

# The Intellectual Pyramid (1968) – Model After Intellectual Evolution of Traditional Stratigraphy – Remiss in Geosciences Education

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## Summary

In Dec. 1968 I penned Intellectual Pyramid (never published), as companion-piece to Prof. Stewart's "Geology in British Universities" in *Geotimes*, Oct. 1968. He criticized fragmentation and degradation of classical geology into sub-discipline specializations with little or no sense of synthesis. The IP. goes further as a philosophy in evolution of learning through 4 progressively higher levels of understanding moving from the constantly-exploding data base (knowledge) onward to attaining sense of wisdom and conscience – moral and ethical.

A diagram representing the IP. shows a triangular-base with 3 footings – Science, Philosophy & Semantics. Science can be replaced by several other endeavors; Philosophy is the intellectual bank of human experiences; Semantics – more explicit language for more effective communication. Semantics is seen as most important. The 4 levels of understanding are respectively related to 4 increasingly greater sensibilities, Perceptiveness, Discrimination, Synthesis and Responsibility – moral and ethical. Knowledge and Wisdom, Hypotheses and Theories, Induction and Deduction relations are shown with the all-pervading feedback cycle. These are shown to rise upward to the peak in progressively smaller 'volumes' of the IP. to reflect relative 'percentages' of educated persons attaining these levels. This may reflect the 4 sensibilities are not equally evolved in different individuals and that most fit in L. 1 & 2.

The concepts in IP. based on personal geological experience (1943 – 68) are mirrored in Traditional Stratigraphy as evolved in Europe during 200 + years as a fundamental discipline. This progressed through 4 sub-disciplines – Sedimentology, Paleontology, Paleogeography and Paleotectonics (Gignoux, 1955). In diagram presentation, Traditional Stratigraphy and its sub-disciplines are shown as 4 jig-saw puzzles, each occupying a portion in succession upward of the total – HOLISTIC picture. Sedimentology and Paleontology are shown in lower positions, as the MAZE in N. American 'stratigraphy'.

Sedimentology may align with L. 1 where Perceptiveness is required for describing and cataloguing data. Paleontology with L. 2 where Discrimination is required for meanings of different sedimentary and fossil criteria, and feedback to L. 1. Paleogeography with L. 3, calling for valid testing and re-testing in Syntheses of data in L. 1 and 2, and feedback. Paleotectonics with L. 4 – calls for Responsibility – moral and ethical – in valid conclusions to be disseminated for science and society.

Traditional Stratigraphy concluded the Stage and its basal unconformity to be the discrete sedimentary cycle of global transgression of one age for global correlations (synchronicity) – Walther's Law, and the Principle of Superposition for separation of Stages of successive ages, at the basal unconformity, with depositional hiatus above and erosional hiatus below.

But this philosophy has not been recognized in N. America since WW II where specializations in Sedimentology and Paleontology (Salvador, 1997) in academia, industry, research centres and continuing education are misrepresented as Stratigraphy (Storey & Patterson, 1959; Storey 1970). Thus valid syntheses to L. 1 and 2 are not evolved and therefore the significance of the Stage is not grasped (Lafitte 1972). Thus the critical evidence of globe-wide tectonics occurring synchronously to end each transgression of each age, before the next transgression of the next age, does not rise to L. 4 – Responsibility – in drawing final conclusions for publication. Thus the Code 1983 and Guide 1994 and Seismic/Sequence 'Stratigraphy' fall short of being HOLISTIC.

But who really knows or cares?

## Purposes of Intellectual Pyramid

- 1) To show how Traditional Stratigraphy has served so well in amazing successes in hydrocarbon exploration and in resolving many geological problems in the 4 sub-disciplines and in geophysical problems (in Canada, Algeria, Brazil and Venezuela). And to confirm approval from world-wide experts in Germany, England, Belgium and Canada.
- 2) To show that the above successes led me to the I.P. as a philosophy of learning – of great confidence in prediction and intuition capabilities.
- 3) The I.P. offers bases for evaluating educational, training, organizational and management problems based on real experiences such as recognizing and foreseeing the Peter Principle and Practice of Management.
- 4) To assure others that the philosophy of the I.P. is not different from that of chemistry, biology and other sciences and perhaps is mirrored in the evolution of scientific philosophy – from Alchemy to Causal, to Stockastic – Probabilistic, to Quantum Theory - ? Philosophy may be seen as the generalist approach – the vehicle for each and all different endeavors. The paths to Truths are important, but successful retracing of these paths (feedback) back to the beginnings of research makes WISDOM more inclusive. Is this the Labyrinth of Life, of setting standards for the few gifted in integrating all 4 talents? To wit – the saga of Prince Henry of Portugal (1394 – 1460), Columbus (1451 – 1506) and Magellan (1480 – 1521), each building higher achievements and confidence. The philosophy in I.P. may well accord

also with that which produced the 2 Ages of Enlightenment (14 – 17 & 18 centuries) when the powers of Divine Rights shifted from the Naive to the Critical Realists (Lonerger). However, for decades passive response has prevailed = “flight from insight” Lonerger.

**Recent Concerns for Geosciences Education and Professionalism – CSPG Res. 2000**

- 1) “In recent years – steady erosion of geosciences as legitimate members of the community of professional disciplines ----. Failure to address the problem will result in continuing hemorrhaging of qualified people --- In all --- most earthscience organizations have taken a passive role. It is time --- to take an active role in promoting the earth sciences generally and petroleum geology specifically.”
- 2) “Many of us have been frustrated over the years (with APEGGA) which – appears to have little relevance to the geoscience community.”

**Commentary**

- 1) In 1962 I suggested to Pres. Armstrong (U. of C.), formerly geology professor that perhaps 80% (see I.P. model) of petroleum geologists were over-educated for only technical/clerical jobs in industry. He was shocked!

In 1965 (AAPG Bull) I had published “On Certification of Geologists”, a commentary on “What Is Our Geologic Image” earlier, claiming that most of us are practicing geologists not professional! In CSPG 1979, Baillie had published “Petroleum Geologist – Scientist or Technician?”. In 1965 and 1983 in discussion I objected to geoscientists joining APEGGA and criticized their lack of understanding problems in geological education. I also have had 5 pertinent papers refused for publication. What responses did we get? Passive! In essence, earthscience education has been displaced by oil-company training in petroleum geology – of technical school standards.

As to scientific standards? In “Pangea 1993” and “Sedimentary Events 1997”, my illustrations of the Traditional Stratigraphic approach were made in poster presentations using AAPG cross-sections (1960) and Devonian of the World (1967 and 1988). This showed revision of Tournaisian, Farmennian, Frasnian and Givetian basal unconformity/hiatal boundaries across N. America, Europe and Russia, as compared with paleontological specialist concepts preferring faunal zone boundaries and deliberately avoiding documented unconformable/hiatal contacts. While I have had support of world-wide experts in Germany, England, Belgium and Canada – CSPG authorities did not come to see and to judge. Passive? Yes!