THE KUHNIAN REVOLUTION pdf

1: Paradigm Shift - Defined

Phase 5- Post-Revolution, the new paradigm's dominance is established and so scientists return to normal science, solving puzzles within the new paradigm. [17] A science may go through these cycles repeatedly, though Kuhn notes that it is a good thing for science that such shifts do not occur often or easily.

The Problems of Revolution and Innovative Change The difficulties in identifying and conceptualizing scientific revolutions involve many of the most challenging issues in epistemology, methodology, ontology, philosophy of language, and even value theory. With revolution we immediately confront the problem of deep, possibly noncumulative, conceptual and practical change, now in modern science itself, a locus that Enlightenment thinkers would have found surprising. And since revolution is typically driven by new results, or by a conceptual-cum-social reorganization of old ones, often highly unexpected, we also confront the hard problem of understanding creative innovation. Third, major revolutions supposedly change the normative landscape of research by altering the goals and methodological standards of the enterprise, so we face also the difficult problem of relating descriptive claims to normative claims and practices, and changes in the former to changes in the latter. In a market economy, as in science, there is a premium on change driven by innovation. Yet most economists have treated innovations as exogenous factorsâ€"as accidental, economically contingent events that come in from outside the economic system to work their effects. It is surprising that only recently has innovation become a central topic of economic theorists. Decades ago, the Austrian-American economist Joseph Schumpeter characterized economic innovation as the process of industrial mutationâ€"if I may use that biological termâ€"that incessantly revolutionizes the economic structure from within, incessantly destroying the old one, incessantly creating a new one. This process of Creative Destruction is the essential fact about capitalism. The result was an inability of economic models to account for economic innovation endogenously and, thereby, to gain an adequate understanding of the generation of economic wealth. The parallel observation holds for philosophy of science. Here, too, the leading philosophers of science until the sâ€"the logical empiricists and the Popperiansâ€"rejected innovation as a legitimate topic, even though it is the primary intellectual driver of scientific change and producer of the wealth of skilled knowledge that results. The general idea is that the so-called context of discovery, the context of creatively constructing new theories, experimental designs, etc. On this view, convincing confirmation or refutation of a claim enables scientists to render an epistemic judgment that detaches it from its historical context. This judgment is based on the logical relations of theories and evidence rather than on history or psychology. According to this traditional view, there exists a logic of justification but not a logic of discovery. The distinction has nineteenth-century antecedents Laudan See the entry on Reichenbach. For recent discussion see Schickore and Steinle, Today there are entire academic industries devoted to various aspects of the topic of scientific revolutions, whether political or scientific, yet we have no adequate general theory or model of revolutions in either sphere. See also Hoyningen-Huene , and Bird The answer is an intriguing mix of accounts of physical phenomena, political fortunes, and conceptions of chance, fate, and history. The term later returned to science at the metalevel, to describe developments within science itself e. Christopher Hill, historian of seventeenth-century Britain and of the so-called English Revolution in particular, writes: Previously it had been an astronomical and astrological term limited to the revolution of the heavens, or to any complete circular motion. This conception of revolution as overturning was compatible with a cyclical view of history as a continuous process. It was in the socio-political sphere that talk of revolution as a successful uprising and overturning became common. The fully modern conception of revolution as involving a break from the pastâ€"an abrupt, humanly-made overturning rather than a natural overturningâ€"depended on the linear, progressive conception of history that perhaps originated in the Italian Renaissance, gained strength during the Protestant Reformation and the two later English revolutions, and became practically dogma among the champions of the scientific Enlightenment. The violent English Revolution of the s gave political revolution a bad name, whereas the Glorious Revolution of , a bloodless, negotiated compromise, reversed this reputation. In the most thorough treatment of the history of the concept of scientific revolution, I. Cohen notes that the

French word revolution was being used in early eighteenth-century France to mark significant developments. Toward the end of the century, Condorcet could speak of Lavoisier as having brought about a revolution in chemistry; and, indeed, Lavoisier and his associates also applied the term to their work, as did Cuvier to his. Interestingly, for Kant political revolutions are, by nature, unlawful, whereas Locke, in his social contract theory, had permitted them under special circumstances. It was during the twentieth century that talk of scientific revolutions slowly gained currency. One can find scientists using the term occasionally. In The Origins of Modern Science: The anti-whiggism that he had advocated in his The Whig Interpretation of History became a major constraint on the new historiography of science, especially in the Anglophone world. His history ended there. A revolution for Butterfield is a major event that founds a scientific field. Taken together, these revolutions founded modern science. As the title of his book suggests, he was concerned with origins, not with what comes after the founding. In the Introduction he famously or notoriously stated that the Scientific Revolution outshines everything since the rise of Christianity and reduces the Renaissance and Reformation to the rank of mere episodes, mere internal displacements, within the system of medieval Christendom. For Butterfield, the Scientific Revolution was a watershed event on the scale of total human history, an event that, somewhat ironically and somewhat like Christianity according to its believers, enabled the sciences, to some degree, to escape from history and thereby to become exceptional among human endeavors. Rupert Hall, a full-fledged historian of science who worked from primary sources, published The Scientific Revolution: Soon many other scholars spoke of the Scientific Revolution, the achievements of the period from Copernicus to Newton, including such luminaries as Kepler, Galileo, Bacon, Descartes, Huygens, Boyle, and Leibniz. Then Thomas Kuhn and Paul Feyerabend challenged received views of science and made talk of revolutionary breaks and incommensurability central to the emerging new field of history and philosophy of science. They asserted that major conceptual changes lay in the future of mature, modern sciences as well as in their past. IX contended that there will be no end to scientific revolutions as long as systematic scientific investigation continues, for they are a necessary vehicle of ongoing scientific progressâ€”necessary to break out of dated conceptual frameworks. However, soon after Structure, Kuhn had second thoughts and eventually abandoned the Butterfield conception of revolution, on the ground that even his so-called preparadigm schools had their paradigms Kuhn , , note 4; details below. So multiple Kuhnian paradigms in long-term competition now became possible. The Scientific Revolution was the topic around which the field of history of science itself came to maturity. The revolution frame of reference was also a boon to historiographical narrative itself see Cohen and Nickles And by challenging the received, quasi-foundational, Enlightenment conception of science, history of science and related philosophies of science gained great cultural significance for a time. One difficulty is that no one has succeeded in capturing a year or more period of work in an insightful, widely accepted characterization that embraces the important changes in theory, method, practices, instrumentation, social organization, and social status ranging over such a wide variety of projects. The very attempt has come to seem reductionist. Philosophically oriented writers attempted to find unity and progress in terms of the discovery of a new, special scientific method. Today even most philosophers of science dismiss the claim that there exists a powerful, general, scientific method, the discovery of which explains the Scientific Revolution and the success of modern science. There is no content-neutral, thereby general and timeless method that magically explains how those results were achieved Schuster and Yeo , Nickles When examined closely in their own cultural context, all the supposed revolutionaries are found to have had one foot in the old traditions and to have relied heavily on the work of predecessors. In this vein, J. Still, most historians and philosophers would agree that the rate of change of scientific development increased notably during this period. Hence, Shapin, despite his professional reservations, could still write an instructive, synthetic book about the Scientific Revolution. The most thorough appraisal of historiographical treatments of the Scientific Revolution is H. The Scientific Revolution supposedly encompassed all of science or natural philosophy, as it then existed, with major social implications, as opposed to more recent talk of revolutions within particular technical fields. Have there been other multidisciplinary revolutions? Enrico Bellone , Kuhn, and others Kuhn have focused on the tremendous increase in mathematical abstraction and sophistication during the early-to-mid nineteenth century that essentially created what we know as mathematical physics. Still others have claimed that there was a general revolution in the sciences in the decades around See also Cohen , chap. They find it safer to divide the Scientific Revolution into several more topic- and project-specific developments. However, in their unusually comprehensive history of science textbook, Peter Bowler and Iwan Morus query of practically every major development they discuss whether or not it was a genuine revolution at all, at least by Kuhnian standards. Such was the change from the Aristotelian to the Newtonian conception of inertia. Yet Toulmin remained critical of revolution talk. Although the three influential college course texts that he co-authored with June Goodfield recounted the major changes that resulted in the development of several modern sciences Toulmin and Goodfield , , , these authors could write, already about the so-called Copernican Revolution: We must now look past the half-truths of this caricature, to what Copernicus attempted and what he in fact achieved. In the development of science, as we shall see, thorough-going revolutions are just about out of the question. And the answer seems to be: Nor do we find talk of scientific revolutions in the later Vienna Circle, even after the diaspora following the rise of Hitler. Hans Reichenbach speaks rather casually of the revolutions in physics. It plays no significant role in N. Meanwhile, there were, of course, a few widely-read works in the background that spoke of major ontological changes associated with the rise of modern science, especially E. In his retrospective autobiographical lecture at Cambridge in , Popper did refer to the dramatic political and intellectual events of his youth as revolutionary: According to Popper, at any time there may be several competing theories being proposed and subsequently refuted by failed empirical testsâ€”rather like several balloons being launched, over time, and then being shot down, one by one. Beginning in the s, several philosophers and historians addressed this difficulty by proposing the existence of larger units than theories of and for analysis. These stable formations correspondingly raised the eventual prospect of larger-scale instabilities, for an abrupt change in such a formation would surely be more dramatic, more revolutionary, than a Popperian theory change. Section 5 returns to this theme. First, the scientists involved in the development must perceive themselves as revolutionaries, and relevant contemporaries must agree that a revolution is underway. Second, documentary histories must count it as a revolution. Third, later historians and philosophers must agree with this attribution and, fourth, so must later scientists working in that field or its successors. By including both reports from the time of the alleged revolution and later historiographical judgments, Cohen excludes people who claimed in their day to be revolutionaries but who had insufficient impact on the field to sustain the judgment of history. He also guards against whiggish, post hoc attributions of revolution to people who had no idea that they were revolutionaries. His own four examples of big scientific revolutions all have an institutional dimension: Third is the rise of university graduate research toward the end of that century. Fourth is the post-World War II explosion in government funding of science and its institutions. Cohen sets the bar high. Or if there was a revolution, should it not be attributed to Kepler, Galileo, and Descartes? This thought further problematizes the notion of revolution, for science studies experts as well as scientists themselves know that scientific and technological innovation can be extremely nonlinear in the sense that a seemingly small, rather ordinary development may eventually open up an entire new domain of research problems or a powerful new approach. As Kuhn shows, despite the flood of later attributions to Planck, it is surprisingly difficult, on historical and philosophical grounds, to justify the claim that he either was, or saw himself as, a revolutionary in and for many years thereafter. Kuhn b offers a short summary. In the last analysis, many would agree, revolution, like speciation in biology, is a retrospective judgment, a judgment of eventual consequences, not something that is always directly observable as such in its initial phases, e.

2: Kuhn's Structure of Scientific Revolutions - outline

In his quiet way, he brought about a conceptual revolution by triggering a shift in our understanding of science from a Whiggish paradigm to a Kuhnian one, and much of what is now done in the.

These beliefs form the foundation of the "educational initiation that prepares and licenses the student for professional practice". Scientists take great pains to defend the assumption that scientists know what the world is like To this end, "normal science" will often suppress novelties which undermine its foundations. Research is therefore not about discovering the unknown, but rather "a strenuous and devoted attempt to force nature into the conceptual boxes supplied by professional education". This is difficult and time consuming. It is also strongly resisted by the established community. Normal science "means research firmly based upon one or more past scientific achievements, achievements that some particular scientific community acknowledges for a time as supplying the foundation for its further practice". These achievements must be sufficiently unprecedented to attract an enduring group of adherents away from competing modes of scientific activity and sufficiently open-ended to leave all sorts of problems for the redefined group of practitioners and their students to resolve. These achievements can be called paradigms. Students study these paradigms in order to become members of the particular scientific community in which they will later practice. Because the student largely learns from and is mentored by researchers "who learned the bases of their field from the same concrete models" there is seldom disagreement over fundamentals. Men whose research is based on shared paradigms are committed to the same rules and standards for scientific practice. A shared commitment to a paradigm ensures that its practitioners engage in the paradigmatic observations that its own paradigm can do most to explain. Paradigms help scientific communities to bound their discipline in that they help the scientist to create avenues of inquiry, formulate questions, select methods with which to examine questions, define areas of relevance. A paradigm is essential to scientific inquiry - "no natural history can be interpreted in the absence of at least some implicit body of intertwined theoretical and methodological belief that permits selection, evaluation, and criticism". How are paradigms created, and how do scientific revolutions take place? Inquiry begins with a random collection of "mere facts" although, often, a body of beliefs is already implicit in the collection. During these early stages of inquiry, different researchers confronting the same phenomena describe and interpret them in different ways. In time, these descriptions and interpretations entirely disappear. A pre-paradigmatic school appears. Such a school often emphasises a special part of the collection of facts. Often, these schools vie for pre-eminence. From the competition of these pre-paradigmatic schools, one paradigm emerges - "To be accepted as a paradigm, a theory must seem better than its competitors, but it need not, and in fact never does, explain all the facts with which it can be confronted", thus making research possible. As a paradigm grows in strength and in the number of advocates, the other pre-paradigmatic schools or the previous paradigm fade. A paradigm transforms a group into a profession or, at least, a discipline. And from this follow the formation of specialised journals, foundation of professional bodies and a claim to a special place in academe. There is a promulgation of scholarly articles intended for and "addressed only to professional colleagues, [those] whose knowledge of a shared paradigm can be assumed and who prove to be the only ones able to read the papers addressed to them". If a paradigm consists of basic and incontrovertible assumptions about the nature of the discipline, what questions are left to ask? When they first appear, paradigms are limited in scope and in precision. But more successful does not mean completely successful with a single problem or notably successful with any large number. Initially, a paradigm offers the promise of success. Normal science consists in the actualisation of that promise. In other words, there is a good deal of mopping-up to be done. Mop-up operations are what engage most scientists throughout their careers. Mopping-up is what normal science is all about! This paradigm-based research is "an attempt to force nature into the pre-formed and relatively inflexible box that the paradigm supplies". No effort is made to call forth new sorts of phenomena, no effort to discover anomalies. When anomalies pop up, they are usually discarded or ignored. Those restrictions, born from confidence in a paradigm, turn out to be essential to the development of science. By focusing attention on a small range of relatively esoteric problems, the paradigm forces scientists to investigate some part of nature in a detail and depth that would otherwise be unimaginable" and, when the paradigm ceases to function properly, scientists begin to behave differently and the nature of their research problems changes. IV - Normal Science as Puzzle-solving. Doing research is essentially like solving a puzzle. Puzzles generally have predetermined solutions. A striking feature of doing research is that the aim is to discover what is known in advance. This in spite of the fact that the range of anticipated results is small compared to the possible results. When the outcome of a research project does not fall into this anticipated result range, it is generally considered a failure. So why do research? Results add to the scope and precision with which a paradigm can be applied. The way to obtain the results usually remains very much in doubt - this is the challenge of the puzzle. Solving the puzzle can be fun, and expert puzzle-solvers make a very nice living. To classify as a puzzle as a genuine research question , a problem must be characterised by more than the assured solution, but at the same time solutions should be consistent with paradigmatic assumptions. Despite the fact that novelty is not sought and that accepted belief is generally not challenged, the scientific enterprise can and does bring about unexpected results. V - The Priority of Paradigms. The paradigms of a mature scientific community can be determined with relative ease. The "rules" used by scientists who share a paradigm are not so easily determined. Some reasons for this are that scientists can disagree on the interpretation of a paradigm. The existence of a paradigm need not imply that any full set of rules exist. Also, scientists are often guided by tacit knowledge - knowledge acquired through practice and that cannot be articulated explicitly. Further, the attributes shared by a paradigm are not always readily apparent. Paradigms can determine normal science without the intervention of discoverable rules or shared assumptions. In part, this is because it is very difficult to discover the rules that guide particular normal-science traditions. Scientists never learn concepts, laws, and theories in the abstract and by themselves. They generally learn these with and through their applications. New theory is taught in tandem with its application to a concrete range of phenomena. Sub-specialties are differently educated and focus on different applications for their research findings. A paradigm can determine several traditions of normal science that overlap without being coextensive. Consequently, changes in a paradigm affect different sub-specialties differently. When scientists disagree about whether the fundamental problems of their field have been solved, the search for rules gains a function that it does not ordinarily possess. If normal science is so rigid and if scientific communities are so close-knit, how can a paradigm change take place? Paradigm changes can result from discovery brought about by encounters with anomaly. Normal science does not aim at novelties of fact or theory and, when successful, finds none. Nonetheless, new and unsuspected phenomena are repeatedly uncovered by scientific research, and radical new theories have again and again been invented by scientists. Fundamental novelties of fact and theory bring about paradigm change. So how does paradigm change come about? There are two ways: Discovery begins with the awareness of anomaly - the recognition that nature has violated the paradigm-induced expectations that govern normal science. The area of the anomaly is then explored. The paradigm change is complete when the paradigm has been adjusted so that the anomalous become the expected. The result is that the scientist is able "to see nature in a different way".. How paradigms change as a result of invention is discussed in greater detail in the following chapter. Although normal science is a pursuit not directed to novelties and tending at first to suppress them, it is nonetheless very effective in causing them to arise. Research results in the construction of elaborate equipment, development of an esoteric and shared vocabulary, refinement of concepts that increasingly lessens their resemblance to their usual common-sense prototypes. New and refined methods and instruments result in greater precision and understanding of the paradigm. Only when researchers know with precision what to expect from an experiment can they recognise that something has gone wrong. Consequently, anomaly appears only against the background provided by the paradigm. The more precise and far-reaching the paradigm, the more sensitive it is to detecting an anomaly and inducing change. By resisting change, a paradigm guarantees that anomalies that lead to paradigm change will penetrate existing knowledge to the core. As is the case with discovery, a change in an existing theory that results in the invention of a new theory is also brought about by the awareness of anomaly. The emergence of a new theory is generated by the persistent failure of the puzzles of normal science to be solved as they should. Failure of existing rules is the prelude to a search for new ones. Neither problems nor puzzles yield often to the first attack. Recall that paradigm and theory resist change and are extremely resilient. Philosophers of science have repeatedly demonstrated that more than one theoretical construction can always be placed upon a given collection of data. In early stages of a paradigm, such theoretical alternatives are easily invented. Once a paradigm is entrenched and the tools of the paradigm prove useful to solve the problems the paradigm defines , theoretical alternatives are strongly resisted. As in manufacture so in science--retooling is an extravagance to be reserved for the occasion that demands it. Crises provide the opportunity to retool. The awareness and acknowledgement that a crisis exists loosens theoretical stereotypes and provides the incremental data necessary for a fundamental paradigm shift. Normal science does and must continually strive to bring theory and fact into closer agreement.

3: What is a "Kuhnian Revolution"? | Yahoo Answers

Thomas Samuel Kuhn (/ k uË• n /; July 18, - June 17,) was an American physicist, historian and philosopher of science whose controversial book The Structure of Scientific Revolutions was influential in both academic and popular circles, introducing the term paradigm shift, which has since become an English-language idiom.

Kuhn, an industrial engineer, and Minette Stroock Kuhn, both Jewish. He graduated from The Taft School in Watertown, CT, in , where he became aware of his serious interest in mathematics and physics. He later taught a course in the history of science at Harvard from until , at the suggestion of university president James Conant. After leaving Harvard, Kuhn taught at the University of California, Berkeley , in both the philosophy department and the history department, being named Professor of the History of science in In , he joined Princeton University as the M. He served as the president of the History of Science Society from â€" Rockefeller Professor of Philosophy, remaining there until In Kuhn was diagnosed with lung cancer. He died in The Structure of Scientific Revolutions[edit] Main article: In this book, Kuhn argued that science does not progress via a linear accumulation of new knowledge, but undergoes periodic revolutions, also called " paradigm shifts " although he did not coin the phrase , [18] in which the nature of scientific inquiry within a particular field is abruptly transformed. In general, science is broken up into three distinct stages. Prescience, which lacks a central paradigm, comes first. This is followed by " normal science ", when scientists attempt to enlarge the central paradigm by "puzzle-solving". Guided by the paradigm, normal science is extremely productive: Rather, they are concrete indices to the content of more elementary perceptions, and as such they are selected for the close scrutiny of normal research only because they promise opportunity for the fruitful elaboration of an accepted paradigm. Far more clearly than the immediate experience from which they in part derive, operations and measurements are paradigm-determined. Science does not deal in all possible laboratory manipulations. Instead, it selects those relevant to the juxtaposition of a paradigm with the immediate experience that that paradigm has partially determined. As a result, scientists with different paradigms engage in different concrete laboratory manipulations. As anomalous results build up, science reaches a crisis, at which point a new paradigm, which subsumes the old results along with the anomalous results into one framework, is accepted. This is termed revolutionary science. In SSR, Kuhn also argues that rival paradigms are incommensurable â€"that is, it is not possible to understand one paradigm through the conceptual framework and terminology of another rival paradigm. For many critics, for example David Stove Popper and After , , this thesis seemed to entail that theory choice is fundamentally irrational: Freeman Dyson has quoted Kuhn as saying "I am not a Kuhnian! Kuhn is credited as a foundational force behind the post-Mertonian sociology of scientific knowledge. According to Kuhn, "When scientists must choose between competing theories, two men fully committed to the same list of criteria for choice may nevertheless reach different conclusions. Kuhn then goes on to say, "I am suggesting, of course, that the criteria of choice with which I began function not as rules, which determine choice, but as values, which influence it. Polanyi lectured on this topic for decades before Kuhn published The Structure of Scientific Revolutions. The charge of plagiarism is peculiar, for Kuhn had generously acknowledged Polanyi in the first edition of The Structure of Scientific Revolutions. The winner is selected based in the novelty of the viewpoint and its potential impact if it were to be widely accepted. He also received numerous honorary doctorates.

4: The Coming Kuhnian Revolution in Biology

revolution is not cumulation; revolution is transformation. the price of significant scientific advance is a commitment that runs the risk of being wrong. without commitment to a paradigm there can be no normal science.

Hire Writer KUHNIAN MODEL According to many science is a steady progression of accrual of new ideas but to Kuhn science was as a result of occasional revolutionary explosions of new knowledge whereby each revolution was triggered by introduction of new ways of thought that were so large that he called them paradigms. These paradigms according to Kuhn were supposed to generally recognize scientific achievements, present model problems and solutions for group of researchers. The kind of questions that are supposed to be asked and probed for answers in relation to this subject. The Kuhnian model consists of five main steps which include: This is due to accumulation of anomalies and events the model cannot explain. It can therefore no longer serve as a reliable guide to problem solving. Any attempts to patch the model up to work will fail hence the field is in anguish. This new paradigm then becomes the normal science and the khunian model is complete. Working techniques that later provide a model of understanding eventually works hence this will put the field in normal science step. In this step it takes longer. As time passes by new questions arise but the current model of understanding cannot answer this puts it in the model drift step. The model crisis step is reached later if the anomalies appear and the model cannot be patched up to explain them unfortunately it tends to fail due to guesswork and intuition. At long last the model revolution begins. It is a revolution because the new model is a new paradigm. This makes the believers in both paradigms not to communicate well. The paradigm change step begins when the new paradigm is settled on by a few influential supporters. Guess what happens next? The cycle begins again because our knowledge about the world is never complete. References The structure of Scientific Revolutions- Thomas. He is the man of â€¦.

5: The Kuhnian Paradigm | Rogier De Langhe - www.enganchecubano.com

Yet it is also clear that a discovery might come about in the course of normal science and initiate a 'revolution' (in a non-Kuhnian sense) in a field because of the unexpected insight it provides and the way it opens up opportunities for new avenues of research.

In , Thomas Kuhn wrote The Structure of Scientific Revolution, and fathered, defined and popularized the concept of "paradigm shift" p. Kuhn argues that scientific advancement is not evolutionary, but rather is a "series of peaceful interludes punctuated by intellectually violent revolutions", and in those revolutions "one conceptual world view is replaced by another". Think of a Paradigm Shift as a change from one way of thinking to another. It just does not happen, but rather it is driven by agents of change. For example, agriculture changed early primitive society. The primitive Indians existed for centuries roaming the earth constantly hunting and gathering for seasonal foods and water. However, by B. Agents of change helped create a paradigm-shift moving scientific theory from the Plolemaic system the earth at the center of the universe to the Copernican system the sun at the center of the universe , and moving from Newtonian physics to Relativity and Quantum Physics. Both movements eventually changed the world view. These transformations were gradual as old beliefs were replaced by the new paradigms creating "a new gestalt" p. Likewise, the printing press , the making of books and the use of vernacular language inevitable changed the culture of a people and had a direct affect on the scientific revolution. With the invention of the printing press , books became readily available, smaller and easier to handle and cheap to purchase. Masses of people acquired direct access to the scriptures. Attitudes began to change as people were relieved from church domination. Similarly, agents of change are driving a new paradigm shift today. The signs are all around us. For example, the introduction of the personal computer and the internet have impacted both personal and business environments, and is a catalyst for a Paradigm Shift. We are shifting from a mechanistic, manufacturing, industrial society to an organic, service based, information centered society, and increases in technology will continue to impact globally. In conclusion, for millions of years we have been evolving and will continue to do so. Human Beings resist change ; however, the process has been set in motion long ago and we will continue to co-create our own experience. Kuhn states that "awareness is prerequisite to all acceptable changes of theory" p. It all begins in the mind of the person. What we perceive, whether normal or metanormal, conscious or unconscious, are subject to the limitations and distortions produced by our inherited and socially conditional nature. However, we are not restricted by this for we can change. We are moving at an accelerated rate of speed and our state of consciousness is transforming and transcending. Many are awakening as our conscious awareness expands.

6: Thomas Kuhn: the man who changed the way the world looked at science | Science | The Guardian

2 The Kuhnian Revolution Thomas Kuhn's The Structure of Scientiï¬•c Revolutions(, ï¬•rst published in) challenged the dominant popular and philosophical pictures of the.

In , Kuhn added a postscript to the book in which he replied to critical responses to the first edition. About motion, in particular, his writings seemed to me full of egregious errors, both of logic and of observation. Ludwik Fleck developed the first system of the sociology of scientific knowledge in his book The Genesis and Development of a Scientific Fact He claimed that the exchange of ideas led to the establishment of a thought collective, which, when developed sufficiently, served to separate the field into esoteric professional and exoteric laymen circles. Harvard University had denied his tenure, a few years before. However, by the mids, his book had achieved blockbuster status. Kuhn also addresses verificationism , a philosophical movement that emerged in the s among logical positivists. The verifiability principle claims that meaningful statements must be supported by empirical evidence or logical requirements. What types of lexicons and terminology were known and employed during certain epochs? Kuhn did not see scientific theory as proceeding linearly from an objective, unbiased accumulation of all available data, but rather as paradigm-driven. Rather, they are concrete indices to the content of more elementary perceptions, and as such they are selected for the close scrutiny of normal research only because they promise opportunity for the fruitful elaboration of an accepted paradigm. Far more clearly than the immediate experience from which they in part derive, operations and measurements are paradigm-determined. Science does not deal in all possible laboratory manipulations. Instead, it selects those relevant to the juxtaposition of a paradigm with the immediate experience that that paradigm has partially determined. As a result, scientists with different paradigms engage in different concrete laboratory manipulations. For instance, eighteenth century scientists believed that homogenous solutions were chemical compounds. Therefore, a combination of water and alcohol was generally classified as a compound. Nowadays it is considered to be a solution, but there was no reason then to suspect that it was not a compound. Water and alcohol would not separate spontaneously, nor will they separate completely upon distillation they form an azeotrope. Water and alcohol can be combined in any proportion. Under this paradigm, scientists believed that chemical reactions such as the combination of water and alcohol did not necessarily occur in fixed proportion. Under this new paradigm, any reaction which did not occur in fixed proportion could not be a chemical process. Copernican Revolution A famous example of a revolution in scientific thought is the Copernican Revolution. As accuracy of celestial observations increased, complexity of the Ptolemaic cyclical and epicyclical mechanisms had to increase to maintain the calculated planetary positions close to the observed positions. Copernicus proposed a cosmology in which the Sun was at the center and the Earth was one of the planets revolving around it. For modeling the planetary motions, Copernicus used the tools he was familiar with, namely the cycles and epicycles of the Ptolemaic toolbox. Kuhn illustrates how a paradigm shift later became possible when Galileo Galilei introduced his new ideas concerning motion. Intuitively, when an object is set in motion, it soon comes to a halt. A well-made cart may travel a long distance before it stops, but unless something keeps pushing it, it will eventually stop moving. Aristotle had argued that this was presumably a fundamental property of nature: Given the knowledge available at the time, this represented sensible, reasonable thinking. Galileo put forward a bold alternative conjecture: Galileo had no equipment with which to objectively confirm his conjecture, but he suggested that without any friction to slow down an object in motion, its inherent tendency is to maintain its speed without the application of any additional force. The Ptolemaic approach of using cycles and epicycles was becoming strained: Johannes Kepler was the first person to abandon the tools of the Ptolemaic paradigm. He started to explore the possibility that the planet Mars might have an elliptical orbit rather than a circular one. After many years of calculations, Kepler arrived at what we now know as the law of equal areas. But each conjecture increased the credibility of the other, and together, they changed the prevailing perceptions of the scientific community. Newton solidified and unified the paradigm shift that Galileo and Kepler had initiated. Coherence[edit] One of the aims of science is to find models that will account for as many observations as possible within a coherent framework. Once a paradigm shift has taken place, the textbooks are rewritten. Often the history of science too is rewritten, being presented as an inevitable process leading up to the current, established framework of thought. There is a prevalent belief that all hitherto-unexplained phenomena will in due course be accounted for in terms of this established framework. Kuhn states that scientists spend most if not all of their careers in a process of puzzle-solving. Their puzzle-solving is pursued with great tenacity, because the previous successes of the established paradigm tend to generate great confidence that the approach being taken guarantees that a solution to the puzzle exists, even though it may be very hard to find. Kuhn calls this process normal science. As a paradigm is stretched to its limits, anomalies â€” failures of the current paradigm to take into account observed phenomena â€” accumulate. Their significance is judged by the practitioners of the discipline. Some anomalies may be dismissed as errors in observation, others as merely requiring small adjustments to the current paradigm that will be clarified in due course. Some anomalies resolve themselves spontaneously, having increased the available depth of insight along the way. But no matter how great or numerous the anomalies that persist, Kuhn observes, the practicing scientists will not lose faith in the established paradigm until a credible alternative is available; to lose faith in the solvability of the problems would in effect mean ceasing to be a scientist. In any community of scientists, Kuhn states, there are some individuals who are bolder than most. These scientists, judging that a crisis exists, embark on what Kuhn calls revolutionary science, exploring alternatives to long-held, obvious-seeming assumptions. Occasionally this generates a rival to the established framework of thought. The new candidate paradigm will appear to be accompanied by numerous anomalies, partly because it is still so new and incomplete. The majority of the scientific community will oppose any conceptual change, and, Kuhn emphasizes, so they should. To fulfill its potential, a scientific community needs to contain both individuals who are bold and individuals who are conservative. There are many examples in the history of science in which confidence in the established frame of thought was eventually vindicated. It is almost impossible to predict whether the anomalies in a candidate for a new paradigm will eventually be resolved. There typically follows a period in which there are adherents of both paradigms. In time, if the challenging paradigm is solidified and unified, it will replace the old paradigm, and a paradigm shift will have occurred. Phases[edit] Kuhn explains the process of scientific change as the result of various phases of paradigm change. Phase 1- It exists only once and is the pre-paradigm phase, in which there is no consensus on any particular theory. This phase is characterized by several incompatible and incomplete theories. Consequently, most scientific inquiry takes the form of lengthy books, as there is no common body of facts that may be taken for granted. If the actors in the pre-paradigm community eventually gravitate to one of these conceptual frameworks and ultimately to a widespread consensus on the appropriate choice of methods , terminology and on the kinds of experiment that are likely to contribute to increased insights. As long as there is consensus within the discipline, normal science continues. Over time, progress in normal science may reveal anomalies, facts that are difficult to explain within the context of the existing paradigm. Crises are often resolved within the context of normal science. However, after significant efforts of normal science within a paradigm fail, science may enter the next phase. Incommensurability[edit] According to Kuhn, the scientific paradigms preceding and succeeding a paradigm shift are so different that their theories are incommensurable â€” the new paradigm cannot be proven or disproven by the rules of the old paradigm, and vice versa. The new theories were not, as the scientists had previously thought, just extensions of old theories, but were instead completely new world views. Such incommensurability exists not just before and after a paradigm shift, but in the periods in between conflicting paradigms. It is simply not possible, according to Kuhn, to construct an impartial language that can be used to perform a neutral comparison between conflicting paradigms, because the very terms used are integral to the respective paradigms, and therefore have different connotations in each paradigm. The advocates of mutually exclusive paradigms are in a difficult position: The competition between paradigms is not the sort of battle that can be resolved by proofs. Kuhn states that the probabilistic tools used by verificationists are inherently inadequate for the task of deciding between conflicting theories, since they belong to the very paradigms they seek to compare. Similarly, observations that are intended to falsify a statement will fall under one of the paradigms they are supposed to help compare, and will therefore also be inadequate for the task. According to Kuhn, the concept of falsifiability is unhelpful for understanding why and how science has developed as it has. In the practice of science, scientists will only consider the possibility that a theory has been falsified if an alternative theory is available that they judge credible. If there is not, scientists will continue to adhere to the established conceptual framework. If a paradigm shift has occurred, the textbooks will be rewritten to state that the previous theory has been falsified. In his unpublished manuscript The Plurality of Worlds, Kuhn introduces the theory of kind concepts: During periods of normalcy, scientists tend to subscribe to a large body of interconnecting knowledge, methods, and assumptions which make up the reigning paradigm see paradigm shift. Normal science presents a series of problems that are solved as scientists explore their field. The solutions to some of these problems become well known and are the exemplars of the field. There is no fixed set of exemplars, but for a physicist today it would probably include the harmonic oscillator from mechanics and the hydrogen atom from quantum mechanics. Since he considered problem solving to be a central element of science, Kuhn saw that for a new candidate paradigm to be accepted by a scientific community, "First, the new candidate must seem to resolve some outstanding and generally recognized problem that can be met in no other way. Second, the new paradigm must promise to preserve a relatively large part of the concrete problem solving activity that has accrued to science through its predecessors. As a result, though new paradigms seldom or never possess all the capabilities of their predecessors, they usually preserve a great deal of the most concrete parts of past achievement and they always permit additional concrete problem-solutions besides. He described a thought experiment involving an observer who has the opportunity to inspect an assortment of theories, each corresponding to a single stage in a succession of theories. What if the observer is presented with these theories without any explicit indication of their chronological order? Kuhn and Social Science. Others argued that the field was in the midst of normal science, and speculated that a new revolution would soon emerge. For a long while after the explosion of macroeconomics in the s, the field looked like a battlefield. Over time however, largely because facts do not go away, a largely shared vision both of fluctuations and of methodology has emerged. Not everything is fine. Like all revolutions, this one has come with the destruction of some knowledge, and suffers from extremism and herding. In , a special symposium on the book was held at an International Colloquium on the Philosophy of Science that took place at Bedford College , London, and was chaired by Karl Popper.

7: Thomas Kuhn's Theory of Scientific Revolutions

What is a "Kuhnian Revolution"? I need to write a 3, word Psychology essay entitled "Was the Cognitive Revolution a Kuhnian Revolution?" Could somebody possibly tell me what a Kuhnian Revolution is (something to do with Thomas Kuhn?) and possibly recommend what I could even write about?:s.

As such it provides the frame for much of the rest of my work in philosophy of science, most importantly: Alisa Bokulic and William Devlin http: Published in the journal Philosophy of Science. Published in Studies in History and Philosophy of Science. The result is a new kind of philosophy of science that finds a better balance between philosophical rigor and societal relevance. In this paper I explain 38 8 similar to that of Ancient astronomy. In Ancient astron- why the gap was there in the first place, why it can now be 39 9 omy, the Aristotelian view based on static, perfect circles bridged and what lies on the other end. In the first section I 40 10 explained the movement of heavenly bodies but was not argue that the Kuhnian paradigm was not sufficiently 41 11 empirically adequate. The Ptolemaean view, on the other articulated because Kuhn was one of the first to describe an 42 ED 12 hand, allowed good predictions but did not explain them. In the second section I 44 14 empirically adequate but usually fail to explain why sci- argue that recent developments provide powerful new tools 45 15 ence works, while philosophical explanations of the for better articulating the Kuhnian paradigm. Kuhn is often 46 16 workings of science tend to depart significantly from actual credited for undermining the logical empiricist research 47 17 scientific practice. In an attempt at his own Copernican consensus in philosophy of science in his time, but because 48 T 18 revolution, Thomas Kuhn tried to do both: This resulted in an immensely a state of fragmentation. The vision of an explanatory and empirically ade- be, including both a descriptive and a normative research 53 23 quate general philosophy of science showed the potential to agenda. This program for a systemic philosophy of science 54 24 broaden the scope of philosophy of science to questions is laid out in the third section. These questions are 1 Science as a Complex System 56 28 highly relevant for practicing scientists but have tradi- 29 tionally received little attention in philosophy of science. I represented in scientific textbooks, but based on the histor- 65 iography of science. De Langhe 70 their study only deepens the problems they suggest rather conceptual, theoretical, instrumental and methodological 71 than solving them. The 80 can generate complex structure from simple rules. In addition I 88 governing these localized interactions change through time. It consists of many locally tion is correct. First, the seemingly disparate analogies that 90 interacting components, but the interaction between those Kuhn used throughout his work, such as institutional 91 components is stable and can be centrally controlled by the dynamics, political revolutions, biological evolution, eco- 92 driver. Studying their parts is sufficient to understand how system dynamics and cognitive dynamics, have turned out ED 93 the car works. Traffic, on the other hand, is complex. For lack of a theoretical account 95 endogenous change , as a result of events outside the system to describe science as a complex system, Kuhn seems to 96 exogenous change and usually both the endogenous have taken recourse to analogical descriptions using well- 97 reinforcement of exogenous chance events. No single driver known properties of other such systems. Second, Kuhn was 98 controls the system, yet these complex interactions can give a Harvard condensed matter physicist PhD Con- T 99 rise to simple, stable patterns such as traffic jams. The system densed matter systems such as magnets, crystals, glasses is thus capable of self-organization, a process that can occur and superconductors are among the earliest known exam- EC at various levels and thus create a hierarchy within the sys- ples of complex systems and these were exactly the kind of tem e. Kuhn Paradigm describes how science emerges from the localized inter- actions of scientists through time. Philosophers were loop through which theory change affects the values which not satisfied with the answers Kuhn provided on all levels: Such a feedback input, output and their connection. They might provide exactly what Kuhn comings stem from the fact that Kuhn tried to describe was looking for by the end of his life: In this section I will argue that this evolutionary process. Describing science as a com- Insights from network theory can help articulating the plex adaptive system requires hypotheses about how pos- Kuhnian paradigm on all three levels. First, network theory sibly its emergent features can be produced from the provides a formal framework originating from graph theory localized interactions of its components, and the right data in mathematics and condensed matter physics within which to test them. Developments outside philosophy mental and methodological commitments could self-orga- have previously shown the ability to have an enormous nize through local interaction rules into paradigms that Author Proof impact on our philosophical understanding. The following exhibit critical behavior. Thirdly it can help to operation- breakthroughs related to complex systems could be for the alize Kuhnian phenomena, possibly leading to novel Kuhnian paradigm what the breakthroughs in logic were empirical predictions and a clearer view on exactly what PR for logic empiricism. For example the increasing ability to sta- tistically identify phases and phase transitions on networks 2. Through time these networks evolve by events such data. Similar research on bibliometric data might reveal the as the rewiring between nodes or the addition of new nodes existence of normal and revolutionary phases in science. In recent years there has been renewed interest in This would constitute a significant philosophical result the properties of evolving networks such as the small-world achieved by empirical means. It also suggests a normative property. In most networks the longest path between two agenda for a systemic philosophy of science aimed at T nodes increases proportional to the number of nodes in the optimizing information flows on networks, increasing the network. Although small ized interaction are often beyond reach of pure mathe- world networks are only a small set of possible networks, matical methods Bonabeau The alternative is to the onset of Big Data has revealed that a surprisingly large explore possibility space by simulating the possible inter- amount of actual networks exhibit this property, e. An agent-based model is a computa- CO telephone call networks, food chains, electric power grids tional model for simulating the interaction of autonomous and metabolite processing networks. For example Thomas Schelling demon- world property Watts and Strogatz ; Barabasi and strated with his exemplary checkerboard model that just a UN Albert More generally, new and abundant network small racial preference is already sufficient to produce data has led to a surge in the theory of evolving networks in strictly segregated neighborhoods over time. Although Schelling the last 15 years, drawing heavily on pre-existing tools made his model using only paper and pencil, canvassing pos- from condensed matter physics Albert and Barabasi De Langhe for long was not widely available. Moreover the develop- perhaps one hundred members, occasionally significantly ment of such models typically required substantial pro- fewer. Communities of this sort are the units that this book gramming skills. Only recently has low-barrier software has presented as the producers and validators of scientific such as Netlogo enabled a broader use of these models, knowledge. Kuhn explicitly refer- lines for their construction Miller and Page Agent- ences Eugene Garfield, the founder of the Web of Science. If scientific activ- ibid. Now more than 40 years after the postscript, this ity behaves as a complex system, then science is a process. Philosophy of science has a long history of focusing on the products of science in relation to the 2. But citations do not have, nor are they intended to PR have, any justificatory value; citing a paper does not mean The study of complex systems is characterized by the heavy one agrees with it. Yet citations anchor a paper in a net- use of statistics to study aggregate patterns emerging from work of similar papers. They are similar not in their complex underlying interactions. The scarcity of large and opinion but in the more abstract sense of sharing what the qualitative datasets has long been an impediment to its question should be and what counts as a solution. Thus expansion beyond physics. Complex systems typically citations are, and are intended to be, anchoring a paper in a ED consist of a very large number of components, for example network of papers that address similar questions and economic agents in a market, each with their own interac- uphold similar standards. So while citation data is mean- tions through time. Only recently do we have the technical ingless from a justificatory point of view, for the Kuhnian means to acquire, store and process such information. For paradigm it captures an elementary relation: Citation networks are typically characterized by a of our world. To give just one example, in Jure power law distribution of citations. This operationalizes the notion of an lion messages sent by million people. Such an exemplar exemplifies the problems and RR data is part of this Big Data revolution, containing infor- standards for the papers to which they are connected. This mation about for example co-authorship, keywords and cluster in turn operationalizes the notion of a paradigm as a citations of scientific papers. It is a fresh and vast source of network of scientific practices connected by conceptual, empirical data about the dynamics of science through time. Although the nodes connected to the hub tend properties but had to content himself with anecdotal evi- not to be connected to other hubs, the hubs themselves are CO dence, in his case from historical case-studies. As noted above, this was a dead end. Shifts in growth rates of con- UN to have realized this fairly quickly. Typically it may yield communities of revolutions. And as for making normative rec- ommendations for specific situations, dependent on thor- ough knowledge of an often partly tacit context, there is no reason to assume that philosophers have privileged access to this context over and above the scientists concerned. Just as biologists confronted with the diversity of species had done before Darwin: But where do these purposes come from? As far as philosophers were concerned, distributed as a power law the purposes were given, just as biologists before Darwin had assumed as given the purposes species serve. But like The complex, evolving networks revealed in biblio- Darwin, Kuhn had realized from his empirical observations metric data co-author networks, citation networks, key- the large amount of variation in these purposes. So instead word networks,â€¦ are the material reflection of science as of using the purposes as an explanation for the variety of T a complex adaptive system. Because the Kuhnian paradigm frameworks, he made that variety of purposes itself an can give meaning to a citation, it is able to incorporate this explanandum. Although there is no general story to be told EC fresh and vast source of empirical data. But because of works for different purposes to a realization that variation its lack of articulation he failed to install a new one. Hence focus shifts from the products of CO forward, philosophers of science after SSR started to take science to its process. The components of a complex sys- more serious actual scientific practice. But the lack of tem cannot be understood exhaustively without taking into generality of discipline-specific case-studies has led to a account their past and their relation to each other. A phi- fragmentation of the discipline into philosophies of indi- losophy seeing science as a complex system therefore vidual sciences. Even though traditional because specific cases do not provide a basis for the philosophy of science is increasingly fragmented because extrapolation of general normative guidance, rather they of the lack of generality of discipline-specific case-studies, illustrate their sheer variation. This variation has played a a systemic philosophy of science might reveal that there is central role in philosophy of science from its inception, indeed an across-the-board story to be told about which when Reichenbach and Carnap were struggling with the philosophers of science can claim exclusive expertise. This is why Kuhn considers the historical, articulate the Kuhnian paradigm. But the articulation of the the social and the contingent to be integral parts of the Kuhnian paradigm should not be an end in itself. Rather the domain of philosophy of science. Without them science goal is to operationalize it: The benefits of describing research agenda for the philosophical investigation of sci- science as a complex system are then twofold.

8: The â€œRevolutionâ€• in Financial Reporting Theory: A Kuhnian Interpretation

Natural Phenomena, Science, and Philosophy of Science. Now that we have looked at what is often referred to as the first major scientific revolution in modern history -- the cosmological revolution from Copernicus to Newton -- we will go on to look at philosophies of science that attempt to explain the historical dynamics of scientific revolutions.

The demise of the economic income perspective represented by the normative a priorists is attributed to the lack of a paradigm which could serve to identify research problems and provide methodological guidance. The success of the informational paradigm, on the other hand, is attributed to the fact that it was, in essence, a sub-paradigm of the broader and well-established market economics paradigm. The study concludes, however, with a discussion of two types of persistent anomalous findings the first with respect to the EMH and the second with respect to the CAPM that have the potential to generate a crisis for the informational paradigm. The s was a decade of turmoil in financial accounting theory and research. Posts financial accounting research is radically different in method, theoretical content, and philo-sophical thrust than pres research. Wells [] has sug-gested that the turmoil signified the beginning of a Kuhnian revolution. Although there is no indication that Beaver is using the term revolution in a Kuhnian sense, the implication is that the changes were internally generated, an overthrow that was initiated by developments in accounting theory. This paper offers a significantly different interpretation. This approach holds the potential of a new explanation for the failure of the normative a priori research movement and the success of the new informational research movement. The Kuhnian perspective also provides a unique vehicle for analyzing the potential significance of challenges to the validity of the efficient markets hypothesis EMH and the capital asset pricing model CAPM which have long served as cornerstones for the informational perspective. First, however, it will be useful to locate the present study within the context of existing Kuhnian analyses in the accounting literature. His analysis is more elaborate than previous studies and provides useful background for the present study. The advent of governmental regulation of accounting practice and reporting in the Twentieth century led to a search for uniform accounting principles and resulted, according to Cushing, in the first stage of crisis for the double-entry para-digm. The sense of crisis was further deepened by the growing conviction that even if a scientific theory of financial accounting could be found, it could never be implemented because of the extent to which the rule-making process had been politicized. Many academic accountants responded to this situation, Cushing argues, not by abandoning science, but by abandoning accounting. This author agrees with Cushing that the s ushered in a wholesale concern with scientific accounting research, but attributes this concern more to outside social, political, and technological factors than to crisis in a Kuhnian-type paradigm. A unique congruence of social, political and technological developments had produced a shared commitment to the pursuit of scientific research in accounting. In Kuhnian terms, the committee suggested that accounting theorists were involved in paradigm competition [p. In the first place, it does not differentiate the pre theorists from the science-oriented theorists of the s. As Peasnell points out, this categorization is at odds with other classifications in the accounting literature. This charge is further borne out by the fact that Beaver, in , presented very cogently the interrelationship of information economics theory and empirical capital markets research: A given way of looking at the world, including theoretical orientation, becomes paradigmatic after it has found a certain level of acceptance. Theories may be offered by individual theorists, but paradigms are not put forth by individuals. The perspective suggested by an individual may eventually become paradigmatic, but it is not paradigmatic at the time it is put forth. Such considerations led Peasnell to pose the following question: According to Kuhn, debate over fundamentals was also characteristic of many fields that subsequently developed into sciences: I think, for example, of fields like chemistry and electricity before the mid-eighteenth century, of the study of heredity and phylogeny before the mid-nineteenth, or of many of the social sciences today. With respect to the situation faced by the information economics and the capital market researchers, however, the AAA committee erred in a different direction. With respect to the informational perspective information economics and capital markets research , the contrary was actually the case. Thus, with respect to Kuhnian thought, accounting in the s and early s was the site of two distinct, yet interacting, Kuhnian processes. From the perspective of the traditional concerns of accounting, i. The normative apriorists were attempting to establish a solid scientific foundation for the pursuit of the traditional concerns of accounting. At the same time, another Kuhnian process was in opera-tion. During the s theoretical developments such as the EMH and the CAPM held the promise of extending the explanatory power of the basic economics paradigm to encompass first business finance, and subsequently, financial accounting, while developments in information economics served to locate the emerging new perspective on financial reporting theory within the broader theoretical framework of economic thought. In sum, accounting in the s and early s is viewed as the site of competition between the normative apriorists who were engaged in pre-paradigm debate with each other and the proponents of the newly formed financial economics paradigm an economics sub-paradigm which was engaged in normal science expansionary efforts. The remainder of this paper presents: But the s also saw a major increase in the pressure for more research. The American Assembly of Collegiate Schools of Business the primary accrediting organization for academic schools of business in the U. This emphasis, together with the social and political pressures noted earlier, resulted in a major push for more accounting research that was also scientific. However, research never happens in isolation from a net-work of beliefs, attitudes and theories. From a Kuhnian perspective the body of intertwined theoretical and methodological belief provided by a paradigm is what gives researchers the confidence that their work will find acceptance. Various theoretical perspectives were put forth by individual researchers, but no single perspective found widespread acceptance. The most notable proposals tended to disagree on one or more fundamental issues. Mutual criticism among the leading apriorists was also highly visible. Perhaps the most notable example was the ex-change between Chambers and Mattessich. Mattessich was also involved in another notable exchange, this one with Sterling. From a Kuhnian perspective, however, a different explanation is compelling. That explanation is that many young accounting academics tended to gravitate toward a budding new research paradigm which provided clear-cut research problems and examples of acceptable research methods. Many young new PhDs tended to gravitate toward a new accounting research paradigm which can be considered to be a sub-paradigm of economics. According to Kuhn, the ac-cepted framework provided by a paradigm serves as a founda-tion for the articulation of problems that must be solved if the range of explanatory power is to be extended: This provides a major clue to the success of the informational perspective in financial reporting theory. These developments, in conjunction with the theoretical framework of information economics, created the opportunity for accounting researchers who were trained in economics to import the constructs and methods of economics into financial accounting research. The University of Chicago began its an-nual Conference on Empirical Accounting Research in with the leadership and participation of academics trained in the theory and methodology of financial economics. Brown notes that he had already studied the accounting classics at the University of New South Wales before going to Chicago for graduate study in Developments in finance, however, were closely related to the spirit of Chicago economics which, as Brown implies, provided the theoretical underpinning of the entire financial economics paradigm. I and many of my doctoral program classmates chose Economics as our basic discipline. We then trotted off to the Econom-ics Department where we inevitably were schooled in applied microeconomics and given a heavy dose of so-called positive economics, often taught by Milton Friedman himself. Watts and Zimmerman [, p. This was borne out by an earlier report by Dyckman and Zeff of an informal survey of their research-oriented colleagues regarding the most important contributions to accounting literature between and The Ball and Brown study was essentially an extension of the financial economics paradigm. Using the CAPM as a tool for relating accounting numbers to securities prices, they investigated the relationship between unexpected earnings and abnormal rates of return for New York Stock Exchange firms during the nine years from to The results, interpreted in light of the efficient markets hypothesis, indicated that stock price changes do reflect earnings changes, but that most of the change in stock prices occurs prior to the report of annual earnings. From a Kuhnian perspective, it is not surprising that a study that was so radically different from the traditional approach to accounting research should become the exemplary study for future research. From a Kuhnian perspective, the Ball and Brown study can be seen as a demonstration of how accounting researchers could harness the productive potential of the financial economics paradigm. If there was nothing left to be done, no unsolved problems or nagging questions, researchers would have to look for different areas in which to practice their skills of inquiry. The Ball and Brown [] article was a success in the sense suggested by Kuhn. It held the promise of successfully extending the financial economics paradigm to accounting. Ball and Brown established that, within the financial economics paradigm, accounting earnings are empirically related to stock prices, but they studied only a limited set of accounting earnings annual and established only a gross relationship between earnings and stock prices. Left unanswered were such questions as the following. Could their results be duplicated for other sets of accounting earnings such as quarterly earnings? To what extent does the market anticipate changes in earnings? To what extent do accounting earnings announcements convey information to market participants? Are investors misled by earnings changes that result solely from changes in accounting procedures? The Ball and Brown article stimulated a number of studies aimed at answering such questions. Such work can be demonstrated quite clearly with respect to the extension of the financial economics paradigm to financial reporting theory. Whereas Ball and Brown had demonstrated the relationship between annual earnings and stock prices for NYSE firms, an obvious approach for further research was to determine whether the same relationship existed for other securities. A second category of normal scientific problems arises as a result of difficulties involved in matching theory with factual observations. In the natural sciences, for instance, special equipment must be developed to measure results that are not observable to the naked eye, and the use of such special equipment usually requires theoretical justification and adaptation. This type of problem was very pointed for researchers in the new accounting paradigm. The underlying theory of financial economics specified a certain relationship between expected future cash flows and securities prices. Accounting researchers, on the other hand, were primarily concerned with the relationship between earnings and securities prices; and in any case, expectations about the future are not directly observable. The development of the new accounting paradigm, therefore, left much scope for work regarding the fit between fact and theory. Ball and Brown assumed that accounting earnings could be used as a surrogate for cash flows, thus allowing them to use the CAPM to make predictions about the response of securities prices to earnings announcements. Due to the fact that expectations are not directly observable, Ball and Brown chose to proceed as follows: They further used market models to differentiate the market response in terms of normal versus abnormal rates of return. In short, the actually observed data was compared with theoretical models which were, in turn, theoretically linked with the un-derlying theories of financial economics. Such investigative procedures obviously left considerable scope for further mopping-up work aimed at improving the fit between fact and theory. And indeed, many of the studies stimulated by Ball and Brown experimented with alternative models for measuring market expectations and abnormal returns. As noted earlier, the Ball and Brown study established that securities price changes are related to accounting earnings changes, but it also found that much of the price changes occur prior to the annual earnings announcements. This gave rise to what was perhaps the most interesting question for subsequent researchers seeking further articulation of the basic theory â€" how much information con-tent do accounting earnings actually convey? Ball and Brown concluded that annual earnings announcements do contain use-ful information, but that only percent of the potential information is conveyed in the month of announcement. The limitations of their study raised a number of questions about the validity of their conclusions with respect to information content of earnings announcements, and especially with respect to the role played by interim announcements. Many subsequent studies which addressed these issues can be viewed as attempts to refine and further articulate the paradigm theory. The paradigm both generates acceptable research problems and supplies criteria for accept-able solutions, in much the same way that game-type puzzles specify problems and stipulate the rules for solving them. Thus, when engaged with a normal research problem, the sci-entist must premise current theory as the rules of his game. His object is to solve a puzzle. Quite the contrary, it is the skill of the researcher that is at risk: The upshot of this is that the puzzle-solving activity of the normal science researcher is frequently aimed at establishing predictable or unsurprising results. Or consider the research on interim earnings, when Ball and Brown provided evidence that most of the price adjustments related to earnings changes took place prior to the month of annual earnings announcements, the obvious explanation was that most of the information reported was not new.

THE KUHNIAN REVOLUTION pdf

9: Kuhnian Model | Free Essays - www.enganchecubano.com

The Kuhn Cycle is a simple cycle of progress described by Thomas Kuhn in in his seminal work The Structure of Scientific www.enganchecubano.com Structure Kuhn challenged the world's current conception of science, which was that it was a steady progression of the accumulation of new ideas.

Change Resistance as the Crux of the Environmental Sustainability Problem Do you every wonder why the sustainability problem is so impossibly hard to solve? The system itself, and not just individual social agents, is strongly resisting change. Why this is so, its root causes, and several potential solutions are presented. The memo was written in Paradigm Tools Analysis Analysis is the breaking down of a problem into smaller easier to solve problems. Exactly how this is done determines the strength of your analysis. You will see powerful techniques used in this analysis that are missing from what mainstream environmentalism has tried. This explains why a different outcome can be expected. The key techniques are proper subproblem decomposition and root cause analysis. Summary of Analysis Results The analysis was performed over a seven year period from to The results are summarized in the Summary of Analysis Results, the top of which is shown below: Click on the table for the full table and a high level discussion of analysis results. The Universal Causal Chain This is the solution causal chain present in all problems. This leads to using superficial solutions to push on low leverage points to resolve intermediate causes. Popular solutions are superficial because they fail to see into the fundamental layer, where the complete causal chain runs to root causes. In the analytical approach, root cause analysis penetrates the fundamental layer to find the well hidden red arrow. Further analysis finds the blue arrow. Fundamental solution elements are then developed to create the green arrow which solves the problem. For more see Causal Chain in the glossary. The 4 Subproblems First the analysis divided the sustainability problem into four subproblems. Then each subproblem was individually analyzed. This is no different from what the ancient Romans did. Subproblems like these are several orders of magnitude easier to solve because you are no longer trying in vain to solve them simultaneously without realizing it. This strategy has changed millions of other problems from insolvable to solvable, so it should work here too. For example, multiplying times in your head is for most of us impossible. But doing it on paper, decomposing the problem into nine cases of 2 times 2 and then adding up the results, changes the problem from insolvable to solvable. How to Overcome Complete subproblem analysis Change resistance is the tendency for a system to resist change even when a surprisingly large amount of force is applied. Overcoming change resistance is the crux of the problem, because if the system is resisting change then none of the other subproblems are solvable. Therefore this subproblem must be solved first. Until it is solved, effort to solve the other three subproblems is largely wasted effort. The root cause of successful change resistance appears to be effective deception in the political powerplace. Too many voters and politicians are being deceived into thinking sustainability is a low priority and need not be solved now. The high leverage point for resolving the root cause is to raise general ability to detect political deception. How to Achieve Life Form Proper Coupling Complete subproblem analysis Life form improper coupling occurs when two social life forms are not working together in harmony. In the sustainability problem, large for-profit corporations are not cooperating smoothly with people. Instead, too many corporations are dominating political decision making to their own advantage, as shown by their strenuous opposition to solving the environmental sustainability problem. The root cause appears to be mutually exclusive goals. The goal of the corporate life form is maximization of profits, while the goal of the human life form is optimization of quality of life, for those living and their descendents. These two goals cannot be both achieved in the same system. One side will win and the other side will lose. Guess which side is losing? The high leverage point for resolving the root cause follows easily. If the root cause is corporations have the wrong goal, then the high leverage point is to reengineer the modern corporation to have the right goal. The root cause appears to be low quality of governmental political decisions. Various steps in the decision making process are not working properly, resulting in inability to proactively solve many difficult problems. This indicates low decision making process maturity. The high leverage point for resolving the root cause is to raise the maturity of the political decision making process. Environmental impact from economic system growth has exceeded the capacity of the environment to recycle that impact. This subproblem is what the world sees as the problem to solve. The analysis shows that to be a false assumption, however. The change resistance subproblem must be solved first. The root cause appears to be high transaction costs for managing common property like the air we breath. This means that presently there is no way to manage common property efficiently enough to do it sustainably. The high leverage point for resolving the root cause is to allow new types of social agents such as new types of corporations to appear, in order to radically lower transaction costs. Solutions There must be a reason popular solutions are not working. Given the principle that all problems arise from their root causes, the reason popular solutions are not working after over 40 years of millions of people trying is popular solutions do not resolve root causes. Summary of Solution Elements Using the results of the analysis as input, 12 solutions elements were developed. Each resolves a specific root cause and thus solves one of the four subproblems, as shown below: Click on the table for a high level discussion of the solution elements and to learn how you can hit the bullseye. The 4 Subproblems The solutions you are about to see differ radically from popular solutions, because each resolves a specific root cause for a single subproblem. The right subproblems were found earlier in the analysis step, which decomposed the one big Gordian Knot of a problem into The Four Subproblems of the Sustainability Problem. Everything changes with a root cause resolution approach. Once the analysis builds a model of the problem and finds the root causes and their high leverage points, solutions are developed to push on the leverage points. You hit the bullseye every time. The bullseye is the root cause.

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