Definition and Propositions Master List

John A Challoner, 2026

Important Note

Please note that this list will be updated from time to time as papers in the General and Social Systems Theory series are published.

PART 1 – GENERAL SYSTEMS THEORY (GST)

GST 01 – Philosophical Foundations of General Systems Theory

Definitions

D1.1 – Cognitive Physicalism

A philosophical position that assumes:

1. everything that exists is physical and located in space–time, and
2. human perception and cognition are limited, requiring simplified representations or models of reality.

Cognitive Physicalism therefore recognises that knowledge of reality is necessarily mediated through cognitive processes that operate within physical systems.

D1.2 – Critical Realism

A philosophical approach which holds that:

1. reality exists independently of human thought or perception (realism), and
2. knowledge of that reality is always mediated by social, cultural, and conceptual frameworks (critical).

Critical Realism distinguishes between three domains:

- **the real** – structures and causal mechanisms that exist independently of observation
- **the actual** – events that occur when those mechanisms operate
- **the empirical** – events as experienced or observed.

D1.3 – Epistemology

The branch of philosophy concerned with knowledge: its nature, sources, limitations, justification, and validity. Epistemology therefore addresses the conditions under which informational states become beliefs or knowledge.

D1.4 – Ontology

The branch of philosophy concerned with the nature of existence and the kinds of things that exist. Ontology addresses what exists in reality, independent of whether those entities are known or observed.

D1.5 – Epistemic Reflexivity

The property of a theoretical or cognitive system by which it recognises itself as part of the reality it describes. In systems theory, epistemic reflexivity denotes the understanding that knowing, modelling, and theory formation are themselves physical and systemic processes operating within the world they seek to explain.

Propositions

P1.1 – Compatibility Proposition

Cognitive Physicalism and Critical Realism are compatible philosophical positions. Cognitive Physicalism asserts that everything is physical and exists in space–time, while Critical Realism asserts that reality exists independently of our knowledge of it. Together they establish a realist ontology grounded in the physical nature of reality.

P1.2 – Epistemic Complementarity Proposition

Cognitive Physicalism and Critical Realism are epistemologically complementary. Cognitive Physicalism highlights the cognitive limitations of perception and modelling, while Critical Realism emphasises the social and conceptual mediation of knowledge. Together they provide a framework that recognises both the physical basis of knowledge and its interpretive limitations.

P1.3 – Ontological Subset Proposition (GST)

The epistemic domain is a proper subset of the ontological domain. Knowledge, thought, and perception are themselves physical processes occurring in space–time. When accurate, these processes function as internal models of other physical processes, encoding within their informational organisation aspects of the causal structure of the external world.

P1.4 – Probabilistic Future Proposition (GST)

The future is probabilistic rather than predetermined. System trajectories unfold within constraint-defined possibility spaces through branching pathways shaped by contingent interactions among systems and their environments. In systems possessing

agency, reflexive decision-making further expands and reshapes these possibility spaces.

GST 02 - The Ontological Foundations of General Systems Theory

Definitions

D2.1 – Space-Time

A single continuum comprising three dimensions of space and one of time.

D2.2 – Physical

Anything that exists within, or constitutes, space-time, including matter, energy, and the fields and structures that occupy or define it.

D2.3 – Metaphysical

Not existing in space-time, i.e. not physical.

D2.4 – Entity

Any identifiable portion of physical reality, including objects, fields, relationships, and events.

D2.5 – Boundary

A demarcation that separates an entity from what is not the entity.

D2.6 – Concrete Entity (Object)

A physical entity that occupies a bounded region of space-time and can, in principle, be apprehended as a single entity.

D2.7 – Abstract Entity

A physically instantiated configuration distributed across space-time that cannot be apprehended in its entirety at a single moment. Such entities may be understood either as sets of instances or as characteristics defining those instances.

D2.8 – Collection

Any plurality of entities.

D2.9 – Set

A collection of entities treated as a single entity.

D2.10 – Aggregation

The conversion of a collection into a set.

D2.11 – Disaggregation

The conversion of a set into a collection.

D2.12 – Set Duality

A set may be regarded either as a single entity or as a plurality of constituent entities (a collection), depending on the analytical perspective.

D2.13 – Configuration

The spatial and temporal arrangement of entities with respect to one another, without necessarily implying interaction.

D2.14 – Structure

The disposition of entities in space-time together with the network of causal relationships connecting them.

D2.15 – Static Structure

A structure in which configuration and causal relationships persist with little or no change over the timescale of observation.

D2.16 – Dynamic Structure

A structure in which configuration or causal relationships change in a recurring and organised way over time.

D2.17 – Randomness

Randomness describes variation without recurring organisation. Randomness may occur in the spatio-temporal arrangement of entities or in the causal networks connecting them.

D2.18 – Information (Ontological)

Recurring causally organised structure or recurring organised configuration.

D2.19 – Relationship

A physically instantiated connection between entities arising either from configuration (structure) or from transfer.

D2.20 – Configurational Relationship

A relationship arising from the configuration (arrangement) of entities in space-time, without transfer.

D2.21 – Causal Relationship

A physically instantiated process involving the transfer of matter, energy, or information between entities.

D2.22 – Event

A time-bounded instance of a causal relationship resulting in a change of state.

D2.23 – Network

A group of causally interconnected entities or relationships.

D2.24 – Characteristic (Property)

A feature common to entities used to classify or distinguish them.

D2.25 – Variable

A characteristic capable of taking different values.

D2.26 – State

The set of characteristics that apply to an entity at a given time.

D2.27 – Change of State

A change in the set of characteristics that apply to an entity.

D2.28 – Continuum Change of State

A gradual change of state that culminates in observable transformation.

Propositions

P2.1 – Space-Time Existence Proposition

Everything that exists does so in a region or regions of space-time.

P2.2 – Empirical Closure Proposition

There is no empirical evidence of any non-physical entity interacting with the physical universe. All observed entities, relationships, and events are mediated through physical processes within space-time.

P2.3 – Abstract Entity Proposition

Abstract entities are physical in existence but cognitively abstract due to the distributed nature of their instantiation and the limits of perception and representation.

P2.4 – Relationship Proposition

Relationships may be configurational or causal; both forms contribute to the organisation of systems.

P2.5 – Transfer Proposition

A causal relationship involves the transfer of matter, energy, or information between entities.

P2.6 – Relationship Ontology Proposition

Relationships are physically instantiated within space-time.

P2.7 – Causal Relationship–Disposition Proposition

A causal relationship involves transfer, whereas configuration does not.

P2.8 – Event Proposition

Every event is a causal relationship actualised in time, but not every relationship is confined to a single event.

P2.9 – Dual Representation of Causality Proposition

Causal processes may be represented either as transfers between systems (process-transfer-process, PTP) or as transformations within systems involving inputs and outputs (transfer-process-transfer, TPT). These are complementary representations of the same causal structure.

P2.10 – Hierarchical Causality Proposition

A causal relationship or process, whether represented in PTP or TPT form, may be decomposed into component causal relationships or processes, which may themselves be represented in PTP or TPT form.

P2.11 – Causal Relationship Composition Proposition

A causal relationship consists of participating entities and the matter, energy, or information transferred between them, forming a physically instantiated process in space-time.

GST 03 The Ontology of Randomness, Structure and Information

Definitions

D3.1 – Pattern

The observable manifestation of recurring causal organisation, whether structural or configurational. Unless otherwise stated, pattern refers to causal pattern.

D3.2 – Information (Epistemic)

Information as interpreted, processed, or understood by a system, arising from the detection and transformation of physical structure.

D3.3 – Spatio-temporal arrangement

The disposition of entities relative to one another in space-time.

D3.4 – Organised Configuration

The spatio-temporal arrangement of entities arising from causal interaction between them.

D3.5 – Dynamic Configuration

A configuration in which the arrangement of entities changes in a recurring and organised way over time.

D3.6 – Artificial Pattern

A recurring configuration generated through the causal intervention of an agent.

D3.7 – Causal Pattern

A recurring causal network.

D3.8 – Configurational Pattern

A recurring configuration generated by causal relationships between components and constituting a specific manifestation of causal pattern.

D3.9 – Constraint or Condition

Constraints and conditions are complex causal networks delivering multiple enabling or inhibiting inputs to a system, thereby defining the range of behaviours in which the system can or cannot engage. The precise causal mechanisms involved are often unknown, distributed, or analytically impractical to specify directly, requiring simplification through the concepts of constraint and condition. These do not denote fundamentally different ontological categories, but different emphases within organised causal systems. In the case of constraints, the emphasis lies on the range of behaviours excluded or limited. In the case of conditions, it lies on the range of behaviours enabled or permitted.

Propositions

P3.1 – Configuration Possibility Proposition

A given set of entities may be arranged in multiple configurations within the configurational constraints of space-time.

P3.2 – Randomness Proposition

Randomness consists of variation in configuration or causal organisation that does not give rise to recurring pattern.

P3.3 – Structure Emergence Proposition

Structure arises when entities within a configuration become connected through causal relationships.

P3.4 – Structure–Interaction Proposition

Structure defines the pathways through which causal interactions and transfers of matter, energy, or information may occur between entities.

P3.5 – Organised Configuration Proposition

Organised configurations arise where causal interactions between entities produce recurring or stable configurational arrangements.

P3.6 – Recurrence–Causality Proposition

Recurring pattern requires causal organisation. Configurations can recur only where causal relationships or causal constraints exist that produce their reappearance in space-time.

P3.7 – Pattern Proposition

Pattern is the observable manifestation of recurring causal organisation, whether expressed structurally or configurationally.

P3.8 – Information Proposition

Information consists of recurring causally organised structure or configuration.

P3.9 – Structure–Information Distinction Proposition

Not all structure or organised configuration constitutes information; only recurring structure or organised configuration qualifies as information.

P3.10 – Dynamic Structure Proposition

Structure may persist through recurring configurational or causal change as well as through static continuity.

P3.11 – Information Objectivity Proposition

Information, as recurring causally organised pattern, exists independently of observation, interpretation, or meaning.

P3.12 – Ontological–Epistemic Distinction Proposition

Epistemic information arises through the interpretation of physical information by a system and is distinct from information as an objective feature of physical reality.

P3.13 – Configurational Dependence Proposition

Configurational patterns depend upon underlying causal organisation, even where such organisation is not directly observable.

GST 04 – The Thermodynamics of Information

GST 05 – Relationships, Networks and Events

GST 06 – Systems, Inputs, Processes and Outputs

Definitions

D6.x – System

A system is an organised set of components and processes whose interactions produce identifiable properties and whose organisation may persist over time.

D6.x – Environment

The environment of a system consists of entities and processes external to the system that are capable of causal interaction with it through the exchange of matter, energy, or information.

For component systems or processes, the environment includes other components within the parent system as well as entities external to it. The environment is therefore defined relative to the system.

D6.x – Emergent Property

An emergent property is a property of a system that arises from the organisation and causal interaction of its components, and is not a property of the components considered in isolation.

Propositions

P6.x – System–Process Equivalence

Systems and processes are treated as equivalent, differing only in analytical perspective. A system emphasises structured organisation, while a process emphasises causal interaction and transformation.

P6.x – Composite System / Process

A system or process may comprise multiple component systems or processes that interact causally through the exchange of matter, energy, or information.

P6.x – Emergence Proposition

Emergent properties arise from the organisation and interaction of components and are not reducible to properties of the components considered in isolation.

GST 07 – Constraints and System–Environment Dynamics

Definitions

D7.x – Viability

Viability is the capacity of a system to maintain its structure and processes and/or proliferate over time under prevailing constraints, through the continued receipt and integration of sufficient causal inputs.

D7.x – Freedom

A freedom is the absence or reduction of inhibiting constraints, permitting a system process or behaviour to occur.

D7.x – Sustainable

A system is sustainable when its interactions with its environment maintain or restore sufficient constraint alignment over time to support its continued viability.

D7.x – Unsustainable

A system is unsustainable when its interactions with its environment progressively reduce constraint alignment, leading to declining viability over time.

D7.x – Configurational Constraints

Configurational constraints define the limits on how entities may be arranged in space-time. They operate at the level of configuration and determine what arrangements are physically possible.

D7.x – Spatial Exclusion Constraint

A constraint whereby no two entities may occupy the same region of space-time simultaneously.

D7.x – Spatial Extension Constraint

A constraint whereby entities occupy finite regions of space-time and therefore possess size and shape.

D7.x – Contiguity Constraint

A constraint whereby causal interaction between entities depends on their proximity in space-time.

D7.x – Topological Constraint

A constraint on the possible relational arrangement of entities, including connectivity, separation, and enclosure, independent of precise spatial distance.

D7.x – Continuity/Discreteness Constraint

A constraint arising from whether entities and configurations are continuous or discrete, affecting how they may be arranged and transformed.

D7.x – Kinematic Constraint

A constraint on how configurations may change over time, including limits on motion and transition.

D7.x – Dimensional Constraint

A constraint arising from the dimensional structure of space-time, limiting possible arrangements and orientations.

D7.x – Boundary Constraint

A constraint whereby entities are defined by boundaries that separate them from their surroundings.

D7.x – Compositional Constraint

A constraint on how entities may be combined or assembled into larger configurations.

D7.x – Causal Constraint

A causal constraint is a causal mechanism that operates on a system through the transfer of matter, energy, or information, enabling or inhibiting particular processes or behaviours.

D7.x – Structural Constraints

Structural constraints regulate the occurrence, form, and persistence of interactions between entities. They operate at the level of structure and determine how causal processes unfold.

D7.x: Causal Mechanism

A causal mechanism is a structured set of interacting causal transfers of matter, energy, or information that together produce, sustain, or inhibit a particular system behaviour.

D7.x – Enabling Condition

An enabling condition is a constraint that operates in an enabling manner, making a process or behaviour possible or facilitating its occurrence.

D7.x – Inhibiting Constraint

An inhibiting constraint is a constraint that operates in an inhibiting manner, preventing, restricting, or limiting a system process or behaviour.

D7.x – Threshold Constraint

A constraint whereby a causal interaction occurs only when certain conditions or levels are reached.

D7.x – Rate Constraint

A constraint on the speed or frequency of causal interactions.

D7.x – Capacity Constraint

A constraint on the quantity or throughput of matter, energy, or information transfer.

D7.x – Directionality Constraint

A constraint on the direction of causal transfer between entities.

D7.x – Feedback Constraint

A constraint arising when the outputs of a process are reintroduced as inputs, influencing subsequent behaviour.

D7.x – Coupling Constraint

A constraint on the strength and organisation of interactions between components.

D7.x – Stability Constraint

A constraint determining whether a structure persists or dissolves over time.

D7.x – Transformation Constraint

A constraint on how inputs are converted into outputs within a causal process.

Propositions

P7.x – Constraint States

Constraints may exist in different states depending on their degree of activation, stability, and influence on system viability:

- **Absent** – not present and no influence
- **Latent** – not active but may arise under certain conditions
- **Precarious** – present but unstable and sensitive to change
- **Entrenched** – stable and persistent over time

P7.x – Constraint-Behaviour Determination

System behaviour is determined by the configuration of constraints acting upon it.

P7.x – Constraint Effectiveness Proposition

A characteristic of the environment constitutes a constraint only insofar as it effectively alters causal inputs to a system in a way that influences its viability.

P7.x – System–Environment Constraint Transformation Proposition

Systems operate on their environment through the absorption of inputs and the emission of outputs, thereby potentially altering the constraint states of that environment and influencing future system viability.

P7.x – Constraint Dynamics Proposition

Constraints may shift between absent, latent, precarious, and entrenched states as a result of system–environment interactions, thereby altering system viability over time.

P7.x – Constraint Emergence Proposition

Constraints may arise, transform, or become entrenched as a result of system–environment interactions over time.

GST 08 – Nested Systems and Hierarchical Organisation

Definitions

D8.x – Component Environment

The environment of a component system or process includes other components within the parent system, as well as entities external to the parent system, insofar as they are capable of causal interaction.

D8.x – Tight Coupling

Component systems or processes are tightly coupled when their viability depends primarily on causal inputs from other components within the same parent system.

D8.x – Loose Coupling

Component systems or processes are loosely coupled when their viability depends significantly on causal inputs from the wider environment of the parent system.

GST 09 – Function and Purpose in Systems

GST 10 – Assembly Theory and the Formation of Complex Systems

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GST 11 – Complexity, Assembly and Granularity

GST 12 – Energy Landscapes, Configuration Spaces and State Spaces

Definitions

D12.x – Attractor
An attractor is a region or pattern within a system's configuration or state space toward which the system tends to evolve and within which it remains relatively stable over time.

Propositions

P12.x – Constraint–Landscape Proposition

The constraints and freedoms acting on a system determine the structure of its state space, including the location and stability of attractors and the ease of transition between them.

GST 13 – Stability, Resilience and Viability in Systems

GST 14 – System Lifecycle and Evolutionary Dynamics

GST 15 – Systems Processes and System Behaviour

GST 16 – Systems Causality and Transfer

GST 17 – Feedback and Complex Causal Structures

GST 18 – Dual Models of Systems Causality (PTP and TPT)

PART 2 – SOCIAL SYSTEMS THEORY (SST)

SST 01 – The Enhanced Morphogenetic Cycle

Definitions

D1.1 – Morphogenetic Cycle

The Morphogenetic Cycle is a temporally sequenced process through which social structures and cultural systems condition social interaction, and through which the outcomes of that interaction either reproduce existing arrangements (morphostasis) or transform them (morphogenesis).

D1.2 – Morphostasis

Morphostasis refers to the reproduction or maintenance of existing structural and cultural arrangements through social interaction.

D1.3 – Morphogenesis

Morphogenesis refers to the elaboration, modification, or transformation of structural and cultural arrangements arising from social interaction.

D1.4 – Material Constraint (Revised 29/4/2026)

A material constraint is a constraint arising from the system's environment, consisting of causal transfers of matter, energy, or information external to the system. Material constraints define the environmental conditions under which a system can maintain viability.

D1.5 – Structural Constraint (Revised 29/4/2026)

A structural constraint is a constraint arising from the internal organisation of a system, including the arrangement of components and the causal interactions between them. Structural constraints determine what actions or processes can or cannot occur within a system.

D1.6 – Cultural Constraint (Revised 29/4/2026)

A cultural constraint is a constraint arising from shared meanings, norms, values, and knowledge that influence behaviour through interpreted information. Cultural constraints shape behaviour by establishing shared expectations regarding what agents should or should not do.

D1.7 – Need

A need is a condition that must be satisfied for the continuation of processes required to maintain system viability. Needs arise when viability depends on ongoing causal inputs

D1.8 – Satisfier

A satisfier is a process-maintaining causal input that contributes to the persistence or proliferation of a system. Different satisfiers may fulfil the same underlying need depending on context.

D1.9 – Contra-satisfier

A contra-satisfier is a process-inhibiting causal input that degrades, destabilises, or prevents the persistence or proliferation of a system.

D1.10 – Constraint Alignment (Revised 29/4/2026)

Constraint alignment is a condition in which constraints across material, structural, and cultural domains operate in a mutually supportive manner, enabling coherent and stable system behaviour.

D1.11 – Constraint Misalignment (Revised 29/4/2026)

Constraint misalignment is a condition in which constraints across material, structural, and cultural domains operate in tension or contradiction, inhibiting coherent system behaviour and contributing to instability.

D1.12 – Defensive Filtering

Defensive filtering refers to the psychological process through which agents reinterpret, suppress, or ignore feedback that threatens important needs, identities, or institutional commitments.

D1.13 – Overlapping Social Systems

Overlapping social systems are partially intersecting fields of social interaction in which agents simultaneously participate in multiple structural and cultural environments.

D1.14 – Hierarchical Social Systems

Hierarchical social systems are multi-level organisational structures in which coordinated patterns of interaction emerge at progressively larger scales.

D1.15 – Multi-Scalar Agency

Multi-scalar agency refers to the capacity for coordinated interpretation and action to occur at multiple levels of social organisation, including individuals, organisations, institutions, and societies.

D1.16 – Enhanced Morphogenetic Cycle

The Enhanced Morphogenetic Cycle (EMC) is a systems-based refinement of the classical morphogenetic framework in which social stability and transformation arise through the interaction of material, structural, and cultural constraints, mediated by feedback arising from satisfiers and contra-satisfiers and interpreted by agents operating across multiple organisational scales.

Additional Definitions (Internal Morphogenetic Cycle)

D1.17 – Internal Morphogenetic Cycle

The Internal Morphogenetic Cycle (IMC) is the process through which an individual reflexively evaluates feedback arising from their interactions with the environment and adjusts beliefs, dispositions, or behavioural strategies accordingly.

D1.18 – Behavioural Disposition

A behavioural disposition is a stored pattern of beliefs, habits, expectations, and behavioural tendencies that guide an individual's automatic responses to recurring situations.

D1.19 – Reflexive Evaluation

Reflexive evaluation is the conscious process through which an individual examines the outcomes of their actions and the assumptions underlying their behavioural dispositions.

D1.20 – Positive Feedback

Positive feedback occurs when an individual's behaviour has produced satisfiers or successfully avoided contra-satisfiers.

D1.21 – Negative Feedback

Negative feedback occurs when an individual's behaviour has produced contra-satisfiers or failed to obtain expected satisfiers.

D1.22 – Internal Morphostasis

Internal morphostasis refers to the maintenance of existing behavioural dispositions when feedback indicates that they continue to produce satisfactory outcomes.

D1.23 – Internal Morphogenesis

Internal morphogenesis refers to the modification or replacement of behavioural dispositions following reflexive evaluation of feedback indicating unsatisfactory outcomes.

D1.24 – Automatic Behavioural Response

An automatic behavioural response is an action triggered by previously learned behavioural dispositions without conscious deliberation.

Propositions

P1.1 – Constraint Interaction Proposition

Social stability and transformation arise from the interaction of material, structural, and cultural constraints mediated through social interaction among agents.

P1.2 – Alignment–Morphostasis Proposition

When structural feasibility and cultural legitimacy remain broadly aligned within material limits, interactions tend to generate satisfiers that reinforce existing structural and cultural arrangements, producing morphostasis.

P1.3 – Misalignment–Morphogenesis Proposition

When material, structural, and cultural constraints become misaligned, interactions are more likely to generate contra-satisfiers that create pressures for structural or cultural transformation.

P1.4 – Feedback Interpretation Proposition

The effects of satisfiers and contra-satisfiers depend upon how agents interpret the feedback generated through social interaction and whether they trigger reflexive evaluation.

P1.5 – Defensive Filtering Proposition

When feedback threatens important needs or commitments, agents may employ defensive filtering that sustains existing beliefs and institutional arrangements despite the presence of systemic tension.

P1.6 – Overlapping Systems Proposition

Morphogenetic processes occur within overlapping networks of social systems, allowing structural and cultural changes originating in one domain to propagate into others.

P1.7 – Hierarchical Propagation Proposition

Morphogenetic processes propagate across levels of social organisation through hierarchical structures that transmit constraints and institutional arrangements between levels.

P1.8 – Multi-Scalar Agency Proposition

Agents operating at multiple organisational scales, including individuals, organisations, and institutions, participate in morphogenetic processes through coordinated interpretation and action.

P1.9 – Internal Learning Proposition

At the level of the individual, morphogenetic dynamics manifest as a learning process in which feedback generated through interaction leads to adjustments in beliefs, habits, and behavioural strategies.

P1.10 – Organisational Learning Proposition

At the level of organisations and institutions, morphogenetic dynamics manifest as institutional learning processes in which decision structures interpret feedback and implement structural or strategic adaptations.

P1.11 – Multi-Level Morphogenesis Proposition

Social transformation emerges through the interaction of morphogenetic processes operating simultaneously at multiple levels of organisation.

P1.12 – Evolutionary Extension Proposition

The Enhanced Morphogenetic Cycle represents the form taken by adaptive processes once reflexive agency emerges, extending earlier evolutionary mechanisms based on variation and selection through the incorporation of reflexive interpretation and coordinated action.

Additional Propositions (Internal Morphogenetic Cycle)

P1.13 – Automatic Behaviour Proposition

Individuals typically respond to recurring situations through automatic behavioural responses derived from stored behavioural dispositions.

P1.14 – Feedback Generation Proposition

Behavioural responses generate feedback in the form of satisfiers acquired, contra-satisfiers avoided, or failures to avoid contra-satisfiers.

P1.15 – Reflexive Trigger Proposition

Negative feedback, unexpected satisfiers, or repeated failures to obtain expected satisfiers increase the likelihood that individuals will engage in reflexive evaluation.

P1.16 – Internal Morphostasis Proposition

When feedback consistently comprises satisfactory outcomes, individuals tend to retain existing behavioural dispositions, resulting in internal morphostasis.

P1.17 – Internal Morphogenesis Proposition

When reflexive evaluation reveals that existing behavioural dispositions produce repeated contra-satisfiers or fail to secure expected satisfiers, individuals may modify or replace those dispositions, resulting in internal morphogenesis.

P1.18 – Learning Proposition

Learning occurs through repeated cycles of behavioural action, feedback reception, reflexive evaluation, and adjustment of behavioural dispositions.

P1.19 – Defensive Filtering Proposition (Internal)

When feedback threatens important needs, identities, or commitments, individuals may employ defensive filtering that prevents reflexive modification of behavioural dispositions.

P1.20 – Social Feedback Proposition

Because feedback arises primarily through social interaction, individual learning processes are embedded within broader social morphogenetic dynamics.

P1.21 – Morphogenetic Learning Proposition

Morphogenetic learning occurs across multiple levels of organisation, including individuals, organisations, and societies, through the interpretation of feedback arising from interaction with structural, cultural, and material environments.

SST 02 – The Evolutionary Basis of the Enhanced Morphogenetic Cycle

Definitions

D2.1 – Constraint (Functional Definition) (Revised 29/4/2026)

A constraint influences system behaviour by altering the probability, availability, or effectiveness of causal inputs (including satisfiers and contra-satisfiers), thereby affecting system viability.

D2.2 – Constraint Regulation

Constraint regulation is the process by which systems alter constraint configurations affecting access to satisfiers and exposure to contra-satisfiers.

This may involve:

- Constraint reduction on satisfiers
- Constraint imposition on contra-satisfiers

D2.3 – Agency

Agency is the capacity of a system to regulate structural constraints affecting its own behaviour in ways that affect its viability.

D2.4 – Reflexive Agency

Reflexive agency is the capacity of a system to recognise and deliberately regulate material, structural, and cultural constraints affecting its own viability.

Propositions

The propositions developed in SST Paper 1 may be understood as domain-specific expressions of the more general principles of constraint regulation described here.

P2.1 – Viability Constraint Proposition

Systems persist and proliferate only insofar as their organisation regulates constraints on satisfiers and contra-satisfiers sufficiently to maintain viability.

P2.2 – Needs Emergence Proposition

Needs emerge when the persistence of a system depends on ongoing access to satisfiers required for the continuation of viability-maintaining processes.

P2.3 – Constraint Regulation Proposition

Systems whose organisation reduces constraints on satisfiers and imposes constraints on contra-satisfiers are more likely to persist and proliferate.

P2.4 – Emergence Proposition

Emergent properties persist when they alter constraint configurations in ways that improve system viability.

P2.5 – Evolutionary Constraint Regulation Proposition

Evolutionary development proceeds through the successive emergence of properties that enable increasingly effective constraint regulation.

P2.6 – Agency Emergence Proposition

Agency emerges when systems acquire the capacity to regulate structural constraints affecting their own behaviour.

P2.7 – Reflexive Agency Proposition

Reflexive agency emerges when systems acquire the capacity to recognise and regulate cultural constraints, and thereby to modify structural and material constraints affecting their own viability.

P2.8 – Social Emergence Proposition

Social systems emerge when constraint regulation occurs through coordinated interaction between multiple agents.

P2.9 – Cultural Evolution Proposition

Cultural morphogenesis enables the cumulative modification of cultural constraints affecting system viability.

P2.10 – Evo-Socio Correspondence Proposition

Human organisms and human societies exhibit corresponding organisational properties because both emerged through the progressive regulation of material, structural, and cultural constraints affecting viability.

P2.11 – Morphogenetic Cycle Evolution Proposition

The morphogenetic cycle is the latest evolutionary expression of constraint regulation in reflexive social systems.

P2.12 – Societal Viability Proposition

Societal stability depends on the continued effectiveness of constraint regulation affecting satisfiers and contra-satisfiers. Failure of constraint regulation leads to instability or decline.

P2.13 – Cultural-Biological Evolution Coupling Proposition

Cultural morphogenesis may alter the selective environments affecting biological evolution.

P2.14 – Universal Constraint Regulation Proposition

The regulation of constraints on satisfiers and contra-satisfiers is a universal principle governing the persistence and proliferation of viable systems.

SST 03 – Constraint Analysis: A Causal Framework for Understanding and Influencing Complex Systems

Definitions

D3.1 – Constraint Presence and Absence

Constraint effects arise both from presence (existing enablers or inhibitors) and absence (missing enablers or missing inhibitors), each of which has distinct causal implications.

D3.2 – System-Specific Constraint

A constraint is system-specific, meaning that its enabling or inhibiting effect depends on the nature, structure, and level of organisation of the system to which it is applied.

D3.3 – Constraint Domain

Constraint domains are analytical categories of constraint within social systems comprising:

- material (environmental and resource conditions),
- structural (organisational and interactional arrangements),
- cultural (shared meanings, norms, and knowledge).

Biogenic constraints, which arise from the biological nature of system components and define their fundamental needs and capacities, are treated as a subset of material constraints.

In addition, agentic constraints operate within agents at the level of decision-making, shaping how conditions are interpreted and actions selected. While not treated as a separate analytical domain, they are conceptually distinct and mediate between biogenic and cultural constraints in shaping behaviour.

D3.4 – Biogenic Constraint

Biogenic constraints are internal constraints arising from the biological nature of system components, defining the needs, capacities, and limits required for their continued functioning. They are typically relatively stable over the timescales of social analysis, although variation across agents or populations may be significant in shaping system behaviour.

D3.5 – Biogenic Constraint Variation

Biogenic constraint variation refers to differences in biological needs, capacities, or limitations across individuals or populations that influence their ability to participate in, respond to, or sustain system processes.

D3.6 – Agentic Constraint

Agentic constraints are internal constraints governing the processes of perception, interpretation, evaluation, decision-making, and action selection within agents. They mediate between biogenic needs, cultural meanings, and structural conditions, shaping how agents respond to the constraints acting upon them.

D3.7 – Agentic Constraint Variation

Agentic constraint variation refers to differences in cognitive capacity, reflexivity, interpretive frameworks, or decision-making processes across agents that influence how they respond to constraints and engage in system interactions.

D3.8 – Epistemic Constraint

An epistemic constraint is a constraint that operates through information and its interpretation, enabling or inhibiting the formation, organisation, or transmission of knowledge.

D3.9 – Internal Constraint Profile

The internal constraint profile of an agent is the combined configuration of its biogenic and agentic constraints, which together shape its capabilities, needs, and patterns of action within a system.

D3.10 – Constraint Intensity (Amplitude)

Constraint intensity is the relative strength of a constraint in shaping system behaviour.

D3.11 – Constraint Rate of Change

Constraint rate of change refers to the speed at which a constraint evolves over time.

D3.12 – Constraint Frequency of Change

Constraint frequency of change refers to how often a constraint is altered.

D3.13 – Attractor (Constraint-Based Interpretation)

In social systems, an attractor may be understood as a relatively stable pattern of system behaviour sustained by a coherent configuration of constraints.

D3.14 – Constraint Analysis

Constraint analysis is a method for understanding system behaviour by identifying and analysing the causal constraints, both external and internal, that enable or inhibit its processes.

D3.15 – Emerging Attractor

An emerging attractor is a potential future stable configuration defined by a coherent arrangement of constraints.

D3.16 – Constraint Reconfiguration

Constraint reconfiguration is the deliberate modification of constraints to alter system behaviour and improve alignment and viability.

Constraint regulation and constraint reconfiguration represent different modes of system adaptation: regulation involves ongoing adjustment within an existing structure, whereas reconfiguration involves deliberate restructuring of the constraint landscape.

D3.17 – Reflexive Constraint Modification

Reflexive constraint modification is the process by which agents identify, interpret, and deliberately alter the constraints that shape their own knowledge or behaviour.

Reflexive constraint modification is the operational expression of reflexive agency, through which agents analyse and deliberately alter the constraints shaping their behaviour.

Propositions

P3.1 – Causality-Constraint Equivalence

Constraints are causally effective conditions that enable or inhibit system processes, either through direct causal transfers of matter, energy, or information, or through configurations that shape the possibility and structure of such transfers.

P3.2 – Enabler-Inhibitor Duality

All system behaviours depend on a combination of enabling conditions and inhibiting constraints.

P3.3 – Presence-Absence Proposition

The absence of enabling conditions is causally distinct from the presence of inhibiting constraints and must be analysed separately.

P3.4 – System Specificity Proposition

A constraint only exists as such in relation to a defined system and level of organisation.

P3.5 – Domain Interaction Proposition

Constraint domains (material, structural, cultural, biogenic, and agentic) interact to shape system behaviour and cannot be analysed in isolation.

P3.6 – Alignment-Stability Proposition

Constraint alignment across domains, together with compatible internal constraints within agents, produces stable attractors characterised by coherent and co-operative system behaviour.

P3.7 – Misalignment-Instability Proposition

Constraint misalignment across domains, or between external and internal constraints, produces instability, conflict, and increased likelihood of transition between attractors.

P3.8 – Temporal Misalignment Proposition

Differences in the rate and frequency of constraint change are a primary source of constraint misalignment.

P3.9 – Asymmetry Diagnostic Proposition

A predominance of lost enabling conditions and accumulating inhibiting constraints is indicative of system stress or transition.

P3.10 – Attractor Transition Proposition

Transitions between attractors occur when changes in constraint configurations disrupt existing alignment and establish new configurations.

P3.11 – Agency Constraint and Alignment Proposition

Constraint changes in social systems may arise from both elite-driven processes, such as institutional decisions or policy interventions, and population-driven processes, such as distributed behavioural or cultural change. Alignment between these sources supports coherent system adaptation, while misalignment contributes to instability and contested outcomes.

P3.12 – Constraint Dominance Proposition

Constraints differ in intensity, and dominant constraints disproportionately shape system behaviour.

P3.13 – Landscape Interpretation Proposition

System behaviour can be understood as movement within a constraint-defined landscape comprising attractors and transitional regions.

P3.14 – Cooperation-Constraint Proposition

Co-operation arises from the exchange of enabling conditions (satisfiers), while conflict arises from the exchange of inhibiting constraints (contra-satisfiers), as agents, through their agentic constraints, seek to satisfy their needs under constraint.

P3.15 – Viability Proposition

System viability depends on maintaining sufficient constraint alignment, through interactions with the environment, to support both stability and adaptability over time.

P3.16 – Open System Proposition

Social systems are open and embedded within larger systems, and their constraints are influenced by external conditions.

P3.17 – Non-Predictive Proposition

Constraint analysis identifies conditions of possibility rather than precise outcomes.

P3.18 – Intervention Proposition

Effective intervention requires the reconfiguration of constraints to restore alignment across material, structural, and cultural domains, taking into account the internal biogenic and agentic constraints that shape behaviour.

P3.19 – Epistemic Attractor Proposition

Epistemic systems exhibit attractors corresponding to stable configurations of knowledge, belief, or interpretation sustained by aligned constraints.

P3.20 – Reflexivity Proposition

In epistemic systems, agents can reflect on and deliberately modify constraints, introducing recursive dynamics in which knowledge influences the conditions of its own formation.

P3.21 – Biogenic Viability and Misalignment Proposition

Biogenic constraints define the fundamental requirements for system viability. Misalignment between these internal constraints and material, structural, or cultural conditions constitutes a direct threat to system stability, as it reflects a failure to sustain the processes necessary for the continued functioning of system components.

P3.22 – Cross-Domain Applicability Proposition

Constraint analysis applies across physical, social, and epistemic systems, with domain-specific constraints emerging from the organisation of each system type.

P3.23 – Internal–External Constraint Proposition

System behaviour arises from the interaction between external constraints operating at the level of the system and internal constraints operating within agents.

P3.24 – Internal Constraint Influence Proposition

Variation in the internal constraint profiles of agents, including both biogenic and agentic constraints, contributes to variation in behaviour, participation, and interaction within social systems.

P3.25 – Biogenic Variation Proposition

Differences in biogenic constraints across agents influence their capacity to satisfy needs and sustain participation in system processes.

P3.26 – Agentic Variation Proposition

Differences in agentic constraints influence how conditions are perceived, interpreted, and acted upon.

P3.27 – Participation Asymmetry Proposition

Variation in internal constraint profiles leads to asymmetries in participation and engagement within system processes.

P3.28 – Constraint Sensitivity Proposition

Agents with different internal constraint profiles respond differently to the same external constraints.

P3.29 – Internal Constraint Relevance Proposition

Variation in internal constraint profiles becomes analytically significant where it affects access to satisfiers, system participation, or overall system behaviour and stability.

P3.30 – Aggregation Proposition

System-level patterns emerge from aggregation of differing internal constraint profiles

P3.31 – Influence and Power Proposition

Variation in agentic constraints contributes to asymmetries in influence and control within social systems, forming a micro-level basis for differences in power.

P3.32 – Interaction Mediation Proposition

Agentic constraints mediate the effects of biogenic, cultural, and structural constraints by shaping how agents interpret and respond to them.

P3.33 – Cultural Transmission Proposition

Cultural constraints are transmitted and reproduced through the structured interactions between system components, as the exchange of information between agents provides the causal mechanism by which shared meanings, norms, and expectations are maintained and propagated.

SST 22 – Role Differentiation and Recognition (Micro-level and Group Dynamics)

SST 23 – Psychological Traits (Dark Traits)

SST 24 – Power

SST 25 – Information Control and Narrative Framing

SST 26 – Environmental and Communicated Information in Social Systems

SST 27 – Dissonance Suppression and Feedback Distortion in Social Systems

SST 28 – Delegated Reflexivity and Organisational Misalignment

SST 29 – Institutional Capture (Case Paper)

SST 30 – Application of Constraint Dynamics to Role Systems and Stability

SST 31 – Major Societal Domains and their System Roles

SST 32 – Religion as an Adaptive Cultural System

SST 33 – Economics

SST 34 – Political Orientations and Social Adaptation

SST 35 – Pathologies

SST 36 – Identifying and Correcting Social System Pathologies

SST 37 – Planetary Constraints and the Limits of Social System Viability

SST 38 – Systemic Viability Ethics

