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Sustainability thoughts 142: Expanding sustainability line theory to point out the nature of sustainability problems and of unsustainability paradigm zones separating sustainability and unsustainability-based paradigms

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Abstract

Sustainability line theory tells us that sustainability varies from 0 to 1 or from full unsustainability to full sustainability. This thinking can be expanded step by step to show the following: i) The location of full unsustainability paradigms and of full sustainability paradigms; ii) The possible contractions and expansions of sustainability paradigms; iii) The possible contractions and expansions of unsustainability paradigms; iv) The nature of the sustainability problem separating full sustainability paradigms and full unsustainability paradigms; v) The nature of the unsustainability paradigm zone separating full sustainability paradigm and full unsustainability paradigms; and vi) The expected expansion of unsustainability paradigms and of full sustainability paradigms once they are in place. The overall goal of this paper is to show how this step-by-step expansion of the sustainability line idea works as well as to highlight the relevant implications at each step.

Key Words: *Sustainability, Unsustainability, Sustainability problem, Unsustainability paradigm zone, Optimal paradigm, non-optimal paradigm, Golden paradigm, Flawed paradigm, Paradigm expansion, Paradigm contraction*.

Introduction

a) The sustainability line theory

Sustainability line theory has been used to advance paradigm evolution ideas(Muñoz 2019) through sustainability inversegram based thinking and sustainability gaps or to share pareto optimality ideas(Muñoz 2021) through sustainability rightgrams and leftgrams and cost externalization and cost internalization thinking to gain an outside the box understanding of the sustainability problems associated with Adam Smith's traditional market model(Smith 1776) such as the socio-environmental sustainability problems the

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Brundtland Commission identified in 1987(WCED 1987) or the environmental sustainability problems the United Nations Commission on Sustainable Development tried to address in 2012 Rio + 20(UNCSD 2012a; UNCSD 2012b), a sustainability idea that can be expressed in its simplest general form as in Figure 1 below:

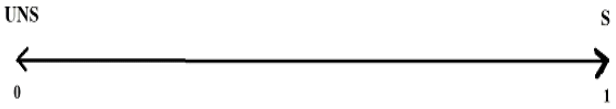

Figure 1 The sustainability line(SL) and the unsustainability line(UNSL)

From left to right on Figure 1 above, we have the sustainability rightgram, telling us that sustainability (Si) varies from zero to one, meaning that there can be full unsustainability (Si = 0), partial sustainability (0 < Si <1), and full sustainability (Si = 1). From right to left on Figure 1 above, we have the unsustainability leftgram, indicating that unsustainability (UNSi) varies from one to zero, meaning that there can be no unsustainability at all (UNSi = 1), partial unsustainability (0 < UNSi < 1), and full unsustainability (UNSi = 0). Hence, either way we look we see that sustainability varies from 0 to 1 as Si = 0 = UNSi means no sustainability at all and Si = 1 = UNSi means full sustainability.

b) Expanding the sustainability line idea

As indicated above sustainability line theory tells us that sustainability varies from 0 to 1 or from full unsustainability to full sustainability. This thinking can be expanded step by step to show the following: i) The location of full unsustainability paradigms and of full sustainability paradigms; ii) The possible contractions and expansions of sustainability paradigms; iii) The possible contractions and expansions of unsustainability paradigms; iv) The nature of the sustainability problem separating full sustainability paradigms and full unsustainability paradigms; v) The nature of the unsustainability paradigm zone separating full sustainability paradigm and full unsustainability paradigms; and vi) The expected expansion of unsustainability paradigms and of full sustainability paradigms once they are in place. The overall goal of this paper is to show how this step-by-step expansion of the sustainability line idea works as well as to highlight the relevant implications at each step.

Goals of this paper

a) To use sustainability line theory to place full sustainability paradigms and full unsustainability paradigms as its boundaries; b) To use the sustainability line structure above to show how each of those paradigms can expand or contract; c) To use the sustainability line structure above to point out where the sustainability problems and the unsustainability paradigm zones are located; and d) To use the sustainability line structure above to indicate how full sustainability paradigms and unsustainability paradigms are expected to expand once in place.

Methodology

First, the terminology and operational concepts relevant to this paper are shared. Second, sustainability line theory is used to place full sustainability paradigms and full unsustainability paradigms as its boundaries and the main implications of doing this are highlighted. Third, the sustainability line structure given above is adapted to show how sustainability paradigms can expand or contract and the main implications of doing this are given. Fourth, the sustainability line structure given above is used to show how unsustainability paradigms can expand or contract and the main implications of doing this are provided. Fifth, the sustainability line structure above is used to point out where the sustainability problems are located and the main implications of this location are stressed. Seventh, the sustainability line structure above is used to indicate where the unsustainability paradigm zone is located and the main implications of this location are shared. Eight, the sustainability line structure given above is used to stress how full sustainability paradigms and unsustainability paradigms are expected to expand once in place and the main implications of the way they expand are exalted. And finally, ninth, some food for thoughts and relevant conclusions are given.

Terminology

S = Sustainability	Si = Sustainability paradigm "i"
P = Price	D = Demand
UNS = Unsustainability	UNSi = Unsustainability paradigm "i"
SOP = Sustainability problem	SOPi = Sustainability problem "i"
UNSPZ = Unsustainability paradigm zone	EXP = Expansion
EXPi = Expansion "i"	CON= Contraction
CONi = Contraction "i"	GOP = Golden paradigm
FLP = Flawed paradigm	Ai = Abnormality "i"

Operational concepts

1) **Full sustainability,** the paradigm where there is no externality cost externalization.
2) **Partial sustainability,** the paradigm where there is partial cost externalization.
3) **Full unsustainability,** the paradigm where there is full cost externalization.
4) **Sustainability problem,** the gap created when unsustainability-based paradigms are placed below full sustainability.
5) **Unsustainability paradigm zone,** the gap that separate full unsustainability paradigms from full sustainability paradigms.
6) **Golden paradigm,** a full sustainability paradigm.
7) **Flawed paradigm,** any paradigm placed on any point on the unsustainable paradigm zone.
8) **Optimal paradigm,** a golden paradigm.
9) **Non-optimal paradigm,** a flawed paradigm.
10) **Optimal expansion trend,** the tendency that sustainability paradigms have to produce at the lowest optimal price possible to maximize sustainability paradigm-based profits.
11) **Non-optimal expansion trend,** the tendency that unsustainability paradigms have to produce at the lowest non-optimal price possible to maximize unsustainability paradigm-based profits.

The location of full unsustainability paradigms and of full sustainability paradigms

If we place full sustainability(S) as the right boundary of the sustainability line and we place full unsustainability (UNS) as the left boundary on the sustainability line given in Figure 1 of the introduction, and represent these boundaries as vertical lines we produced the situation in Figure 2 below:

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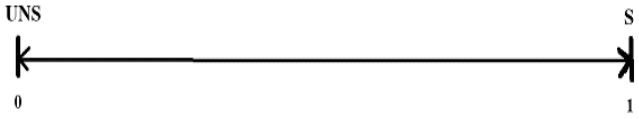
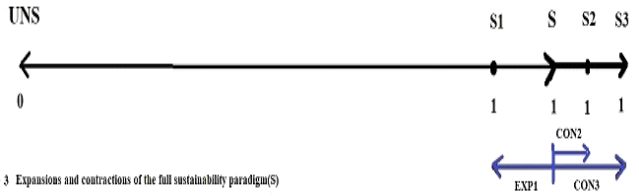


Figure 2 The location of full unstainability paradigms and full sustainability paradigms

Figure 2 above simply shows the boundaries on the sustainability line.

Implications:
The boundaries on the sustainability line are full sustainability(S) and full unsustainability (UNS). And therefore, a move away from full unsustainability is a move closer to full sustainability; and any move away from full sustainability is a move closer to full unsustainability. In other words, the level of sustainability a paradigm has depends on whether it is closer to full unsustainability or closer to full sustainability.

The possible contractions and expansions of full sustainability paradigms
Full sustainability paradigms(S) are optimal paradigms so they can expand (EXP) or contract (CON) as needed in an optimal fashion as indicated in Figure 3 below:



3 Expansions and contractions of the full sustainability paradigm(S)

Figure 3 above describes i) how full sustainability paradigms(S) can contract optimally as needed as the contraction from S to S2 (CON2) and contraction from S to S3 (CON3) show; and ii) how full sustainability paradigms(S) can expand optimally as needed as the move from S to S1 (EXP1) indicates, as in all cases optimality maintains full sustainability intact as represented by the 1 below S1, S, S2, and S3.

Implications:
Full sustainability is maintained when optimal contractions and optimal expansions take place, and therefore, full sustainability paradigms can expand or contract optimally as needed.

The possible contractions and expansions of unsustainability paradigms
Unsustainability paradigms (UNS) are non-optimal paradigms so they cannot expand (EXP) forever, but they can contract, and the more they contract the closer they are to full sustainability(S) a situation shown in Figure 5 below:

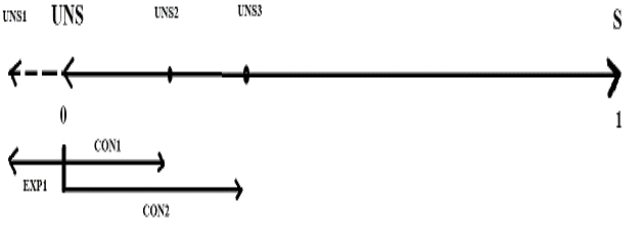


Figure 4 Expansions and contractions of unsustainability paradigms(UNS)

We can appreciate the following aspects based on Figure 4 above: i) Unsustainability cannot expand beyond full unsustainability (UNS) as the broken arrow indicating the expansion EXP1 from UNS to UNS1 tells us; ii) Unsustainability can be contracted as needed as the contraction CON1 from UNS to UNS2 and the contraction CON2 from UNS to UNS3 indicate; iii) The contraction UNS3 is more sustainable than the contraction UNS2 as it is closer to full sustainability(S); and iv) The contraction UNS2 is more unsustainable than contraction UNS3 as it is closer to full unsustainability.

Implications:
Unsustainability paradigms cannot expand beyond full unsustainability; and the larger the contraction that unsustainability paradigms have the closer to full sustainability they are.

The nature of the sustainability problem separating full sustainability paradigms and full unsustainability paradigms
The gap between unsustainability paradigms and full sustainability paradigm(S) represents the sustainability problem (SOP) associated with the working of unsustainability paradigms (UNSi), a situation reflected by the blue arrows moving from left to right in Figure 5 below:

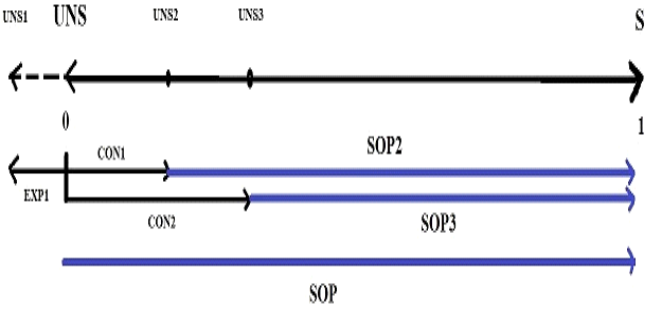


Figure 5 The sustainability problem(SOP) separating unsustainability paradigms(UNS) from full sustainability(S)

We can extract the following relevant aspects based on the information in Figure 5 above: i) There is a sustainability problem(SOP) separating full unsustainability(UNS) from full sustainability(S) as indicated by the blue arrow from left to right from UNS to S; ii) There is a sustainability problem(SOP2) separating partial unsustainability(UNS2) from full sustainability(S) as shown by the blue arrow from left to right from UNS2 to S; iii) There is a sustainability problem(SOP3) separating partial unsustainability(UNS3) from full sustainability(S) as represented by the blue arrow from left to right from UNS3 to S; and iv) The higher the contraction of unsustainability the smaller the sustainability problem separating them from full sustainability(S) as in the case of UNS2 and UNS3 we can see that unsustainability paradigm UNS2 has a larger sustainability problem than unsustainability UNS3 does since SOP3 < SOP2 as indicated by the lengths of their respective blue arrows.

Implications:
There is a sustainability problem separating unsustainability-based paradigms from full sustainability; and the sustainability problem associated with full unsustainability is bigger than the sustainability problem associated with any of its contractions since the closer the contractions are to full sustainability the less unsustainable, they are.

The nature of the unsustainability paradigm zone separating full sustainability paradigm and full unsustainability paradigms
The unsustainability paradigm zone (UNSPZ) captures of non-optimal paradigms that can be found below full sustainability(S) as

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indicated by the brown arrow from right to left going from S to UNS, as pointed out in Figure 6 below:

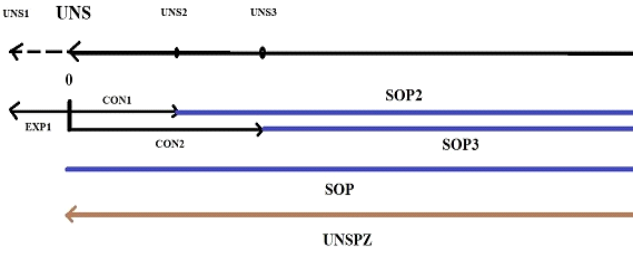

Figure 6 The unsustainability paradigm zone(UNSPZ) separating full unsustainability(UNS) from full sustainability(S)

We can see directly from Figure 6 above that paradigms UNS, UNS2, and UNS3 are within the unsustainability paradigm zone (UNSPZ); and therefore, they are non-optimal paradigms that in terms of unsustainability can be ranked as UNS > UNS2 > UNS3. We can also appreciate based on Figure 6 above that when an unsustainability paradigm is placed in the unsustainability paradigm zone (UNSPZ) we also allocate the sustainability problem (SOP) associated with it as for example, placing the unsustainability paradigm UNS3 on the unsustainable paradigm zone makes it a non-optimal paradigm with the associated sustainability problem SOP3.

Implications:
Any paradigm found or placed in the unsustainability paradigm zone is a non-optimal paradigm, which has a specific sustainability problem associated with it. In other words, any non-optimal paradigm is below full sustainability, and it has a sustainability problem embedded in it.

The expected expansion of unsustainability paradigms and of full sustainability paradigms once they are in place.
Once paradigms are in place, they will tend to expand at the lowest price possible, in the case of optimal paradigms like full sustainability they expand at the lowest optimal price possible; and in the case of unsustainability paradigms, they will tend to expand at the lowest non-optimal price possible, a view expressed in Figure 7 below:

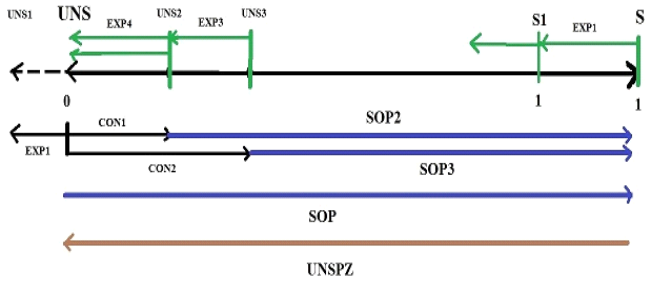

Figure 7 The expected tendency of unsustainability paradigms(UNS) and sustainability paradigms(S) to expand once in place

On the right side on top of Figure 7 above we have the optimal expansion of full sustainability(S), which can expand as needed as the expansion EXP1 from S to S1 and beyond as represented by the green arrow shows. This is because as the optimal paradigm price decreases sustainability paradigms expand and as the optimal paradigm price continues to decrease beyond S1 they expand more. On the left side on top of Figure 7 above we have the non-optimal expansion of unsustainability paradigms such as paradigm UNS2 and paradigm UNS3, which will tend to expand towards full unsustainability (UNS) as the expansions EXP4 from UNS2 towards UNS and the expansion EXP3 from UNS3 to UNS2 and beyond as represented by the green arrows from right to left tell us. This is because as the non-optimal paradigm price of those unsustainability markets decreases unsustainability paradigms expand, and as their non-optimal paradigm prices continue to decrease the paradigms UNS2 and UNS3 will expand towards full unsustainability (UNS), as that is the unsustainability limit. Notice that Figure 7 summarizes sustainability line thinking as i) it shows the limits of sustainability; ii) it indicates the sustainability problems within those limits; iii) it tells us about where the unsustainability paradigm zone is; iv) it suggests the sustainability problems associated with any unsustainability paradigm found on the unsustainability paradigm zone; and v) it highlights how sustainability paradigms and unsustainability paradigms are expected to expand once in place.

Implications:
Sustainability paradigms, once in place, should be expected to expand as the optimal paradigm price decreases; and unsustainability paradigms, once in place, should be expected to expand as the non-optimal paradigm price decreases, if left unattended, unsustainability paradigms will expand towards full unsustainability and collapse.

Food for thoughts

i) Are unsustainability paradigms consistent with optimalization principles? I think No, what do you think?; ii) Are sustainability paradigms consistent with maximization principles? I think No, what do you think?; and iii) Can you pass an unsustainability paradigm as a sustainability paradigm without alternative academic facts? I think No, what do you think?

Conclusions

In general, it was shown that the sustainability line idea can be used to highlight important issues that help us understand the world of sustainability and unsustainability paradigms and how they are expected to work and the problems associated with them. Specifically, it was pointed out step by step the following: the limits of sustainability, the possible expansion and contractions of unsustainability and sustainability paradigms, the sustainability problems associated with each unsustainability paradigm, the unsustainability paradigm zone where all unsustainability paradigms are found, and the expected way sustainability and unsustainability paradigm will expand once in place.

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