Sustainability Thought 198: Sustainability or sustainable development solutions: Pointing out the first major blunder in terms of development thinking and critical socio-environmental problems solving

By

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Abstract

It can be said that dealing with the socio-environmental consequences of living under socio-environmentally distorted traditional market thinking since 1776 when the world endorsed and promoted Adam Smith's ideas there have been according to this author three clear major development thinking blunders when trying to address those market distortions while the distortion problem remains active, one after the other: 1) First in 1987, the Brundtland Commission had a choice, to recommend a fix through sustainability market based solutions or to recommend a patch through sustainable development solutions to the critical socio-environmental problem created by the distorted market they were dealing with; and they chose a patch; 2) In 2012 Rio + 20, the United Nations Commission on Sustainable Development had a choice, to implement an environmental fix through green market-based solutions or to recommend a patch through dwarf green market-based solutions to the critical environmental problem they were addressing created by distorted traditional market pricing; and they chose a patch; and 3) In 2023 the world had again a choice, to finally internalize socio-environmental externalities to fix the pollution production problem embedded in the linear traditional market and make it circular or to move from traditional linear pollution production markets to traditional circular pollution production markets assuming again socio-environmental price distortion neutrality, and hence, leaving the root cause of the pollution generation problem embedded in both linear and circular pollution production markets untouched; and they chose to go circular economy thinking as a pretend patch.

Notice that the Brundtland Commission in 1987 found a socio-environmental pollution production problem associated with working of the traditional market not an inefficient use of resources and that the United Nations Commission on Sustainable development as well documented in 2012 an environmental pollution production problem associated with the traditional market, not an inefficient use of resources, therefore, none of them found that the problem generating pollution embedded in the traditional market was an inefficient use of resources. Hence, all those development choices made since 1987 are all considered development thinking blunders because all those choices made to address critical sustainability problems violate the theory-practice consistency principle as they do not match the nature of the problem and as well as violating the expectations of the Thomas Kuhn's paradigm evolution loop under academic integrity. This paper focuses on the first development thinking blunder, the choosing of sustainable development solutions over sustainability-based solutions in 1987 to address a critical socio-environmental sustainability problem.

Key concepts

Sustainability, sustainable development, sustainability gap, traditional market, sustainability problem, sustainable development problem, theory-practice consistency principle, social sustainability problem, environmental sustainability problem, socio-environmental sustainability problem, paradigm fix, paradigm patch, linear traditional market, circular traditional market, pollution production market, pollution management market.

Introduction

a) Recent development thinking blunders

It can be said that dealing with the socio-environmental consequences of living under socio-environmentally distorted traditional market thinking since 1776 when the world endorsed and promoted Adam Smith's ideas (Smith, 1776) there have been according to this author three clear major development thinking blunders when trying to address those market distortions while the distortion problem remains active, one after the other: 1) First in 1987, the Brundtland Commission had a choice, to recommend a fix through sustainability market based solutions such as a full sustainability fix (Muñoz 2020) or to recommend a patch through sustainable development solutions to the critical socio-environmental problem created by the distorted market they were dealing with; and they chose a patch a la sustainable development(WCED 1987; Trzyna 1995; UN 2001; UN 2007); 2) In 2012 Rio + 20, the United Nations Commission on Sustainable Development (UNCSD) had a choice, to implement an environmental fix through green market-based solutions and thinking (Muñoz 2016);) or to recommend a patch through dwarf green market-based solutions to the critical environmental problem they were addressing created by distorted traditional market pricing; and they chose a patch despite indicating otherwise (UNCSD 2012a; UNCSD 2012b); and 3) In 2023 the world had again a choice, to finally internalize socio-environmental externalities to fix the pollution production problem embedded in the linear traditional market and make it circular or to move from traditional linear pollution production markets to traditional circular pollution production markets assuming again socio-environmental price distortion neutrality, and hence, leaving the root cause of the pollution generation problem embedded in both linear and circular pollution production markets untouched (Muñoz 2024a); and they chose to go circular economy thinking as a pretend patch (OECD 2018; WB 2022; EEA 2023; OECD 2024; OECD 2025).

Notice that the Brundtland Commission in 1987 found a socio-environmental pollution production problem associated with working of the traditional market, not an inefficient use of resources; and see that the United Nations Commission on Sustainable development as well documented in 2012 an environmental pollution production problem associated with the traditional market, not an inefficient use of resources, and therefore, none of them found that the problem generating pollution embedded in the traditional market was an inefficient use of resources. Hence, the chosen development recommendations mentioned above made starting

1987, going sustainable development, going dwarf green markets, and going circular economy thinking, they are all considered development thinking blunders because all those development choices made to address critical sustainability problems violate the theory-practice consistency principle as they do not match the nature of the problem (Muñoz 2009) and as well as violating the expectations of the Thomas Kuhn's paradigm evolution loop under academic integrity (Muñoz 2022).

b) The sustainable development or sustainability blunder

This paper focuses on the first development thinking blunder, the choosing of sustainable development solutions over sustainability-based solutions in 1987(WCED 1987) to address a critical socio-environmental sustainability problem. Figure 1 below shows the choices the Brundtland Commission had in 1987 in terms of socio-environmental sustainability problems they documented and were addressing as pointed out recently in terms of golden paradigm, sustainable development paradigm, and flawed paradigm dynamics (Muñoz 2024b):

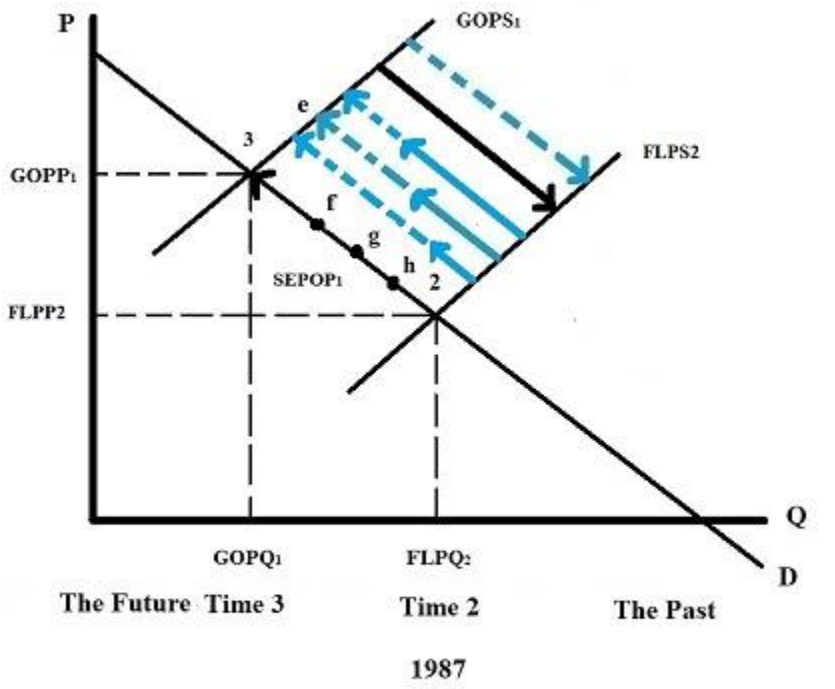

Figure 1 The multi-goal strucrture of the sustainable development framework given to use by the Brundtland Commission in 1987 with no priorty goals in term of golden paradigm and flaw paradigm thinking.

We can see the following in Figure 1 above: i) At point 2, we have the flawed paradigm (FLP), a paradigm that is assumed to be optimal when it is not, creating the socio-environmental problem (SEPOP1) represented by the continuous black arrow from point 3 to point 2, the problem to be corrected fully or be managed; ii) At point 3, we have a golden paradigm (GOP), a paradigm without socio-environmental problems, a truly optimal paradigm, the point of optimal development, representing a full correction of the flawed paradigm as indicated by the continuous black arrow going from point 2 to point 3; and iii) Between point 2 and point 3 we have the sustainable development

paradigm representing its various forms of sustainable development in full competition with the others, namely socially friendly sustainable development at point “h”, environmentally friendly sustainable development at point “g”, and socio-environmentally friendly sustainable development at point “f”.

In other words, i) at point 2 we have a socio-environmental pollution problem (SEPOP1) created by distorted market prices in social-environmental terms, ii) at point 3 we do not have a socio-environmental pollution problem (SEPOP1) as prices reflect the socio-environmental cost of business activity; and iii) between point 2 and point 3 we have the sustainable development solutions that accounts for some social cost (socially friendly sustainable development) or some environmental cost (environmentally friendly sustainable development) or some socio-environmental cost (socio-environmentally friendly sustainable development). Over all we can see that if we assume that the flawed paradigm is a golden paradigm, we can see how through time we can have a socio-environmental sustainability problem as in Figure 1 above growing in front of our eyes, but we cannot see it as we assume it away (Muñoz 2024c).

Figure 2 below shows the choices the Brundtland Commission had in 1987 to address the socio-environmental sustainability problems created by socially and environmentally distorted traditional markets they documented in terms of the sustainability paradigm, the sustainable development, paradigm, and traditional market paradigm, where the sustainability paradigm (S) is the golden paradigm (S = GOP1, SP = GOPP1, and SMS = GOPS1) and where the traditional market (TM) is the flawed paradigm (TM = FLP1, TMP = FLPP1, TMS = FLPS1):

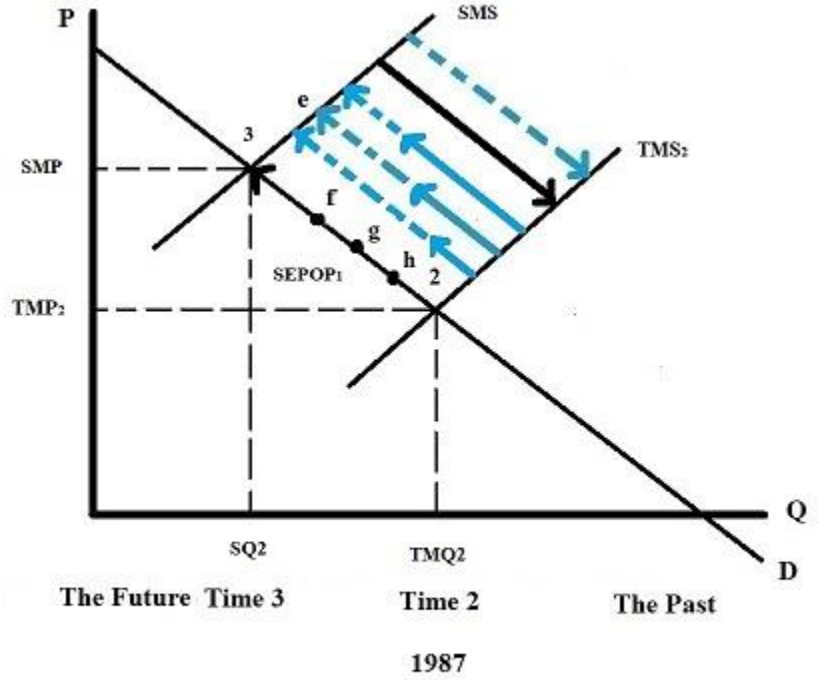

Figure 2 The multi-goal structure of the sustainable development framework given to use by the Brundtland Commission in 1987 with no priorty goals in terms of sustainability paradigm and traditional market paradigm thinking

We can appreciate now the following in Figure 2 above in terms of sustainability and traditional market thinking, which the Brundtland Commission should have been able to see: i) At point 2, we have the flawed traditional market model (TM), a paradigm that has been assumed to be optimal since 1776 (Smith 1776) when it is not, creating the socio-environmental problem (SEPOP1) in the process as represented by the continuous black arrow from point 3 to point 2, the problem to be corrected fully or to be managed; ii) At point 3, we have the sustainability paradigm (S), a paradigm without socio-environmental abnormalities, a truly optimal paradigm, the point of optimal development, representing a full correction of the socio-environmental problem associated with distorted traditional markets by full cost internalization as indicated by the continuous black arrow going from point 2 to point 3; and iii) Between point 2 and point 3 we have the sustainable development paradigm representing its various forms in ongoing competition with the others, namely socially friendly sustainable development at point "h", environmentally friendly sustainable development at point "g", and socio-environmentally friendly sustainable development at point "f". In other words, at point 2 we have a socio-environmental pollution problem (SEPOP1) created by distorted traditional market prices in social and environmental terms, at point 3 we do not have a socio-environmental pollution problem (SEPOP1) as prices reflect the socio-environmental cost of business activity, and between point 2 and point 3 we have the sustainable development solutions that accounts for some social cost (socially friendly sustainable development) or some environmental cost(environmentally friendly sustainable development) or some socio-environmental cost(socio-environmentally friendly sustainable development). In other words, a shift to sustainability is a full fix as the root-cause of the pollution production problem, distorted traditional market prices, is fixed; and sustainable development is a patched as the pollution production problem continues while the patching is being implementing. Over all we can see that if we assume that the traditional market paradigm is a golden paradigm when it is not, we can see how through time we can have a socio-environmental sustainability problem as in Figure 2 above growing in front of our eyes, but we cannot see it as we assume it away under externality neutrality assumptions at the core of traditional market thinking.

Finally, Figure 2 above in general helps us see that the Brundtland Commission (WCED 1987) had two choices, i) one choice was to fix the socio-environmental pollution production problem by fixing the traditional market model fully and shift it to sustainability in one step or in two steps, depending on which type of sustainability is taken as the priority, full sustainability or partial sustainability with a transition path to full sustainability; and ii) the other choice was to just patch the socio-environmental problems associated with the way traditional market thinking works by means socially friendly or environmentally friend or socio-environmentally friendly sustainable development solutions implemented at the same time with no link to the over-all goal of one day perhaps living in a world without socio-environmental externalities; and the Brundtland Commission chose to promote and implement the sustainable development patch.

And this decision of choosing sustainable development over sustainability in 1987 is a blunder in terms of development thinking i) first, because we have a socio-environmental

sustainability problem being addressed using sustainable development theory indicating a violation of the theory practice consistency principle, which requires sustainability theory for sustainability problems and sustainable development theory for sustainable development problems (Muñoz 2009), as we know that sustainability is not sustainable development; and ii) second, because the move from traditional market pricing to sustainable development market pricing is a move from fully distorted market pricing-based markets to partially distorted market prices-based markets, all markets operating under sustainability gap pressures, violating Thomas Kuhn's paradigm evolution expectations (Muñoz 2022) as sustainability abnormalities still are present .

c) The need to understand the nature and implications of the decision to go the ways of sustainable development in 1987

The discussion above highlights the need to understand all the possible recommendations that the Brundtland Commission could have made in 1987 in order to stress how recommendations that matches the nature of the problem would have work such as the sustainability solutions, how the recommendations that do not match the nature of the problem work such as the sustainable development solutions, and then use this knowledge to point out why choosing a solution that does not match the nature of the problem such as choosing sustainable development thinking is the first development thinking blunder since 1987 in terms of theory-practice consistency and in terms of paradigm evolution thinking a la Thomas Kuhn.

Goals of this paper

1) To show the nature and implications of recommending a full sustainability solution. 2) To highlight the nature and implications of recommending a shift to red markets first and then transition towards full sustainability. 3) To stress the nature and implications of recommending a shift to green markets first and then transition towards full sustainability. 4) To point out the nature and implications of recommending a full set of competing sustainable development solutions at the same time. And 5) To indicate why choosing sustainable development as the solution is the first development thinking blunder.

Methodology

First, the terminology used and operational concepts and analytical tools are provided. Second, the different recommendations to address the socio-environmental problem created by distorted traditional market pricing the Brundtland Commission had available in 1987 and the actual recommendation made are pointed out in general. Third, the nature and implications of recommending a one-step full sustainability solution to the socio environmental problem created by the traditional market in 1987 is highlighted. Fourth, the nature and implications of recommending a shift to red markets first and then transition towards full sustainability as a way to solve the socio-environmental problem created by distorted traditional market prices are described. Fifth, the nature and implications of recommending a shift to green markets first and

then transition towards full sustainability as a way to solve the socio-environmental problem associated with distorted traditional market pricing are stressed. Sixth, the nature and implications of recommending a full set of competing sustainable development solutions at the same time are indicated. Seventh, the reasons why choosing sustainable development as the solution in 1987 is the first development thinking blunder are given. And eighth, some food for thoughts and relevant conclusions are shared.

Terminology

P = Price Q = Quantity

D = Demand A = Social system active

a = Social system passive B = Economic system active

B = Economic system passive C = Environmental system active

c = Environmental system passive GOP = Golden paradigm

GOPP = Golden paradigm price GOPS = Golden paradigm supply

GOPQ = Golden paradigm quantity FLP = Flawed paradigm

FLPP = Flawed paradigm price FLPS = Flawed paradigm supply

FLPQ = Flawed paradigm quantity S = Sustainability market

SMP = Sustainability market price SMS = Sustainability market supply

SMQ = Sustainability market quantity TM = Traditional market

TMP = Traditional market price TMQ = Traditional market quantity

TMS = Traditional market supply SEPOP = Socio-environmental pollution problem

SPOP = Social pollution problem EPOP = Environmental pollution problem

RM = Red market RMP = Red market price

RMS = Red market supply RMQ = Red market quantify

GM = Green market GMS = Green market supply

GMP = Green market price GMQ = Green market quantity

SEFSD = Socio-environmentally friendly sustainable development

SEFSDP = Socio-environmentally friendly sustainable development price

SEFSDS = Socio-environmentally friendly sustainable development supply

SEFSDQ = Socio-environmentally friendly sustainable development quantity

EFSD = Environmentally friendly sustainable development

EFSDP = Environmentally friendly sustainable development price

EFSDS = Environmentally friendly sustainable development supply

EFSDQ = Environmentally friendly sustainable development quantity

SFSD = Socially friendly sustainable development

SFSDP = Socially friendly sustainable development price

SFSDS = Socially friendly sustainable development supply

SFSDQ = Socially friendly sustainable development quantity

Operational concepts and analytical tools

a) Concepts

1) Golden market paradigm, a paradigm without abnormalities.

2) Flawed market paradigm, a paradigm with abnormalities.

3) Traditional market paradigm, a paradigm with socio-environmental abnormalities.

4) Sustainability market paradigm, a paradigm without socio-environmental abnormalities.

5) Sustainable development, a paradigm with remaining socio-environmental sustainability gaps.

6) Red market paradigm, a paradigm without social abnormalities.

7) Green market, a paradigm without environmental abnormalities.

b) Analytical tools

i) Merging rules

If we have the following model paradigm P1 = km, P2 = Km, P3 = kM, and P4 = KM, then the merging rules are:

P1.P2 = (km)(Km) = (kK)m, where kK = sustainability gap K = SG_K

P1.P3 = (km)(kM) = k(mM), where mM = sustainability gap M = SG_M

P1.P4 = (km)(KM) = (kK)(mM) = (SG_K)(SG_M) = sustainability gap driven competition

P1.P1 = (km)(km) = km

P4.P4 = (KM)(KM) = KM

ii) The theory-practice consistency principle

If we have a golden paradigm in theory TGOP = KM, golden paradigm problem in practice PGOP = KM, and you have a flawed paradigm in practice PFLP = Km

1) Respecting the theory-practice consistency principle

The theory must match the practice so that

(TGOP)(PGOP) = (KM)(KM) = KM

Golden paradigm theory (TGOP) is appropriate to address golden paradigm practice (PGOP) as golden paradigm theory matches the nature of the golden paradigm practice.

2) Violating the theory-practice consistency principle

The theory does not match the practice or visa verse so that

(TGOP)(PFLP) = (KM)(Km) = K(Mm) = K(SG_M)

Golden paradigm theory (TGOP) is not appropriate to address flawed paradigm practice (PFLP) as golden paradigm theory does not work in the flawed paradigm world.

iii) The Thomas Kuhn's paradigm transformation loop (TKPTL)

If we have a flawed paradigm like FLP = Km, where "m" is the abnormality embedded in that system, we have a golden paradigm GOP = KM, with no abnormalities, and we have a sustainable development paradigm SDP = K(RSG_M), with a remaining sustainability gap M (RSG_M) as the sustainability gap is partially closed, then the transformation loop theory leads to the following:

1) The flawed paradigm to golden paradigm possibility theorem

If abnormalities are fully removed the Thomas Kuhn's paradigm transformation has then the following structure

$TKPTL_m$

FLP = Km----------→ GOP = KM

When the abnormality M is fully internalized, the flawed paradigm (FLP) shifts to take the form of the golden paradigm (GOP).

2) The flawed paradigm to flawed paradigm possibility theorem

If abnormalities are not removed the Thomas Kuhn's paradigm transformation has then the following structure

TKPTL

FLP = Km----------→ FLP = Km

When the abnormality M is not removed fully, the flawed paradigm (FLP) remains a flawed paradigm as no paradigm shift can take place without fully removing the abnormalities.

3) The flawed paradigm to sustainable development paradigm possibility theorem

If abnormalities are partially removed the Thomas Kuhn's paradigm transformation has then the following structure

$$\mathbf{FLP = Km \xrightarrow{TKPTL_{PRm}} SDP = K(RSG_M)}$$

When the abnormality M is partially removed, the flawed paradigm (FLP) shifts imperfectly towards a sustainable development paradigm (SDP) under remaining sustainability gap (RSG) pressures.

4) The sustainable development paradigm to golden paradigm impossibility theorem

If abnormalities are partially removed the Thomas Kuhn's paradigm transformation has then the following structure

$$\mathbf{SDP = K(RSG_M) \xrightarrow{TKPTL_{PRm}} SDP = K(RSG_M)}$$

When the abnormality M is only partially removed there is a remaining sustainability gap (RSG_M), and hence, the sustainable development paradigm (SDP) remains a sustainable development paradigm (SDP) as the abnormality "m" is not fully removed, just partially removed (PRm), no way to become a golden paradigm (GOP) as there is no incentive to do so.

5) Perfect paradigm shifts under the influence of the Thomas Kuhn's paradigm evolution loop

If we have a golden paradigm Q = TKL and a flawed paradigm FLP = Tkl, then the following holds true:

a) One step paradigm shift

If we remove the two abnormalities in the flawed paradigm (FLP) at the same time, then the structure of the shift is the following:

$$\mathbf{FLP = Tkl \xrightarrow{TKPTL_{kl}} Q = TKL}$$

Fully removing both abnormalities at once leads to the flawed paradigm (FLP) shifting to a golden paradigm Q

b) Two steps paradigm shift type 1

If we give priority to removing fully abnormality "k" first and then remove fully abnormality "l", then the structure of the shift is:

$$FLP = Tkl \xrightarrow{TKPTL_k} TP1 = TKl \xrightarrow{TKPTL_l} Q = TKL$$

Hence, removing fully abnormality "k" first shift the flawed paradigm to a transition paradigm TP1 = TKl, and then removing fully abnormality 'l" leads to the golden paradigm Q.

c) Two steps paradigm shift type 2

If we give priority to removing fully abnormality "l" first and then remove fully abnormality "k", then the structure of the shift is:

$$FLP = Tkl \xrightarrow{TKPTL_l} TP2 = TkL \xrightarrow{TKPTL_k} Q = TKL$$

Hence, removing abnormality "l" fully first shift the flawed paradigm to a transition paradigm TP2 = TkL, and then removing fully abnormality 'k" leads to the golden paradigm Q.

The different recommendations to address the socio-environmental problem created by distorted market pricing the Brundtland Commission had available in 1987

Below all the recommendations available in 1987 to solve the socio-environmental sustainability problem created by distorted traditional market pricing, both science-based recommendations such as sustainability solutions and non-science-based recommendations such as sustainable development solutions consistent with the nature of the socio-environmental problem as summarized in Figure 2 above are addressed below in detail, both graphically and analytically.

a) The nature and implications of recommending a one-step full sustainability solution in 1987 to fix the socio-environmental sustainability problem created by distorted traditional market pricing in 1987

The structure of a shift from traditional market towards full sustainability in one step had the Brundtland Commission recommended in 1987 it is summarized in Figure 3 below:

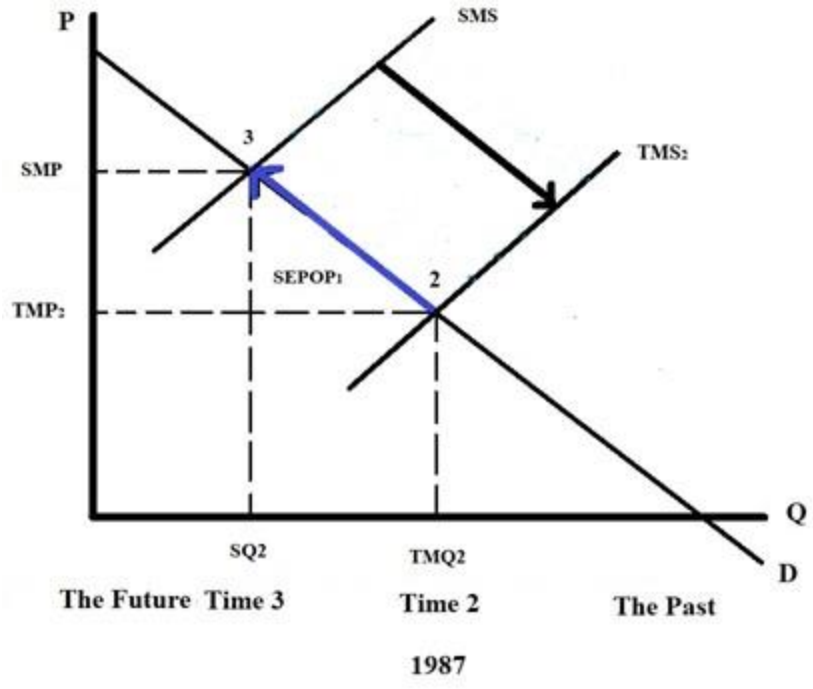

Figure 3 If the Brundtland Commission would have recommended a full sustainability fix in 1987

Figure 3 above tells us that had the Brundtland Commission recommended full socio-environmental cost internalization in 1987 then the distorted traditional market (TM) at point 2 would have shifted to the sustainability market (S) at point 3 closing the socio-environmental sustainability gap (SEPOP1) achieving a full way of going beyond business as usual. Notice that since we have a critical socio-environmental sustainability problem to fix then one step sustainability market theory is the appropriate way to deal with it in this case, fully respecting that way the theory-practice consistency principle, sustainability theory for addressing sustainability problems.

More over as the shift from distorted traditional markets to sustainability markets is achieved by fully removing the socio-environmental abnormalities this is a move consistent with Thomas Kuhn's scientific paradigm loop. Therefore, it is important to point out here that the shift from point 2 to point 3 as indicated in Figure 3 above is a shift from perfect traditional market thinking to perfect sustainability market thinking, a move that leave the knowledge based of the previous paradigm behind since at point 3 traditional market theory no longer works.

Finally, we can use Figure 3 above to highlight that i) a shift from traditional market thinking at point 2 to sustainability market thinking at point 3 is a shift from more production and consumption to less production and consumption(SQ < TMQ) as the sustainability market price is higher after correction than the traditional market price(SMP > TMP); and ii) once sustainability markets are in place they will tend to produce at the lowest sustainability market price possible leading to higher sustainability based production and consumption through time as the sustainability market supply (SMS) would move towards the right.

b) The nature and implications of recommending a shift to red markets first in 1987 and then transition towards full sustainability to fix the socio-environmental sustainability problem created by distorted traditional market pricing

The structure of a shift from traditional market towards full sustainability in two steps, a move to red markets first, and then transition to full sustainability had the Brundtland Commission recommended in 1987 it is indicated in Figure 4 below:

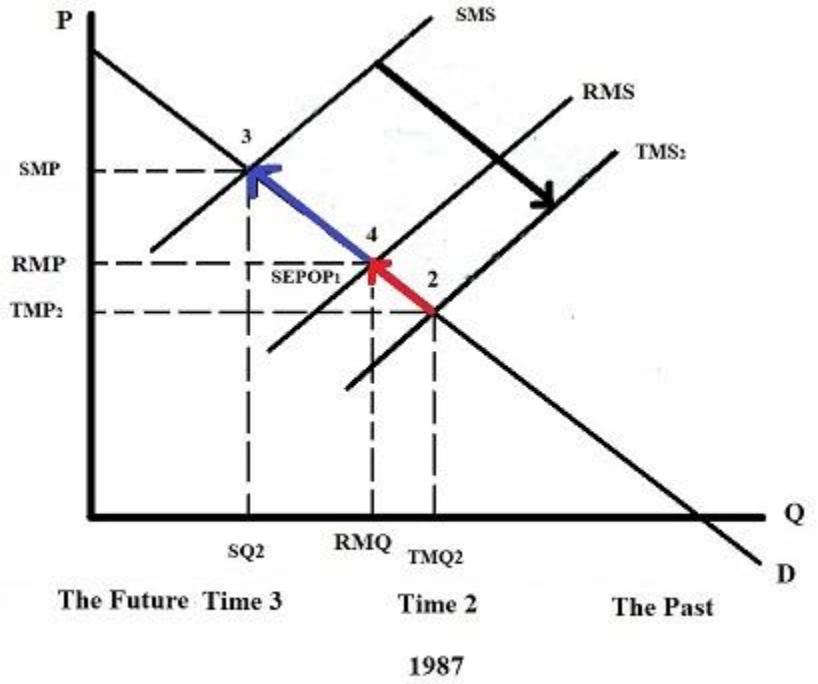

Figure 4 If the Brundland Commission would have recommended a shift to red markets first, then transition to full sustainability

Figure 4 above shows that had the Brundtland Commission recommended full social cost internalization first in 1987 then the distorted traditional market (TM) at point 2 would have shifted to the red market (RM) at point 4 closing the social sustainability gap (SPOP1) achieving a partial way of going beyond business as usual. Then later the red market (RM) internalizes environmental externalities shifting towards full sustainability markets (S). Notice that since we have a critical socio-environmental sustainability problem to fix then two steps sustainability market theory is the appropriate way to deal with it in this case, again fully respecting that way the theory-practice consistency principle, sustainability theory for addressing sustainability problems.

In addition, as the shift from distorted traditional markets to red markets is achieved by fully removing the social abnormalities; and the move from red markets to full sustainability markets is accomplished by fully removing environmental abnormalities, then those moves are consistent with Thomas Kuhn's scientific paradigm evolution loop. Hence, it is important to point out here that the shift from point 2 to point 4 and from point 4 to point 3 as indicated in Figure 4 above are shifts from perfect traditional market thinking to perfect red markets and then to perfect sustainability where each move leaves the knowledge based of the previous model

behind since at point 4 traditional market theory no longer works and at point 3 perfect red market thinking no longer works.

Finally, we can use Figure 4 above to point out that i) a shift from traditional market thinking at point 2 to red market thinking at point 4 is a shift from more production and consumption to less production and consumption(RMQ < TMQ) as the red market price is higher after correction than the traditional market price(RMP > TMP); ii) once red markets are in place they will tend to produce at the lowest red market price possible leading to higher red market based production and consumption through time as the red market supply(RMS) would move towards the right; and iii) Once the red market(RM) is corrected to reflect environmental concerns it will shift from point 4 to point 3 and become a full sustainability market bringing production and consumption to lower levels(RMQ > SQ) as sustainability market prices are higher(SMP > RMP).

c) The nature and implications of recommending a shift to green markets first in 1987 and then transition towards full sustainability to fix the socio-environmental sustainability problem created by distorted traditional market pricing

The structure of a shift from traditional market towards full sustainability in two steps, a move to green markets first, and then transition to full sustainability had the Brundtland Commission recommended in 1987 it is indicated in Figure 5 below:

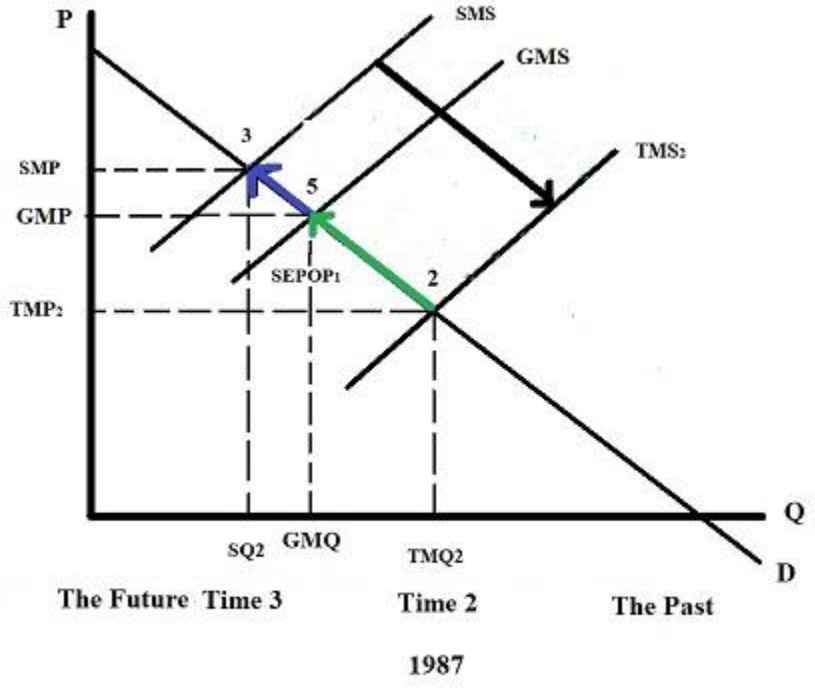

Figure 5 If the Brundtland Commission would have recommended a shift to green markets first, and the transition to full sustainability

Figure 5 above highlights that had the Brundtland Commission recommended full environmental cost internalization first in 1987 then the distorted traditional market (TM) at point 2 would have shifted to the green market (GM) at point 5 closing the environmental

sustainability gap (EPOP1) achieving another partial way of going beyond business as usual. Then later the green market (GM) internalizes social externalities shifting towards full sustainability markets (S). Notice that since we have a critical socio-environmental sustainability problem to fix then again two steps sustainability market theory is the appropriate way to deal with it in this case, again fully respecting that way the theory-practice consistency principle, sustainability theory for addressing sustainability problems.

In other words, as the shift from distorted traditional markets to green markets is achieved by fully removing the environmental abnormalities; and the move from green markets to full sustainability markets is accomplished by fully removing social abnormalities, then those moves are consistent with Thomas Kuhn's scientific paradigm evolution loop. Hence, it is important to point out here that the shift from point 2 to point 5 and from point 5 to point 3 as indicated in Figure 5 above are shifts from perfect traditional market thinking to perfect green markets and then to perfect sustainability markets, where each move leaves the knowledge based of the previous model behind since at point 5 traditional market theory no longer works and at point 3 perfect green market thinking no longer works.

Finally, we can use Figure 5 above to indicate that at i) a shift from traditional market thinking at point 2 to green market thinking at point 5 is a shift from more production and consumption to less production and consumption(GMQ < TMQ) as the green market price is higher after correction than the traditional market price(GMP > TMP); ii) once green markets are in place they will tend to produce at the lowest green market price possible leading to higher green market based production and consumption through time as the green market supply(GMS) would move towards the right; and iii) Once the green market(GM) is corrected to reflect social concerns it will shift from point 5 to point 3 and become a full sustainability market bringing production and consumption to lower levels(GMQ > SQ) as sustainability market prices are higher(SMP > GMP).

d) The nature and implications of recommending a full set of competing sustainable development solutions at the same time to partially address the socio-environmental sustainability problem created by distorted traditional market pricing

The structure of the sustainable development solution recommended by the Brundtland Commission in 1987 to address a critical socio-environmental sustainability problem is shown in Figure 6 below:

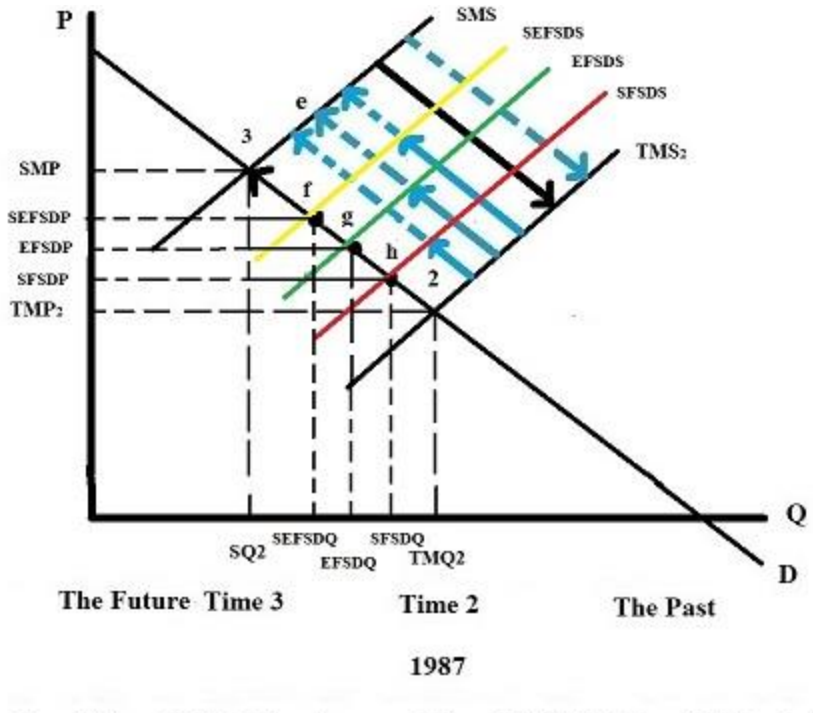

Figure 6 The sustainable development recommendation made in 1987 by the Brundtland Commission

Figure 6 above shows the set of sustainable development solutions that came to play at the same time under sustainable development thinking in 1987: i) socially friendly sustainable development (SFSD) at point "h"; ii) environmentally friendly sustainable development (EFSD) at point "g"; and iii) socio-environmentally friendly sustainable development (SEFSD) at point "f". Notice that the sustainability solution(S) was at point 3, but sustainable development solutions without priorities were chosen. They are all patches to deal with the socio-environmental problem (SEPOP1) depicted in Figure 6 above all shown by the sustainability gaps under which each of them operates as shown by the broken arrows from point "h", point "g", and point "f" to point 3 shows. Notice that the prices of all sustainable development solutions are lower than the sustainability market price so more is produced and consumed and more pollution is created at lower prices.

Finally, we can use Figure 6 above to state that i) a shift from traditional market thinking at point 2 to the sustainable development solutions at point "h", "g", and "f" is an imperfect shift from more production and consumption to less production and consumption(SEFSDQ < EFSDQ < SFSDQ < TMQ) as sustainable development prices are higher after correction than the traditional market price(SEFSDP > EFSDP > SFSDP > TMP); ii) once sustainable development based markets are in place they will not tend to produce at the lowest sustainable development market price possible as socio-environmental pollution reduction is not yet an endogenous profit making opportunity. And hence, iii) Once the sustainable development-based markets are in place, their expansions and production and consumption will lead to an expansion in the socio-environmental sustainability gap that separates them from a true sustainability market (S) as their supplies would move right when they expand moving further away from point 3 as it can be appreciated in Figure 6 above.

Why choosing sustainable development as the solution in 1987 is the first development thinking blunder?

The discussion above is summarized in Table 1 below in terms of models that respect both the theory-practice consistency principle and that respect Thomas Kuhn's paradigm evolution loop expectations where the full removal of abnormalities embedded in the distorted traditional market leads to shift to golden paradigms like sustainability market paradigms.

TABLE 1 Possible solutions to the socio-environmental sustainability problem

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Solution	**Respect the theory-practice consistency principle**	**Consistent with Thomas Kuhn's paradigm evolution loop**
One step Sustainability Solution	**YES**	**YES**
Two steps Sustainability Solution via Red markets first	**YES**	**YES**
Two steps Sustainability Solution via Green markets first	**YES**	**YES**
The full set Sustainable Development	**NO**	**NO**

Solution

We can indicate the following based on the information in Table 1 above: First, we can see that all different types of sustainability solutions, one step or two step sustainability solutions respect the theory practice consistency principle as sustainability theory applies to sustainability problems. In other words, all sustainability solutions match the sustainability nature of the problem at hand. All types of sustainability solutions respect the Thomas Kuhn paradigm evolution look as the removal of socio-environmental or social or environmental abnormalities leads to paradigm shift towards full sustainability. Second, we can appreciate that only the full set of sustainable development solutions violate the theory practice consistency principle as they are using sustainable development theory to address a social sustainability problems or environmental sustainability problems or socio-environmental sustainability problem separately while competing with each other, a theory-practice inconsistency that indicates that sustainable development solutions do not match the sustainability based nature of the problem at hand; and all sustainable development solutions violate the Thomas Kuhn's paradigm evolution loop as sustainable development solutions do not remove the abnormalities embedded in the market pricing mechanism so they operate a friendly mechanism while those abnormalities such as social sustainability gaps or environmental sustainability gaps or socio-environmental sustainability gaps, are still active as shown in Figure 6 above: a paradigm evolution loop inconsistency as the embedded abnormalities are not fully removed; and these violations make the choosing of sustainable development over sustainability in 1987 by the Brundtland Commission the first development thinking blunder since 1987: they chose a patch to the critical socio-environmental problem they documented instead of recommending a full fix instead.

Food for thoughts

1) Do we need to point out science-based solutions when they exit even when they are not politically palatable? I think yes, what do you think? 2) Is implementing a non-science-based solution under paradigm shift knowledge academic tunneling? I think no, what do you think? 3) Is implementing a non-science-based solution knowing that a science based one exist or it is possible willful academic blindness? I think yes, what do you think? 4) Does the promotion of non-science-based solutions require alternative academic facts? I think yes, what do you think?

Conclusions

The Brundtland Commission found that the distorted way in which the traditional market of Adam Smith works has led to a socio-environmental sustainability problem, which according to the theory-practice consistency principle its solution requires sustainability theory to fix a sustainability problem and according to the Thomas Kuhn's paradigm evolution loop expectation its solution requires the elimination of the socio-environmental abnormality embedded in the pricing mechanism of traditional markets as socio-environmental costs are externalized. Hence,

the solution to a socio-environmental problem that respects the theory-practice consistency principle and the Thomas Kuhn's paradigm evolution loop expectation is not a sustainable development solution, but a sustainability solution in one step or two step solution. The fact that the Brundtland Commission recommended in 1987 a sustainable development solution to address a socio-environmental sustainability problem makes this recommendation the first development thinking blunder since 1987 as sustainable development thinking violates both the theory-practice consistency principle and the Thomas Kuhn's paradigm evolution loop expectation as sustainable development solutions are patches, not fixes of the socio-environmental sustainability problem they are intended to correct as remaining sustainability gaps continue to be active as sustainable development plans and actions are being implemented.

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