



True sustainability thinking 108: From Domain-Specific Impossibility Theorems to a General Impossibility Theorem: Linking the Degree of Conjunctural Framework and the Degree of Externality Production Framework

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Abstract

There are domain-specific and general impossibility theorems. For example, the arrow impossibility theorem is an independent decision-making based impossibility theorem where it is not possible to aggregate independent preferences, and hence it is a domain specific impossibility theorem. The critical problem-solving impossibility theorem is a pollution production-based impossibility theorem where it is not possible to solve a pollution production problem using pollution production means of production, and therefore, this too is a domain specific impossibility theorem. The general impossibility theorem is one where the structural natures of the components do not allow you to reach the desired outcome. Among the goals of this paper is to link the degree of conjunctural framework and the degree of externality production framework to link domain-specific impossibility theorems and highlight the general nature and implications of placing domain-specific impossibility theorems within the degree of possibility framework.

Keywords: Impossibility Theorem; Arrow Impossibility Theorem; Critical Problem-Solving; Degree of Possibility; Externality Production.

Objectives

1) To provide a short overview of the degree of conjunctural framework and of the degree of externality production framework; 2) To link both frameworks to highlight the nature of the degree of general possibility framework; 3) To highlight the degree of general possibility continuum; and 4) To place domain specific impossibility theorems within the degree of general possibility continuum to highlight relevant implications.

Methodology

The paper uses qualitative comparative structural analysis to compare two independently developed structural continua, the degree of conjunctural framework and the degree of externality production framework. Then it identifies their common structural conditions, and uses this to derive a higher-order nesting framework, the degree of general possibility framework and its main

implications. Then implications, summary of consistency and of degree of possibility thinking, and relevant conclusions are provided.

The degree of conjunctural framework and the degree of conjunctural based theorems

The theorems, the theory and the implications behind the degree of conjunctural framework and its link to ideas such as the arrow impossibility theorem have been recently shared (Muñoz 2026a), and they can be summarized in simple terms as indicated below:

Level 1: The arrow impossibility theorem or the full non-conjunctural impossibility theorem

“Low degree of conjunctural”

Specific manifestations:

Arrow impossibility theorem → impossibility of coherent choice aggregation under independent decision structures

The structural condition:

The components necessary for achieving the desired outcome are treated as independent when they must be conjuncturally connected.

Therefore, the arrow impossibility theorem can be seen as a special case of a general impossibility theorem if looking from the degree of conjunctural angle.

Level 2: Bounded partially conjunctural possibility theorem

“Intermediate degree of conjunctural”

Specific manifestation:

Bounded partial conjunctural possibility theorem

The structural condition:

Some necessary relationships are restored, but structural gaps remain.

The system can generate partial solutions because: i) some interdependencies exist; ii) some constraints are recognized, and iii) but full structural consistency has not yet been achieved.

Therefore:

Partial conjunctural = bounded possibility.

Level 3: Full conjunctural possibility theorem

“Full degree of conjunctural”

Specific manifestations:

Full conjunctural possibility theorem

The structural condition:

The components required for system coherence are fully connected.

There is here: i) full codependence; ii) full structural consistency; and iii) no sustainability gaps,

Therefore:

Full conjuncturality = full possibility.

The degree of externality production framework and the degree of externality production-based theorems

The theorems, the theory and the implications behind the degree of externality production framework and its link to ideas such as the critical problem-solving impossibility theorem (Muñoz 2025a; Muñoz 2025b) have been highlighted recently (Muñoz 2026b), and they can be stated in simple terms as shown below:

Level 1: Full critical problem-solving impossibility theorem or full externality production reduction technology gap impossibility theorem

“High degree of externality production”

Specific manifestations:

Critical problem-solving impossibility theorem → impossibility of solving externally generated critical problems when costs and consequences are structurally disconnected.

The structural condition:

The components necessary for achieving the desired problem-solving outcome are treated as separable when they must be conjuncturally connected.

Therefore, the critical problem-solving impossibility theorem can be seen too as a special case of a general impossibility theorem if looked from the degree of externality production's side.

Level 2: Bounded partial critical problem-solving possibility theorem

“Partial externality reduction”

Specific manifestations:

Bounded partial critical problem-solving possibility theorem

The structural condition:

Some necessary problem-solving relationships are restored, but structural gaps remain.

The system can generate partial solutions because: i) some costs are internalized; ii) some constraints are recognized; and iii) but full structural consistency has not yet been achieved.

Therefore:

Partial externality internalization = bounded possibility.

Level 3: Full critical problem-solving possibility theorem

“No externality production”

Specific manifestations:

Full critical problem-solving possibility theorem.

The structural condition:

The components required for critical problem-solving coherence are fully connected.

There is here: i) full structural consistency; ii) no sustainability gaps; and iii) no externality production gap.

Therefore:

Full externality internalization = full possibility.

Linking the degree of conjuncturality framework and the degree of externality production framework to place them inside the degree of general possibility framework

The degree of general possibility framework

Level 1: General impossibility theorem

“Low degree of conjuncturality + high degree of externality production”

Specific manifestations:

Arrow impossibility theorem → impossibility of coherent choice aggregation under independent decision structures.

Critical problem-solving impossibility theorem → impossibility of solving externally generated critical problems when costs and consequences are structurally disconnected.

The common structural condition:

The components necessary for achieving the desired outcome are treated as independent or separable when they must be conjuncturally connected.

Therefore, as components in the degree of conjuncturality framework and the components in the degree of externality production framework are taken as fully non-separable or as fully conjuncturally connected then both are special cases of the general impossibility theorem.

And this means:

Arrow impossibility theorem ↔ Full critical problem-solving impossibility theorem

Definition 1:

General impossibility theorem: A desired outcome is structurally impossible whenever the relationships among the necessary components are inconsistent with the structural conditions required to produce that outcome.

Level 2: General bounded possibility theorem

“Intermediate degree of conjuncturality + partial externality reduction”

Specific manifestations:

Bounded partial conjunctural possibility theorem.

Bounded partial critical problem-solving possibility theorem.

The common structural condition:

Some necessary relationships, codependence and critical problem-solving, are restored, but structural gaps remain.

The system can generate partial solutions because: i) some interdependencies exist; ii) some costs are internalized; iii) some constraints are recognized; and iv) but full structural consistency has not yet been achieved.

Therefore:

Partial conjuncturality + partial internalization = bounded possibility.

Hence, as components in the degree of conjuncturality framework and the components in the degree of externality production framework are taken as partially separable then both are special cases of the general partial bounded possibility theorem.

And this means:

Bounded partial conjunctural possibility theorem ↔ Bounded partial critical problem-solving possibility theorem

Definition 2:

General bounded (or partial) possibility theorem: A desired outcome is structurally partially possible whenever the relationships among the necessary components are partially consistent with the structural conditions required to produce that outcome.

Level 3: General possibility theorem

“Full degree of conjuncturality + no externality production”

Specific manifestations:

Full conjunctural possibility theorem.

Full critical problem-solving possibility theorem.

The common structural condition:

The components required for system conjuncturality and critical problem-solving coherence are fully connected.

There is here: i) full codependence; ii) full structural consistency; iii) no sustainability gaps; and iv) no externality production gap.

Therefore:

Full conjuncturality + full internalization = full possibility.

Hence, as components in the degree of conjuncturality framework and the components in the degree of externality production framework are taken as fully non-separable then both are special cases of the general possibility theorem.

And this means:

Full conjunctural possibility theorem ↔ Full critical problem-solving possibility theorem

Definition 3:

General possibility theorem: A desired outcome is structurally possible whenever the relationships among the necessary components are consistent with the structural conditions required to produce that outcome.

The degree of the general possibility theorem as a general structural continuum

Level 1

Independent/separated structures ↔ General impossibility theorem



Level 2

Partially connected structures ↔ General bounded possibility theorem



Level 3

Fully conjunctural structures ↔ General possibility theorem

The arrow impossibility theorem and the full critical problem-solving impossibility theorem within the degree of general possibility theorem continuum

Level 1

Arrow impossibility theorem



Independent/separated structures ↔ General impossibility theorem



Full critical problem-solving impossibility theorem



Level 2

Bounded partial conjunctural possibility



Partially connected structures ↔ General bounded possibility theorem



Bounded partial critical problem-solving possibility



Level 3

Full conjunctural possibility theorem



Fully conjunctural structures ↔ General possibility theorem



Full critical problem-solving possibility theorem

Implications

i) at level 1, if there is an arrow impossibility theorem at work, there is a critical problem-solving impossibility theorem at work too, and both are different expressions of the same general

structural impossibility condition; ii) at level 2, if there is a partial conjunctural possibility conditions, then there is a partial critical problem-solving situation; and both are different manifestations of the same partial structural possibility condition; iii) at level 3, if there is a full conjunctural possibility situation, then there is a full critical problem solving possibility; and both are different takes of the same general full structural possibility condition; and iv) Hence, domain-specific impossibility theorems are not isolated theoretical results but special structural manifestations of a more general possibility continuum. Differences across domains arise from the particular components involved, whereas the underlying structural logic remains the same.

Summary of general possibilities

Level 1 → **Inconsistent relationships** → **Impossibility**

Level 2 → **Partially consistent relationships** → **Bounded (partial) possibility**

Level 3 → **Consistent relationships** → **Full possibility**

The symmetry of degree of possibility thinking

Degree of Conjunctural	Degree of externality Production	Degree of General Possibility
Arrow impossibility Theorem	Full critical problem-solving Impossibility theorem	General full possibility Theorem
Bounded(partial) Conjunctural Possibility	Bounded(partial) critical Problem-solving Possibility	Bounded(partial) general Possibility
Full conjunctural Possibility	Full critical problem-solving Possibility	General possibility Theorem

Conclusions

It was shown that two independently developed continuums, the degree of conjunctural framework and the degree of externality production framework can be linked, and three distinctive concepts developed, that of the general impossibility theorem, the bounded possibility theorem and the full possibility theorem. It was shown that horizontally all degrees of possibility framework are consistent, the degree of conjunctural framework, the degree of externality production, and the degree of general possibility. It was pointed out that as we moved from the general possibility theorem

towards the general impossibility theorem the admissibility of each framework changes. At level 3 for example, all impossibility theorems are not admissible, be it the arrow impossibility theorem or the full critical problem-solving impossibility theorem or the general impossibility theorem; and the opposite move is true too. However, the Degree of General Possibility Framework does not replace the earlier frameworks linked above, but structurally nests them, showing that domain-specific impossibility and possibility theorems are special cases of a more general structural continuum.

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