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Sustainability thought 170: What happens to the Thomas Kuhn's paradigm evolution loop under willful academic blindness? What are the implications of this?

By

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Abstract

Thomas Kuhn shared with the world the working of scientific revolutions, which can be simplified with six components in an evolution loop: the status quo paradigm, the abnormalities, the paradigm crisis, the possible paradigm failure and death, the academic consensus to change paradigm, and the paradigm shift. When consensus is reached, Kuhn implicitly assumes that academic integrity will ensure the actual implementation of the paradigm shift that has been agreed upon to stimulate the growth of knowledge as it is difficult to think that true scientists will join the academic consensus to change paradigm and then go later in a way i) that blocks the growth of scientific knowledge that comes from closing paradigm shift knowledge gaps, and ii) that coexist with the paradigm crisis they are trying to solve, but under willful academic blindness what in Kuhn's loop is inconceivable actually happens. And this raises the question, what happens to the Thomas Kuhn's paradigm evolution loop under willful academic blindness? What are the implications of this?

Key concepts

Scientific revolutions, status quo model, model abnormalities, paradigm crisis, paradigm death, academic consensus, paradigm shifts, academic integrity, willful academic blindness, scientific truth, academic facts, alternative academic facts, golden paradigm, flawed paradigm, new paradigms, paradigm evolution loop.

Introduction

a) The structure of scientific revolutions a la Thomas Kuhn

Thomas Kuhn(1970) shared with the world the working of scientific revolutions in his seminal work “the structure of scientific revolutions”, which in my view can be simplified with six components in an evolution loop: the status quo paradigm(SQM), the abnormalities(A), the paradigm crisis(PC), the possible paradigm failure and death(PD), the academic consensus to change paradigm(CC), and the paradigm shift(PS), as summarized in Figure 1 below:

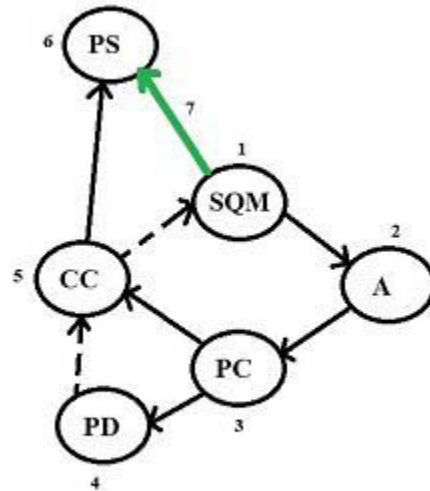


Figure 1. The Kuhn's loop idea in six components

The nature of the 6 component in the Thomas Kuhn’s paradigm evolution loop in Figure 1 above are described in detailed below following the step by step moves that need to take place so as to have the Kuhn’s loop dynamics to come into existence when dealing with a paradigm that produces abnormalities:

i) The status quo paradigm

It refers to the current paradigm guiding thinking in theory and in practice in any field, a situation found at point 1 in Figure 1 above.

ii) The coming of abnormalities

In the short term, we should expect abnormalities emanating from the status quo paradigm to be hard to notice to the point that they can be assumed irrelevant or insignificant, a situation found at point 2 in Figure 1 above.

iii) The coming of the paradigm crisis

In the long-term, the abnormalities accumulate affecting noticeable the working of the status quo paradigm and its long-term sustainability. This situation leads to the beginning of calls about the need to do something to move away from the status quo paradigm bringing new

ideas into play on how to correct or fix the abnormalities of the status quo paradigm, initiating a process of academic discourse between the status quo ideas and the new ideas, a situation found at point 3 in Figure 1 above.

iv) The coming of paradigm failure and death threat

As abnormalities become extreme and binding since the status quo ideas double down to persist, they threaten the survival of the status quo model in a way that if we do nothing the system will collapse and die. Then the need to save the status quo paradigms from collapse leads to very formal calls to take a serious look to the new ideas on how to address the abnormalities of the status quo paradigm, a situation found at point 4 in Figure 1 above.

v) The coming of the academic consensus to change paradigm

The need to save the core values of the status quo paradigm leads to academic consensus for paradigm change and the new ideas correcting the abnormalities of the status quo paradigm are formally accepted, meaning a shift from the status quo paradigm to the new paradigm will take place in order to correct the abnormalities, the situation at point 5 in Figure 1 above.

vi) The actual implementation of the paradigm shift

Now that there is academic consensus to change paradigm we have to implement it closing in the process the paradigm shift knowledge gaps that come along with the paradigm shift away from the status quo to create the knowledge base needed to support the new paradigm so the shift from the status quo paradigm to the new paradigm takes place, a situation found at point 6 in Figure 1 above.

vii) The growth of scientific knowledge line

The shift from the status quo thinking to the thinking of the new paradigm that corrects the abnormalities affecting the status quo paradigm requires new ideas and/or updated old ideas, and this represents the growth of scientific knowledge, the situation at point 7 in Figure 1 above as represented by the green arrow.

b) The implicit assumption of academic integrity as reassurance that academic consensus will actually lead to paradigm shift in Kuhn's revolution loop

When academic consensus for paradigm change is reached as indicated in Figure 1 above at point 5, Kuhn implicitly assumes that academic integrity will ensure the actual implementation of the paradigm shift that has been agreed upon stimulating that way the growth of scientific knowledge, a situation summarized in Figure 2 below:

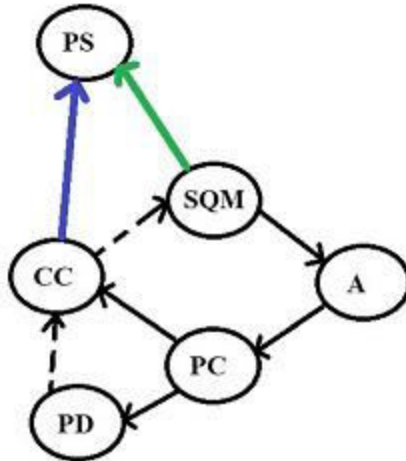


Figure 2 The academic integrity assumption ensuring the paradigm shift takes place for sure

Figure 2 simply indicates that once there is academic consensus(CC), then academic integrity as represented by the blue arrow from CC to PS ensures the actual paradigm shift(PS) and the closing of the paradigm shift knowledge gap that exist between the status quo model SQM and the new paradigm(PS) as indicated by the green arrow. The idea of paradigm shift avoidance after academic consensus has been reached under academic integrity is inconceivable within the Kuhn's loop in Figure 2 above. Notice that if no academic consensus CC is reached to address the extreme paradigm crisis PC in Figure 2 above, the status quo model SQM will fully collapse and die reaching the paradigm death status PD. It has been pointed out that when a paradigm like the status quo model SQM dies due to extreme abnormality pressures, it flips to the opposite paradigm structure or to the inverse opposite paradigm structure, perfectly or imperfectly(Muñoz 2021a), losing in the process some or all of its core values.

c) The case of willful academic blindness

It is difficult to think that true scientists will join the academic consensus to change paradigm and then go later in a way i) that blocks the growth of scientific knowledge that comes from closing paradigm shift knowledge gaps, and ii) that coexist with the paradigm crisis they are trying to solve, but under willful academic blindness what in Kuhn's loop under academic integrity is inconceivable actually happens. For example, in 2012 Rio +20(UNCSD 2012a; UNCSD 2012b) we were supposed to move from traditional market thinking a la Adam Smith(Smith 1776) to green market thinking to address head on the environmental abnormalities embedded in the traditional market model and make markets environmentally friendly, a need pointed out by the Brundtland Commission in 1987(WCED 1987) as the model was not working as expected, but then we witness paradigm shift avoidance as the shift to green markets did not take place as expected and a move towards different forms of dwarf green markets followed, a move that requires willful academic blindness and perhaps alternative academic facts too to be undertaken. Hence, the traditional market model of Adam Smith went into extreme paradigm

crisis and in 2012 the consensus was to go the green market way to fix the environmental abnormality, even though it was not the only option(Muñoz 2016), yet instead of ending up in a green market world we all ending up in the dwarf green market world, two very different paradigms(Muñoz 2019).

Therefore, there is a need to understand the nature of paradigm shift under Thomas Kuhn's scientific revolution thinking and academic integrity, and the nature and consequences of paradigm shift avoidance under willful academic blindness. And this raises the question, what happens to the Thomas Kuhn's paradigm evolution loop under willful academic blindness? What are the implications of this?

Goals of this paper

a) To highlight analytically and graphically that under willful academic blindness the Thomas Kuhn's scientific revolution loop breaks down leading to implementation of dwarf models; b) To stress analytically and graphically that when dwarf models collapse but before paradigm death they will tend towards academic consensus and academic integrity again and then the agreed paradigm shift that was avoided before actually takes place; c) To indicate analytically and graphically that when dwarf models fail to reach consensus to change paradigm regardless of the extreme paradigm crisis they created they actually collapse and die and then they will flip to opposite or inverse opposite form paradigms, perfectly or imperfectly; and d) To point out analytically and graphically that when the status quo paradigm does not create abnormalities it is then a golden paradigm where the Kuhn's loop is not needed.

Methodology

First the terminology used in this paper is shared. Second, the structure of the Kuhn's revolution loop under willful academic blindness is stressed both analytically and graphically. Third, the structure of the Kuhn's revolution loop from just before dwarf market paradigm death is pointed out both analytically and graphically. Fourth, the structure of the Kuhn's revolution loop after dwarf market paradigm death is indicated both analytically and graphically. Fifth, the structure of the golden paradigm is highlighted both analytically and graphically. And finally, some food for thoughts and relevant conclusions are listed.

Terminology

SQM = Status quo model

A = Abnormality

PC = Paradigm crisis

PD = Paradigm death

CC = Academic consensus to change paradigm

PS = Paradigm shift

DM = Dwarf model

GOM = Golden model

FLM = Flawed model

SFLM = Super flawed model

Operational concepts

- 1) **Science**, *the world based on the scientific truth, this world falls if invalidated.*
- 2) **Ideology**, *the world based on the non-scientific truth, this world will tend to persist even if invalidated.*
- 3) **The theory-practice general consistency principle**, *the world where the theory of the model must match the practice.*
- 4) **The different model general inconsistency principle**, *the world where the theory and practice of different models are inconsistent with each other.*
- 5) **Academic facts**, *the science based truth.*
- 6) **Alternative academic facts**, *the non-science based truth.*
- 7) **Academic blindness**, *the inability to see academic facts due to the existence of knowledge gaps, paradigm shift based or otherwise.*
- 8) **Willful academic blindness**, *the willingness to ignore academic facts and consensus.*
- 9) **Sustainability**, *the world where the interplay of sustainability theory and sustainability practice is aimed at fixing or correcting embedded externality problems.*
- 10) **Sustainable development**, *the world where the interplay of sustainable development theory and sustainable development practice is aimed at patching or managing embedded externality problems.*
- 11) **Academic integrity**, *the duty to respect and defend academic facts and consensus.*
- 12) **Golden paradigm**, *one that does not creates abnormalities.*
- 13) **Flawed paradigm**, *one that creates abnormalities.*

14) Kuhn's loop, the science based mechanism that leads to paradigm shift through abnormality correction.

The Thomas Kuhn's scientific revolution loop under willful academic blindness

Under willful academic blindness the Kuhn's revolution loop shared in Figure 2 of the introduction above breaks down and paradigm shift avoidance takes place moving towards the establishment of dwarf markets DM as indicated in Figure 3 below:

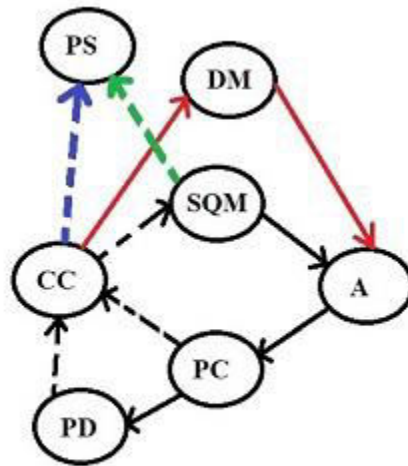


Figure 3 The Kuhn's loop breaks under willful academic blindness

Figure 3 above shows that contrary to the academic consensus CC reached under academic integrity, the paradigm shift PS is avoided as indicated by the broken blue arrow braking the paradigm shift based growth of scientific knowledge line as indicated by the broken green arrow, and the system moves towards a dwarf model DM which is aimed at managing the abnormalities A still being produced by SQM.

Implications based on Figure 3 above

i) By ignoring the academic consensus(CC) under willful academic blindness as indicated by the broken blue arrow the Kuhn's revolution loop breaks down and the status quo paradigm SQM goes into dwarf model mode DM in order to manage the abnormalities A as indicated by the red arrow from CC to DM and from DM to A; ii) The dwarf model DM is managing the abnormalities A at the same time the status quo model SQM is still producing abnormalities A as indicated by the continuous black arrow from SQM to A; iii) The paradigm shift avoidance move to DM also blocks the paradigm shift agreed upon to PS as indicated by the broken blue arrow from CC to PS breaking the growth of knowledge line as indicated by the broken green arrow from SQM to PS; and iv) If the dwarf model DM fails in the long term to manage the

abnormality A as is still being actively produced by the status quo model SQM it has only one way to go and it is towards paradigm death PD as indicated by the continuous black arrow from A to PC to PD and by the broken black arrows towards academic consensus CC from PC and PD as academic consensus was broken.

The Thomas Kuhn’s scientific revolution loop just before the dwarf paradigm death

If the dwarf market DM fails in the long term managing the abnormalities it will tend towards paradigm death PD, but before death it will seek academic consensus to change paradigm and finally correct the abnormalities through the new ideas and the paradigm shift it avoided before, a situation summarized in Figure 4 below:

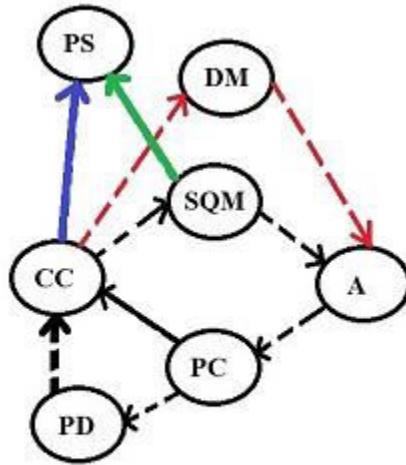


Figure 4 The collapse of the dwarf model and its return to academic consensus and final paradigm shift just before paradigm death PD.

Figure 4 above shows the dwarf market model reaching academic consensus for paradigm change and shift just before paradigm death PD as indicated by the continuous black arrow from PC to CC and the broken black arrow from PC to PD.

Implications based on Figure 4 above

i) The dwarf model DM fails in the long term to manage the abnormality A and tends towards paradigm death PD as indicated by the broken arrows from CC to DM to A to PC and to PD; ii) Just before paradigm death PD, the dwarf model DM reaches academic consensus CC to paradigm change as indicated by the continuous black arrow from PC to CC; iii) The previously avoided paradigm shift PS takes place as indicated by the continuous blue arrow CC to PS; iv) The actual paradigm shift PS restores the paradigm shift based growth of scientific knowledge line as indicated by the continuous green arrow from SQM to PS; and v) The shift to PS after

paradigm shift avoidance to finally complete the required abnormality corrections is done now at a higher sustainability cost.

The Thomas Kuhn's scientific revolution loop just after the dwarf paradigm death

If the dwarf model DM fails to manage the abnormalities A in the long term and despite the worsening of the paradigm crises PC it does not reach consensus for paradigm change and shift it will die, as indicated in Figure 5 below:

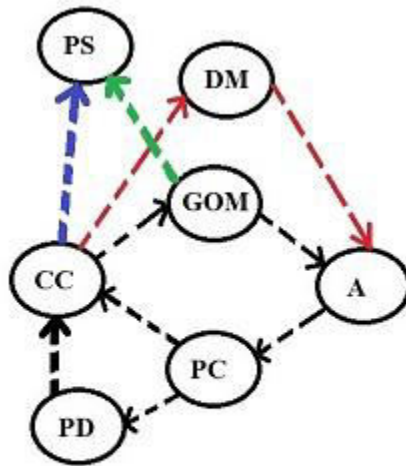


Figure 5 If the status quo model SQM is a golden paradigm model GOM so that SQM = GOM, then it does not produce abnormality while at work expanding or contracting.

Figure 5 above tells us that if the dwarf model DM goes into extreme paradigm crisis PC and it fails to reach consensus for paradigm change or it acts too late as indicated by the broken arrows from PC to CC and PD it will die and flip to other paradigm forms. It has been pointed out that if a paradigm like DM dies under extreme binding abnormality pressures it will flip to its opposite form or inverse opposite form, perfectly or imperfectly (Muñoz 2021b) losing some or all of its core values in the process.

Implications based on Figure 5 above

i) No reach for academic consensus for paradigm change before paradigm death and death happens means not just the loss of some or all the core values of the dwarf model, but also of the status quo model; ii) The dwarf model DM after death will tend to flip to the opposite model that allows it to keep some of the core values it had before; and iii) The fall of the dwarf model DM can be seen as the fall of a distortion on top of another distortion as dwarf models are aimed at managing the abnormalities of the status quo model, not at correcting the root cause within the status quo model generating those abnormalities.

The structure of the golden paradigm

If the status quo paradigm SQM happens to not produce abnormalities when expanding or contracting, in reality or by assumption or by scientific inquiry, then it is a golden paradigm GOM, so if we make SQM =GOM in Figure 2 in the introduction above we find the situation indicated in Figure 6 below:

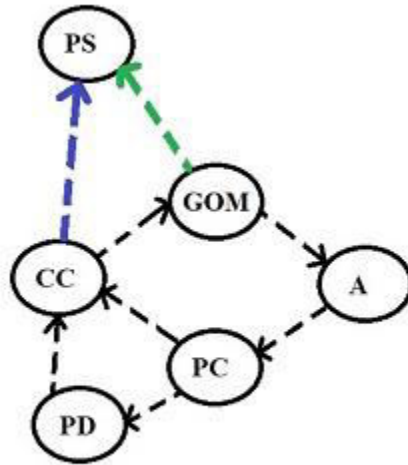


Figure 6 The structure of the golden paradigm

Figure 6 above shows that if there is a golden paradigm GOM the Kuhn's revolution loop is not needed as there are no externalities to correct, no paradigm crisis PC or paradigm death PD to fear, no need for academic consensus to change paradigm CC and paradigm shift as change and shift are not needed, all which is indicated by all broken arrows.

Implications

i) if the status quo paradigm SQM produces abnormalities, then it is a flawed paradigm and the Kuhn's revolution loop is at work correcting abnormalities as it is the case in Figure 2 above; ii) if the status quo paradigm SQM does not produce abnormalities, then it is a golden paradigm and the Kuhn's revolution loop is not needed as there are no abnormalities to correct as it is the case in Figure 6 above; iii) if the status quo paradigm SQM is assumed to be a golden paradigm, but in reality it is a flawed paradigm, then the extreme accumulation of abnormalities that at one point take place will send the paradigm in to extreme crisis, which will speed up the Kuhn's revolution loop to change and shift paradigm just before paradigm death; and iv) As true golden paradigms do not produce abnormalities they are never under the threat of collapse and death.

Food for thoughts

a) Should we expect the Kuhn's revolution loop to break under ideology conditions? I think Yes, what do you think?; b) Can paradigm shift avoidance take place under academic integrity conditions? I think No, what do you think?; c) Are dwarf models inconsistent with the Kuhn's revolution loop thinking? I think yes, what do you think?; and d) Do breaking the Kuhn's evolution loop means breaking the paradigm shift based growth of scientific knowledge line? I think yes, what do you think?

Conclusions

First, it was shown that under willful academic blindness the Kuhn's revolution loop breaks down and the status quo paradigm goes into dwarf model. The move to dwarf model to avoid paradigm shift blocks the paradigm shift, breaks the paradigm shift growth of knowledge line, and it is focused on managing the abnormality still being produced by the status quo paradigm. Second, it was stressed that if the dwarf model fails to manage the abnormalities in the long term will tend towards paradigm death and just before death it will reach for academic consensus to change paradigm and it will complete the paradigm shift it was trying to avoid. Third, it was pointed out that if the dwarf paradigm does not reach for academic consensus to change paradigm and shift before death it will actually die and flip to other paradigms forms losing all or some of its core values. And fourth, it was highlighted that if the status quo model is one that does not produce abnormalities, then it is a golden paradigm.

Overall, it was demonstrated that the Thomas Kuhn's scientific revolution loop can be seen as a mechanism that leads towards paradigm shift through correcting abnormalities under academic integrity, but which breaks under willful academic blindness.

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