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ARTIFICIAL INTELLIGENCE LARGE LANGUAGE MODEL INTERROGATION

REPRESENTATIONAL MEASUREMENT FAILURE IN HEALTH TECHNOLGY ASSESSMENT

POLAND: NATIONAL ENDORSEMENT OF MEASUREMENT FAILURE IN HEALTH TECHNOLOGY ASSESSMENT

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FOREWORD

HEALTH TECHNOLOGY ASSESSMENT: A GLOBAL SYSTEM OF NON-MEASUREMENT

Health technology assessment in Poland is organized primarily through the Agency for Health Technology Assessment and Tariff System (AOTMiT), which plays a central role in evaluating pharmaceuticals, medical devices, and health programs for reimbursement within the publicly funded healthcare system. AOTMiT provides formal recommendations to the Minister of Health, integrating clinical evidence, economic evaluation, and budget impact analysis into a structured decision-making process that directly influences national coverage and pricing outcomes. Since its establishment, AOTMiT has developed a methodological framework closely aligned with prevailing European HTA standards. Economic submissions routinely incorporate cost–utility analysis, preference-based health-related quality-of-life instruments, and reference-case modeling conventions consistent with those used by agencies such as NICE, HAS, and IQWiG. Although national guidance reflects local procedural requirements, the underlying analytical architecture mirrors that of the broader European HTA environment.

Poland's HTA system therefore operates not as an isolated national experiment, but as an integrated participant within the European methodological consensus. Training pathways, academic research, consultancy practice, and submission templates reinforce this alignment, ensuring that numerical claims derived from utility instruments and modeling outputs are interpreted as legitimate quantitative evidence for decision making.

This institutional positioning is crucial for the present analysis. Because Poland's HTA framework adopts the same core evaluative conventions as other European systems, it provides an appropriate setting in which to examine whether the axioms of representational measurement function as admissibility conditions for numerical claims. The interrogation that follows therefore does not assess policy quality or administrative effectiveness. It examines whether the Polish HTA knowledge base possesses the conceptual foundations required for measurement itself.

The purpose of this study is to evaluate the Polish national health technology assessment (HTA) knowledge base against the axioms of representational measurement theory using the 24-item canonical statement diagnostic developed for the Logit Working Papers series. Rather than assessing policy outcomes, institutional performance, or methodological sophistication, the analysis interrogates the epistemic conditions under which numerical claims are authorized within the Polish HTA environment. Specifically, it asks whether the principles required for quantitative measurement—unidimensionality, scale-type coherence, invariant units, and the logical precedence of measurement over arithmetic—function as governing constraints within the national knowledge base. By applying a standardized probability–logit framework, the study seeks to determine whether Poland's HTA system possesses the conceptual architecture necessary for measurement or whether numerical practice proceeds in the absence of measurement admissibility.

The canonical interrogation reveals a stable and internally coherent endorsement profile indicating systematic non-possession of measurement principles within the Polish HTA knowledge base.

Propositions expressing foundational axioms of representational measurement receive uniformly low endorsement probabilities, yielding strongly negative logits. In contrast, propositions that enable valuation-based arithmetic, including the treatment of preference-weighted utilities as quantitative measures, acceptance of negative values on purported ratio scales, and reliance on simulation modeling to generate comparative claims, receive consistently high endorsement probabilities. This polarity does not reflect inconsistency or methodological confusion. Rather, it reveals a coherent epistemic structure in which valuation substitutes for measurement and numerical form substitutes for quantitative meaning. The findings demonstrate that Polish HTA has converged fully with the international architecture of false measurement observed across other national systems examined in the Logit Working Papers series.

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 NATIONAL KNOWLEDGE BASE FOR POLAND

Understanding the results of the canonical interrogation requires a clear definition of what constitutes the Polish national HTA knowledge base. This knowledge base cannot be reduced to any single institution, guideline, or agency document. Nor can it be identified solely with the formal role of the national HTA authority. Once numerical outcomes are accepted as legitimate within policy decision-making, they become embedded within a distributed epistemic environment whose authority arises through coordinated practice rather than explicit theoretical justification.

The Polish HTA knowledge base comprises multiple interacting components. These include national reimbursement legislation, methodological guidance documents, academic health economics publications, HTA submissions prepared by manufacturers, university training programs, professional short courses, and the analytic software environments used to generate economic evaluations. Together, these elements form a coherent corpus that defines what counts as acceptable evidence, which numerical claims may be advanced, and how results are interpreted in decision making.

At the center of this corpus lies the adoption of European HTA conventions. Poland's HTA framework emerged through alignment with international norms rather than through independent development of measurement standards. As a result, the system inherited a methodological architecture in which preference-based utilities, QALYs, and cost-effectiveness modeling function as default evaluative tools. These elements are treated as technical instruments rather than as epistemic propositions requiring justification.

Within this environment, numerical legitimacy does not arise from demonstration that quantities are being measured. It arises from precedent. Utilities are accepted because they are widely used. QALYs are employed because they are standard. Models are trusted because they follow recognized templates. The question of whether the numbers generated by these procedures represent empirical magnitude does not arise as a live scientific issue. It has already been settled implicitly through institutional repetition.

Academic training plays a decisive role in reinforcing this structure. Students of health economics and HTA in Poland are taught how to implement utility-based evaluations, how to populate models, and how to interpret incremental ratios. They are not taught to interrogate scale properties, invariance conditions, or the axioms governing admissible arithmetic. By the time analysts enter professional practice, numerical legitimacy has already been internalized. The methods are encountered as tools, not as claims about measurement.

Regulatory and procedural guidance further consolidates this epistemic closure. Submission templates and analytic requirements specify which forms of analysis are expected, but do not articulate the conditions under which numerical outputs qualify as measures. The absence of measurement theory within these documents is not treated as a deficiency. It is simply assumed that numerical form implies quantitative meaning.

Importantly, this knowledge base is not unified by explicit agreement about measurement. There is no statement asserting that utilities satisfy representational axioms, nor any formal rejection of such axioms. Instead, unity arises through silence. Measurement theory is not debated because it is not invoked. Scale type is not discussed because it is presumed irrelevant. The result is a system in which arithmetic becomes routine while the conditions that would authorize arithmetic remain unexamined.

This distributed structure explains the stability of Polish HTA practice. Developers may point to European precedent. Analysts may point to methodological guidance. Decision makers may point to consistency with international standards. Each actor defers epistemic responsibility elsewhere. The system persists not because its quantitative foundations have been established, but because no institutional mechanism exists to require that they be examined.

The canonical interrogation therefore does not evaluate Polish HTA as an administrative enterprise. It interrogates the epistemic environment that makes numerical claims possible. By treating the national knowledge base as a collective system of reinforcement rather than as a collection of individual decisions, the analysis renders visible what routine practice has obscured: that numerical authority in Polish HTA is not grounded in measurement, but in institutionalized belief.

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: POLAND

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.

POLAND: IMPORTING FALSE MEASUREMENT

The national-level interrogation of Poland's health technology assessment knowledge base using the 24-item canonical diagnostic reveals a pattern that is neither anomalous nor transitional (Table 1). Instead, it reproduces with striking clarity the same epistemic structure observed across multiple jurisdictions previously examined in the Logit Working Papers series. The probability–logit profile does not reflect partial misunderstanding, uneven training, or methodological ambiguity. It reflects a coherent and stable system of numerical reasoning in which representational measurement theory is absent as an admissibility condition for quantitative claims, while its inversion is systematically normalized.

TABLE 1: ITEM STATEMENT, RESPONSE, ENDORSEMENT AND NORMALIZED LOGITS   POLAND

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	0.10	-2.20
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	0.90	+2.20
TIME IS A RATIO MEASURE	1	0.80	+1.40
MEASUREMENT PRECEDES ARITHMETIC	1	0.05	-2.50
SUMMATIONS OF SUBJECTIVE INSTRUMENT RESPONSES ARE RATIO MEASURES	0	0.90	+2.20
MEETING THE AXIOMS OF REPRESENTATIONAL MEASUREMENT IS REQUIRED FOR ARITHMETIC	1	0.05	-2.50
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	0.90	+2.20
THE QALY IS A DIMENSIONALLY HOMOGENEOUS MEASURE	0	0.85	+1.75
CLAIMS FOR COST-EFFECTIVENESS FAIL THE AXIOMS OF REPRESENTATIONAL MEASUREMENT	1	0.05	-2.50
QALYS CAN BE AGGREGATED	0	0.90	+2.20

NON-FALSIFIABLE CLAIMS SHOULD BE REJECTED	1	0.20	-1.40
REFERENCE CASE SIMULATIONS GENERATE FALSIFIABLE CLAIMS	0	0.90	+2.20
THE LOGIT IS THE NATURAL LOGARITHM OF THE ODDS-RATIO	1	0.40	-0.45
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	0.80	+1.40
THE OUTCOME OF INTEREST FOR LATENT TRAITS IS THE POSSESSION OF THAT TRAIT	1	0.05	-2.50
THE RASCH RULES FOR MEASUREMENT ARE IDENTICAL TO THE AXIOMS OF REPRESENTATIONAL MEASUREMENT	1	0.05	-2.50

The diagnostic begins with propositions that articulate foundational truths of measurement. These are not advanced theoretical claims but elementary axioms that determine whether numbers may legitimately represent empirical attributes. The first proposition that interval measures lack a true zero receives only weak reinforcement, with an endorsement probability of 0.20 corresponding to a logit of −1.40. This result already signals a structural problem. The absence of a true zero is not a matter of interpretation or debate; it is definitional. Where this proposition is weakly reinforced, the implication is that the Polish HTA knowledge base does not consistently recognize the distinction between interval and ratio scales. This confusion is consequential because it underpins all subsequent arithmetic operations performed on utility-based outcomes.

The next cluster of foundational axioms collapses much further toward the floor of the logit scale. The requirement that measures must be unidimensional, that multiplication requires a ratio measure, and that measurement must precede arithmetic all register endorsement probabilities of 0.10 or lower, producing logits of −2.20 to −2.50. These are not marginal results. They indicate that these propositions do not function as operative constraints within Polish HTA discourse. They are not invoked, taught, or used to adjudicate numerical claims. Their absence means that arithmetic is permitted without prior establishment of measurement.

This absence becomes even more explicit in the proposition that meeting the axioms of representational measurement is required for arithmetic. With an endorsement probability of 0.05 and a logit of −2.50, this statement collapses completely. The implication is unambiguous: the Polish HTA knowledge base does not recognize representational measurement theory as a governing framework. Arithmetic is not treated as conditional upon measurement. Instead, arithmetic is treated as permissible wherever numbers exist.

The diagnostic further demonstrates that the structural absence of measurement theory extends into the domain of latent constructs. The proposition that transforming subjective responses to interval measurement is only possible with Rasch rules also collapses to the floor at −2.50. Similarly, the propositions that the Rasch logit ratio scale is the only admissible basis for assessing latent trait impact, that the outcome of interest for latent traits is possession of that trait, and that the Rasch rules are identical to the axioms of representational measurement all exhibit identical floor values. This cluster is decisive. It demonstrates that the Polish HTA knowledge base does not possess the conceptual apparatus required to measure latent attributes at all.

These results are not surprising once one recognizes that latent trait measurement has never been institutionalized within HTA training or practice. Health-related quality of life is routinely discussed as if it were a measurable attribute, yet no requirement exists that such measurement satisfy invariance, unidimensionality, or conjoint structure. The collapse of all Rasch-related propositions to −2.50 therefore does not indicate rejection. It indicates non-possession. The principles simply do not exist within the epistemic grammar of the system.

The diagnostic then turns to propositions known to be false under representational measurement theory, yet routinely required for contemporary HTA practice to function. Here the pattern reverses sharply. The proposition that time trade-off preferences are unidimensional receives an endorsement probability of 0.85, yielding a strongly positive logit of +1.75. This result is critical. Time trade-off preferences are constructed precisely through trade-offs across multiple attributes and dimensions. Treating them as unidimensional is not a misunderstanding; it is a necessary fiction that permits their numerical use.

An even stronger endorsement is observed for the proposition that ratio measures can have negative values, with a probability of 0.90 and a logit of +2.20. This statement directly contradicts the definition of a ratio scale, which requires a non-arbitrary zero. Yet its strong endorsement reveals that Polish HTA practice accepts negative utilities not as anomalies but as legitimate quantities. This acceptance is not accidental. Without it, QALYs could not be constructed as currently defined.

The proposition that EQ-5D-3L preference algorithms create interval measures also receives strong positive endorsement at +1.75. This is particularly revealing because it illustrates the mechanism through which valuation is mistaken for measurement. The scoring algorithm does not transform ordinal responses into interval quantities through invariant modeling. It merely applies population preferences. Yet within the Polish HTA knowledge base, this distinction is erased. Algorithmic output is treated as measurement by default.

The same pattern continues with propositions asserting that the QALY is a ratio measure (+2.20), that summations of subjective instrument responses are ratio measures (+2.20), that Likert-type summation creates ratio measures (+2.20), that QALYs can be aggregated (+2.20), and that reference case simulations generate falsifiable claims (+2.20). These propositions are not epistemic errors at the margin. Together, they constitute the operational assumptions required for cost-effectiveness modeling to exist at all.

The coexistence of these strongly positive false propositions with the strongly negative true propositions is not contradictory. It is coherent. When measurement axioms are absent, the system must affirm alternative rules that permit numerical practice to proceed. Arithmetic cannot occur in a vacuum. If measurement does not constrain arithmetic, something else must authorize it. In Polish HTA, that authorization is supplied by valuation, convention, and institutional repetition.

The proposition that time is a ratio measure receives a positive logit of +1.40. This result is instructive. Time is indeed a ratio measure, and its correct identification contrasts sharply with the misclassification of utilities. Yet this correct recognition does not extend to the conditions required for multiplication. Time is treated as ratio, but what it is multiplied by is not. The rule that multiplication requires both operands to be ratio measures collapses at −2.20. The system therefore affirms time as ratio while denying the logic that would prohibit its multiplication with non-ratio utilities. This asymmetry is central to the construction of the QALY and is reproduced perfectly in the Polish diagnostic.

The proposition that non-falsifiable claims should be rejected receives a modestly negative logit of −1.40, reflecting weak but not absent reinforcement. This suggests that the language of falsifiability may occasionally appear in Polish HTA discourse, likely borrowed from broader scientific rhetoric. However, this weak endorsement is overwhelmed by the strong positive reinforcement of the proposition that reference case simulations generate falsifiable claims. In practice, simulation outputs are treated as testable despite being immune to empirical refutation. The coexistence of these two results reveals not inconsistency but displacement: falsifiability is affirmed rhetorically while being nullified operationally.

The cumulative structure of the probability–logit profile leaves little room for alternative interpretation. The Polish HTA knowledge base does not partially possess measurement theory. It does not contest it. It does not reinterpret it. It simply does not contain it. In its place exists a fully coherent valuation-based ontology in which numbers acquire legitimacy through use, repetition, and institutional endorsement rather than through representational validity. This structure explains why debates within Polish HTA tend to focus on methodological refinement rather than foundational legitimacy. Discussions revolve around choice of tariff, appropriateness of foreign value sets, adaptation of international models, or calibration of thresholds. These debates occur entirely downstream of the pre-arithmetic boundary. They presuppose that utilities already measure something. The diagnostic demonstrates that this presupposition is never examined.

Importantly, nothing in the probability–logit profile suggests instability or epistemic tension. The system is internally consistent. All propositions that would impose constraints on numerical practice are rejected or ignored. All propositions that permit numerical practice are strongly endorsed. This is not confusion. It is closure. The implication is that reform proposals that focus on improving modeling practice, refining guidelines, or updating methodological handbooks cannot succeed. The problem is not that Polish HTA applies measurement theory incorrectly. It is that measurement theory is not recognized as relevant. Without that recognition, no amount of technical sophistication can restore quantitative meaning.

The results also clarify why international harmonization does not correct error but amplifies it. When multiple jurisdictions share the same epistemic structure, convergence does not move systems closer to measurement. It stabilizes non-measurement. Alignment across countries becomes alignment of conventions rather than alignment with representational principles.

The Polish case therefore adds weight to a central claim of the Logit Working Papers series: health technology assessment did not evolve as a measurement science that later adopted utilities. It evolved as a valuation enterprise that later adopted arithmetic. Once that sequence is reversed, the entire architecture becomes illegitimate from a measurement standpoint. This does not imply that Polish HTA lacks technical competence, analytical rigor, or policy relevance. It implies something far more fundamental. The numbers it produces do not possess the properties they are claimed to have. Apparent precision arises from computation, not from measurement. Differences reflect scoring mechanics, not variation in an underlying attribute.

Recognizing this does not require abandoning descriptive instruments, preference research, or structured decision processes. It requires restoring a boundary that has been erased: the boundary between valuation and measurement. Until that boundary is reinstated, numerical outputs will continue to be treated as quantities without ever satisfying the conditions that make quantity possible.

The diagnostic therefore does not indict individual analysts, institutions, or agencies. It indicts an epistemic inheritance. The Polish HTA system has inherited a framework in which numerical legitimacy is assumed rather than demonstrated. That inheritance is now visible, measurable, and invariant. Once seen, it cannot be unseen. The probability–logit structure makes clear that the problem is not methodological disagreement but ontological absence. Measurement does not fail in Poland. It does not occur. That conclusion is not rhetorical. It follows directly from the axioms of representational measurement and from the endorsement structure revealed by the canonical diagnostic. The numbers speak clearly. What they reveal is not quantity, but belief; a belief in numerical storytelling.

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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