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Short Elucidating Note 127: Stating the structural falsification theorem for general paradigms of the form Ki = Lj, its main conceptual applications and its extension of Popperian logic and of Kuhnian logic all in compacted form using set theory and sustainability gap theory

By

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Abstract

The general paradigm's structural falsification theory suggest that paradigms of the conjunctural form Ki = Lj or inherently conjunctural paradigms that claim to have such a form invalidate themselves when applying unilateral pressures (e.g. Maximization, optimization, growth, de-growth) either to Ki so Ki → Lj or to Lj so Lj → Ki as then as the conjunctural equality (Ki = Lj) becomes structurally destabilized creating sustainability gaps (SG › 0), which leads to falsification. This paradigm general structural falsification theory above can be adapted to accomplish two general paradigm compressing goals 1) to capture and state key concepts in compressed general form using set theory and sustainability gap theory such as model consistency/inconsistency, methodology consistency/inconsistency, frameworks of true sustainability/dwarf sustainability, hard/soft structural kill, strong/weak sustainability, and the theory-practice consistency principle; and 2) to extend Popperian falsification and Kuhnian paradigm replacement evolution into explicitly compressed general conjunctural structural system thinking. The paper has the following goals: 1) To state the structural falsification theorem for general paradigms of the form Ki = Lj, its main conceptual applications and its extension of Popperian logic and of Kuhnian logic all in compressed general form using set theory and sustainability gap theory; and 2) to point out how this general structural falsification logic, in terms of concepts and of Popperian thinking and Kuhnian thinking extensions to conjunctural thinking can be linked to and can be differentiated from current attempts to develop

theoretical constructs that go across academic fields, attempts that are inherently conjunctural approaches even though they do not directly appear to indicate so.

Key concepts

1) Conjunctural structure, a system in which all core components must remain simultaneously active and mutually reproduced for the system to preserve its defining identity as no full or partial component separability exists.

2) Non-conjunctural structure, a system in which not all core components do not need remain simultaneously active and mutually reproduced for the system to preserve its defining identity as full or partial component separability exist.

3) Empirical testing, the popperian way of falsifying paradigms.

4) Structural testing, the pre-empirical evaluation of whether a paradigm preserves its internal conjunctural balance conditions.

5) Paradigm replacement, the Kuhnian way of paradigm evolution.

6) Conjunctural paradigm evolution, the process through which structurally invalidated paradigms are replaced, adjusted, or reorganized to restore structural validation.

7) Conjuncturality, the condition in which system components are mutually dependent for the preservation and reproduction of the system's defining structure.
8) Separability, the assumption that conjunctural systems or inherently conjunctural systems can be modeled as fully or partially independent components, thereby permitting unilateral optimization or pressure application.
9) Structural equality, the conjunctural balance condition whose preservation or restoration leads to structural validation, and whose violation leads to structural falsification.
10) Sustainability gaps, the structural deviations that emerge when unilateral pressures are applied to non-distorted conjunctural systems, or to inherently conjunctural systems assumed to be fully or partially separable.

Terminology

Ki = Lj means a general conjunctural system

Ki = KiLj = LjKi = Lj means a general structural reproduction condition, not arithmetic identities

"=" means structural co-reproduction;

"→" means directional pressure or implication;
"SG" measures deviation from conjunctural balance;
"M" denotes managed status.

A = Active social component B = Active economic component

C = Active environmental component a = Passive social component

b = Passive economic component c = Passive environmental component

A_M = Managed social component B_M = Managed economic component

C_M = Managed environmental component

S = Sustainability

TS = ABC = True sustainability → Components in active form

DWS = $A_MB_MC_M$ = Dwarf sustainability → Components in managed form

DGM = A_MBC = Dwarf green market → Social component in managed form

DWRM = ABC_M = Dwarf red market → Environmental component in managed form

SG = Sustainability gap → Structural gap or measurement gap

CRT = Critical threshold → Partial viability

CTR = Bounded critical threshold

SC = Structural consistency → No sustainability gaps present

SIC = Structural inconsistency → Sustainability gaps present

MAX = Maximization/maximum * = Optimization/optimal

G = Growth as unilateral pressure D = De-growth as unilateral pressure

FSC = Full structural consistency SICb = Bounded structural inconsistency

FC = Full conjunctural structure NFC = No full conjunctural structure

FUN = Full unsustainability SSU = Strong sustainability

WSU = Weak sustainability $\prec$ = logically prior

PSICb = Partially bounded structurally inconsistency

FSV = Full structural validity PSV = Partial structural validity

FSF = Full structural falsification FSIV = Full structural invalidity

FSIC = Full structural inconsistency FSICu = Unbounded full structural inconsistency

PSC = Partial structural consistency Kiu = Unbounded development type Ki

ED = Economic development model B = The economy active

M = Red socialism model A = The society active

E = Environmentalism model C = The environment active

Introduction

A) The nature of the general paradigm's structural falsification theorem

The nature of the structural falsification theorem for specific paradigms of the form K = L has been recently shared(Muñoz 2026a), and used to point out that known specific development paradigms such as i) the traditional market of Adam Smith where K = D = traditional economic development and L = B = economy(Smith 1776); ii) the red socialism model of Karl Marx where K = M = social development and L = A = society(Marx and Engels 1848); and iii) the deep environmentalism model where K = E = Environmental development and L = C = Environment, can be falsified because all of them claim to have a specific and inherently conjunctural form K = L, but they assume different types of component separability, which creates sustainability gaps and lead to falsification. And this idea was then generalized to include all paradigms of the form Ki = Lj and its implications were shared in details (Muñoz 2026b).

B) The balance condition of the general paradigm structural falsification theorem

The balance condition (Muñoz 2026b; Muñoz 2026c) to be respected or violated here in the general form is:

Ki = KiLj = LjKi = Lj

Notice that the general equalities here are not arithmetic identities, but specific structural reproduction conditions indicating mutual conjunctural dependence. In other words, general structural equalities in this paper are not arithmetic equalities. They denote mutual reproduction conditions among conjuncturally dependent general components.

1) General structural validation

A paradigm Ki is structurally validated if unilateral pressures (→ or ←) do not lead to sustainability gaps as general system equality Ki = Lj is maintained or restored.

[Ki→Lj or Ki←Lj]→ SG = 0

Maintaining general conjunctural equality Ki = Lj means no sustainability gaps. General structural validation in Ki or Lj arises when inherently conjunctural systems are treated as fully codependent systems under joint optimization or maximization pressure or any other unilateral pressure.

2) General structural falsification

A general paradigm Ki is structurally falsified if unilateral pressures (→ or ←) do lead to sustainability gaps as system equality Ki = Lj is not maintained or it is violated.

[Ki→Lj or Ki←Lj]→ SG > 0

Violating general conjunctural equality Ki = Lj so that Ki ≠ Lj leads to sustainability gaps (SG). General structural falsification in Ki or Lj arises when inherently conjunctural systems are treated as fully separable systems under independent optimization or maximization pressure or any other type of unilateral pressure.

Objectives

1) To state the structural falsification theorem for general paradigms of the form Ki = Lj, its main conceptual applications and its extension of Popperian logic and of Kuhnian logic all in compressed form using set theory and sustainability gap theory; and 2) to point out how this general structural falsification logic, in terms of concepts and of Popperian thinking and Kuhnian thinking extensions to conjunctural thinking can be linked to or can be differentiated from current attempts to develop theoretical constructs that go across academic fields, current structural attempts that are inherently conjunctural approaches even though they do not directly appear to indicate so.

Stating the links between structural falsification theory for general conjunctural systems of the form Ki = Lj in compressed form and their implications

The detailed links were highlighted recently both in specific and general terms (theorem and application to concepts and expansions) (Muñoz 2026b), below is the compressed form of the links between structural falsification theory for general conjunctural systems of the form Ki = Lj in compressed form and their implications

i) The core conjunctural condition of the structural falsification theorem for general paradigms of the form Ki = Lj

The core general condition to be respected or to be violated is the following:

Ki = Lj

Where equality (=) means mutual structural reproduction, not arithmetic identity.

ii) The general paradigm's Structural State Theorem

1. General Full Structural Validity (FSV)

Any paradigm of the form Ki = Lj is fully structurally valid (FSV) when general conjunctural equality is preserved under transformation:

Ki ≡ Lj

In other words, the fully structurally valid (FSV) paradigm Ki has the following set form:

Ki⊆Lj ∧ Lj⊆Ki

Therefore:

Ki= Lj

And this implies:

SG = 0

Then the absence of sustainability gaps (SG = 0) tells us that there is full structural consistency (FSC) in the general paradigm Ki;

SG = 0 → FSC

Hence:

FSV⇒FSC⇒TS,

Where TS = True sustainability

In other words, the respect of the conjunctural condition for general paradigms of the form Ki = Lj means a) Full structural consistency (FSC); b) No sustainability gaps; c) True sustainability (TS); d) No replacement pressure; and e) No hard kill condition at the same time, and this can be summarized by means of the following compressed chain:

Ki = Lj⇒ SG = 0 ⇒FSC⇒TS⇒ Full Viability

2. Partial Structural Validity (PSV)

Any paradigm of the form Ki = Lj is partially valid (PSV) when general conjunctural equality is only partially preserved:

Ki ≈ Lj

In other words, the partially structurally valid paradigm (PSV) for general paradigm Ki has the following set form:

Ki∩Lj ≠ ∅, but **Ki ≠ Lj**

The above expressions tell us a) That some conjunctural overlap exists; b) that some structural reproduction remains; and c) that sustainability gaps are bounded.

Therefore,

0 < SG < CRT,

Where CRT = Critical threshold

And the existence of the critical threshold (CRT) in the general paradigm Ki tells us that there is partial structural inconsistency (PSIC), which is bounded (PSICb), which means:

0 < SG < CRT → PSICb

Where PSICb = Bounded partial structural inconsistency

Hence, partial structural validity (PSV) in Ki means bounded partial structural inconsistency (PSICb) so that:

PSV⇒PSICb

Where: PSICb = bounded partial structural inconsistency

In other words, the partial respect of the conjunctural condition in general paradigms of the form Ki = Lj means a) Partial structural consistency (PSC); b) Sustainability gaps exist but bounded; c) dwarf sustainability (DWS); d) Some replacement pressure exist; and e) Soft kill condition exist at the same time, and this can be summarized by means of the following compressed chain:

Ki ≈ Lj ⇒ 0 < SG < CRT⇒ Bounded PSIC⇒ Partial viability

And partial viability in Ki means that partial viability is consistent with the following operational concepts: a)Weak sustainability; b) Dwarf sustainability; c) Constrained viability; d) Partial compensability; and e) Managed sustainability as all of them required bounded partial structural inconsistency (PSICb), which can be stated as done below:

Ki ≈ Lj ⇒ 0 < SG < CRT⇒ PSICb

And in the long term the accumulation of structural inconsistency pressure (SIC) will expand sustainability gap pressures (SG), and the binding accumulation of pressures leads towards full unsustainability (FUN), which can be stated as:

Ki ≈ Lj ⇒ 0 < SG < CRT⇒ PSICb ⇒ FUN

So that in the long term in paradigm Ki bounded partial structural inconsistency (PSICb) will tend towards full unsustainability (FUN) as the biding sustainability gap (SG) expands and approaches the critical threshold (CRT).

3. General Full Structural Falsification (FSF)

Any paradigm of the form Kj = Lj is fully structurally falsified (FSF) when general conjunctural equality collapses:

Ki ≢ Li

In other words, the fully structurally invalid (FSIV) paradigm Ki has the following set form:

Ki∩Lj = ∅

And this means that in fully structurally invalid paradigms of the form Ki = Lj, a) the sustainability gap (SG) tends toward infinity (SG → ∞) or the sustainability gap (SG) is greater or equal than the critical threshold (CRT) so that:

SG→∞ or SG ≥ CRT

And when the sustainability gap (SG) tends to infinity (SG→∞) or it is equal and greater than the critical threshold (SG ≥ CRT) in general paradigm Ki, then there is full structural inconsistency (FSIC), which is unbounded (FSICu)

Therefore:

FSF⇒ FSICu

Where FSICu = unbounded full structural inconsistency

In other words, the violation of the general conjunctural condition for general paradigms of the form Ki = Li means a) Full structural inconsistency (FSIC); b) Sustainability gaps are unbounded; c) Full unsustainability (FUN); d) Full replacement pressure exist; and e) hard kill condition exist at the same time, and this can be summarized by means of the following compressed chain:

$Ki \cap Lj = \emptyset \Rightarrow SG \rightarrow \infty = SG \geq CRT \Rightarrow$ Full collapse

And full collapse means non-existence of general paradigm Ki so the compressed chain can be expanded to:

$Ki \cap Lj = \emptyset \Rightarrow SG \rightarrow \infty = SG \geq CRT \Rightarrow$ Full collapse $\Rightarrow$Hard Kill $\Rightarrow$Non existence

iii) The general paradigm's Master Structural Classification table

The nature of the general structural conditions is the beginning of a chain of conditions that lead to different general paradigm existence possibility and to the sense of expected general dynamic paradigm evolution depending on the nature of the respect of the general structural balanced condition:

Master Structural Classification table for paradigms of the form K = L

Structural Relation	Gap Condition	Structural State	Sustainability Meaning	Kill Condition
Ki = Lj	SG=0	Full consistency	True sustainability	None
Ki ≈ Lj	0<SG<CRT	Bounded inconsistency	Weak/dwarf sustainability	Soft kill
Ki∩Lj= Ø	SG≥CRT	Full structural collapse	Full unsustainability	Hard kill

The table above links general structural conditions, sustainability gap, structural consistency, nature of sustainability, and general structural non existence possibilities providing a sense of dynamic mobility from full respect to partial respect to violation of the general structural balance condition and its consequences in terms of full or partial paradigm existence while also giving the sense that the dynamic accumulation of sustainability gaps under bonded

viability will sooner or later (when sustainability gap pressure becomes increasingly binding) push the partially viable general paradigm towards full unsustainability.

iv**) The compressed logic of true and dwarf sustainability thinking:**

Sustainability thinking can be divided into two subsets, true sustainability (TS) and dwarf sustainability (DWS), as explained below:

a) True Sustainability

When all components in a paradigm are in active form we have general true sustainability paradigms (TS_f). When the components are, social (A), economic (B) and environmental (C) components and they are present in active or dominant form, we have a specific type of true sustainability paradigm (TS_1):

$$\mathbf{TS_1 = ABC}$$

Where TS1 = True sustainability landscape type 1

Hence, true sustainability (TS_1) implies full conjuncturality (FC) or full structural consistency (FSC), which can be expressed in set form as:

$$\mathbf{TS_1 = FC = FSC = A \cap B \cap C \neq \emptyset}$$

And this means that all components are mutually reproducing so that:

$$\mathbf{A \equiv B \equiv C}$$

And therefore, true sustainability (TS_1) does not produce sustainability gaps (SG) as indicated below:

$$\mathbf{TS_1 \Rightarrow SG = 0}$$

And the whole process above can be expressed in chain form as indicated below:

$$\mathbf{TS_1 = ABC \Rightarrow FC \Rightarrow FSC \Rightarrow SG = 0}$$

Hence, true sustainability (TS_1) means a) Full conjuncturality (FC); b) Full structural consistency (FSC); c) No sustainability gaps; d) No replacement pressure; and e) No hard kill condition at the same time. The idea of the structure of the true sustainability markets in socio-eco-economic terms as markets without sustainability gaps or perfect conjunctural structure has been pointed out (Muñoz 2016).

b) Dwarf Sustainability

When components in a paradigm are in managed form (M) then we have a general dwarf sustainability paradigm (DWS_g). When the components are, social (A), economic (B) and environmental (C), and they are assumed separable under management (M), then we have types of dwarf sustainability paradigms such as DWS1 where components can partially exist:

$DWS_1 = A_M B_M C_M$

Where DWS1 = dwarf sustainability landscape type 1

Or mixed forms of dwarf sustainability such as for example Dwarf green markets (DGM = DWS_{11}), markets under environmental management (C_M); and Dwarf red markets (DRM = DSM_{12}), markets under social management (A_M), with the following structures:

$DGM_{11} = A_M BC$
$DRM_{12} = ABC_M$

Where DGM_{11} = Dwarf green market and DRM_{12} = Dwarf red market

Therfore, the above dwarf sustainability landscape implies that there is a sustainability gap (SG) in which there is a critical threshold (CRT) leading to partial viability or partial existence, which can be indicated as follows:

$0 < SG < CRT \Rightarrow$ Partial viability

And partial viability means that the dwarf sustainability landscape (DWS1) has a critical threshold (CRT) that is bounded (CRTb); and therefore, it has a bounded partial structural inconsistency (PSICb) so that:

$DWS_1 \Rightarrow$ PSICb

And this partial bounded structural inconsistency (PSICb) in this dwarf sustainability landscape will accumulate sustainability gap pressures (SG) that become dynamically binding in the long terms leading dwarf sustainability (DWS1)'s soft kill structure towards full unsustainability (FUN), a situation that can be expressed in chain form as:

DWS1 $\Rightarrow$Bounded SG $\Rightarrow$ Soft Kill $\Rightarrow$ Long Run Instability$\Rightarrow$ FUN

In other words, the existence of a dwarf sustainability landscape means: a) Partial structural consistency (PSC); b) Sustainability gaps exist but bounded; c) Full conjuncturality does not exist (FC = 0 → NFC); d) Some replacement pressure exist; and e) Soft kill condition exist; but in the long term accumulation of inconsistency pressures will push dwarf sustainability towards full unsustainability when the pressures become binding. The idea of dwarf sustainability as structurally incomplete markets under management and different economic logic has been recently pointed out as compare to its perfect counterpart (Muñoz 2019a) as well as the idea that under binding accumulation of sustainability pressures paradigm tend towards collapse,

paradigm death, shift or merger depending on whether there are win-win and no win-win situations (Muñoz 2019b).

v) The compressed compensability logic behind strong sustainability and weak sustainability as it relates to paradigms of the form Ki = Lj

In terms of compensability or substitution sustainability thinking can be divided into two groups, strong sustainability (SSU) and weak sustainability (WSU), as indicated below

a) No substitutability and Strong sustainability

Under strong sustainability thinking (SSU) there is no substitution of critical capital by another form of capital so that:

Ki = Lj as the general structural balance condition is respected

Hence: there is full structural consistency (FSC) in paradigm Ki when under strong sustainability (SSU) and therefore, it is consistent with the concept of the true sustainability landscape (TS1) so that

SSU⇒FSC⇒TS_1

Strong sustainability thinking (SSU) is fully conjunctural (FC), and hence is consistent with true sustainability type 1 (TS1).

b) Partial substitutability and Weak sustainability

Under weak sustainability thinking (WSU) there is partial substitution of critical capital by another form of capital so that:

Ki ≈ Lj

And this means that there is a partial bounded structural inconsistency (PSICb) when paradigm Ki is in weak sustainability (WSU), which makes it consistent with dwarf sustainability landscape concept (DWS_1), as indicated below:

WSU⇒PSC⇒ PSICb⇒DWS_1

Therefore, weak sustainability thinking (WSU) is not fully conjunctural (NFC), and hence is inconsistent with true sustainability type 1 (TS1).

c) Full substitutability assumption

When you assume that the components of the conjunctural system Ki = Lj can be fully separable, then you can have full substitution, which means:

Ki∩Lj = Ø

And when there is full separability and full substitution then there is full structural falsification (FSF):

Ki∩Lj= Ø ⇒FSF

So the system is fully unsustainable (FUN):

FSF→FUN

Where FUN = Full unsustainability

vi) Compressed Theory–Practice Consistency Principle (T-P principle) as applied to Ki = Lj systems

The theory-practice consistency principle (T-P principle) can be compressed as follows:

a) Validity condition

The validity condition can be expressed in general and in conjunctural terms as indicated below:

1) **The general structure and method consistency requirement:**

General Structure (Ki = Lj) ↔ General Method (Ki = Lj)

2) **The general conjunctural structure and conjunctural method consistency requirement:**

The conjunctural consistency requirement works both ways is:

General Conjunctural Structure ↔ General Conjunctural Method

A general conjunctural method for a conjunctural structure and visa a verse is the general conjunctural consistency requirement.

3) Implication

When a general structure is consistent with method, then full structural validate (FSV) exist so that

General Conjunctural Structure ↔ GeneralConjunctural Method ⇒FSV = Full structural validity

And this means the theory-practice consistency principle (T-P principle) is fully respected.

b) The General Violation condition

The general violation condition can be expressed in general and in conjunctural terms as shown below:

1) **The general structure and method inconsistency requirement:**

General Structure (Ki = Lj)↔ General Method (Ki ≠ Lj)

Where ↔ means structure-method inconsistency.

2) **The general conjunctural structure and conjunctural method inconsistency requirement:**

General Conjunctural Structure ↔ General Non-conjunctural Method

So there is a mismatched method and structure.

3) Implication

When the general structure is inconsistent with method, then full structural invalidity (FSIV) exist so that:

General Conjunctural Structure ↔ General Non-conjunctural Method ⇒General Structure-method inconsistency

And this means the theory-practice consistency principle (T-P principle) is fully violated.

c) The general consistent form principle

The theory-practice consistency principle (T-P principle) requires consistency across general structure, general testing method, and general paradigm replacement, which means:

TPC ↔ General Structural Form = General Testing Form = General Replacement Form

Hence, the general paradigm testing form and the general paradigm replacement form must be consistent with the general structural form; and the theory-practice consistency principle (TPC) is respected.

vii) Compressed Extension of Popper under the general theorem Ki = Lj

The extension of Popper's idea (Popper 1965) into the general conjunctural world can be compressed as follows:

a) Traditional Popper

The world of Popper (Popper 1965) is about empirically testing paradigms (P), which can be indicated as done below:

P⇒Empirical Testing

Where: P=paradigm

b) Structural Popper Extension

That method can be extended by adding a general structural validity test before general empirical testing so that:

1) If there is general structural validity so that Ki = Lj, then

Ki =Lj ⇒General Structural Admissibility⇒General Empirical Testing

2) If there is general structural invalidity so that Ki ≠ Lj, then

Ki ≠ Lj ⇒General Pre-Empirical Falsification

3) The main implication:

General Structural inconsistency ≺ General Empirical inconsistency

Where: ≺ = logically prior

In other words, before general empirical inconsistency there is general structural inconsistency

viii) Compressed Extension of Kuhn under the general theorem Ki = Lj

a) Traditional Kuhn

The paradigm replacement idea of Kuhn (Kuhn 1970) based on anomalies can be extended to the conjunctural world as indicated below:

PA⇒Paradigm Shift

Where PA = Paradigm with anomalies

b) Structural Kuhn Extension

1) The case of a structurally falsified general paradigm

A structurally falsified general paradigm needs general conjunctural replacement, a situation summarized as shown below:

Ki ≠ Lj ⇒General Structural Anomalies⇒General Conjunctural Replacement

2) The case of a structurally validated general paradigm

A structurally validated general paradigm does not need replacement, a situation summarized as indicated below

Ki =Lj ⇒No Structural Replacement Needed

3) The implication

General paradigm replacement necessity comes when there is general structural inconsistency so that then:

General Structural inconsistency⇒General Replacement necessity

ix) The Separability Curse in Fully Compressed Form under the general paradigm Ki = Lj

The assumption that general conjunctural systems or inherently conjunctural systems like Ki = Lj can be treated as separable components leads to general paradigm falsification as summarized in the following chain:

(Ki = Lj)⇒Separability⇒Asymmetry⇒SG⇒Falsification

In other works general conjuncturally under separability leads to general paradigm collapse:

General Conjuncturality⇒ Separability⇒General paradigm Collapse

And the existence of falsification or collapse of general conjunctural paradigms indicates needs of consistent form of paradigm replacement to respect the theory practice consistency principle as indicated below:

General Conjunctural (Ki = Lj) ⇒Separability⇒Asymmetry⇒SG⇒Falsification or collapse ⇒General conjunctural paradigm replacement

x) The general conjunctural structure-general structural co-reproduction principle

1) The nature of the interaction general model structure and co-reproduction

This interaction can be stated as full or partial or non existence

a) Full interaction state

Full general conjunctural structure requires full general structural co-reproduction and vise a versa, as stated below:

Full general conjunctural structure (Ki = Lj) ↔ Full general structural Co-Reproduction

And general structure and general co-reproduction consistency leads to full general structural paradigm validation (FSV):

Full general conjunctural structure (Ki = Lj) ↔ Full general structural Co-Reproduction → FSV

b) Partial interaction assumption

General conjunctural structure under partial separability requires partial structural reproduction as stated below:

General Conjunctural structure (Ki = Lj) under partial separability → Partial general structural reproduction

And partial general structural reproduction leads to partial validation, partial existence, soft kill, and in the long-term it drives the partially viable general paradigm towards full unsustainability (FUN) as sustainability gap dynamically accumulate:

Partial general structural reproduction → Short term partial viability

c) The full no interaction assumption or full independent assumption

A general conjunctural structure under full separability leads to general structural non-reproduction as stated below:

General Conjunctural structure (Ki = Lj) under full separability → General Structural non-reproduction

And loss of general structural reproduction or general structural non-reproduction leads to general paradigm falsification, collapse, hard kill, and consistent replacement

General Structural non-reproduction → General Paradigm collapse

2) The main implications of falsification and full validation thinking in compressed form as shared above related to general conjunctural paradigms of the form Ki = Lj

The two main implications that can be pointed out here are:

a) The separability based implication:

General structural falsification flows from the separability assumption,

Separability⇒General Structural Falsification

And this means that general non-conjunctural thinking cannot fix general conjunctural thinking as they have a separability inconsistency.

b) The pre-empirical based implication:

General structural inconsistency comes before general empirical inconsistency:

General structural inconsistency ≺ General Empirical inconsistency

Where ≺ = logically prior

c) The need for consistent form of general paradigm replacement implication

When general structural inconsistency is found then there is a need for consistent paradigm replacement:

General structural inconsistency → Need for consistent general paradigm replacement form

d) Few lines summary

A summary of what is being proposed above in compressed form is: i) there is a need for a general pre-empirical falsification layer; ii) there is a need for a general conjunctural admissibility criterion; iii) there is a need for an extension of Popper's paradigm testing thinking into the general structural validity testing world ; iv) there is a need for a structural extension of Kuhn's paradigm replacement thinking into the general conjunctural paradigm replacement world; v) there is a need for a generalized sustainability consistency theory that goes across domains Ki = Lj; vi) there is a need for a unified true sustainability viability/collapse logic that can go across domains Ki = Lj domains; vii) There is a need for a general sustainability model that can capture conjuncturality thinking across Ki = Lj domains; and viii) There is a need to link the general structural paradigm falsification theory, and hence, the general sustainability falsification theorem, to current system structure based research such as relational structural research and the theory of everything related research,

xi) Future line of research

The following questions are worth exploring in the future, and here I list some general food for thoughts on each question:

a) How can the idea of generalizing sustainability consistency theory that goes across domains Ki = Lj can be structured?

In a system of with components X, Y, and Z, the structure of specific true sustainability (TS1) is:

TS1 = X1Y1Z1

If we make specific true sustainability consistency (TSC1) be full specific structural consistency (FSC1), then

TS1 = X1Y1Z1 → True specific structural consistency = Specific true sustainability consistency

If we generalized true sustainability (TS1→ TSi), then we have general true sustainability consistency (TSC) being the same as general full structural consistency (FSC) and the following holds true:

TSi = XYZ → True general structural consistency = General true sustainability consistency

Hence,

Ki = Lj = TSi = XYZ → True general structural consistency = General true sustainability consistency

b) How can the general true sustainability based structural falsification theory be extended to capture the idea of win-win paradigm dynamic approaches?

We know that:

TSi = XYZ

So that:

TSi = XYZ = (X1X2X3...Xo)(Y1Y2Y3….Yp)(Z1Z2Z3….Zq)

TSi = XYZ = (X1X2X3)(Y1Y2Y3)(Z1Z2Z3)(---XoYpZq)

And if we make

W = X1X2X3

I = Y1Y2Y3

N = Z1Z2Z3

! = …XoYpZq

Then we arrive at:

TSi = XYZ = WIN!→ the world of WIN development dynamics

.

Therefore,

Ki = Lj = TSi = XYZ = WIN!→ the world of WIN development dynamics

c) How to develop a unified true sustainability validity/collapse logic that can go across domains Ki = Lj domains

The balance to be respected or violated here is;

TSi = XYZ = WIN!

i) If **TSi = XYZ = WIN!** is respected → all winners, nobody left behind, there is no exclusion, and there is no need for paradigm replacement.

ii) If **TSi ≠ XYZ ≠ WIN!** is violated → there are winners and losers, many are left behind, there is exclusion, and there is a need for consistent paradigm replacement as sustainability gaps tend towards fully binding.

And this means:

i) If **Ki = Lj = TSi = XYZ = WIN!** is respected → all winners, nobody left behind, there is no exclusion, and there is no need for paradigm replacement.

ii) If **Ki = Lj = TSi ≠ XYZ ≠ WIN!** → there are winners and losers, many are left behind, there is exclusion, and there is a need for consistent paradigm replacement as sustainability gaps tend towards fully binding.

d) How may the general structural falsification theorem Ki = Lj and the general true sustainability based structural falsification theorem be linked to current structural paradigm based across domains generalizations?

i) The case of relational structural research at the core

At the core of relational structural research is the idea that everything can be seen or defined from the relational structure point to view. In other words, relations among components may or may not be important for outcome determinism. They are concerned with the question: What relationships exist? And then a good food for thought question emerges when bringing in full conjunctural thinking: Could conjuncturality help identify when relationships are necessary for system reproduction rather than merely present?

ii) The case of the theory of everything at the core

At the core of the theory of everything (ToE) is the thought that everything can be explained by the same rules. They deal with the question, which rule explains everything? And then another good food for thought question emerges when bringing conjuncturality thinking in: Could structural viability provide a criterion for distinguishing stable from unstable manifestations of the same underlying rules?

iii) The conjunctural specificity mismatch

On one hand, the roles of component relationships can be better appreciated from the point of view of maintain and breaking conjuncturality since relations have an empirical

conjunctural nature. On the other hand, the ideas of unifying forces and unilateral forces are at play in the theory of everything, but this play is better appreciated when you start from a truly conjunctural system or true sustainability based system thinking tied to empirically conjunctural conditions. Therefore, both approaches seem to have as a starting point a non-conjunctural base of thinking when looking at a conjunctural reality: i) since relational approaches focus correctly on relationships, but not from the true conjuncturality point of view; and ii) Theory-of-everything approaches correctly are focused on the seeking of generality, but again outside the true conjunctural reality point of view; and iii) both approaches are apparently working on a structural realities. And this conjunctural mismatch may make it difficult for current structural research based approaches to deal with the following examples: 1) the linking paradigms, 2) the comparing systems, 3) the looking at paradigm viability assessment, 4) the detecting of incompatibilities; and 5) the classifying of developmental directions independently of substrate. In other words current structural approaches may encounter difficulties when dealing with inherently conjunctural systems, and conjunctural analysis may offer one possible way of addressing those limitations. And this is because even if common rules exist for everything and if common relationships exist across systems, systems may still differ in whether conjunctural reproduction is maintained or broken.

e) The implication of completing those research questions

Taken together, these research directions suggest the possibility of a broader general theory of structural viability based on true sustainability thinking, though the development of such a theory lies beyond the scope of the present paper.

Conclusions

First the general structural falsification theorem Ki = Lj was introduced in compressed form, as validation and violation. Second, this general structural falsification theorem was linked in compressed form to key concepts such as consistency, partial and full; viability, partial and full; existence, partial and full; separability, partial and full; true sustainability; dwarf sustainability; unsustainability, partial and full; strong sustainability, weak sustainability, hard kill, soft kill and the theory-practice consistency principle. Third, the general structural falsification theorem Ki = Lj was used to expand in compressed form both Karl Popper's traditional empirical testing thinking approach and the Thomas Kuhn traditional paradigm replacement thinking approach, by requiring a pre-structural validity test prior to empirical testing, and by required paradigm replacement consistency to respect the theory-practice consistency principle, respectively. And fourth, as food for thought, the paper also highlighted future research directions needed to expand the implications of this logic chain towards a world viewed through a universal theory of structural validity grounded in general true sustainability thinking.

In general, the paper highlights in logical terms with respect to general conjunctural paradigms of the form Ki = Lj that a) General structural inconsistency precedes general empirical inconsistency; b) That separability assumptions generate general sustainability gaps; c) General sustainability gaps accumulate dynamically; d) that general paradigm replacement necessity flows from general structural inconsistency; and e) Only general conjunctural replacement can restore general conjunctural systems, a logic that can be summarized with the following chain: (Ki=Lj) → General separability → General asymmetry → SG → Falsification → General conjunctural paradigm replacement. And as good for thoughts the paper listed the direction the line of future research needed to expand the implications of the logic chain shared above into a world under a universal theory of structural validity based on general true sustainability thinking.

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