Introduction to the T-NPI Framework

A Tantrayukti–Enhanced Nyāya Pragmatic Inference Approach for Research, Policy, and Project Design

1. Rationale and Context

Contemporary research and policy practice have achieved significant advances in data availability, analytical techniques, and methodological diversity. However, a persistent limitation remains in the *inferential linkage between empirical observation and actionable knowledge*. While qualitative methods such as grounded theory and case study research provide rich contextual insights, they often leave the process of generalisation implicit or weakly justified (Creswell, 2018; Flyvbjerg, 2006). Similarly, policy frameworks frequently rely on the replication of best practices without sufficiently articulating the causal conditions under which such practices succeed (Pawson & Tilley, 1997).

The Tantrayukti–Enhanced Nyāya Pragmatic Inference (T-NPI) framework is developed to address this gap by re-centering *inference as the core methodological problem*. It provides a structured approach through which researchers and practitioners can move from empirical data to justified conclusions, and from conclusions to effective interventions.

2. Epistemic Foundations of T-NPI

The T-NPI framework is grounded in two complementary knowledge traditions:

Nyāya Epistemology (Inferential Structure)

Nyāya philosophy provides a rigorous account of inference (*anumāna*), centred on the concept of *vyāpti*, the invariable relation between a reason (*hetu*) and a probandum (*sādhya*). A valid inference requires that this relation be:

- empirically grounded through repeated observation (*bhūyo-darśana*), and
- free from limiting conditions (*upādhi*), which may distort causal interpretation.

This approach aligns with contemporary developments in philosophy of science, particularly *critical realism*, where causal relations are understood as context-sensitive but non-arbitrary (Bhaskar, 1975; Sayer, 2000).

Tantrayukti (Procedural Logic)

Tantrayukti, originating in classical Indian knowledge systems such as the *Caraka Saṃhitā*, provides a set of procedural tools for organising and interpreting knowledge. These include:

- *Nirvacana* (definition and conceptual clarification)

- *Samuccaya* (systematic compilation of evidence)
- *Apadeśa* (authoritative reference and corroboration)
- *Upamāna* (analogy and cross-context comparison)
- *Prasaṅga* (implication analysis)
- *Sambhava* (feasibility and possibility assessment)

Together, these heuristics enable the operationalisation of inferential reasoning in real-world contexts.

Integration in T-NPI

T-NPI integrates these two dimensions into a unified methodological system:

- *Nyāya provides the structure of inference (what counts as valid knowledge)*
- *Tantrayukti provides the procedure of inquiry (how knowledge is generated and tested)*

This integration allows T-NPI to function not merely as a method, but as a *generative methodological framework* applicable across domains.

3. Core Analytical Logic of T-NPI

At its core, T-NPI follows a structured progression:

1. **Evidence Compilation (Pramāṇa–Saṃgraha)**

   Collection of credible empirical data from documents, cases, or field observations.

2. **Analytical Structuring (C–H–S Coding)**
   - Conditions (C): Structural factors enabling outcomes
   - Indicators (H): Observable signs or mechanisms
   - Outcomes (S): Resulting states

3. **Pattern Identification (Bhūyo-darśana)**

   Repeated observation across cases to identify recurring relations.

4. **Vyāpti Formulation**

   Establishment of a condition–outcome relation that is non-accidental and empirically grounded.

5. **Inferential Argument (Pañcāvayavī)**

   Structured articulation of the inference.

6. **Validation (Tantrayukti Lenses)**

   Multi-layer testing through corroboration, analogy, implication, and feasibility.

7. **Application (Pravṛtti-sāmarthya)**

   Translation of inference into action—policy, design, or intervention.

This workflow ensures that knowledge is not only descriptive but *inferentially justified and practically actionable.*

4. The Three Core Templates

This repository provides three core templates derived from the T-NPI framework. Each template applies the same inferential logic to a distinct research function.

4.1 T-NPI-Design (Inferential Project Design)

This template is intended for designing interventions or projects based on existing evidence. It enables users to:

- extract patterns from empirical cases,
- identify structural conditions associated with successful outcomes, and
- translate these into *design-ready interventions*.

Unlike conventional design approaches, T-NPI-Design ensures that interventions are grounded in *validated causal relations* rather than intuition or trial-and-error (Hevner et al., 2004).

4.2 T-NPI-Policy (Inferential Policy Formulation)

This template is designed for policy analysis and formulation. It allows users to:

- synthesise evidence from multiple sources,
- identify recurring policy-relevant patterns, and
- construct *logically justified policy recommendations.*

This approach aligns with theory-driven evaluation and evidence-based policy, where decisions are grounded in causal reasoning rather than normative assumptions (Weiss, 1995; Pawson & Tilley, 1997).

4.3 T-NPI-Compare (Cross-Domain Inference)

This template enables generalisation across cases and domains. It supports users in:

- conducting structured comparative analysis,
- identifying cross-contextual regularities, and

- formulating *generalisable inferential rules*.

This addresses a key limitation in qualitative research by providing a systematic basis for generalisation without relying on statistical abstraction (Mahoney & Rueschemeyer, 2003; Merton, 1968).

5. Relevance for Contemporary Research and Practice

The T-NPI framework is particularly suited for contexts where:

- *open-access data* (e.g., World Bank, government reports) is available,
- interventions must be designed without extensive field experimentation,
- policy decisions require *transparent justification*, and
- cross-domain insights are necessary for complex problem-solving.

By integrating inferential rigor with procedural flexibility, T-NPI provides a method that is both *academically robust and practically applicable*.

6. Using the Templates

Each template document in this repository is designed as a *standalone methodological guide*. Users are encouraged to:

1. Begin with clearly defined problems (*nirvacana*)
2. Use open-access datasets for evidence (*pramāṇa*)
3. Apply structured coding (C–H–S)
4. Identify patterns through comparison
5. Formulate and test *vyāpti*
6. Translate findings into actionable outputs

The templates can be used independently or in combination, depending on the research objective.

7. Concluding Note

The T-NPI framework represents a shift from method as technique to method as *epistemic reasoning system*. It ensures that research, policy, and design are grounded not only in data, but in *justified inference capable of guiding effective action*. In doing so, it contributes to the development of a more coherent and integrative methodological paradigm.

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