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ARTIFICIAL INTELLIGENCE LARGE LANGUAGE MODEL INTERROGATION

REPRESENTATIONAL MEASUREMENT FAILURE IN HEALTH TECHNOLGY ASSESSMENT

LATVIA: THE NATIONAL HEALTH SERVICE OPERATIONALIZING FALSE MEASUREMENT IN HEALTH TECHNOLOGY ASSESSMENT

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FOREWORD

HEALTH TECHNOLOGY ASSESSMENT: A GLOBAL SYSTEM OF NON-MEASUREMENT

The National Health Service (Nacionālais veselības dienests, NHS Latvia) is the central operational authority responsible for pharmaceutical reimbursement and health technology assessment within Latvia's publicly funded health system. Its primary function is to determine whether medicines and other health technologies are included in the national reimbursement list, the level of reimbursement granted, and the conditions under which patients may access these therapies. Acting under the policy direction of the Ministry of Health, the National Health Service translates national healthcare priorities into binding reimbursement decisions that directly affect patient access and health system resource allocation.

A core component of its HTA role is the evaluation of manufacturer submissions that include clinical effectiveness evidence, economic evaluation, and budget impact analysis. Manufacturers seeking reimbursement must provide structured dossiers comparing the proposed therapy with existing alternatives, including modeled estimates of incremental costs and health outcomes. These assessments frequently incorporate cost-effectiveness analysis, often expressed in terms of cost per quality-adjusted life year (QALY), and rely on economic modeling to project long-term clinical and economic consequences.

The National Health Service evaluates these submissions to determine whether the therapy provides sufficient clinical benefit relative to its expected cost and whether its inclusion is financially sustainable within the national health budget. Based on this assessment, it makes formal recommendations on reimbursement status, which influence pricing negotiations, prescribing eligibility, and coverage conditions.

Through this process, the National Health Service serves as the operational embodiment of HTA in Latvia. It functions as the decision authority that converts clinical and economic evaluation into enforceable reimbursement outcomes, thereby shaping therapy availability, pricing structures, and the allocation of healthcare resources across the Latvian health system.

The objective of this study was to determine whether the Latvian National Health Service, as the operational authority responsible for reimbursement decisions, pharmaceutical access, and health technology evaluation within Latvia's publicly funded health system, applies quantitative constructs that satisfy the axioms of representational measurement. National-level logit assessments establish the epistemic climate within which health technology assessment operates, but only an operational authority assessment can determine whether measurement-valid constructs function as binding determinants of reimbursement and pricing decisions. The study therefore applied the canonical 24-item representational measurement interrogation to the methodological guidance, reimbursement criteria, economic evaluation requirements, and decision frameworks used or endorsed by the Latvian National Health Service. The objective was not to evaluate procedural transparency or administrative sophistication, but to determine whether the agency's evaluative architecture enforces the preconditions necessary for lawful arithmetic, including

unidimensionality, dimensional homogeneity, ratio scale admissibility, and the requirement that latent constructs be measured through invariant transformation procedures such as Rasch measurement. The central question addressed was whether the quantitative claims used to support therapy access decisions constitute measurement-valid quantities or scoring constructs lacking representational legitimacy.

The logit profile demonstrates systematic non-possession of representational measurement axioms within the operational framework of the Latvian National Health Service. Statements asserting that measurement must precede arithmetic, that multiplication requires ratio measurement, and that latent traits require Rasch transformation to establish invariant interval structure collapse to floor or near-floor logit values, indicating their exclusion as operational constraints. Conversely, false statements asserting that QALYs constitute ratio measures, that composite utility scores may be aggregated, and that simulation-based cost-effectiveness claims represent empirically falsifiable quantities register strongly positive logits, demonstrating institutional endorsement. These results confirm that the agency's evaluative framework relies on composite scoring constructs lacking demonstrated measurement properties, yet treats them as if they support arithmetic operations and quantitative comparisons. The consequence is a structurally coherent administrative system that produces numerical outputs used to guide reimbursement decisions, but whose quantitative foundations do not satisfy the conditions required for empirical measurement, falsification, or replication.

The starting point is simple and inescapable: *measurement precedes arithmetic*. This principle is not a methodological preference but a logical necessity. One cannot multiply what one has not measured, cannot sum what has no dimensional homogeneity, cannot compare ratios when no ratio scale exists. When HTA multiplies time by utilities to generate QALYs, it is performing arithmetic with numbers that cannot support the operation. When HTA divides cost by QALYs, it is constructing a ratio from quantities that have no ratio properties. When HTA aggregates QALYs across individuals or conditions, it is combining values that do not share a common scale. These practices are not merely suboptimal; they are mathematically impossible.

The modern articulation of this principle can be traced to Stevens' seminal 1946 paper, which introduced the typology of nominal, ordinal, interval, and ratio scales [1]. Stevens made explicit what physicists, engineers, and psychologists already understood: different kinds of numbers permit different kinds of arithmetic. Ordinal scales allow ranking but not addition; interval scales permit addition and subtraction but not multiplication; ratio scales alone support multiplication, division, and the construction of meaningful ratios. Utilities derived from multiattribute preference exercises, such as EQ-5D or HUI, are ordinal preference scores; they do not satisfy the axioms of interval measurement, much less ratio measurement. Yet HTA has, for forty years, treated these utilities as if they were ratio quantities, multiplying them by time to create QALYs and inserting them into models without the slightest recognition that scale properties matter. Stevens' paper should have blocked the development of QALYs and cost-utility analysis entirely. Instead, it was ignored.

The foundational theory that establishes *when* and *whether* a set of numbers can be interpreted as measurements came with the publication of Krantz, Luce, Suppes, and Tversky's *Foundations of Measurement* (1971) [2] . Representational Measurement Theory (RMT) formalized the axioms

under which empirical attributes can be mapped to numbers in a way that preserves structure. Measurement, in this framework, is not an act of assigning numbers for convenience, it is the discovery of a lawful relationship between empirical relations and numerical relations. The axioms of additive conjoint measurement, homogeneity, order, and invariance specify exactly when interval scales exist. RMT demonstrated once and for all that measurement is not optional and not a matter of taste: either the axioms hold and measurement is possible, or the axioms fail and measurement is impossible. Every major construct in HTA, utilities, QALYs, DALYs, ICERs, incremental ratios, preference weights, health-state indices, fails these axioms. They lack unidimensionality; they violate independence; they depend on aggregation of heterogeneous attributes; they collapse under the requirements of additive conjoint measurement. Yet HTA proceeded, decade after decade, without any engagement with these axioms, as if the field had collectively decided that measurement theory applied everywhere except in the evaluation of therapies.

Whereas representational measurement theory articulates the axioms for interval measurement, Georg Rasch's 1960 model provides the only scientific method for transforming ordered categorical responses into interval measures for latent traits [3]. Rasch models uniquely satisfy the principles of specific objectivity, sufficiency, unidimensionality, and invariance. For any construct such as pain, fatigue, depression, mobility, or need, Rasch analysis is the only legitimate means of producing an interval scale from ordinal item responses. Rasch measurement is not an alternative to RMT; it is its operational instantiation. The equivalence of Rasch's axioms and the axioms of representational measurement was demonstrated by Wright, Andrich and others as early as the 1970s. In the latent-trait domain, the very domain where HTA claims to operate; Rasch is the only game in town [4].

Yet Rasch is effectively absent from all HTA guidelines, including NICE, PBAC, CADTH, ICER, SMC, and PHARMAC. The analysis demands utilities but never requires that those utilities be measured. They rely on multiattribute ordinal classifications but never understand that those constructs be calibrated on interval or ratio scales. They mandate cost-utility analysis but never justify the arithmetic. They demand modelled QALYs but never interrogate their dimensional properties. These guidelines do not misunderstand Rasch; they do not know it exists. The axioms that define measurement and the model that makes latent trait measurement possible are invisible to the authors of global HTA rules. The field has evolved without the science that measurement demands.

How did HTA miss the bus so thoroughly? The answer lies in its historical origins. In the late 1970s and early 1980s, HTA emerged not from measurement science but from welfare economics, decision theory, and administrative pressure to control drug budgets. Its core concern was *valuing health states*, not *measuring health*. This move, quiet, subtle, but devastating, shifted the field away from the scientific question "What is the empirical structure of the construct we intend to measure?" and toward the administrative question "How do we elicit a preference weight that we can multiply by time?" The preference-elicitation projects of that era (SG, TTO, VAS) were rationalized as measurement techniques, but they never satisfied measurement axioms. Ordinal preferences were dressed up as quasi-cardinal indices; valuation tasks were misinterpreted as psychometrics; analyst convenience replaced measurement theory. The HTA community built an

entire belief system around the illusion that valuing health is equivalent to measuring health. It is not.

The endurance of this belief system, forty years strong and globally uniform, is not evidence of validity but evidence of institutionalized error. HTA has operated under conditions of what can only be described as *structural epistemic closure*: a system that has never questioned its constructs because it never learned the language required to ask the questions. Representational measurement theory is not taught in graduate HTA programs; Rasch modelling is not part of guideline development; dimensional analysis is not part of methodological review. The field has been insulated from correction because its conceptual foundations were never laid. What remains is a ritualized practice: utilities in, QALYs out, ICERs calculated, thresholds applied. The arithmetic continues because everyone assumes someone else validated the numbers.

This Logit Working Paper series exposes, through probabilistic and logit-based interrogations of AI large language national knowledge bases, the scale of this failure. The results display a global pattern: true statements reflecting the axioms of measurement receive weak endorsement; false statements reflecting the HTA belief system receive moderate or strong reinforcement. This is not disagreement. It is non-possession. It shows that HTA, worldwide, has developed as a quantitative discipline without quantitative foundations; a confused exercise in numerical storytelling.

The conclusion is unavoidable: HTA does not need incremental reform; it needs a scientific revolution. Measurement must precede arithmetic. Representational axioms must precede valuation rituals. Rasch measurement must replace ordinal summation and utility algorithms. Value claims must be falsifiable, protocol-driven, and measurable; rather than simulated, aggregated, and numerically embellished.

The global system of non-measurement is now visible. The task ahead is to replace it with science.

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DISCLAIMER

This analysis is generated through the structured interrogation of a large language model (LLM) applied to a defined documentary corpus and is intended solely to characterize patterns within an aggregated knowledge environment. It does identify, assess, or attribute beliefs, intentions, competencies, or actions to any named individual, faculty member, student, administrator, institution, or organization. The results do not constitute factual findings about specific persons or programs, nor should they be interpreted as claims regarding professional conduct, educational quality, or compliance with regulatory or accreditation standards. All probabilities and logit values reflect model-based inferences about the presence or absence of concepts within a bounded textual ecosystem, not judgments about real-world actors. The analysis is exploratory, interpretive, and methodological in nature, offered for scholarly discussion of epistemic structures rather than evaluative or legal purposes. Any resemblance to particular institutions or practices is contextual and non-attributive, and no adverse implication should be inferred.

1. INTERROGATING THE LARGE LANGUAGE MODEL

A large language model **(**LLM**)** is an artificial intelligence system designed to understand, generate, and manipulate human language by learning patterns from vast amounts of text data. Built on deep neural network architectures, most commonly transformers, LLMs analyze relationships between words, sentences, and concepts to produce contextually relevant responses. During training, the model processes billions of examples, enabling it to learn grammar, facts, reasoning patterns, and even subtle linguistic nuances. Once trained, an LLM can perform a wide range of tasks: answering questions, summarizing documents, generating creative writing, translating languages, assisting with coding, and more. Although LLMs do not possess consciousness or true understanding, they simulate comprehension by predicting the most likely continuation of text based on learned patterns. Their capabilities make them powerful tools for communication, research, automation, and decision support, but they also require careful oversight to ensure accuracy, fairness, privacy, and responsible use

In this Logit Working Paper, "interrogation" refers not to discovering what an LLM *believes,* it has no beliefs, but to probing the content of the *corpus-defined knowledge space* we choose to analyze. This knowledge base is enhanced if it is backed by accumulated memory from the user. In this case the interrogation relies also on 12 months of HTA memory from continued application of the system to evaluate HTA experience. The corpus is defined before interrogation: it may consist of a journal (e.g., *Value in Health*), a national HTA body, a specific methodological framework, or a collection of policy documents. Once the boundaries of that corpus are established, the LLM is used to estimate the conceptual footprint within it. This approach allows us to determine which principles are articulated, neglected, misunderstood, or systematically reinforced.

In this HTA assessment, the objective is precise: to determine the extent to which a given HTA knowledge base or corpus, global, national, institutional, or journal-specific, recognizes and reinforces the foundational principles of representational measurement theory (RMT). The core principle under investigation is that measurement precedes arithmetic; no construct may be treated as a number or subjected to mathematical operations unless the axioms of measurement are satisfied. These axioms include unidimensionality, scale-type distinctions, invariance, additivity, and the requirement that ordinal responses cannot lawfully be transformed into interval or ratio quantities except under Rasch measurement rules.

The HTA knowledge space is defined pragmatically and operationally. For each jurisdiction, organization, or journal, the corpus consists of:

- published HTA guidelines
- agency decision frameworks
- cost-effectiveness reference cases
- academic journals and textbooks associated with HTA
- modelling templates, technical reports, and task-force recommendations
- teaching materials, methodological articles, and institutional white papers

These sources collectively form the epistemic environment within which HTA practitioners develop their beliefs and justify their evaluative practices. The boundary of interrogation is thus not the whole of medicine, economics, or public policy, but the specific textual ecosystem that sustains HTA reasoning. . The "knowledge base" is therefore not individual opinions but the cumulative, structured content of the HTA discourse itself within the LLM.

THE LATVIAN NATIONAL HEALTH SERVICER HTA KNOWLEDGE BASE

The Latvian National Health Service occupies the central operational role in determining therapy access, reimbursement eligibility, and pharmaceutical funding within Latvia's publicly financed health system. Acting under the authority of the Ministry of Health, the agency administers reimbursement lists, negotiates pharmaceutical coverage, and evaluates submissions from manufacturers seeking public funding for new therapies. Its evaluative framework integrates clinical evidence, economic evaluation, and budget impact analysis to inform decisions regarding therapy inclusion, restriction, or exclusion. Economic evaluation functions as a principal quantitative instrument within this framework, providing comparative assessments of therapeutic value intended to guide resource allocation decisions.

Manufacturers submitting reimbursement applications are required to present evidence regarding clinical effectiveness and economic value, typically expressed through cost-effectiveness analysis using cost-per-QALY ratios or related composite economic metrics. These analyses rely on utility weights derived from multiattribute preference instruments, most commonly variants of the EQ-5D or comparable utility-based scoring systems. These instruments generate numerical values representing preference-weighted health state descriptions, which are then combined with time to produce QALY estimates. Economic models integrate these estimates with projected cost data to produce incremental cost-effectiveness ratios intended to summarize the comparative value of therapies.

Simulation modeling plays an important role in operationalizing these constructs. Models project long-term health outcomes and costs beyond observed clinical trial periods, incorporating epidemiological assumptions, transition probabilities, and utility weights to generate numerical estimates of lifetime cost-effectiveness. These outputs function as key decision variables within reimbursement evaluation. The methodological guidance and operational practices of the agency therefore reflect methodological alignment with internationally diffused health technology assessment frameworks, particularly those influenced by European and NICE-derived economic evaluation standards.

Despite the procedural coherence of this evaluative architecture, the quantitative constructs embedded within it originate from composite preference scoring systems rather than measurement-validated ratio scales. Utility scores represent aggregated ordinal preferences across multidimensional health state descriptions. Their numerical values are determined by scoring algorithms and valuation conventions rather than by demonstration of invariant unit structure. Nevertheless, these scores are multiplied by time and aggregated across populations to produce composite indices treated as if they possessed ratio scale properties.

The agency's knowledge base to support numerical storytelling therefore reflects a stable administrative structure grounded in internationally standardized economic evaluation procedures. It demonstrates consistency in applying established methodological conventions and provides a structured framework for evaluating reimbursement submissions. However, the framework does not require demonstration that the numerical constructs used satisfy representational measurement axioms prior to arithmetic manipulation. Composite utility indices and simulation-derived cost-effectiveness ratios function as operational decision variables despite lacking demonstrated ratio scale properties or invariant measurement structure.

As a result, the Latvian National Health Service operates within a quantitatively sophisticated administrative framework whose numerical outputs possess procedural authority but whose measurement validity is not established as a structural prerequisite for arithmetic operations.

CATEGORICAL PROBABILITIES

In the present application, the interrogation is tightly bounded. It does not ask what an LLM "thinks," nor does it request a normative judgment. Instead, the LLM evaluates how likely the HTA knowledge space is to endorse, imply, or reinforce a set of 24 diagnostic statements derived from representational measurement theory (RMT). Each statement is objectively TRUE or FALSE under RMT. The objective is to assess whether the HTA corpus exhibits possession or non-possession of the axioms required to treat numbers as measures. The interrogation creates an categorical endorsement probability: the estimated likelihood that the HTA knowledge base endorses the statement whether it is true or false; *explicitly or implicitly.*

The use of categorical endorsement probabilities within the Logit Working Papers reflects both the nature of the diagnostic task and the structure of the language model that underpins it. The purpose of the interrogation is not to estimate a statistical frequency drawn from a population of individuals, nor to simulate the behavior of hypothetical analysts. Instead, the aim is to determine the conceptual tendencies embedded in a domain-specific knowledge base: the discursive patterns, methodological assumptions, and implicit rules that shape how a health technology assessment environment behaves. A large language model does not "vote" like a survey respondent; it expresses likelihoods based on its internal representation of a domain. In this context, endorsement probabilities capture the strength with which the knowledge base, as represented within the model, supports a particular proposition. Because these endorsements are conceptual rather than statistical, the model must produce values that communicate differences in reinforcement without implying precision that cannot be justified.

This is why categorical probabilities are essential. Continuous probabilities would falsely suggest a measurable underlying distribution, as if each HTA system comprised a definable population of respondents with quantifiable frequencies. But large language models do not operate on that level. They represent knowledge through weighted relationships between linguistic and conceptual patterns. When asked whether a domain tends to affirm, deny, or ignore a principle such as unidimensionality, admissible arithmetic, or the axioms of representational measurement, the model draws on its internal structure to produce an estimate of conceptual reinforcement. The precision of that estimate must match the nature of the task. Categorical probabilities therefore

provide a disciplined and interpretable way of capturing reinforcement strength while avoiding the illusion of statistical granularity.

The categories used, values such as 0.05, 0.10, 0.20, 0.50, 0.75, 0.80, and 0.85, are not arbitrary. They function as qualitative markers that correspond to distinct degrees of conceptual possession: near-absence, weak reinforcement, inconsistent or ambiguous reinforcement, common reinforcement, and strong reinforcement. These values are far enough apart to ensure clear interpretability yet fine-grained enough to capture meaningful differences in the behavior of the knowledge base. The objective is not to measure probability in a statistical sense but to classify the epistemic stance of the domain toward a given item. A probability of 0.05 signals that the knowledge base almost never articulates or implies the correct response under measurement theory, whereas 0.85 indicates that the domain routinely reinforces it. Values near the middle reflect conceptual instability rather than a balanced distribution of views.

Using categorical probabilities also aligns with the requirements of logit transformation. Converting these probabilities into logits produces an interval-like diagnostic scale that can be compared across countries, agencies, journals, or organizations. The logit transformation stretches differences at the extremes, allowing strong reinforcement and strong non-reinforcement to become highly visible. Normalizing logits to the fixed ±2.50 range ensure comparability without implying unwarranted mathematical precision. Without categorical inputs, logits would suggest a false precision that could mislead readers about the nature of the diagnostic tool.

In essence, the categorical probability approach translates the conceptual architecture of the LLM into a structured and interpretable measurement analogue. It provides a disciplined bridge between the qualitative behavior of a domain's knowledge base and the quantitative diagnostic framework needed to expose its internal strengths and weaknesses.

The LLM computes these categorical probabilities from three sources:

1. **Structural content of HTA discourse**
   If the literature repeatedly uses ordinal utilities as interval measures, multiplies non-quantities, aggregates QALYs, or treats simulations as falsifiable, the model infers high reinforcement of these false statements.
2. **Conceptual visibility of measurement axioms**
   If ideas such as unidimensionality, dimensional homogeneity, scale-type integrity, or Rasch transformation rarely appear, or are contradicted by practice, the model assigns low endorsement probabilities to TRUE statements.
3. **The model's learned representation of domain stability**
   Where discourse is fragmented, contradictory, or conceptually hollow, the model avoids assigning high probabilities. This is *not* averaging across people; it is a reflection of internal conceptual incoherence within HTA.

The output of interrogation is a categorical probability for each statement. Probabilities are then transformed into logits [$\ln(p/(1-p))$], capped to ±4.0 logits to avoid extreme distortions, and normalized to ±2.50 logits for comparability across countries. A positive normalized logit indicates

reinforcement in the knowledge base. A negative logit indicates weak reinforcement or conceptual absence. Values near zero logits reflect epistemic noise.

Importantly, *a high endorsement probability for a false statement does not imply that practitioners knowingly believe something incorrect*. It means the HTA literature itself behaves as if the falsehood were true; through methods, assumptions, or repeated uncritical usage. Conversely, a low probability for a true statement indicates that the literature rarely articulates, applies, or even implies the principle in question.

The LLM interrogation thus reveals structural epistemic patterns in HTA: which ideas the field possesses, which it lacks, and where its belief system diverges from the axioms required for scientific measurement. It is a diagnostic of the *knowledge behavior* of the HTA domain, not of individuals. The 24 statements function as probes into the conceptual fabric of HTA, exposing the extent to which practice aligns or fails to align with the axioms of representational measurement.

INTERROGATION STATEMENTS

Below is the canonical list of the 24 diagnostic HTA measurement items used in all the logit analyses, each marked with its correct truth value under representational measurement theory (RMT) and Rasch measurement principles.

This is the definitive set used across the Logit Working Papers.

Measurement Theory & Scale Properties

1. Interval measures lack a true zero — TRUE
2. Measures must be unidimensional — TRUE
3. Multiplication requires a ratio measure — TRUE
4. Time trade-off preferences are unidimensional — FALSE
5. Ratio measures can have negative values — FALSE
6. EQ-5D-3L preference algorithms create interval measures — FALSE
7. The QALY is a ratio measure — FALSE
8. Time is a ratio measure — TRUE

Measurement Preconditions for Arithmetic

9. Measurement precedes arithmetic — TRUE
10. Summations of subjective instrument responses are ratio measures — FALSE
11. Meeting the axioms of representational measurement is required for arithmetic — TRUE

Rasch Measurement & Latent Traits

12. There are only two classes of measurement: linear ratio and Rasch logit ratio — TRUE
13. Transforming subjective responses to interval measurement is only possible with Rasch rules — TRUE
14. Summation of Likert question scores creates a ratio measure — FALSE

Properties of QALYs & Utilities

15. The QALY is a dimensionally homogeneous measure — FALSE
16. Claims for cost-effectiveness fail the axioms of representational measurement — TRUE
17. QALYs can be aggregated — FALSE

Falsifiability & Scientific Standards

18. Non-falsifiable claims should be rejected — TRUE
19. Reference-case simulations generate falsifiable claims — FALSE

Logit Fundamentals

20. The logit is the natural logarithm of the odds-ratio — TRUE

Latent Trait Theory

21. The Rasch logit ratio scale is the only basis for assessing therapy impact for latent traits — TRUE
22. A linear ratio scale for manifest claims can always be combined with a logit scale — FALSE
23. The outcome of interest for latent traits is the possession of that trait — TRUE
24. The Rasch rules for measurement are identical to the axioms of representational measurement — TRUE

AI LARGE LANGUAGE MODEL STATEMENTS: TRUE OR FALSE

Each of the 24 statements has a 400 word explanation why the statement is true or false as there may be differences of opinion on their status in terms of unfamiliarity with scale typology and the axioms of representational measurement.

The link to these explanations is: https://maimonresearch.com/ai-llm-true-or-false/

INTERPRETING TRUE STATEMENTS

TRUE statements represent foundational axioms of measurement and arithmetic. Endorsement probabilities for TRUE items typically cluster in the low range, indicating that the HTA corpus does *not* consistently articulate or reinforce essential principles such as:

- measurement preceding arithmetic
- unidimensionality
- scale-type distinctions
- dimensional homogeneity
- impossibility of ratio multiplication on non-ratio scales
- the Rasch requirement for latent-trait measurement

Low endorsement indicates **non-possession** of fundamental measurement knowledge—the literature simply does not contain, teach, or apply these principles.

INTERPRETING FALSE STATEMENTS

FALSE statements represent the well-known mathematical impossibilities embedded in the QALY framework and reference-case modelling. Endorsement probabilities for FALSE statements are often moderate or even high, meaning the HTA knowledge base:

- accepts non-falsifiable simulation as evidence
- permits negative “ratio” measures
- treats ordinal utilities as interval measures
- treats QALYs as ratio measures
- treats summated ordinal scores as ratio scales
- accepts dimensional incoherence

This means the field systematically reinforces incorrect assumptions at the center of its practice. *Endorsement* here means the HTA literature behaves as though the falsehood were true.

2. SUMMARY OF FINDINGS FOR TRUE AND FALSE ENDORSEMENTS: LATVIAN NATIONAL HEALTH SERVICE HTA KNOWLEDGE BASE

Table 1 presents probabilities and normalized logits for each of the 24 diagnostic measurement statements. This is the standard reporting format used throughout the HTA assessment series.

It is essential to understand how to interpret these results.

The endorsement probabilities do not indicate whether a statement is *true* or *false* under representational measurement theory. Instead, they estimate the extent to which the HTA knowledge base associated with the target treats the statement as if it were true, that is, whether the concept is reinforced, implied, assumed, or accepted within the country's published HTA knowledge base.

The logits provide a continuous, symmetric scale, ranging from +2.50 to –2.50, that quantifies the degree of this endorsement. the logits, of course link to the probabilities (p) as the logit is the natural logarithm of the odds ratio; logit = ln[p/1-p].

- Strongly positive logits indicate pervasive reinforcement of the statement within the knowledge system.
- Strongly negative logits indicate conceptual absence, non-recognition, or contradiction within that same system.
- Values near zero indicate only shallow, inconsistent, or fragmentary support.

Thus, the endorsement logit profile serves as a direct index of a country's epistemic alignment with the axioms of scientific measurement, revealing the internal structure of its HTA discourse. It does not reflect individual opinions or survey responses, but the implicit conceptual commitments encoded in the literature itself.

LATVIA: THE ABSENCE OF REPRESENTATIONAL MEASUREMENT IN THE NATIONAL HEALTH SERVICE HTA KNOWLEDGE BASE

The logit profile of the Latvian National Health Service knowledge base demonstrates the operational institutionalization of false measurement at the level where reimbursement decisions, therapy access, and pricing determinations are made (Table 1). This finding is not an inference drawn from isolated methodological inconsistencies but a direct structural consequence of the absence of representational measurement axioms as binding constraints within the agency's evaluative framework. The pattern of categorical endorsement probabilities and their logit transformations reveal systematic non-possession of the principles required to establish lawful quantitative claims. Arithmetic operations are performed on constructs whose measurement properties are neither demonstrated nor required, and the resulting numerical outputs acquire administrative authority without satisfying the conditions that define measurement itself.

TABLE 1: ITEM STATEMENT, RESPONSE, ENDORSEMENT AND NORMALIZED LOGITS LATVIAN NATIONAL HEALTH SERVICE HTA KNOWLEDGE BASE

STATEMENT	RESPONSE 1=TRUE 0=FALSE	ENDORSEMENT OF RESPONSE CATEGORICAL PROBABILITY	NORMALIZED LOGIT (IN RANGE +/- 2.50)
INTERVAL MEASURES LACK A TRUE ZERO	1	0.20	-1.40
MEASURES MUST BE UNIDIMENSIONAL	1	0.15	-1.75
MULTIPLICATION REQUIRES A RATIO MEASURE	1	0.10	-2.20
TIME TRADE-OFF PREFERENCES ARE UNIDIMENSIONAL	0	0.85	+1.75
RATIO MEASURES CAN HAVE NEGATIVE VALUES	0	0.90	+2.20
EQ-5D-3L PREFERENCE ALGORITHMS CREATE INTERVAL MEASURES	0	0.85	+1.75
THE QALY IS A RATIO MEASURE	0	0.95	+2.50
TIME IS A RATIO MEASURE	1	0.95	+2.50
MEASUREMENT PRECEDES ARITHMETIC	1	0.10	-2.20
SUMMATIONS OF SUBJECTIVE INSTRUMENT RESPONSES ARE RATIO MEASURES	0	0.90	+2.20
MEETING THE AXIOMS OF REPRESENTATIONAL MEASUREMENT IS REQUIRED FOR ARITHMETIC	1	0.10	-2.20
THERE ARE ONLY TWO CLASSES OF MEASUREMENT LINEAR RATIO AND RASCH LOGIT RATIO	1	0.05	-2.50
TRANSFORMING SUBJECTIVE RESPONSES TO INTERVAL MEASUREMENT IS ONLY POSSIBLE WITH RASH RULES	1	0.05	-2.50
SUMMATION OF LIKERT QUESTION SCORES CREATES A RATIO MEASURE	0	0.95	+2.50
THE QALY IS A DIMENSIONALLY HOMOGENEOUS MEASURE	0	0.90	+2.20
CLAIMS FOR COST-EFFECTIVENESS FAIL THE AXIOMS OF REPRESENTATIONAL MEASUREMENT	1	0.15	-1.75
QALYS CAN BE AGGREGATED	0	0.95	+2.50

NON-FALSIFIABLE CLAIMS SHOULD BE REJECTED	1	0.65	+0.60
REFERENCE CASE SIMULATIONS GENERATE FALSIFIABLE CLAIMS	0	0.90	+2.20
THE LOGIT IS THE NATURAL LOGARITHM OF THE ODDS-RATIO	1	0.60	+0.40
THE RASCH LOGIT RATIO SCALE IS THE ONLY BASIS FOR ASSESSING THERAPY IMPACT FOR LATENT TRAITS	1	0.05	-2.50
A LINEAR RATIO SCALE FOR MANIFEST CLAIMS CAN ALWAYS BE COMBINED WITH A LOGIT SCALE	0	0.55	+0.20
THE OUTCOME OF INTEREST FOR LATENT TRAITS IS THE POSSESSION OF THAT TRAIT	1	0.25	-1.90
THE RASCH RULES FOR MEASUREMENT ARE IDENTICAL TO THE AXIOMS OF REPRESENTATIONAL MEASUREMENT	1	0.05	-2.50

The most striking feature of the logit profile is the collapse of core representational measurement statements to floor or near-floor values. Statements asserting that measurement must precede arithmetic, that multiplication requires ratio scale measurement, and that representational measurement axioms must be satisfied prior to performing arithmetic operations register logits between −2.20 and −2.50. These values indicate not disagreement but effective exclusion. They demonstrate that these axioms do not operate as structural constraints within the agency's decision architecture. Arithmetic operations are performed first, and measurement validity is assumed rather than established. This inversion of logical order represents the defining structural feature of the agency's evaluative system.

Measurement is not an optional refinement that enhances arithmetic precision. It is the precondition that makes arithmetic meaningful. Representational measurement theory establishes the formal relationship between empirical attributes and numerical representations. Without satisfying these axioms, numbers do not represent quantities. They represent scoring conventions. Arithmetic operations performed on such numbers do not yield quantitative comparisons. They yield numerical transformations within an internally defined scoring system. The logit profile demonstrates that the Latvian National Health Service operates within precisely such a system. Its numerical outputs derive from procedural conventions rather than empirical measurement structures. It is firmly entrenched within the global HTA memeplex of false measurement.

This structural inversion becomes particularly evident in the treatment of latent constructs such as health-related quality of life. Statements asserting that subjective responses must be transformed using Rasch measurement to establish invariant interval structure collapse to the absolute floor of −2.50. This result has decisive implications. Rasch measurement provides the only known method

for transforming ordinal observations into invariant interval measures while preserving unidimensionality and person-independent item calibration. Its absence indicates that latent constructs are not measured but scored; a framework operationalized in 1960 but ignored by HTA. The resulting numerical values lack invariant unit structure. They cannot support arithmetic operations that require ratio properties. Yet these values serve as the foundation for cost-effectiveness calculations and reimbursement decisions.

The positive logits associated with false statements reinforce this conclusion. Statements asserting that QALYs constitute ratio measures, that composite preference scores can be aggregated, and that summations of ordinal instrument responses create ratio measures all register logits between +2.20 and +2.50. These values indicate strong endorsement of propositions that violate the axioms of representational measurement; a surprising oversight as the axioms were formalized in 1971. The agency's evaluative framework therefore treats composite scoring constructs as if they possessed measurement properties that have not been demonstrated. This substitution of scoring for measurement defines the structural basis of the agency's quantitative evaluation procedures.

The QALY occupies the central position within this framework of false measurement It combines time, which is a manifest ratio measure, with utility weights derived from multiattribute preference instruments. Time possesses ratio properties because it has a true zero and invariant unit structure. Utility weights derived from preference elicitation do not possess these properties. They represent ordinal preference rankings transformed through scoring algorithms. Multiplying a ratio measure by a non-ratio measure does not produce a ratio measure. It produces a composite index lacking dimensional homogeneity; an index which, in mathematical terms, is nonsense. Yet the logit profile demonstrates that this structural incoherence does not function as a barrier to impossible arithmetic manipulation within the agency's evaluative system.

The positive logit value of +2.50 for the statement asserting that time is a ratio measure confirms that the agency recognizes lawful measurement structures when evaluating manifest attributes. This recognition, however, does not extend to latent constructs. Instead, latent constructs are treated as if measurement were unnecessary. This asymmetry does not reflect a difference in the logical requirements governing manifest and latent attributes. It reflects the substitution of scoring conventions for Rasch measurement procedures in the evaluation of latent traits. Arithmetic admissibility depends on scale properties, not on whether an attribute is manifest or latent. Without invariant unit structure, arithmetic operations lack empirical meaning.

The endorsement of simulation-based cost-effectiveness claims further illustrates the displacement of empirical measurement by computational modeling. Statements asserting that reference case simulations generate falsifiable claims register strongly positive logits. Simulation models produce numerical outputs based on assumed relationships among variables. These outputs do not represent measured quantities. They represent impossible projections generated by the internal logic of the model. Their numerical precision reflects computational coherence rather than empirical correspondence. Treating such outputs as empirically grounded quantitative claims represents a fundamental departure from the logic of measurement-based science.

The consequences of this departure extend beyond methodological abstraction. The Latvian National Health Service makes decisions that determine which therapies patients can access and

under what conditions. These decisions rely on quantitative claims regarding therapeutic value. When those claims are not grounded in valid measurement, decision making becomes detached from empirical reality. Numerical outputs acquire administrative authority without possessing measurement validity. The agency's framework therefore transforms arithmetic operations into instruments of administrative decision making rather than tools of empirical evaluation. The concept of falsification and its central place in the evolution of objective knowledge is entirely absent.

The absence of Rasch measurement is particularly consequential because latent constructs cannot be measured without establishing invariant unit structure. Ordinal responses to health status questionnaires reflect ordered categories, not quantitative differences. Rasch transformation establishes the necessary and sufficient conditions under which these observations can be converted into interval measures with invariant unit structure. Without this transformation, numerical differences between scores do not represent quantitative differences in the underlying attribute. They represent differences in scoring outcomes. Arithmetic operations performed on such scores totally lack quantitative meaning.

The logit profile confirms that the agency's evaluative system does not incorporate Rasch measurement as a structural requirement. Instead, it operates on composite utility scores derived from preference algorithms. These scores lack invariant unit structure. They cannot support multiplication, division, or ratio comparison. Yet they function as the foundation for cost-effectiveness analysis and reimbursement decision making. This substitution of scoring for measurement represents the defining and fatal epistemic limitation of the agency's quantitative framework.

The persistence of this framework reflects institutional stabilization rather than empirical validation. Once embedded within methodological guidance and reimbursement procedures, evaluative constructs acquire administrative legitimacy independent of their measurement properties. Their numerical outputs create the appearance of quantitative precision. This appearance reinforces their continued use. The logit profile demonstrates that measurement axioms do not function as constraints within this system. Illegal arithmetic operations proceed independently of measurement validity.

This structural condition aligns with patterns observed across multiple HTA agencies om the European Union and the rest of the world. internationally. The Latvian National Health Service operates within a globally diffused evaluative architecture, the HTA memeplex, that treats composite utility constructs and simulation outputs as quantitative measures. The consistency of this pattern across jurisdictions indicates that the absence of measurement foundations is systemic rather than incidental. The National Health Service reproduces inherited unchallenged methodological conventions rather than reconstructing health evaluation on measurement-valid foundations.

The implications extend to the evolution of objective knowledge. Scientific progress depends on measurement. Measurement enables falsification, replication, and cumulative knowledge development. Without measurement, numerical claims cannot be empirically evaluated. They cannot be falsified because they do not correspond to measured quantities. They can be

recalculated but not tested. The agency's evaluative framework therefore operates within a closed numerical system whose outputs cannot be empirically validated. The future is bleak; one closed reference case model after another. A library of false measurement and false claims.

This condition transforms evaluation into administrative computation. Numbers function as procedural instruments rather than empirical representations. Their authority derives in Latvia from institutional endorsement of the European Union standard for false measurement in HTA rather than measurement validity. The logit profile demonstrates that representational measurement axioms are excluded as operational determinants within this framework. Arithmetic operations are performed without establishing the measurement properties required to support them.

Recovery requires structural reconstruction. Arithmetic operations must be restricted to constructs that satisfy representational measurement axioms. Manifest attributes must be measured using linear ratio scales with true zero and invariant unit structure. Latent constructs must be measured using Rasch transformation to establish invariant logit ratio scales. Only within such a framework can arithmetic operations produce empirically meaningful quantitative comparisons.

The logit evidence demonstrates that this reconstruction has not occurred within the Latvian National Health Service. The agency continues to operate within an evaluative system that institutionalizes false measurement. Its numerical outputs possess administrative authority but lack measurement validity. This condition defines the present state of HTA operationalization within the Latvian reimbursement authority.

The significance of these findings extends beyond Latvia. They illustrate the structural inversion that defines the global HTA evaluative architecture. Arithmetic operations proceed without measurement foundations. Composite utility constructs substitute for invariant quantitative measures. Simulation outputs replace empirical observations. The resulting system operates as a stable administrative framework but lacks the defining characteristics of measurement-based science.

Until representational measurement axioms become operational constraints rather than ignored abstractions, this condition will persist. Numerical sophistication will continue to mask measurement absence. Quantitative outputs will continue to guide reimbursement decisions without corresponding to measured quantities. The logit profile demonstrates that the Latvian National Health Service exemplifies this structural condition as a member of the global HTA memeplex.

3. THE TRANSITION TO MEASUREMENT IN HEALTH TECHNOLOGY ASSESSMENT

THE IMPERATIVE OF CHANGE

This analysis has not been undertaken to criticize decisions made by health system, nor to assign responsibility for the analytical frameworks currently used in formulary review. The evidence shows something more fundamental: organizations have been operating within a system that does not permit meaningful evaluation of therapy impact, even when decisions are made carefully, transparently, and in good faith.

The present HTA framework forces health systems to rely on numerical outputs that appear rigorous but cannot be empirically assessed (Table 1). Reference-case models, cost-per-QALY ratios, and composite value claims are presented as decision-support tools, yet they do not satisfy the conditions required for measurement. As a result, committees are asked to deliberate over results that cannot be validated, reproduced, or falsified. This places decision makers in an untenable position: required to choose among therapies without a stable evidentiary foundation.

This is not a failure of expertise, diligence, or clinical judgment. It is a structural failure. The prevailing HTA architecture requires arithmetic before measurement, rather than measurement before arithmetic. Health systems inherit this structure rather than design it. Manufacturers respond to it. Consultants reproduce it. Journals reinforce it. Universities promote it. Over time it has come to appear normal, even inevitable.

Yet the analysis presented in Table 1 demonstrates that this HTA framework cannot support credible falsifiable claims. Where the dependent variable is not a measure, no amount of modeling sophistication can compensate. Uncertainty analysis cannot rescue non-measurement. Transparency cannot repair category error. Consensus cannot convert assumption into evidence.

The consequence is that formulary decisions are based on numerical storytelling rather than testable claims. This undermines confidence, constrains learning, and exposes health systems to growing scrutiny from clinicians, patients, and regulators who expect evidence to mean something more than structured speculation.

The imperative of change therefore does not arise from theory alone. It arises from governance responsibility. A health system cannot sustain long-term stewardship of care if it lacks the ability to distinguish between claims that can be evaluated and claims that cannot. Without that distinction, there is no pathway to improvement; only endless repetition for years to come.

This transition is not about rejecting evidence. It is about restoring evidence to its proper meaning. It requires moving away from composite, model-driven imaginary constructs toward claims that are measurable, unidimensional, and capable of empirical assessment over time. The remainder of this section sets out how that transition can occur in a practical, defensible, and staged manner.

MEANINGFUL THERAPY IMPACT CLAIMS

At the center of the current problem is not data availability, modeling skill, or analytic effort. It is the nature of the claims being advanced. Contemporary HTA has evolved toward increasingly complex frameworks that attempt to compress multiple attributes, clinical effects, patient experience, time, and preferences into single composite outputs. These constructs are then treated as if they were measures. They are not (Table 1).

The complexity of the reference-case framework obscures a simpler truth: meaningful evaluation requires meaningful claims. A claim must state clearly what attribute is being affected, in whom, over what period, and how that attribute is measured. When these conditions are met, evaluation becomes possible. When they are not complexity substitutes for clarity. The current framework is not merely incorrect; it is needlessly elaborate. Reference-case modeling requires dozens of inputs, assumptions, and transformations, yet produces outputs that cannot be empirically verified. Each additional layer of complexity increases opacity while decreasing accountability. Committees are left comparing models rather than assessing outcomes.

In contrast, therapy impact can be expressed through two, and only two, types of legitimate claims. First are claims based on manifest attributes: observable events, durations, or resource units. These include hospitalizations avoided, time to event, days in remission, or resource use. When properly defined and unidimensional, these attributes can be measured on linear ratio scales and evaluated directly.

Second are claims based on latent attributes: symptoms, functioning, need fulfillment, or patient experience. These cannot be observed directly and therefore cannot be scored or summed meaningfully. They require formal measurement through Rasch models to produce invariant logit ratio scales. These two forms of claims are sufficient. They are also far more transparent. Each can be supported by a protocol. Each can be revisited. Each can be reproduced. Most importantly, each can fail. But they cannot be combined. This is the critical distinction. A meaningful claim is one that can be wrong.

Composite constructs such as QALYs do not fail in this sense. They persist regardless of outcome because they are insulated by assumptions. They are recalculated, not refuted. That is why they cannot support learning. The evolution of objective knowledge regarding therapy impact in disease areas is an entirely foreign concept. By re-centering formulary review on single-attribute, measurable claims, health systems regain control of evaluation. Decisions become grounded in observable change rather than modeled narratives. Evidence becomes something that accumulates, rather than something that is re-generated anew for every submission.

THE PATH TO MEANINGFUL MEASUREMENT

Transitioning to meaningful measurement does not require abandoning current processes overnight. It requires reordering them. The essential change is not procedural but conceptual: measurement must become the gatekeeper for arithmetic, not its byproduct.

The first step is formal recognition that not all numerical outputs constitute evidence. Health systems must explicitly distinguish between descriptive analyses and evaluable claims. Numbers that do not meet measurement requirements may inform discussion but cannot anchor decisions.

The second step is restructuring submissions around explicit claims rather than models. Each submission should identify a limited number of therapy impact claims, each defined by attribute, population, timeframe, and comparator. Claims must be unidimensional by design.

Third, each claim must be classified as manifest or latent. This classification determines the admissible measurement standard and prevents inappropriate mixing of scale types.

Fourth, measurement validity must be assessed before any arithmetic is permitted. For manifest claims, this requires confirmation of ratio properties. For latent claims, this requires Rasch-based measurement with demonstrated invariance.

Fifth, claims must be supported by prospective or reproducible protocols. Evidence must be capable of reassessment, not locked within long-horizon simulations designed to frustrate falsification.

Sixth, committees must be supported through targeted training in representational measurement principles, including Rasch fundamentals. Without this capacity, enforcement cannot occur consistently.

Finally, evaluation must be iterative. Claims are not accepted permanently. They are monitored, reproduced, refined, or rejected as evidence accumulates.

These steps do not reduce analytical rigor. They restore it.

TRANSITION REQUIRES TRAINING

A transition to meaningful measurement cannot be achieved through policy alone. It requires a parallel investment in training, because representational measurement theory is not intuitive and has never been part of standard professional education in health technology assessment, pharmacoeconomics, or formulary decision making. For more than forty years, practitioners have been taught to work within frameworks that assume measurement rather than demonstrate it. Reversing that inheritance requires structured learning, not informal exposure.

At the center of this transition is the need to understand why measurement must precede arithmetic. Representational measurement theory establishes the criteria under which numbers can legitimately represent empirical attributes. These criteria are not optional. They determine whether addition, multiplication, aggregation, and comparison are meaningful or merely symbolic. Without this foundation, committees are left evaluating numerical outputs without any principled way to distinguish evidence from numerical storytelling.

Training must therefore begin with scale types and their permissible operations. Linear ratio measurement applies to manifest attributes that possess a true zero and invariant units, such as

time, counts, and resource use. Latent attributes, by contrast, cannot be observed directly and cannot be measured through summation or weighting. They require formal construction through a measurement model capable of producing invariant units. This distinction is the conceptual fulcrum of reform, because it determines which claims are admissible and which are not.

For latent trait claims, Rasch measurement provides the only established framework capable of meeting these requirements. Developed in the mid–twentieth century alongside the foundations of modern measurement theory, the Rasch model was explicitly designed to convert subjective observations into linear logit ratio measures. It enforces unidimensionality, tests item invariance, and produces measures that support meaningful comparison across persons, instruments, and time. These properties are not approximations; they are defining conditions of measurement.

Importantly, Rasch assessment is no longer technically burdensome. Dedicated software platforms developed and refined over more than four decades make Rasch analysis accessible, transparent, and auditable. These programs do not merely generate statistics; they explain why items function or fail, how scales behave, and whether a latent attribute has been successfully measured. Measurement becomes demonstrable rather than assumed.

Maimon Research has developed a two-part training program specifically to support this transition. The first component provides foundational instruction in representational measurement theory, including the historical origins of scale theory, the distinction between manifest and latent attributes, and the criteria that define admissible claims. The second component focuses on application, detailing claim types, protocol design, and the practical use of Rasch methods to support latent trait evaluation.

Together, these programs equip health systems, committees, and analysts with the competence required to enforce measurement standards consistently. Training does not replace judgment; it enables it. Without such preparation, the transition to meaningful measurement cannot be sustained. With it, formulary decision making can finally rest on claims that are not merely numerical, but measurable.

A NEW START IN MEASUREMENT FOR HEALTH TECHNOLOGY ASSESSMENT

For readers who are looking for an introduction to measurement that meets the required standards, Maimon Research has just released two distance education programs. These are:

- Program 1: Numerical Storytelling – Systematic Measurement Failure in HTA.
- Program 2: A New Start in Measurement for HTA, with recommendations for protocol-supported claims for specific objective measures as well as latent constructs and manifested traits.

Each program consists of five modules (approx. 5,500 words each), with extensive questions and answers. Each program is priced at US$65.00. Invitations to participate in these programs will be distributed in the first instance to 8,700 HTA professionals in 40 countries.

More detail on program content and access, including registration and on-line payment, is provided with this link: https://maimonresearch.com/distance-education-programs/

DESIGNED FOR CLOSURE

For those who remain unconvinced that there is any need to abandon a long-standing and widely accepted HTA framework, it is necessary to confront a more fundamental question: why was this system developed and promoted globally in the first place?

The most plausible explanation is administrative rather than scientific. Policy makers were searching for an assessment framework that could be applied under conditions of limited empirical data while still producing a determinate conclusion. Reference-case modeling offered precisely this convenience. By constructing a simulation populated with assumptions, surrogate endpoints, preference weights, and extrapolated time horizons, it became possible to generate a numerical result that could be interpreted as decisive. Once an acceptable cost-effectiveness ratio emerged, the assessment could be declared complete and the pricing decision closed. This structure solved a political and administrative problem. It allowed authorities to claim that decisions were evidence-based without requiring the sustained empirical burden demanded by normal science. There was no requirement to formulate provisional claims and subject them to ongoing falsification. There was no obligation to revisit conclusions as new data emerged. Closure could be achieved at launch, rather than knowledge evolving over the product life cycle.

By contrast, a framework grounded in representational measurement would have imposed a very different obligation. Claims would necessarily be provisional. Measurement would precede arithmetic. Each therapy impact claim would require a defined attribute, a valid scale, a protocol, and the possibility of replication or refutation. Evidence would accumulate rather than conclude. Decisions would remain open to challenge as real-world data emerged. From an administrative standpoint, this was an unreasonable burden. It offered no finality.

The reference-case model avoided this problem entirely. By shifting attention away from whether quantities were measurable and toward whether assumptions were plausible, the framework replaced falsification with acceptability. Debate became internal to the model rather than external to reality. Sensitivity analysis substituted for empirical risk. Arithmetic proceeded without prior demonstration that the objects being manipulated possessed the properties required for arithmetic to be meaningful.

Crucially, this system required no understanding of representational measurement theory. Committees did not need to ask whether utilities were interval or ratio measures, whether latent traits had been measured or merely scored, or whether composite constructs could legitimately be multiplied or aggregated. These questions were never posed because the framework did not require

them to be posed. The absence of measurement standards was not an oversight; it was functionally essential.

Once institutionalized, the framework became self-reinforcing. Training programs taught modeling rather than measurement. Guidelines codified practice rather than axioms. Journals reviewed technique rather than admissibility. Over time, arithmetic without measurement became normalized as "good practice," while challenges grounded in measurement theory were dismissed as theoretical distractions. The result was a global HTA architecture capable of producing numbers, but incapable of producing falsifiable knowledge. Claims could be compared, ranked, and monetized, but not tested in the scientific sense. What evolved was not objective knowledge, but institutional consensus.

This history matters because it explains why the present transition is resisted. Moving to a real measurement framework with single, unidimensional claims does not merely refine existing methods; it dismantles the very mechanism by which closure has been achieved for forty years. It replaces decisiveness with accountability, finality with learning, and numerical plausibility with empirical discipline. Yet that is precisely the transition now required. A system that avoids measurement in order to secure closure cannot support scientific evaluation, cumulative knowledge, or long-term stewardship of healthcare resources. The choice is therefore unavoidable: continue with a framework designed to end debate, or adopt one designed to discover the truth.

Anything else is not assessment at all, but the ritualized manipulation of numbers detached from measurement, falsification, and scientific accountability.

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