrinsic overlay upon extrinsic overlay with assumptions galore. It overlooks the very essence of good science, which should be to have one

mathematical model (paradigm) to serve all contingencies, whether we are looking at light rays or the precession of the perihelion of Mercury etc. etc.

The foregoing analysis should make one conscious of the need for a better model, where the intrinsic properties are paramount in importance. Such a paradigm already exists, and is the Scalar Spherical Expansion (S.S.E.), where there is no fixed reference frame, nor any fixed origin, but, instead, a universal expansion of space units, each away from the other.

Another intrinsic property of this paradigm is the relationship between space and time, which we call motion, and, in particular, the reference speed for all other speeds is that of the S.S.E.

Yet another intrinsic property of this paradigm is that scalar motion in space and scalar motion in time are equal partners in the “world picture” just as space and time are also equal partners.

From the postulates and the subsequent recognition of their implications we have a Unified Theory of the Universe, called the *Reciprocal System of theory*.