

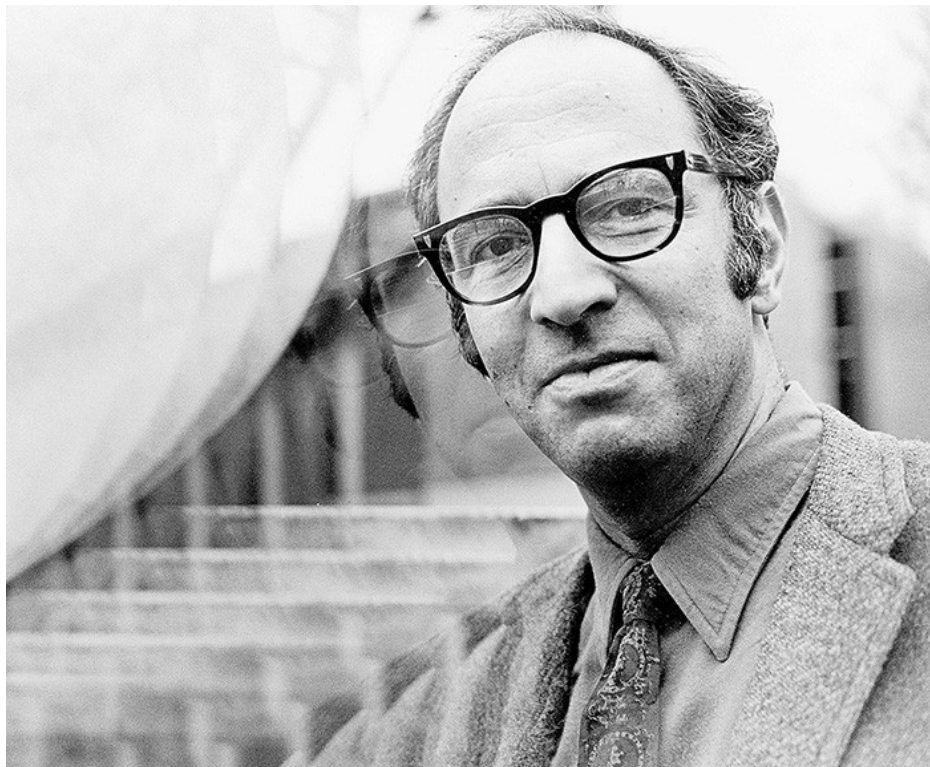


Alain Max Banfi [Follow](#)

Understanding transformations brought about by disruptive technologies and the changes these require in our skill sets, our mindset and our underlying worldview
Oct 15, 2016 · 6 min read

Rebooting Thomas Kuhn's Paradigm Shift

Despite being perhaps the most used and abused term in contemporary discussions, an often overlooked point in Kuhn's "paradigm shift" is likely the most valuable in today's ecosystem of exponential technology.



Thomas Kuhn — physicist, historian and philosopher of science

Mindset Series — part 0:

The term paradigm shift exploded into scene with science historian Thomas Kuhn's 1962 book Structure of Scientific Revolutions, one of the most influential and uproarious books of the 20th century and arguably the most cited academic books of all time. In Structures, Kuhn defies the traditional view of a linear scientific progression by accumulation of "theory-independent facts" (the view, that is, that older theories give way successively to more inclusive and accurate ones) and illustrates instead the substitutional nature of scientific progress which moves, according to him, from paradigm to paradigm. The author notes that from the perspective of the observer inside a given paradigm a "development-by-accumulation" of knowledge seems, correctly, to advance the accepted scientific hypothesis. However, if a science historian studies a long

enough time period, he says, one cannot but notice a cyclical pattern where, time and again, even the most household scientific paradigms, alongside their publications, experiments and chieftains, are eventually substituted altogether. Needless to say this enraged countless members of the scientific community, and most reviews and critics have focused understandably on this questioning of the irrefutability of scientific progress.

Amongst discussions by academics, the basic concept of a paradigm gained sufficient understanding by the public to escape into mainstream and take a life of its own. Today the term "paradigm shift" is routinely used amongst intellectual and even business circles to describe a deep shift in perspective, a fundamental change in the basic concepts and underlying beliefs of a given community. This is correct, but only partly. Will everyone focused on the scrutiny of intellectual progress, the "paradigm" has escaped without a core component, indeed without what could be considered the "second half" of the concept, which we'll explore here.

Kuhn's Paradigm Shift

The key difference on the use of the term "paradigm shift" by the mainstream public and by Kuhn is not, ironically, what it describes (i.e. the concept of a paradigm shift itself) but rather what it leaves out: The role of the surrounding context in shaping and filtering the chosen paradigm. The value of a paradigm, according to Kuhn, lies less in its accuracy than its ability to satisfy the requirements of its time.

For example, many of the greatest scientific breakthroughs were proposed well before their time. Aristarchus anticipated the heliocentric model of the solar system in the 3rd century B.C., eighteen centuries before Copernicus, theories of combustion by absorption from the atmosphere were proposed in the 17th century by Rey, Hooke and Mayow, well before Lavoisier's revolutionary papers, as were 18th and 19th century propositions for a relativistic conception of space, before Einstein. Yet in each case, the historical setting of their time and the precision of their instruments (or lack of) did not require a new paradigm; as Kuhn notes, there were no needs that their insights might have fulfilled, and these ideas were neglected, buried in time until the moment had arrived for their renaissance. In short, it is the external environment that gives context to, and permission for, the growth and fruition of a new worldview.

The implication? First, if our mindset and instruments are the filters through which we allow new paradigms to emerge—and with them the discoveries and innovation they bring—then by logic there's an entire

universe of unimaginable possibilities of which we explore only a fraction. Take science itself, the most “impartial” and empiric of fields: As Kuhn explains, we first select what experiments should be made and appropriate measuring tools built, we delimit what gamut of the results will be analyses, we then define which results inside this spectrum are acceptable inside the standing scientific theories and which will be followed-up with further investigation; everything else is essentially discarded. Yet scientific history is filled with groundbreaking discoveries, Oxygen, X-Rays and nuclear Uranium fission to name a few, made especially difficult to recognize precisely because those who “knew” what to expect chose tests aimed at the wrong elements, and the breakthroughs that did eventually take place happened only because some audacious individual decided to look through a radically different perspective. As F. Duncan Haldane, the 2016 Physics Nobel Prize co-winner for his discoveries on exotic properties of matter said *“If you can’t imagine something marvelous, you’re not going to find it... The barrier to discovering what can be done is actually imagination”*. The exact same can be said of technology and business today, as we shall explore in our next posts.

Second, if there is a connection between the current paradigm and the context where it is inserted, then the more this ecosystem changes, the higher the pressure on the traditional paradigm. What may have seemed appropriate in one environment becomes increasingly out of context in a radically new ecosystem. Thus both the creation of tools, such as the telescope and the internet, and the fruition of new postures and ideologies, such as environmental awareness and social responsibility, are key aspects of the changes in standing paradigms.



Foto by Kit — Flickr — Pressure

The irony, if I may? No matter how many times the cycle is repeated, every moment of history, including the one we are in now, has its incumbent institutions serving as “paradigm gatekeepers”, convinced that their perspective, their paradigm, is the “one true God” and the best (or only) solution to the challenge at hand. Furthermore, we as a society seem to be not only defiant to changes in paradigms but oblivious to our previous inflexibility once the paradigm has finally changed; Once convinced otherwise, we proceed to act as if we’d never been wrong. Or as Arthur Schopenhauer famously put it: “*All truth passes through three stages: First, it is ridiculed; Second, it is violently opposed; and Third, it is accepted as self-evident.*” In our stubbornness to recognize our previous misconception, in our lack of humbleness, if you will, we quickly conclude that whatever paradigm now stands should be set in stone. This behavior holds us back from letting go once a new vision is required, and from gaining the fluidity necessary to operate in an environment of constant change. And change, today more than ever, seems to be the only constant.

Finally, the challenge: As if changing beliefs were not hard enough, this is far from a purely intellectual discussion. With time, individuals, organizations and with them entire societies become heavily vested in the existing paradigm. Full lines of products and services, of studies, entire carriers, indeed entire industries are founded on the principles of a given paradigm, as we shall study ahead. Much like the Catholic Church was vested towards a geocentric vision of the universe before the Renaissance, current organizations are conferred to given rules of conduct and —perhaps most seriously— heavily vested financially in the current state of affairs.

Thus it is understandable that in any early stages of a paradigm shift (before the new world vision sets in) strong resistance from incumbents should be expected. In fact, it can be expected to never lower until they are extinct. As Ervin Laszlo describes in an explanation about systems theory: “*every time you have a systemic change, the change comes from the periphery.... the center doesn’t change, the center dies out... as long as it can maintain itself, it will try to do so, but when you get to a critical point, change is very fast.*”. Unfortunately for incumbents, the change ahead is not just fast, its exponential.

Digital Transformation

Singularity University's Salim Ismail in his book Exponential Organizations defines the concept of an Iridium Moment (named after Motorola's failed investments in a satellite project of the same name) as a crucial strategic decision based on the wrong assumptions, and elaborates further: “*By ironic coincidence, the extinction of the dinosaurs was revealed by*

an Iridium layer in rock formations; this time around, the destructive agent is an Information Comet. What if we are having another collective Iridium Moment? One that doesn't just involve a single giant corporation that has failed to recognise the revolutionary nature of technological change taking place around it, but an whole species—indeed the dominant species—of large corporations in the modern economy. What if they are all facing the same fate as Iridium?"

The future will tell how much these organizations will adjust to an environment of accelerated innovation. Yet the same changes that are threats to some are opportunities to others, and so much depends on our willingness to proactively embrace these changes and their corresponding mindset. For those in search of exploring new opportunities, let's dive into our next post in the Disruptive Mindset Series!