

**Thomas Kuhn and Bernard Lonergan:
The Advance of Knowledge
A Critical Analysis by Christopher Krall**

| Comparable Aspects to the Theories | |
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| Kuhn <i>The Structure of Scientific Revolutions</i> | Lonergan <i>Insight: A Study of Human Understanding</i> |
| The aim: A quest to come to know not scientific theory itself, but the method used by scientists to get to that theory. He probed the underlying influences that affected scientists through the history of science. | The aim: “Neither to advance mathematics nor to contribute to any of the specialized branches of science but to seek a common ground on which men of intelligence meet.” ¹ |
| Science “is the constellation of facts, theories, and methods collected in current texts (and) scientists are the people who, successfully or not, have striven to contribute one or another element to that particular constellation.” ² | Science consists of the investigation of the internal relations of things and developing an objective knowledge through experimentation that leads to explanations rather than myth or mere description. Scientists use technical language to discuss their theories and express their meanings, which are differentiated in the second realm of meaning. |
| The paradigm: A structural box of previously established laws, theories, and agreed-upon parameters of the scientific community that dictate how an investigator sees the world and the thought process used to make decisions about the experiments and data. | Canons of operation and the realms of interiority: the structural patterns and agreed-upon rules consistently used by investigators to come to more knowledge of what is real, and a deeper appreciation of meaning in the universe. |
| Normal science: the articulation and re-articulation of the paradigm through the collection of raw data. It proceeds rapidly as scientists are guided by the paradigm, which gives coherence to the research. This process of puzzle solving is that which persists through the revolutionary changes. | The General Empirical Method of experiencing the world through the senses, coming to an understanding, judging whether the understanding is correct, and making a decision, is the empirical method that allows human understanding to advance. The method remains constant through it all. |
| Scientific Revolution: When the anomalies become too great, and the researchers have severe difficulty keeping their known puzzle-solving techniques inline with the paradigm, a crisis builds up pressure that must somehow be released. The radical eruption to an incommensurately new paradigm is a scientific revolution. | Higher Viewpoint: In virtue of the canon of operation, fresh data are ever being brought to light, to force upon scientific consciousness the inadequacies of existing hypotheses and theories, to provide the evidence for their revision, and in the limit, when minor corrections no longer are capable of meeting the issue, to demand the radical transformation of concepts and postulates that is named a higher viewpoint’ ³ |
| The revolutionary illumination came to a person in sleep or moments of relaxation. When the right mind struggles to solve a previously unsolvable problem, it is all of a sudden transformed to link together components of a new and unique paradigm. From these moments of insight, a new paradigm takes shape within the scientific community. | Insight comes suddenly and unexpectedly. It did not occur when Archimedes was in the mood and posture that a sculptor would select to portray “The Thinker”. It came in a flash, on a trivial occasion, in a moment of relaxation. Insight is reached not by learning rules, not by following precepts, not by studying any methodology. Discovery is a new beginning. |

¹ Bernard Lonergan, *Insight: A Study of Human Understanding*, Frederick E. Crowe and Robert M. Doran, eds., vol. 3, *Collected Works of Bernard Lonergan*, (Toronto: University of Toronto Press, 1957, 1992), 7.

² Thomas S. Kuhn, *The Structure of Scientific Revolutions*, Third Edition (Chicago: The University of Chicago Press, originally published in 1962, then 1996).

³ Robert M. Doran, “October 9, 2003, Part 2” in “Lonergan’s *Insight* Class Notes”

| Notable Differences Between the Theories | |
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| Kuhn <i>The Structure of Scientific Revolutions</i> | Lonergan <i>Insight: A Study of Human Understanding</i> |
| An outer, paradigm of established principles, theories, and agreed-upon facts collected in text books dictates | Realms of interiority and the personal, detached, disinterested pure desire to know everything about |

The Puzzle-Solving time of Normal Science: This consists of bringing a normal research problem to a conclusion, achieving the anticipated in a new way, and requires the solution of all sorts of complex instrumental, conceptual, and mathematical puzzles.

The Realm of Theory and Logic: Scientists perform their experiments, wrestle with abstract problems, and pull away from particulars and experiences of the physical, material world by reaching toward universal theories.

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| <p>the drive and direction of the scientific development</p> | <p>everything fuel the advancement of science.</p> |
| <p>Kuhn makes the argument that there is no ideal goal for its progression. Science is constantly advancing and developing a greater understanding of the intricacies of existence, but Kuhn, presents his theory as an alternative to the notion that there should be progression toward a desired goal</p> | <p>Through the compilation of all of these realms of human knowing and through this process of cognition, Lonergan feels that knowledge advances and can continue to advance until everything about everything is known.</p> |
| <p>Kuhn's scientific revolution implies a complete break from irrelevant and obsolete past theories and models as each successive paradigm is so drastically different from the previous ones that the same language cannot even be used to talk about them. The past paradigm is incommensurate with the present. A new way of seeing the world has come about, a new dimension taken shape, and a leap in understanding has occurred.</p> | <p>Each successive higher viewpoint is a reformulating of past theories, an adapting of the primitive models, and a melding together of the lower viewpoints because of the unity that emerged with the acquirement of the new knowledge. He uses the simple example of the transition from arithmetic to algebra.</p> |
| <p>Kuhn repeatedly names and gives great praise to Galileo, Newton, and Einstein, who thought in new ways, with daring courage to question what had never been questioned before, sparking the greatest scientific revolutions ever conceived. However, the countless scientists working before, between, and subsequent to these men are given very little credit.</p> | <p>Lonergan's premise is for each and every human person to go through the process of self-appropriation. The advancement of knowledge is a human enterprise in which each and every person has a vital role to perform so as to contribute to the total universal viewpoint of all things.</p> |
| <p>Kuhn's description of the scientific enterprise was focused solely on the history and development of the scientific theories and principles through the ages as seen in the particular contexts. Very little attention is given to external factors and contributing causes of change from the outside world.</p> | <p>Lonergan wrote about every realm of human knowledge, from common sense, to science, to interior dispositions, to faith and the sacred, and even onward to the area of beauty and art: He covers the whole spectrum of possible influences that affect each person, who is a member of the scientific communities, which are parts of the whole society.</p> |
| <p>The scientific revolution necessarily consists of the community's rejection of one time-honored scientific theory in favor of another incompatible with it. A shift occurs in the problems available for scientific scrutiny and in the standards by which the profession determined should count as an admissible problem or as a legitimate problem solution.</p> | <p>"Insight consists of one's own rational self-consciousness clearly and distinctly taking possession of itself as rational self-consciousness."⁴ Lonergan's whole project is to guide the reader to the point of the self-affirmation of 'I am a knower.'</p> |
| <p>"Historians of science have begun to ask new sorts of questions and trace different, and often less than cumulative, developmental lines for the sciences. Rather than seeking the permanent contributions of an older science to our present vantage, they attempt to display the historical integrity of that science in its own time. They ask, for example, not about the relation of Galileo's views to those of modern science, but rather about the relationship between his views and those of his group; teachers, contemporaries, and immediate successors in the sciences."⁵</p> | <p>"It is not at all presumed that one be an expert in mathematics or physics in order to get started with <i>Insight</i>. What is required is that one grasp (14) 'the notion of insight, of the accumulation of insights, of higher viewpoints, and of their heuristic significance and implications.' Lonergan found an advantage in illustrating these in mathematics and science, but the reader is urged to substitute his or her examples. And these elements are to be <i>identified</i> in one's own personal experience."⁶</p> |

⁴ Bernard Lonergan, *Insight: A Study of Human Understanding*, Frederick E. Crowe and Robert M. Doran, eds., vol. 3, *Collected Works of Bernard Lonergan*, (Toronto: University of Toronto Press, 1957, 1992), 13.

⁵ Thomas S. Kuhn, *The Structure of Scientific Revolutions*, Third Edition (Chicago: The University of Chicago Press, originally published in 1962, then 1996), 2.

⁶ Robert M. Doran, "September 18, Part 2" in "Lonergan's *Insight* Class Notes, 2003"

