

Vyāpti as Method: Uddyotakara, Tantrayukti, and the Re-Grounding of Qualitative Inference

Dr.R.H. Samseer ^a, Dr.G. Senthilkumar ^b

^a Assistant Professor, Sri Ramakrishna College of Arts and Science, Coimbatore, Tamil Nadu, India.

E-mail: samseer@srcas.ac.in

^b Associate Professor, Department of Electronics, Sri Ramakrishna College of Arts and Science, Coimbatore, Tamil Nadu, India. E-mail: gs@srcas.ac.in

Abstract

Contemporary qualitative inquiry faces a persistent inferential crisis: while empirical richness has proliferated, the epistemic warrant connecting observation to generalization remains unstable. This paper argues that the Nyāya-Vārttika of Uddyotakara (c. 550–610 CE) articulates a sophisticated theory of inference that directly addresses this crisis anticipating developments in modern epistemology while offering resources absent from the qualitative methodological canon. By grounding inference in Vyāpti an invariable relation discovered through repeated observation (bhūyo-darśana), purified through the systematic elimination of limiting conditions (upādhi), and validated through successful action (pravṛtti-sāmarthya) Uddyotakara provides a model of inquiry that corrects foundational weaknesses in contemporary qualitative methodology. The paper demonstrates how this inferential architecture can be operationalized through Tantrayukti heuristics, transforming classical Nyāya logic from a historical artifact into a robust research methodology. This framework, formalized as Tantrayukti-Nyāya-Pramāṇa-Inquiry (T-NPI), positions Nyāya not as a pre-modern logical system but as a living meta-scientific tradition capable of re-grounding the logic of discovery and justification in qualitative research.

Keywords: Uddyotakara, Nyāya Epistemology, Qualitative Methodology, Inference, Vyāpti, Upādhi, Tantrayukti, Research Methods.

Introduction: The Inferential Impasse in Qualitative Research

The maturation of qualitative inquiry over the past half-century has produced an ironic predicament. Methodological sophistication has generated unprecedented empirical density thick description, thematic saturation, and narrative richness yet the transition from observation to warranted generalization remains conceptually fragile. This is not a crisis of data collection but of inference itself: the logic by which researchers move from “this” to “such,” from particular instance to general claim, lacks secure epistemic foundations (Abbott, 2004).

The symptoms are visible across methodological traditions. Grounded theory, despite its emphasis on emergent coding, often produces post-hoc coherence rather than inferential necessity; its axial coding paradigm organizes data elegantly but provides no formal test of whether observed patterns are genuinely binding (Bryant & Charmaz, 2019). Realist evaluation, while productively reviving mechanisms and contexts, struggles to specify criteria for when a mechanism has been sufficiently warranted (Pawson, 2013). Process tracing constructs compelling causal narratives but lacks a settled logic for assessing inferential stability across cases (Bennett & Checkel, 2015). These are not failures of execution but expressions of a deeper condition: the absence of a disciplined account of how empirical observation becomes epistemically obligatory.

This paper proposes that the resources for addressing this impasse lie outside the standard Western philosophical canon. The Nyāya-Vārttika, Uddyotakara’s seventh-century commentary on Gautama’s Nyāya-sūtra, preserves a theory of inference that integrates empirical grounding, error detection, and pragmatic validation into a unified epistemic practice precisely the integration contemporary methodology lacks. Nyāya epistemology has received increasing attention from philosophers working on reliabilism, externalism, and the problem of induction (Ganeri, 2019; Phillips, 2013; Taber, 2018), but its methodological implications remain largely unexplored. This paper argues that Uddyotakara’s inferential theory is not merely philosophically interesting but operationally usable: it can be translated into concrete research heuristics capable of disciplining qualitative inference.

We proceed in eight parts. Section 2 examines Uddyotakara’s theory of vyāpti as the foundational relation licensing inference. Section 3 analyzes the empirical anchoring function of pakṣa-dharmatā. Section 4 reconstructs the theory of upādhi as a systematic protocol for error detection. Section 5 examines Uddyotakara’s rejection of purely negative inference and its methodological consequences. Section 6 establishes vyāpti as the normative core of inferential reasoning. Section 7 demonstrates how Tantrayukti heuristics operationalize this logic as research procedure. Section 8 explicates pragmatic validation as the criterion of epistemic success.

Vyāpti and the Problem of Inductive Grounding

At the core of Nyāya inferential theory lies Vyāpti the invariable concomitance between the probans (hetu) and probandum (sādhya). Yet Uddyotakara’s treatment of vyāpti represents a significant departure from both earlier Nyāya and Buddhist alternatives. Against Dignāga’s theory of apoha (exclusion), which construes inference as the negation of counter-possibles, Uddyotakara insists that genuine knowledge requires positive epistemic access to real relations in the world. His assertion “na hy apoha-mātreṇa jñānaṃ sambhavati” (knowledge cannot arise from mere exclusion) is not a peripheral polemic but a foundational epistemic commitment (Uddyotakara, 1996).

This commitment carries significant methodological weight. For Uddyotakara, the relation “smoke fire” is not a linguistic convention or a mental construction but a real ontological connection between universals (jāti) instantiated in particulars. When a competent observer perceives smoke, they do not merely infer fire through eliminative reasoning; they cognize the presence of smokiness as pervaded by fieriness. The invariable relation is directly available to disciplined perception, albeit through extraordinary perceptual processes (sāmānyalakṣaṇa-pratyakṣa) that require cultivation (Phillips, 2017).

Crucially, Uddyotakara specifies the epistemic mechanism through which vyāpti is acquired: bhūyo-darśana, or repeated observation. He writes, “bhūyo darśanāt sāmānyataḥ smṛtiḥ” (from repeated observation arises a general recollection) (Uddyotakara on NS 1.1.5, cited in Chatterjee, 2015). This is not a simple frequency model. Repetition does not create the invariable relation; it removes obstacles to its recognition. Vyāpti is discovered, not constructed. This anticipates modern reliabilist accounts of knowledge, which locate warrant in the reliability of the belief-forming process rather than in the subject’s ability to articulate justifications (Goldman & Beddor, 2021). Yet it also differs in important respects: Uddyotakara retains a robust realism about universals and insists that genuine inference requires actual positive instances, not merely statistical correlations.

The methodological implication for qualitative research is direct. Contemporary qualitative methodology lacks an explicit account of how repeated observations accumulate inferential force. Thematic analysis, for instance, typically

codes instances and aggregates them into themes, but it possesses no internal mechanism for certifying when an observed co-occurrence has achieved the status of invariable relation (Braun & Clarke, 2021). Grounded theory's constant comparative method approaches this concern but halts at theoretical saturation a pragmatic stopping rule rather than an epistemic certification (Charmaz, 2014). Uddyotakara's theory supplies what is missing: a principled account of how iterated observation, disciplined by specific conditions, can generate knowledge of non-accidental connection.

Pakṣa-Dharmatā and Construct Validity

Inference, for Nyāya, is not a free-floating logical operation. It requires empirical instantiation in the specific case under investigation. This requirement is codified in the condition of pakṣa-dharmatā: the probans must be present in the subject (pakṣa) of inference. Uddyotakara is unequivocal: “pakṣe dharma-abhāve hetuḥ aprayojakaḥ” (if the reason is absent in the subject, it is useless) (Uddyotakara, 1996).

This principle functions as an early and sophisticated theory of construct validity. In contemporary research methodology, construct validity concerns the adequacy of the operationalization: does the measured variable actually capture the theoretical construct it purports to represent (Messick, 1995)? Yet in qualitative practice, constructs are frequently imported from existing literature and applied to data through coding procedures that assume, rather than demonstrate, their applicability. The researcher approaches interview transcripts with a pre-existing category “resilience,” “agency,” “neoliberal subjectivity” and asks whether instances of the category can be identified. Pakṣa-dharmatā inverts this logic. One may only infer that a particular subject possesses the probandum if the probans is actually, empirically present in that subject. Inference cannot be borrowed from elsewhere.

This is not merely a logical nicety; it has profound implications for research design. Uddyotakara's insistence on instantiation entails that vyāpti-establishment and case-analysis are distinct moments in inquiry, and that the latter cannot proceed without the former. This is precisely the architecture formalized in the T-NPI framework: Module B (Vyāpti-Sādhana) is dedicated to the discovery and purification of invariable relations within a closed pramāṇa field; Module C (Anumāna-Prayoga) applies those relations to new cases only after certifying that the probans is present. The structure prevents what might be called “inferential leakage” the illicit application of generalizations not grounded in the case at hand.

Chatterjee, 2015 notes that the condition of pakṣa-dharmatā also serves a psychological function: inference is only triggered when the inquirer experiences a need to know (sismādayiṣā), which presupposes that the presence of the probans is not already certain (pp. 272–274). While later Naiyāyikas debated whether doubt is strictly necessary, the core insight remains: inference is an operation performed under conditions of epistemic need, and it requires local anchoring. Contemporary qualitative researchers would do well to recover this discipline. The practice of “applying a theoretical framework” should not license inferring claims about a case that the case itself does not authorize.

Upādhi: Inference and the Discipline of Error Detection

Uddyotakara's most significant methodological contribution and his most direct anticipation of modern scientific reasoning lies in his theory of upādhi. An upādhi is a limiting condition or undercutting defeater that vitiates an otherwise plausible inference. Uddyotakara defines it formally: “upādhiḥ nāma yaḥ sādhyavad-bhinnatve sati sādhanam anugacchati” (an upādhi is that which, though distinct from the probandum, pervades the probans) (Uddyotakara, 1996).

The logical structure is precise. Consider the inference: “This mountain has fire because it has smoke.” If it could be shown that the smoke is actually wet fuel vapor which is pervaded by dampness, not fire the inference fails. The wetness of the fuel is an upādhi: it is distinct from fire, yet it accompanies the probans (smoke) in a way that breaks the invariable relation to the probandum. The presence of an upādhi indicates that the apparent vyāpti is spurious; the hetu is not really pervaded by the sādhyā but by something else.

Later Nyāya, particularly Gaṅgeśa, developed the theory of upādhi with extraordinary precision, analyzing its role as an undercutting condition (bādhaka) and specifying the conditions under which an upādhi is genuine rather than apparent (Phillips, 2013; Tatacharya & Gaṅgeśa, 2002; Uddyotakara, 1996). But the core insight is Uddyotakara's: regularities are not sufficient. The inquirer must actively search for conditions that would undermine the inference, even if such conditions are not initially apparent.

This transforms inference from a passive generalization into an active epistemic discipline. The qualitative researcher who has observed that “participants who report high organizational commitment also report low turnover intention”

has identified a regularity. But they have not yet warranted an inference. They must systematically inquire: Is there any condition under which the probans (high commitment) occurs without the probandum (low turnover)? Are there forms of commitment that do not reduce turnover? Are there forms of turnover reduction that are produced by other mechanisms? This is precisely the logic of upādhi detection.

Modern qualitative methodology possesses no formal analogue to this procedure. Validity checking in qualitative research typically involves member checks, negative case analysis, or triangulation useful practices, but not systematic protocols for identifying confounds (Lincoln & Guba, 1985). Uddyotakara offers more: a formal specification of what counts as a defeating condition and an obligation to actively search for it. The T-NPI framework operationalizes this through its integration of upādhi-elimination into the vyāpti-refinement process. An inferred relation is not certified until candidate upādhis have been proposed and eliminated.

The Rejection of Purely Negative Inference

Uddyotakara's epistemic realism expresses itself most decisively in his treatment of kevala-vyatireki inference— inference based solely on negative concomitance. He writes: “kevala-vyatirekī na niścaya-hetuḥ” (purely negative inference cannot yield certainty) (Uddyotakara, 1996).

This claim requires careful reconstruction. Nyāya tradition recognizes three inferential forms: kevalānvayi (purely positive, where the probandum is universally present), kevala-vyatireki (purely negative, where vyāpti can only be established through absence), and anvaya-vyatireki (positive-negative, where both forms of concomitance are available). Uddyotakara is the first Naiyāyika to explicitly formulate this tripartite classification, and his evaluation of the three forms is epistemically stratified (Kalita, 2015). Kevalānvayi inferences are valid but rare. Anvaya-vyatireki inferences are paradigmatic. Kevala-vyatireki inferences are epistemically deficient.

Why? Because purely negative inference lacks positive empirical purchase. Consider the stock Nyāya example of kevala-vyatireki: “The living body is not soulless; if it were soulless, it would be lifeless.” The vyāpti here is negative: wherever there is no soul, there is no life. But this relation is established only through agreement in absence, not through positive observation of co-presence. Uddyotakara argues that such inference cannot produce certainty (niścaya) because it lacks direct perceptual grounding in sapakṣa positive instances where both hetu and sādhya are present (Kalita, 2015).

This has direct methodological implications for contemporary practice. Much qualitative inference operates in a kevala-vyatireki register. Researchers infer that a particular factor is causally significant because its absence correlates with the absence of the outcome. Process tracing often relies on such eliminative logic: if alternative explanations are ruled out, the remaining explanation is warranted (Bennett & Checkel, 2015). Uddyotakara's critique suggests this logic is insufficient. Elimination of alternatives does not itself constitute positive warrant. One must also possess positive instances of co-occurrence.

This insight fundamentally shapes T-NPI methodology. Module B's vyāpti-refinement operates within a closed pramāṇa field where both anvaya (positive agreement) and vyatireka (negative agreement) are available. Pure vyatireka is treated as a provisional indicator, not as certifying warrant. The methodology thus builds in a systematic bias toward positive empirical grounding a bias contemporary qualitative methodology lacks.

Vyāpti as the Normative Core of Reasoning

Perhaps the most consequential statement in the Nyāya-Vārttika for methodological purposes is Uddyotakara's assertion: “vyāptir eva hetor ātmā” (vyāpti alone is the soul of the reason) (Uddyotakara, 1996).

This is a normative claim about the conditions under which something functions as a genuine probans (hetu). A mark is only a reason only licenses inference if it stands in a validated vyāpti relation to the probandum. Without vyāpti, the mark is merely a feature, not a ground. As (Matilal, 1998) observes, this distinguishes the Nyāya theory of inference from deductive and inductive models in Western logic: it is neither formal implication nor statistical correlation, but a real relation between properties anchored in the structure of the world (pp. 75–78).

This single sentence challenges foundational assumptions of contemporary qualitative methodology. Much qualitative research proceeds as if the coherence of narrative, the richness of description, or the persuasiveness of interpretation constitutes inferential warrant. Thematic analysis produces well-organized findings; interpretative phenomenological analysis generates compelling accounts of lived experience. But in Uddyotakara's terms, these are hetv-ābhāsas mere appearances of reasons unless they are underwritten by validated vyāpti. Thematic coherence is not inferential binding.

This is not to dismiss interpretive research but to demand that its inferential structure be made explicit. The claim “participants experienced institutional betrayal because of administrative unresponsiveness” asserts a relation between two properties. The warrant for that assertion cannot rest solely on the vividness of participant narratives or the elegance of the coding scheme. It requires demonstration that administrative unresponsiveness is pervaded by institutional betrayal that the former is a non-accidental indicator of the latter. This is a high epistemic bar, but it is precisely the bar Nyāya erects.

T-NPI’s methodological innovation is to accept this bar and design inquiry procedures capable of meeting it. The framework reverses the conventional qualitative workflow. Instead of moving from data to codes to themes to theory, T-NPI moves from exemplars to vyāpti to argument to validation. This is not arbitrary formalism; it follows directly from Uddyotakara’s insistence that vyāpti is the soul of the reason. Inference without vyāpti is not inference at all.

From Logic to Method: Tantrayukti as Operational Epistemology

Nyāya provides the inferential logic; Tantrayukti provides the procedural tools for translating that logic into investigative practice. The Tantrayukti are thirty-two to thirty-six (depending on the textual tradition) heuristic principles enumerated in classical Indian medical, legal, and philosophical texts, most systematically in the Caraka Saṃhitā (Meulenbeld, 1999). They include operations such as nirvacana (etymological or conceptual determination), samuccaya (aggregation of relevant factors), apadeśa (citing a reason or authority), prasaṅga (extended implication), and upamāna (analogical comparison).

The relationship between Tantrayukti and Nyāya has been insufficiently theorized. Pre-modern Indian authors treated them as distinct but complementary: Nyāya provides the general theory of inference and debate; Tantrayukti provides domain-specific heuristics for inquiry in medicine, statecraft, and jurisprudence (Ganeri, 2014). This paper proposes a stronger integration: Tantrayukti can be understood as operational epistemology, transforming the abstract principles of Nyāya inference into concrete, teachable procedures for conducting inquiry.

Consider the heuristic of apadeśa. In Tantrayukti, apadeśa means citing a reason or evidence for a claim. In Nyāya terms, apadeśa is the speech-act that expresses a hetu. The T-NPI framework operationalizes this connection by treating Module C (Anumāna-Prayoga) as the systematic deployment of apadeśa: each inferential claim is accompanied by explicit citation of the vyāpti that warrants it and the pakṣa-dharmatā that instantiates it. Similarly, prasaṅga examining the unwelcome consequences of a position operationalizes upādhi detection. To test whether an inferred vyāpti is genuine, one extends it to cases where the probans is present and examines whether the probandum necessarily follows. Counterexamples discovered through prasaṅga reveal upādhis.

This integration positions T-NPI not as a modern invention but as the methodological completion of a classical project. The ancient authors who enumerated the Tantrayukti understood them as principles of inquiry, but they did not explicitly ground them in a unified theory of inference. The classical Naiyāyikas articulated such a theory but did not develop its methodological implications for non-philosophical inquiry. T-NPI closes this gap, demonstrating that the two traditions are not merely compatible but mutually completing.

Critically, this integration avoids dilution. Tantrayukti are not metaphorically “like” qualitative methods; they are operationalized as formal heuristics with specific input conditions, transformation rules, and output specifications. Researchers are not invited to “draw inspiration” from Indian logic but to execute specified procedures. This distinguishes T-NPI from the many efforts to incorporate “non-Western perspectives” that remain ornamental rather than operational (Smith, 2021).

Pragmatic Validation and the Criterion of Truth

The final element of Uddyotakara’s inferential architecture is its criterion of epistemic success. Following Gautama, Uddyotakara affirms: “pravṛtti-sāmarthyād eva prāmāṇyam” (validity is established only by the capacity to enable successful action) (Uddyotakara, 1996; Phillips, 2013).

This is not pragmatism in the classical American sense, which often relativizes truth to what works in a community of inquiry. Uddyotakara retains a robust correspondence conception of truth: a cognition is true (prama) when it presents its object as that object is (yathārtha). But the criterion of truth how we know that a cognition is veridical is pragmatic. A true cognition, when acted upon, leads to successful attainment of the intended object; a false cognition leads to disappointment (Taber, 2018).

This dual-aspect theory realist truth-condition, pragmatist verification-condition is precisely suited to the needs of qualitative methodology. Qualitative researchers cannot directly observe the truth of their interpretations; there is no

“view from nowhere” against which to check their claims about meaning, experience, or institutional process. But they can observe whether those claims, when acted upon, enable successful navigation of the domain. An interpretation of organizational culture that enables accurate prediction of behavior, effective intervention design, or meaningful participant recognition is, by Uddyotakara’s criterion, validated.

T-NPI operationalizes this through Module D, which comprises four validation heuristics derived from Tantrayukti: Apadeśa (does the inference license successful citation in new contexts?), Upamāna (does it enable analogical extension to comparable cases?), Prasaṅga (are its implications borne out when examined?), and Sambhava (is it coherent with established pramāṇa?). These are not supplementary checks appended after analysis; they are integral to the inferential process. An inference that cannot survive pragmatic deployment is not merely unconfirmed it is falsified.

This approach also addresses the long-standing anxiety in qualitative research about generalization. Uddyotakara does not require that inferences hold universally; vyāpti is defined as niyata-sāhacarya (regular companionship), not sarva-sāhacarya (omnipresent companionship) (Phillips, 2013). The relation is invariable within the domain of relevantly similar conditions. Pragmatic validation discloses the boundaries of that domain. When an inference fails to enable successful action in a new context, that context is revealed as differing in some relevant respect an upādhi is discovered. Pragmatic failure is epistemically productive.

Conclusion: Nyāya as a Living Science of Inquiry

Uddyotakara’s Nyāya-Vārttika preserves a theory of inference that contemporary qualitative science urgently needs: empirically grounded, error-sensitive, and pragmatically validated. It offers solutions to problems that current methodology acknowledges but cannot solve the grounding of generalization, the detection of confounds, the certification of inferential warrant. More importantly, it offers these solutions not as philosophical abstractions but as operationalizable procedures.

The Tantrayukti-Nyāya-Pramāṇa-Inquiry framework demonstrates that classical Indian logic can function as a contemporary research methodology without exoticism or dilution. T-NPI is not Nyāya “applied” to modern problems; it is Nyāya operationalized as method. The categories, heuristics, and validation procedures are direct translations of Uddyotakara’s conceptual apparatus into research protocols.

This carries implications beyond methodology. The persistent exclusion of non-Western philosophical traditions from mainstream research training reflects not their irrelevance but the failure of contemporary scholarship to recognize them as living intellectual resources rather than historical artifacts (Park, 2017). Nyāya is not merely a subject for Indological study; it is a science of inquiry whose practitioners included logicians, physicians, jurists, and theologians working within a unified epistemic culture. To recover Nyāya as method is to recover a conception of philosophy as epistemically productive rather than merely interpretive.

The inferential impasse of contemporary qualitative research is, at its root, a philosophical failure. It reflects the inability of methodological discourse to articulate what counts as a good reason, a warranted generalization, a valid inference. Uddyotakara articulated these criteria fourteen centuries ago. The task now is not to invent new logics but to operationalize old ones to recognize that the science of inquiry has been practiced in multiple traditions, and that the resources for its renewal may come from where we have not yet thought to look.

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