## Beyond Kuhn: Toward the Meta-Paradigm

As Kuhn defines it, a paradigm is a set of theories, ideas, abstractions, beliefs that "provide models from which spring particular traditions of scientific research".[1] Examples of paradigms include Aristotelian dynamics, Copernican astronomy, Newtonian optics, and Einstein's theories of relativity. A paradigm shift is a crisis brought on by conflict between two or more paradigms, in which the "fittest" paradigm survives. There is no synthesis: Kuhn claims that paradigms are incommensurable (incompatible), hence the crisis; the resulting change is comparable to a revolution. Implicit in this argument is the claim that science is an instrument for solving problems. Thus, Kuhn's evolutionary model of science calls into question the teleology (purpose) of the scientific enterprise. As Kuhn states, "we may...have to relinquish the notion...that changes of paradigm carry scientists closer and closer to the truth."[2]

## The Meta-Paradigm

In times of accelerated change the more revealing question may be not what changes, but what *stays the same*. What is of most interest are those theories, ideas, abstractions, beliefs that can be found at work within *all* paradigms, and even Kuhn's own book. As will be demonstrated these concepts function regardless of paradigm shift and predictably make their influence known. I term these persistent concepts meta-paradigms.

The purpose in the following discussion is to call attention to "what stays the same," the meta-paradigm, and to call such meta-paradigms into question as a problem. As such, I offer no answers or solutions. We will now analyze our first meta-paradigm. In addition, I will introduce several presuppositions that call attention to the meta-paradigm's problematic nature.

## Truth

Perhaps the most evident meta-paradigm is truth. That truth can be considered a paradigm subject to *its own* paradigm shifts is a concept we will detail. Additionally, I suggest the concept of truth, and claims to truth, can be found at work in *all* paradigms, for example, Aristotle's anthropocentric, Ptolemy's geocentric, and Copernicus' heliocentric models of the

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[1]Kuhn, Thomas. (1996). The Structure of Scientific Revolutions. (3rd ed.). Chicago: University of Chicago Press, 10.
[2] Ibid., 170.

universe. All were considered *true* within their paradigms. But the concept of truth itself continued beyond the paradigm shift from anthropocentric to geocentric to heliocentric. What changes with paradigm shift are the *claims* to truth, not the concept of truth itself. Thus truth should properly be termed a meta-paradigm.

Indeed, Kuhn himself depends on such meta-paradigms to validate his own argument. (Kuhn claims to offer the "truth" about paradigms and the structure of scientific revolutions): to argue otherwise would be to question Kuhn's validity. While Kuhn calls into question the scientific pursuit of truth, he fails to call the concept of truth itself into question. I will now offer a few presuppositions concerning the concept of truth that are problematic by their very nature:

1. That there is a "truth" – While truth is a concept that has proven useful, and perhaps necessary, it has also proven to be a problem, and there are whole schools of thought dedicated to its solution, epistemology (theory of knowledge) being just one. I will introduce a few dichotomies implicit in the concept of truth, to make my point: the first being the absolute/relative distinction. That there is an "absolute" truth that only need be discovered, is a presupposition for many a scientist, historian, philosopher, not to mention the general population. "The great ocean of truth lay all undiscovered before me"[3] says Sir Isaac Newton.

For the scientist in particular, this usually takes the form of a neutral background of "facts" that are to be "discovered" through the use of mathematical deduction and experiment. But, a neutral background of "facts" demands an absolute neutral perspective. And man is bound by the filters of mind and body, and their implicit relativity. More specifically: Man filters the universe through his mind (rational data) and his senses (empirical data). These have there corollaries in the branches of theoretical and applied sciences that are dominant today: theoretical scientists deduce mathematical arguments that describe the universe in relation to man and applied scientists test those theories by means of experiment and the resulting empirical data: mathematical both to avoid the ambiguity of words and to provide an absolute truth claim. But even in the absolutes of

[3]Microsoft® Encarta® Reference Library 2003. © 1993-2002 Microsoft Corporation. All rights reserved.

mathematics, truth proves problematic: numbers are found only in the mind, and their validity is relative to such. As the physicist James Jeans asserts,

> "The essential fact is simply that *all* the pictures which science now draws of nature, and which alone seem capable of according with observational fact, are *mathematical* pictures...They are nothing more than pictures – fictions if you like, if by fiction you mean that science is not yet in contact with ultimate reality"[4]

And physicist Arthur Eddington echoes,

> "We have learnt that the exploration of the external world by the methods of physical science leads not to concrete reality, but to a world of symbols."[5]

We will now move on to other problematic presuppositions implicit in the concept of truth.

2. That "truth" is in opposition to something considered to be "false" – this absolute dichotomy precludes the possibility of "type" or "degree" in such concepts, that there may be "types" or "degrees" of truth is barred consideration. Of course, quantum theorists and meteorologists alike reached just such an impasse and now speak in terms of "probabilities". But that it may rain is a probability that is considered either absolutely true or absolutely false.

3. That "truth" has value, that this value is "good," and that its pursuit is a worthy and desirable goal. Albert Einstein has a revealing comment here,

> "The knowledge of truth...is so little capable of acting as a guide that it cannot prove even... the value of the aspiration toward that very knowledge."[6]

That the victims of Hiroshima were hovering in Einstein's consciousness as he made this confession is a reasonable but erroneous assumption, written as it was before such tragedy.

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[4] James, J. (1931). "The Mysterious Universe". In K.Wilber, Quantum Questions (pg. 9). Boston: Shambhala.

[5] Eddington, A. (1929). "Science and the Unseen World". In K.Wilber, Quantum Questions (pg. 10). Boston: Shambhala.

[6] Einstein, A. (1929). "Science and Religion". In K.Wilber, Quantum Questions (pg. 106). Boston: Shambhala.

4. That “truth” is not an “error” (perhaps a useful or necessary error, but an error nevertheless). Suggesting that just such a possibility exists, the philologist and philosopher Friedrich Nietzsche made the provocative assertion,

> “Truth is the kind of error without which a certain species of life could not live. The value of life is ultimately decisive.”[7]

An example closer to home can be found in political beliefs. For example, the ideology of equality, the profit motive, and majority rule. That none of these concepts are universally true, but erroneous mental constructs is a possibility that few question, consequences such as hyper-relativity (reduction of cultural and moral value to the least common denominator), “infectious greed” as judged recently by Alan Greenspan, and the manipulation of the majority (perhaps willingly) by a corporate and political minority not withstanding. And regardless of any resulting material prosperity, the market tells us that demand is a measure of *dissatisfaction*.

## Cause

> “History teaches us that people have never learned anything from history.”[8]
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> -G.W.F. Hegel (1770 – 1831)

One of the more frequent criticisms of history is one that Kuhn is very aware, “history, we too often say, is a purely descriptive discipline”.[9] Restated, explanation demands a hermeneutic (interpretation) that lies beyond historical scope: history it is said is no cause. For every past example of a cause one need only ask “and what was the cause of that?” This perpetual regress inevitably ends in the assertion of some absolute cause such as “God” or the “Big Bang.” And with that we are no longer in historical, but metaphysical and ontological territory.

Science rarely admits the boundaries of *its own* discipline. Is it possible that science itself does not explain, but only describes? For example, how does science explain fire (a change in molecular structure), music (a vibration within a gaseous medium), thought (a change in electrical

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[7] Nietzsche, F.W. (1967), The Will to Power, Trans. Walter Kaufmann and R.J. Hollingdale, ed. Walter Kaufman, In S. Simon, Preformations (pg. 47). New York: Writers Club Press.
[8] Osborne, Richard. (1992). Philosophy for Beginners. New York: Writers and Readers, 109.
[9] Kuhn, 1996, 8.

potential of a biological system).[10] No doubt descriptions of increasing complexity and sophistication could be made, but what they all hide is a lack of explanation, and as the British philosopher Laurence Gene suggests "such phenomena remains as magical to us as it did to the most primitive human beings."[11]

That the concept of "cause" continues to function regardless of paradigm shift and is not subject to change Kuhn himself suggests: according to Kuhn, paradigm shift is the "cause" of scientific revolutions. The concept of cause is implicit in the sciences and can be found in the theories of Aristotle, Ptolemy, Copernicus, Galileo, Newton, Einstein and beyond. What changes is not the concept of cause, but what the causes are *claimed to be*.

As Einstein asserts, "God does not play dice with the universe."[12]

Given that cause endures, it is considered a meta-paradigm. I will now present a pair of presuppositions concerning cause that will call attention to its problematic nature:

1. That there is a "cause" – that the concept of "cause" is only a theory subject to debate may sound strange to unfamiliar ears, but as the historian and natural philosopher David Hume contended, "causality is a useful human tool for picturing a process of events – but nothing more."[13] To elaborate, a process of events occurs with a passage of time. Scientific knowledge rests on the assumption that the future will resemble the past, but this assumption is one that science cannot prove. Or as Hume expressed in a metaphor, that the sun *has* always risen is no proof that it always will.

2. That "causes" produce "effects" – "We have arranged for ourselves a world in which we are able to live -with the postulation of bodies, lines, surfaces, causes and effects, motion and rest, form and content: without these articles of faith, nobody could now manage to live!"[14] As suggested by Nietzsche, we interpret the world out of human need; we seek a "cause" for every "effect" from our inability to interpret events

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[10] Gene, Laurence, and Chan, Kitty. (1997). Introducing Nietzsche. New York: Totem Books, 59.
[11] Ibid., 60.
[12] Microsoft® Encarta® Reference Library 2003. © 1993-2002 Microsoft Corporation. All rights reserved.
[13] Gene and Chan, (1997), 61.
[14] Ibid., 61.

otherwise than as events caused by intentions (an interpretation based on the experience of the human ego).

An alternative view may best be clarified by the use of the atomistic/holistic distinction. Many scientific and historical worldviews employ the concept of atomism; an atomistic view of the world sees reality as composed of discrete, irreducible units. As such, the parts are more real than the whole. In contrast, the holistic view of the world sees reality as a totality, as an organism. The parts are real only insofar as they are related to each other and to the whole. In the organic view, reality is composed not of "things," but of relationships: instead of diachronic (historical) analysis of cause and effect, permanent structures are uncovered by means of synchronic (ahistorical) analysis. For example, the dictionary, synchronic analysis would suggest that each word is defined by what *it is not* in relation to all the others. While historians and scientists are not necessarily opposed to such views, this type of thinking is best exemplified by structuralist and post-structuralist thinkers such as the linguistic theorist Ferdinand Saussure, anthropologist Levi Strauss, literary critique Roland Barthes, psychoanalyst Jacques Lecan, sociologist Michel Foucault, and deconstructionist Jacques Derrida.[15]

## Value

The concept of value is perhaps the most typical and most problematic of all the meta-paradigms in consideration today. As suggested earlier, value judgments concerning such concepts as "truth" and "cause" are so habitual that they are rarely called into question. That just such values are problematic is suggested by Kuhn who states that scientific development occurred, "without benefit of a set goal, a permanent fixed scientific truth."[16]

But what is the value of the scientific enterprise without such a goal? If science is simply an instrument for solving problems as Kuhn suggests must not the first solution be the problem of its own goal? As Einstein observed,

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[15] Palmer, Donald D. (1997). Structuralism and Poststructuralism for Beginners. New York: Writers and Readers, 2-3.
[16] Kuhn, (1996), 173.

> "One can have the clearest and most complete knowledge of what *is*, and yet not be able to deduct from that what should be the *goal* of our human aspirations."[17]

And as Picasso rebounded, "The genius of Einstein leads to Hiroshima."[18]

## Conclusion

As we can now see, Kuhn calls into question the notion of scientific progress with his conception of the paradigm and paradigm shift. Suggesting an evolutionary model, in which the fittest paradigm survives in conflict with the incommensurable, science acts as an instrument for solving problems, not for discovering truth. But what Kuhn fails to question is the very problem of science itself. What problems can science solve, and what purpose does their solution possess? Does science serve man, or does man serve science? What use is knowledge of what *is* without knowledge of what *should be*? And, are we any closer to an understanding of the eternal questions? As the quantum physicist Neils Bohr stated, "It is wrong to think that the task of (science) is to find out how nature is. (Science) concerns only what we can say about nature."[19] Although no scientist, perhaps Nabokov said it best, "Space is a swarming in the eyes, and time a singing in the ears."[20]

## Alternatives

We will now address an alternative reading of Kuhn's theory of paradigms as articulated by Brendan Larvor in Lakatos: An Introduction.[21] Lakatos was a philosopher of science and mathematics who attempted a synthesis of the theories of Thomas Kuhn and Karl Popper. Lakatos readily admits that once Kuhn published Structures of Scientific Revolutions in 1962, he was quickly accused of relativism and irrationalism. As Lakatos states, "For Kuhn scientific change...is a mystical conversion which is not and cannot be governed by rules of reason and which falls totally within the realm of the (social) psychology of discovery."[22] Yet, Kuhn was not so easy to dismiss; a trained physicist, he was not weakened such misreadings. Kuhn dispensed

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[17] Einstein, (1929), 106.
[18] Microsoft® Encarta® Reference Library 2003. © 1993-2002 Microsoft Corporation. All rights reserved.

[19] Gleick, James. (1992). Genius. New York: Vintage Books, 244.
[20] Ibid., 244.
[21] Larvor, B. (1998). Lakatos: An Introduction. London: Routledge.
[22] Ibid., p. 37.

with many of the distinctions and definitions which his contemporary Karl Popper regarded as essential to any grasp of objectivity and rationality. In particular, he had no use for the distinction between the contexts of discovery and justification.[23]

> "My attempt to apply [these distinctions] even *grosso modo*, to the actual situations in which knowledge is gained, accepted, and assimilated have made them seem extraordinarily problematic. Rather than being elementary logical or methodological distinctions, which would then be prior to the analysis of scientific knowledge, they now seem to be integral parts of a traditional set of substantive answers to the very questions upon which they have been deployed."[24]

Kuhn is not suggesting by such remarks that the philosophical distinctions are incoherent or pernicious, only that they are not as fundamental as they once were thought. Instead, Kuhn makes use of his own distinctions of mature and immature fields of scientific research. Immature fields are marked by many rival schools. Since no common body of belief exists in such schools, nothing can be taken for granted. Thus, scientists in the immature fields are compelled to engage in metaphysical and methodological debate. Without a shared framework of beliefs, the immature fields of science pursue knowledge rather randomly and have no standard by which to assess the value of various data.

In contrast, the mature sciences emerge when a single body of belief begins to dominate, thus providing a unified direction and value standard for research. This emergence of a single dominating viewpoint is not brought about due to the resolution of metaphysical and methodological debate aroused by the immature sciences, but by two crucial features. First, it must be impressive enough to draw scientists away from rival views, and second, it must be open ended enough to allow for copious scientific research. Kuhn offers as examples Aristotle's Physica, Ptolemy's Almagest, Newton's Principia and Optiks, Franklin's Electricity, Lavoisier's

[23] Ibid., p. 37.
[24] Ibid., p. 37-38.

Chemistry, and Lyell's Geology.[25] These works provided a paradigmatic example of quality scientific research for their time, and thus fostered emulation. And such emulation defines *normal* scientific research according to Kuhn; only when such research faces a crisis, i.e., its paradigm is no longer considered credible compared to some rival theory, is science said to be in "revolution". And this process repeats itself again and again from immature, to mature, to normal, to revolution. But, criticisms of Kuhn's delicate argument abound.

Criticisms concentrate on four features:[26]

1. The gestalt-switch character of the conversion of scientists from an old paradigm to a new one.

2. The incommensurability thesis.

3. The alleged relativism.

4. The uncritical nature of Kuhnian normal science.

Kuhn knew full well that the "gestalt-switch" view of scientific revolutions was clearly incompatible with empirical views that account for scientific objectivity on the notion of theory-neutral observation. In other words, Kuhn suggests that paradigm shifts are not necessarily logically compelling. It seems Kuhn encourages this reading by comparing paradigm shift to political revolution. That such revolutions may or may not be reasonable is implied.

> "Because they differ about the institutional matrix within which political change is to be achieved and evaluated, because they acknowledge no supra-institutional framework for the adjudication of revolutionary difference, the parties to a revolutionary conflict must finally resort to the techniques of mass persuasion, often including force."[27]

In contrast to Kuhn's view, Karl Popper argued that there was a universal standard of rationality. Political and scientific differences need never be settled by physical or rhetorical force,

[25] Ibid., p. 39.
[26] Ibid., p. 39-40.
[27] Ibid., p. 41.

in Popper's view, because disputants can always bring their claims to the court of reason.[28] But "Bruno at the stake" and the history of science are in Kuhn's favor.

Addressing Kuhn's incommensurability theory, "it is not always possible to judge whether a given scientific revolution is an improvement in knowledge without arbitrarily privileging one set of standards over the other.[29] This is a view many scientists find hard to accept. Without a formula for calculating the relative merits of scientific theories, progress is a guess; Kuhn does not think scientific progress is possible. But he does hold out that "the nature of scientific communities provides a virtual guarantee that both the list of problems solved by science and the precision of individual problem-solutions will continue to grow."[30]

Perhaps what proponents of Karl Popper considered the most dangerous view was Kuhn's assertion that in the phase of normal science, scientists rarely ask fundamental questions. For Kuhn, progress required uncritical acceptance of the present orthodoxies bolstered by a systematic distortion of the past.[31] This was the means by which the dominant paradigm flourished. Only with revolution does the critical questioning of orthodoxies surfaces. This view has political implications. As Lakatos states,

> "The clash between Popper and Kuhn is not about a mere technical point in epistemology. It concerns our central intellectual values, and has implications not only for theoretical physics but also for the underdeveloped social sciences and even for moral and political philosophy."[32]

For Lakatos, a Hungarian who had experienced "revolution" first hand, Kuhn's views were compelling, but politically dangerous. But that such views are dangerous is no argument against them. And Lakatos' attempt at a synthesis that would argue away the danger reveals a compromising motive for a seeker of knowledge.

## Relevance

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[28] Ibid., p. 41.
[29] Ibid., p. 43.
[30] Ibid., p. 43.
[31] Ibid., p. 45.
[32] Ibid., p. 45

A legitimate objection may be raised at this point, “What on earth do paradigms and meta-paradigms have to do with the management of information technologies?” The answer is: much. That the Information Age is one of unrelenting change is an unavoidable conclusion. Such an environment may foster what I refer to as *change for change’s sake*. Questioning the value of such change may be persuasive. And to recognize “what stays the same” may take even higher precedence. To lose sight of fundamentals in flux can be costly. What dot bomb would not trade such flux for fundamentals today?

That meta-paradigms such as truth, cause, and value, persist regardless of change is an indicator of greater import. Perhaps such concepts are only assumptions; only fictions parading as facts; or perhaps they are the very structures that make change possible at all. Regardless, the impetuous for information is *perspective*, which implies truths and causes. And as a prerequisite to the management of information, values pervade the shifting environment; context can only be found in assessment. And how is one to accurately assess without first assessing the very concepts one is assessing with? The meta-paradigm offers such an informative critique.

## Annotated Bibliography

Gene, Laurence, and Chan, Kitty. (1997). Introducing Nietzsche. New York: Totem Books.

This work serves as a prologue to the philosophy of Friedrich Nietzsche, as well as offering related material on the views of such thinkers as Socrates, Plato, Pascal, Hume, Kant, Schopenhauer, and Wagner.

Gleick, James. (1992). Genius. New York: Vintage Books.

This work is a biography of the noted physicist Richard Feynman by the writer of the best seller Chaos. It details Feynman's life from the early years at MIT, to his work on the atomic bomb at the Los Almos Research Center, and on to his professorships at Princeton and CalTech.

Kuhn, Thomas. (1996). The Structure of Scientific Revolutions. (3rd ed.). Chicago: University of Chicago Press.

This is the influential text by the historian and philosopher of science Thomas Kuhn, in which he presents his theory of the paradigm and paradigm shift. In this work, he makes the claim that science acts an instrument for solving problems, not for discovering truth.

Larvor, B. (1998). Lakatos: An Introduction. London: Routledge.

This text offers an introduction to the thoughts of the Hungarian philosopher, scientist, and mathematician Lakatos. In addition relevant views of such philosophers of science as Thomas Kuhn and Karl Popper are addressed. An incisive reading of Kuhn's Structure of Scientific Revolutions is included as well.

Microsoft® Encarta® Reference Library 2003 [computer software]. (1993-2002). Microsoft Corporation.

This collection encompasses five CD-ROMs worth of research material of encyclopedic scope. Multimedia presentations, articles, quotes, timelines, dictionary, and more are all included for reference.

Osborne, Richard. (1992). Philosophy for Beginners. New York: Writers and Readers.

This book covers the breadth of western philosophy from the pre-Socratics to the present. Illustrations of the significant philosophers are included as well as many famous quotes.

Palmer, Donald D. (1997). Structuralism and Poststructuralism for Beginners. New York: Writers and Readers.

This book covers structuralist and post-structuralist philosophy from its beginnings in the linquistic theories of Ferdinand Saussure to the present. Other thinkers explored include the anthropologist Levi Strauss, literary critique Roland Barthes, psychoanalyst Jacques Lecan, sociologist Michel Foucault, and deconstructionist Jacques Derrida. This work also contains illustrations and a variety of quotes.

Simon, Scott (2001). Preformations. New York: Writers Club Press.

This work contains contemporary analysis of the philosophies of Plato, Friedrich Nietzsche, Martin Heidegger, Jans Jonas, Merleau-Ponty, and Michel Foucault. Topics

explored include epistemology of power, phenomenology of language, metaphysics, ontology, and more.

Wilber, Ken (1984). Quantum Questions. Boston: Shambhala.

The collection includes essays from physicists Heisenberg, Schrödinger, Einstein, De Broglie, Jeans, Planck, Pauli, and Eddington. The essays have been carefully chosen by Wilber to support his argument against the popular belief that contemporary physics and mysticism are related.