The Reflective Time Model: Testing Observer-Linked Organization in Cross-Temporal Records

Eran Harpaz
*Independent Researcher**

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This study examines a recurring form of organization observed across heterogeneous documentary records associated with different times. Under a fixed deterministic Hebrew character-to-integer representation, records from historical archives, physical artifacts, preserved record states, timestamped live inputs, and independent biographical sources repeatedly form structured networks around the same observer-linked relational registry.

The central empirical object is not an isolated numerical match. It is a larger architecture characterized by event and record self-reconstruction, convergence through multiple paths, preservation of semantic and family roles, recursive re-entry of derived information, chronological ordering, and repeated recovery of the matched observer across materially different source environments.

RTM is an empirically instantiated phenomenological model rather than a purely theoretical proposal. Numerical encoding is treated as a reproducible measurement representation rather than a causal mechanism, and the corpus is evaluated through controls addressing observer identity, semantic-role assignment, source richness, representation choice, record removal, chronology, construction freedom, and adaptive search.

The strongest analyses show that complete architectures can remain selectively associated with the documented observer under defined alternatives and, in one multi-source system, that the observer profile remains reconstructible after the most direct identifying relations are removed. This makes RTM a candidate macroscopic empirical bridge to open foundational questions concerning observer-relative facts, physical records, informational continuity, and temporal structure.

Because substantial portions of the corpus were discovered retrospectively, the study does not claim a universal probability for the historical discovery process. It instead defines a bounded observer-record phenomenon and a prospective program for independent, blinded testing.

I. INTRODUCTION

A. The empirical puzzle

Most of what we know about events outside the present moment comes through records.

A historical document, a photograph, a physical object, a message, a timestamp, a database entry, or a preserved inscription is an object available now that carries information about an event associated with another time.

Ordinarily, we assume that the informational content of such a record is independent of the identity of the person who later examines it. A historical date does not change because a different researcher reads it. A photograph retains the same visible information. A physical inscription remains the same inscription.

The present research began with an observation that appeared difficult to describe adequately at the level of isolated coincidences.

Across materially different record environments, fixed documentary information repeatedly formed exact relational structures around the same observer-linked identity information when represented through one deterministic numerical convention.

The initial observations were numerical, but the recurring object was not simply the repetition of particular numbers.

The same broader structural features began to recur.

Information about an event reconstructed other information about that event. One source sometimes branched toward several related identity variables. Different paths converged on the same intermediate or final node. Derived values re-entered later parts of the same network. Family identities appeared in their corresponding relational roles rather than merely as interchangeable targets. Questions, dates, source records, and answers sometimes formed closed relational structures. In later cases, changes in the state of a physical record and the order in which information became available also became part of the observed architecture.

Across the corpus, the same relational information repeatedly reappears across several record dimensions – time, language, number, identity and role, event information, and documentary state.

The observer-linked information was therefore not behaving merely as a list of numbers that could occasionally be reached.

It repeatedly appeared as an organizing relational structure within larger record networks.

This distinction is the starting point of the present study.

RTM does not ask whether it is possible to find an exact numerical coincidence in a sufficiently large collection of data. It plainly is.

The empirical question is whether complete, role-preserving and dependency-aware architectures recur pref-

* ORCID: 0009-0004-3839-6124

erentially around the matched observer-linked information when the principal sources of analytical freedom are explicitly challenged.

B. Why this problem matters

There is an immediate conventional explanation for such observations.

A sufficiently flexible search can produce remarkable-looking patterns from ordinary data.

If a researcher may inspect many sources, try multiple formulations, choose among representations, perform different operations, search for several possible targets, continue promising branches, and stop when an interesting result appears, then apparently extraordinary coincidences can arise even when nothing unusual exists in the underlying system.

For this reason, an isolated RTM closure has little evidential importance by itself.

The scientifically relevant question is whether the larger architecture disappears when the freedoms capable of generating such patterns are altered.

If comparable networks can be obtained after replacing the observer, redistributing semantic roles, changing record sources, varying representations, removing central targets, or granting an artificial researcher substantial adaptive-search freedom, then a selection-based account is sufficient.

If, however, the complete structure remains preferentially associated with the matched observer as these freedoms are progressively restricted or randomized, then the empirical problem changes.

The issue is no longer simply why one numerical match occurred.

The question becomes why heterogeneous records repeatedly resolve into the same relational organization.

This is why the present corpus was not developed as a collection of increasingly large lists of coincidences.

Its logic is adversarial.

Successive cases change the conditions under which the same reported structural phenomenon is examined.

Large historical archives test the phenomenon where source richness provides a natural conventional objection.

Semantic-role tests ask whether the correct relationships matter or whether the same numerical inventory can be reassigned arbitrarily.

A bounded physical object sharply reduces the available source field.

Preserved states of a single record introduce physical record transition.

Live cases introduce chronological ordering between earlier records and information that becomes available only later.

Later finite-space analyses ask whether the complete relational assignment is globally selective rather than merely locally interesting.

Finally, multi-source reconstruction asks whether the observer remains recoverable from the architecture after direct identifying relations and substantial source information are removed.

The evidential idea is therefore not repetition under identical conditions.

It is recurrence under changing pressure conditions.

C. The statistical literature: why surprising patterns are not enough

The first body of work relevant to this problem comes from statistics and research methodology rather than from physics.

Multiple testing, post-selection inference, researcher degrees of freedom, adaptive data analysis, and the "garden of forking paths" all address the same general danger: when the path from data to reported result contains many choices, nominally surprising outcomes can become common.

Benjamini and Hochberg [1] developed methods for controlling false discoveries under multiple testing. Simmons, Nelson, and Simonsohn [2] demonstrated how undisclosed analytical flexibility can generate false-positive findings. Gelman and Loken [3] emphasized that multiplicity may arise from the many analytical paths that could have been taken even when they were not all explicitly executed. Berk et al. [4] studied valid inference after model selection, while Dwork et al. [5] addressed the loss of statistical validity produced by repeated adaptive interaction with data. Preregistration has subsequently been developed as one important response to these problems [6].

This literature supplies the primary conventional challenge to RTM.

Several important RTM cases were discovered retrospectively, and a complete historical log of every considered source, phrase, arithmetic continuation, abandoned branch, and stopping decision does not exist.

It would therefore be inappropriate to assign one universal probability to the entire historical discovery process.

But this limitation does not answer a different question: whether specified alternative search processes actually reproduce the observed architecture.

The present study consequently treats analytical freedom as a set of separable experimental dimensions rather than attempting to hide all of them inside one nominal probability.

Observer choice, semantic assignment, language, representation, source inventory, permitted construction, chronology, target choice, and stopping are challenged by different controls wherever the corpus allows them to be bounded.

The methodological question is therefore not whether adaptive search can create patterns in principle.

It can.

The question is whether plausible implementations of that explanation reproduce the same role-preserving, dependency-aware, observer-linked architecture.

D. Observers and recorded facts in modern physics

A second, very different body of literature concerns the physical status of observers, observations, memory, recorded facts, and temporal order.

Extended Wigner's-friend research has made the assumption of observer-independent facts an explicit target of foundational analysis. Proietti et al. [7] experimentally violated a Bell-type inequality in an extended Wigner's-friend implementation and argued that, if locality and free choice are retained, quantum theory should be interpreted in an observer-dependent way. Bong et al. [8] strengthened the logic by showing that No-Superdeterminism, Locality, and Absoluteness of Observed Events cannot all be maintained if quantum evolution is controllable at the scale of an observer.

These results do not predict RTM, but they directly establish that the absoluteness of observed facts is not a harmless classical background assumption. It is a substantive physical assumption that can enter experimentally discriminating frameworks.

Baumann and Brukner [9] move the issue from abstract facts to stored records. In their Wigner's-friend analysis, the superobserver's measurement can alter the friend's memory register so that the result stored after Wigner's measurement differs from what was encoded before it. They further show that reliable awareness of such a memory change can conflict with no-signaling in an extended scenario. Thus the physical record carried by an observer is itself a dynamical variable in the quantum description.

Quantum Darwinism supplies an important complementary baseline. Zhu et al. [10] experimentally study how the environment redundantly encodes information about a quantum system, allowing multiple observers to access stable classical information and thereby supporting the emergence of objective classical reality. RTM asks a different question: whether, beyond such observer-independent redundancy, a record environment can exhibit additional organization that is selectively associated with its matched observer registry.

Relational approaches sharpen the fact-observer connection. Di Biagio and Rovelli [11] define relative information and relative facts quantitatively, allowing a variable to be a fact relative to another variable even when it is not an absolute fact. Their formulation treats observers as physical systems and places information in correlations among parts of nature rather than in an external epistemic layer.

Terris [12] adds a diachronic requirement that is especially relevant to the present work. She argues that scientific observation requires an informational observer that sustains and organizes records across time, allowing successive outcomes to be retained, compared, and integrated into a coherent informational structure. This creates a direct conceptual bridge to RTM's operational use of a temporally extended observer-linked registry.

Zwirn [13] argues that scientific objectivity in extended Wigner-type settings need not rest on observer-independent facts but can instead rest on the internal coherence of perspectival structures. Mukherjee and Hance [14] formulate a timelike no-go framework in which Absoluteness of Observed Events and No Retrocausality appear as explicit assumptions alongside time-symmetry and screening conditions; quantum mechanics violates the resulting inequality, so the classical package cannot be retained in full.

Adlam [15], comparing black-hole and Wigner's-friend paradoxes, argues that the analogy favors responses involving intrinsic relationality and motivates serious consideration of retrocausal or teleological accounts. Her discussion is especially relevant to RTM because it treats the global structure of a history, rather than only forward local evolution, as a legitimate explanatory possibility.

Stapp [16] offers a distinct orthodox-quantum construction based on process time and an ' effective past'. In his account, each new observation defines a new effective history obtained by backward evolution from the newly created state, and incompatible parts of the former effective past – including their empirical traces – can be eliminated for future prediction. He explicitly distinguishes this from alteration of an actual past event. His stronger empirically retrocausal effects additionally depend on a proposed biasing of ordinary quantum statistical weights, so they are not a model-independent consequence of standard quantum mechanics.

None of these works derives the Hebrew representation or the specific network statistics reported by RTM. Conversely, the present RTM corpus does not reproduce a Wigner-friend inequality, demonstrate coherent control of a macroscopic human observer, or by itself establish a quantum microscopic mechanism.

The relationship is nevertheless direct at the level of the scientific problem. The cited literature independently identifies observer dependence, fact relativity, record mutability and persistence, informational continuity, and time-symmetric or retrocausal constraints as legitimate foundational variables. RTM asks whether this observer-fact-record-time problem has a measurable macroscopic signature in ordinary documentary systems.

E. Observer-centered information models

A third relevant line of thought places the informational state of the observer closer to the foundation of the description itself.

Wheeler's participatory perspective questioned the adequacy of treating the observer as permanently external to the physical account [17].

More recently, Müller has developed observer-state approaches in which an observer's present informational state is used as the starting point for probabilities concerning subsequent experience [18, 19].

RTM does not derive its mathematics from these approaches, and they do not predict the specific architectures reported here. The important connection is not therefore a claim of formal equivalence.

RTM is also not merely a theoretical proposal placed beside these interpretations. It is an empirically instantiated phenomenological model: the corpus contains measured record architectures, exact finite-space assignments in bounded cases, observer substitutions, target knockouts, source ablations, and Monte Carlo or adversarial search tests. The strongest of these analyses establish exact or extreme selectivity within their declared comparison spaces.

What remains open is the mechanism. Observer identity, observer information state, conscious awareness, measurement interaction, relational consistency, and time-symmetric or retrocausal constraints are distinguishable candidate explanations and should not be collapsed into one another without an experiment that separates them.

RTM therefore turns an observer-centered foundational question into a record-level empirical program: having documented and quantitatively tested repeated within-corpus observer-linked organization under multiple case-specific controls, the next step is to test external population-level generalization and discriminate among candidate mechanisms.

F. The missing empirical layer

The existing literatures therefore leave a specific empirical gap.

Statistical methodology explains why flexible exploration can generate apparently meaningful patterns, but it does not determine in advance whether a specified complex architecture will survive observer replacement, semantic-role permutation, source contraction, target removal, dependency reduction, chronology constraints, and bounded adaptive search.

Quantum-foundational research shows that observer-independent facts, stored records, observer continuity, and No Retrocausality are nontrivial under carefully defined quantum conditions, but it does not test ordinary macroscopic documentary systems of the kind examined here.

Observer-state, relational, and informational approaches provide conceptual or formal accounts of observer-relative information, but they do not provide the particular macroscopic observer-record observable used in this study.

RTM occupies this gap empirically rather than only speculatively. The present corpus reports a measurable architecture and, in its strongest bounded cases, quantitatively tests whether that architecture remains tied to the documented observer under explicitly defined alternatives.

It asks:

> When heterogeneous records are analyzed through a fixed deterministic representation, does their complete relational organization remain independent of the observer who measures them, or does the matched observer-linked registry participate preferentially in that organization?

More specifically, can the observed structure be reproduced by defined alternatives, or does it persist as source breadth contracts, semantic constraints increase, chronology becomes explicit, and direct observer targets are removed?

This is the central empirical problem of the article. The existence and selectivity of the measured architectures are evaluated separately from the still-open question of what physical, informational, or cognitive mechanism produces them.

G. What RTM measures

RTM uses standard Hebrew character values to convert fixed linguistic records into reproducible numerical objects.

This representation is a measurement interface.

It is not proposed as the cause of the phenomenon.

The scientific claim therefore does not concern any intrinsic power of numbers, Hebrew letters, or gematria.

The operational observable is the larger network formed after fixed records have been represented consistently.

A strong RTM unit requires more than reaching a familiar value.

The source must be the declared source. The representation must follow the stated convention. A person's identity must occur in the appropriate relational role. A date must function as the appropriate date. Dependencies between paths must be preserved. If a loop, branch, reconstruction, state transition, or chronological relation is part of the defined architecture, that requirement must also be satisfied.

A value appearing in the wrong role is therefore not equivalent to the documented structure.

The empirical object is structural overdetermination: multiple partially redundant constraints jointly resolving the same event-observer system.

This becomes especially important in the later corpus.

In one class of cases, the record system reconstructs its own event information before observer variables are introduced.

In another, a fixed numerical inventory identifies one semantic assignment rather than arbitrary reallocations.

In another, the same motif family persists after the searchable source field is reduced to a single bounded object.

In a record-state case, distinct preserved states of one physical document participate in the architecture.

In live cases, earlier records and later external information enter in a defined temporal order.

And in the strongest distributed-reconstruction case, the observer behaves not merely as an explicitly supplied target but as a latent relational solution that remains recoverable after most direct identifying relations have been removed.

These are different manifestations of the same observed structural regularity, exhibiting cross-case recurrence under complementary pressure conditions; they are not assumed statistically independent for the purpose of combining probabilities.

H. What this article does

The article tests this observed structural regularity through a sequence of complementary pressure conditions.

It begins with large historical environments to establish the architecture in information-rich sources.

It then tests whether the organization depends on the correct semantic assignment of identities and roles.

The source field is subsequently contracted to a single physical object.

A further case introduces preserved changes in the state of one documentary record.

Live-time records introduce temporal order between earlier inputs and later externally supplied information.

Public-event extensions permit bounded outcome sets and explicit role comparisons.

A multi-source historical system then tests whether the matched observer can be reconstructed from distributed constraints after direct targets and source components are removed.

Across these environments, the study uses complementary controls including observer substitution, semantic-role permutation, source ablation, representation tests, finite exhaustive assignment, record and target removal, dependency reduction, and simulated adaptive-search procedures.

These controls answer different questions and are not treated as independent probability factors.

The purpose is not to produce one probability for the entire RTM research history.

It is to determine whether the observed architecture survives specific competing explanations under the conditions in which those explanations can be tested.

Primary evidential tests. Three analyses carry the greatest evidential weight in the present journal version. Titanic exhaustively evaluates all 11! semantic-role assignments of the same fixed value inventory and identifies the documented assignment as the unique complete solution. The World Cup synthesis exhaustively resolves the complete frozen global role space, yielding one structural solution class under the reported F02 symmetry. Emily Dickinson asks a different question: whether the matched observer remains recoverable after direct identifying information is removed; after all 43 direct observer-target relations are deleted, the remaining indirect constraints still reconstruct the same four-primitive observer profile uniquely. The 9/11, Ford Capri, Living Subscriber, live-time, and July analyses remain important complementary pressure conditions, but these three flagship tests form the primary evidential center of gravity.

I. Scope of the claim

The empirical and physical claims must remain separate.

Evidence of matched observer-record organization would not by itself demonstrate that consciousness creates reality.

It would not establish that numerical encoding is a physical causal agent.

It would not prove that a historical event was dynamically rewritten.

And it would not demonstrate controllable information transfer into the past.

Several broad classes of explanation could in principle produce an observer-linked cross-temporal architecture, including unmodeled selection effects, relational organization, time-symmetric or history-level constraints, selection among globally consistent histories, some form of retrocausal dynamics without backward signaling, or another informational or physical mechanism not yet specified.

The present article does not choose among these possibilities.

Its first task is narrower:

> ***to determine whether there is a reproducible observer-linked record phenomenon that a physical or statistical theory would need to explain.***

The strongest next test of external generality is therefore prospective and independent.

A future blinded multi-observer experiment should freeze observer registries, record-acquisition procedures, permissible representations and operations, scoring rules, stopping conditions, and negative-result retention before the relevant records are analyzed. Each record should then be scored against both its matched observer and mismatched observers.

If matched observers fail to outperform mismatched controls under an adequately powered prospective design, the proposed observer-specific generalization would be weakened or falsified.

If the advantage reproduces independently, the problem would shift from establishing the phenomenon to explaining its mechanism.

Corpus and manuscript freeze. For the purposes of this journal article, the empirical corpus, declared score objects, and case-level analyses are frozen as RTM Journal Corpus v1.0 at a cutoff of 5 September 2026. Findings first discovered after this cutoff are excluded from the present manuscript and will be treated as later corpus extensions or prospective material rather than used to modify the frozen analyses reported here. This freeze does not retroactively convert retrospective components into preregistered evidence; its purpose is to prevent subsequent discovery from changing the evidential object evaluated in this submission.

II. MATERIALS AND METHODS

A. Operational observer, record, and measurement representation

RTM treats an observer operationally rather than introspectively. The observer is represented by a frozen relational registry containing documented identity variables such as first name, surname, full name, family roles, residence, birth year, and age where relevant. A record is an accessible informational state: a historical document, photograph, physical artifact, message, timestamp, public outcome, printed field, or preserved before/after state. The current study does not infer observer identity from belief, intention, or subjective salience.

Linguistic records are mapped through the standard additive Hebrew character-value convention. Let $G(s)$ denote the deterministic mapping from an exact frozen string s to its integer value. Spaces and punctuation contribute zero. The mapping is used as a reproducible measurement interface. It is not proposed as a causal mechanism, and no claim in this article requires numbers or Hebrew letters to exert physical influence.

Several declared representations are used only where explicitly stated: raw integer fields, full Hebrew number-name renderings, digit-by-digit Hebrew renderings, compact date codes, decimal reversal, absolute differences, and low-complexity arithmetic composition. A representation is not treated as interchangeable with another unless the case definition states the conversion. This separation is important because representation choice is itself one dimension of analytical freedom.

B. Architectural object and success criterion

For a case c, let R_c denote the documented record inventory, A the frozen observer-linked registry, E the declared encoding family, and G_c the permitted transformation grammar. An exact closure path maps a declared source through a stated representation and operation sequence to a predefined semantic target. A single closure, however, is not the primary RTM object.

The case-level object is a labeled dependency graph $N_c = (S_c, D_c, T_c, E_c)$, where source nodes S_c are documentary inputs, D_c are deterministic derived nodes, T_c are eligible event or observer targets, and E_c are the declared transformations with their semantic roles. A strong unit requires the correct source, representation, target, semantic role, chronology, dependency structure, and architecture-level completion. Reaching a familiar value in the wrong role does not receive full-unit credit.

The central construct is structural overdetermination: the same event or observer variables are recovered through multiple non-identical structural paths, source blocks, role assignments, temporal layers, or preserved record states. Paths may share nodes and therefore are not treated as independent probability factors. The scientific object is the complete role-preserving network, not the number of displayed arithmetic rows.

1. *Operational motif taxonomy*

C. Dependency accounting and score objects

The corpus contains many exact relations, but row counts are never used as if they were independent Bernoulli trials. Shared sources, repeated intermediate nodes, common wording, and reused transformations create dependencies. Each major case therefore retains its own score ontology: closure chains, Evidence Units, deduplicated role-sensitive tests, dependency blocks, or finite assignment objects. Comparators are interpreted only against the score object for which they were implemented.

D. Pressure-ladder design

The cases exhibit cross-case recurrence of the same architectural motif under complementary pressure conditions, while they are not assumed statistically independent for the purpose of combining probabilities. Each stage changes a dimension under which a conventional explanation of the previous stage could remain plausible while asking whether the same observer-linked architecture persists.

E. Provenance and chronology classification

The corpus is methodologically heterogeneous. Early historical cases were discovered retrospectively after their public outcomes were known. Ford Capri and Subscriber use pre-existing bounded physical records. Live-time cases preserve earlier message fields before later score or image fields become available. The Spain extension preserves a source phrase before a later public outcome, but no blinded pre-outcome prediction of Spain was deposited. Dickinson includes an AI-supplied subject freeze and staged source exposure, while some analytic paths remained adaptive. The 14–15 July bridge publicly preserves the Day-1 value before the Day-2 documentary role existed.

Accordingly, the manuscript does not collapse all cases into one provenance category. Terms such as ' frozen', ' timestamped', 'source-informed one-shot', ' retrospective', and ' prospective bridge' are used only at the level supported by the preserved record. A chronology claim is

TABLE I. Operational motif taxonomy used across RTM cases.

Code	Motif	Operational meaning
M01	Exact identity convergence	A declared source path reaches an eligible frozen observer or family target exactly.
M02	Multi-anchor identity resolution	One bounded unit resolves multiple semantically distinct identity variables.
M03	Event self-reconstruction	Event data reconstruct other documented event data before or alongside observer convergence.
M04	Cross-path convergence	Materially different paths reach the same target or intermediate.
M05	Recursive linguistic chain	A derived value is re-encoded under a declared rule and becomes a later input.
M06	Loop or fixed-point return	A path returns to its source, an earlier node, or an equivalent declared representation.
M07	Observer-centered symmetry	An observer-linked value is a balance point, center, or doubled checksum.
M08	Semantic question-answer loop	Question, answer, and documentary target preserve their semantic roles.
M09	Role-specific family resolution	The correct person and relationship slot is resolved, not any available identity value.
M10	Record-state transition	Preserved states of one record and their exact changes form part of the evidence object.
M11	Timestamped carryover	An earlier archived value re-enters a later record in a new constrained role.
M12	Live external-input closure	Later externally supplied message/image/score fields participate under fixed source order.
M13	Cross-unit node re-entry	A derived node recurs in a distinct unit or source domain.
M14	Observer-linked checksum architecture	Event, observer, family, and intermediate nodes mutually constrain one network.

TABLE II. Case-specific score objects and declared separation results.

Case	Primary score object	Declared separation result
9/11	659-book inventory; 365/365 and 324/324 observer catalogues	Random-observer maxima 59/365 and 174/324; targeted GA best 320/324.
Titanic	190 chains; 85 closure-bearing units; 89 strict-unique role tests	Observed assignment sole complete maximum across all 11! role assignments; best wrong strict score 82/89.
Ford Capri	123 labeled equations plus network-density object	123/123; no full current-world match in reported 100M run; exact encoded-family solver returns one full solution.
Living Subscriber	133 manifest items compressed to 31 dependency blocks	133/133 and 31/31; reported max-over-choice 14/133; strongest block maxima 2-4/31.
Live-time F01/F02	24/24 and 29/29 closure ledgers; nested equality checks	F01 38/38 checks; F02 61/61 checks; no complete-score reproduction in declared million-world lines.
World Cup	61 constraints and 13 dependency blocks in frozen global role space	2 full numeric states among 34,951,113,757,163,520,000 legal states; one structural class under F02 symmetry.
Emily Dickinson	57 relations, 15 classes, 9 blocks	Sole 57/57, 15/15, 9/9 profile among 423,360 coherent alternatives; direct-target and literal-612 knockouts remain unique.
14–15 July	Daily and sequential architecture gates	Sole complete Day 1, Day 2, and adjacent-pair hits in exhaustive 1900-2100 date scans under declared gates.

not upgraded to preregistration unless an external record supports that classification.

F. Control families

Different criticisms require different controls. Observer specificity is tested through observer substitution and coherent profile replacement. Semantic-role arbitrariness is tested by role permutation and, where finite, exhaustive assignment. Source richness is challenged through bounded objects and source ablation. Known-target construction is challenged by direct-target knockout, literal-target removal, and source-block reconstruction. Representation choice is challenged through alternative encodings and same-weight mapping permutations. Construction freedom is challenged through local perturbation, optimization, max-over-choice search, and simulated researcher trajectories. Chronology is tested by preserving source order and later-field availability.

A control result is interpreted only inside its declared support, grammar, score object, and search budget. Exact finite-space enumeration provides an exact cardinality within that support; Monte Carlo provides an empirical tail under the implemented generator; optimization provides a best-found adversarial comparator under its workload. None is silently promoted to a universal probability for the entire historical research process.

G. Inferential discipline

Three inferential levels are kept separate. First, deterministic correctness asks whether source strings, representations, and arithmetic recompute. Second, model-conditioned selectivity asks whether the complete frozen object is separated from a specified alternative family. Third, cross-case architectural recurrence asks whether the same motif family reappears as source breadth, semantic freedom, physical record state, chronology, and target visibility change. The third statement is not a hidden multiplication of casewise probabilities.

Because a complete log of every early abandoned source, phrase, branch, and stopping decision is unavailable, no universal historical-discovery p-value is claimed. This limitation constrains how surprise may be quantified rela-

TABLE III. Pressure-ladder design across record environments.

Stage	Record environment	Primary pressure
9/11	Large historical archive	Archive breadth and target availability
Titanic	Second historical system; same-value semantic reassignment	Arbitrariness of semantic roles
Ford Capri	One bounded family vehicle and photograph	Source richness
Living Subscriber	One personal artifact in preserved states	Static-record limitation
Live-time F01/F02	Earlier messages; later score/image fields	Chronological order
World Cup synthesis	Frozen multi-component finite role space	Global role allocation and whole-component robustness
Emily Dickinson	Distributed staged historical sources	Whether observer identity survives target removal and source ablation
14–15 July	Day-1 public deposit followed by Day-2 roles	Timestamped cross-day carryover

tive to the complete discovery process. It does not alter deterministic equality, exact uniqueness inside a defined finite support, or observed separation under a declared null model. A selection-only explanation becomes explanatory only to the extent that a generative model with comparable freedom reproduces the observed architecture at comparable completeness.

H. AI-assisted research tooling and verification

OpenAI ChatGPT was used substantively during parts of the RTM research program, including assistance with code generation and debugging, statistical stress-test design and interpretation, literature synthesis, and manuscript organization. Multiple model versions were used over the historical research period; final submission preparation used GPT-5.6 Sol. The author specified the research questions, frozen inputs, scoring rules, and comparison constraints; retained the underlying source records and computational outputs; and reviewed the resulting calculations, code outputs, citations, and manuscript text against those materials. The author accepts full responsibility for all scientific claims and conclusions.

III. RESULTS

A. Archive-scale architecture: The 9/11 Identity Matrix

The 9/11 case [20] tests whether the reported structural regularity appears at depth inside a large heterogeneous historical archive. The book-scale inventory contains 100 labeled Evidence Units and 659 documented closures. The present article does not treat those 659 rows as independent evidence. Instead, it uses representative subsystems to show event self-reconstruction, multi-anchor observer resolution, recursive linguistic re-entry, and cross-domain checksum structure.

A compact event-internal hub is 213. The four passenger counts $76 + 51 + 53 + 33$ sum to 213; two Windows on the World floor numbers $106 + 107$ also sum to 213; and the declared difference between George Walker Bush (832) and the Twin Towers disaster label (619) is again 213. The same node then branches into the observer-family registry, including $213 + 213 = 426$. The structural point is not any one equality, but the reuse of one event-derived node across passenger, building, language, and identity roles.

The Flight 93 subsystem is more restrictive because several units reuse the same timestamps, roster values, target buildings, and question encodings while producing different architectural motifs. In the T-85 linear chain, only the two public timestamps and their two frozen questions are used before the terminal comparison: $842 + 842 = 1684$; $1003 + 1003 = 2006$; $2006 + 1684 = 3690$; $3690 - 2207 = 1483$; $2716 - 1483 = 1233$; $1233 - 1003 = 230$; and $842 - 230 = 612$. The case file classifies this as one dependency chain rather than seven separate trials.

Observer substitution is evaluated in two non-interchangeable catalogue objects. The observed registry scores 365/365 against a reported maximum of 59/365 across 10 million sampled alternatives, and 324/324 against a reported maximum of 174/324 across 20 million alternatives. A purpose-built genetic optimizer provides a much closer adversarial comparator: after 17.58 million evaluated candidates it reached 320/324. The optimizer result is explicitly treated as best-found rather than a proof of a global alternative maximum. The result of this stage is therefore architectural breadth plus strong implemented observer separation in a rich archive, not a universal probability for the historical discovery path.

B. Semantic-role specificity: The Titanic Identity Matrix

Titanic [21] addresses a different criticism. The question is not whether a large historical archive can contain many exact relations, but whether the documented semantic assignment of observer and family values matters when the numerical inventory is held fixed. The current case contains 190 closure chains across 85 closure-bearing units and a conservative 89-item strict-unique observer-sensitive layer.

The strongest comparator is exhaustive. All $11! = 39{,}916{,}800$ assignments of the same eleven values to the eleven semantic roles are evaluated. The documented assignment is the only assignment that reaches the complete 190/190 chain score, 85/85 unit score, and 89/89 strict-unique score. The best wrong strict assignment reaches 82/89. This is an exact finite role-assignment result with no sampling uncertainty inside the stated role space.

One representative physical-artifact block uses the archival Harland & Wolff plate identifier H1560. Relative to the three temporal anchors, 2026 − 1560 = 466, 1982 − 1560 = 422, and 1912 − 1560 = 352. The first offset returns the surname through 612 − 466 = 146 and 146 + 146 = 292. The three offsets sum to 1240; subtracting 612 gives 628, the declared value of ' The Reflective Time Model', and the artifact decomposes as 1560 = 612 + 320 + 628. The artifact is not assigned a standalone universal probability because artifact selection and method wording remain additional freedoms.

The role-permutation result is the central result of the Titanic stage. It shows that the observed network does not merely require the presence of eleven useful numbers; it requires those values to occupy the documented semantic positions. This directly pressures explanations that treat the identity registry as an interchangeable target pool.

C. Source contraction: The Ford Capri Identity Matrix

Ford Capri [22] contracts the source field from large public archives to one family vehicle documented in one historical photograph and a small set of public production facts. The current deterministic object contains 123 labeled equations. Its scientific role is therefore not to add a third large archive but to test whether the same observer/family architecture survives severe source contraction.

Representative structures include plate recursion, ownership self-answer, production-total convergence, family-role resolution, and end-of-production reconstruction. The final production date block uses the date representation to return manufacturer, owner, observer, surname, and residence fields through a common compact source trunk. As in the other cases, shared plate and production nodes create dependence, so the 123 rows are scored as one labeled system rather than 123 independent trials.

The principal deterministic score is 123/123. In the reported 100-million current-profile comparison, no profile reproduced the full score and none passed the joint score-density gate; density alone is explicitly not treated as an extreme discriminator because two random profiles exceeded the observed density. An exact solver applying the structural gates in the encoded 123-equation support returns one satisfying full assignment: the documented Harpaz registry. The correct scope is uniqueness inside the implemented support, not exhaustion of every possible human family, wording convention, or discovery grammar.

Ford Capri therefore contributes a qualitatively different pressure condition: the same motif family remains measurable when the searchable environment is reduced to a bounded physical object with industrial and family provenance.

D. Record-state transition: The Living Subscriber

The Living Subscriber [23] tests whether RTM is restricted to static textual archives. The source is one personal membership artifact preserved in distinct states. The analysis retains the first observed values rather than replacing them with later corrected values, thereby turning the state transition itself into part of the measured object.

The compact printed inventory includes identifiers 4819 and 4262, a carrier-assigned telephone field 076419292, deterministic elapsed-time fields, and four preserved record values 1777, 1782, 4027, and 4037. The opening non-linguistic circuit is 4819 − 4262 = 557; 557 + 755 = 1312; 2131 + 2131 = 4262; and 6131 − 1312 = 4819. This loop survives removal of all Hebrew wording and all observer names.

A full-state bridge uses all four preserved record values. Their digit sum is 67, and 67 + 67 = 134. Their total is 11623. The declared digit-spelling of 11623 and the full Hebrew number-name of the exact 9218-day interval both map to 2814. Removing the frozen edited-letters question value 2215 yields 599; subtracting the two-letter kernel 15 yields 584 = 292 + 292. The architecture therefore joins the complete record-state field to an independently determined time axis and then returns to the family surname.

The complete manifest scores 133/133 and the dependence-compressed object scores 31/31. Reported role permutation reaches at most 11/133 in one million permutations; max-over-choice search reaches at most 14/133 across 10 million candidate constructions; and the strongest reported block maxima lie between 2/31 and 4/31. These controls are generator-specific and do not provide a universal discovery-process probability.

E. Chronology-constrained completion: Live-time F01 and F02

The live-time material [24] adds source order. F01 preserves an earlier message field before the final score becomes available. F02 preserves a 21:39 message before a later 22:07 image field. The case is not described as a blinded prospective prediction; some closures were identified after later fields were available. The narrower result is that temporal order is a documented structural variable.

In F01, the Hebrew rendering of 'seven fifty-five minutes' and the later full result phrase ' two-zero for Argentina over Austria' both equal 1650. The same opening block contains 959 − 58 = 901, 2206 − 1955 = 251, and 619 − 543 = 76, preserving the roles of result, sender, date, and event month. A later loop returns date to Messi, Messi to the initiating message, the message field back to Messi, and Messi plus the Mondial label to the sender. A dual-path intermediate 260 is independently generated by 2134 − 965 − 909 and by (2134 − 2026) + (2134 − 1982); the repeated node then closes through 260 + 116 + 236 = 612.

In F02, the later image reconstructs its own event field before observer identity is introduced: 940 + 646 + 621 = 2207; 621 − 505 = 116; 646 − 505 = 141; and 116 + 940 + 646 + 505 = 2207. A node of 660 is then generated through two distinct routes: 2033 − 1373 = 660 and (646 − 316) doubled = 660. Once established twice, the node returns to 584 = 292 + 292 and to the sender.

The locked deterministic audits reproduce F01 at 24/24 closures with 38/38 equality checks and F02 at 29/29 closures with 61/61 equality checks. Declared million-world null lines do not reproduce complete scores. The correct conclusion is chronology-constrained architecture under preserved source order, not backward signaling.

F. Exact global role resolution: World Cup synthesis

The World Cup synthesis combines F01, F02, and the later Spain extension in one frozen role-sensitive object. The two-volume deterministic concordance contains 99 closure units; the common role object contains 61 constraints compressed into 13 dependency blocks. The primary question is global: how many legal assignments in the declared role space satisfy every constraint and every block?

Exhaustive enumeration identifies exactly two complete numeric states among 34,951,113,757,163,520,000 legal assignments. The two differ only by the reported F02 shirt-6/shirt-21 score-preserving symmetry and therefore form one detected structural solution class. F01 and Spain are individually unique in their complete component spaces, whereas F02 contains the symmetry-related pair.

Whole-component knockout provides a second exact diagnostic. Removing F01 leaves the F02+Spain system with one full residual assignment in 13,377,208,320; removing F02 leaves F01+Spain with one in 4,514,807,808,000; and removing Spain leaves F01+F02 with one in 5,056,584,744,960,000 within the same frozen Cartesian role space. These are overlapping structural diagnostics and are not multiplied.

A separate same-inventory 100-million-world stress test produces no unified 61/61 completion, with a maximum of 42/61. Representation choice is analyzed separately: under a same-weight permutation family, the standard Hebrew mapping is selective but not unique, and a nonzero minority of control mappings equal or exceed its representation statistic. This negative/nonexclusive result is retained because it constrains claims of representational privilege without altering the exact role-space result.

G. Distributed observer reconstruction: Emily Dickinson

The Dickinson case [25, 26] changes the evidential question from target recurrence to latent reconstruction. The primary statistical object contains 57 observer-sensitive relations compressed into 15 relation classes and 9 dependency blocks. The sources include biographical records, nineteenth-century letters, modern translation pages, and later staged extensions. The observer is represented by four primitives: first name, surname, residence, and birth year.

Across 423,360 coherent empirical observer profiles, the documented profile is the sole 57/57, 15/15, 9/9 completion. The best nonactual profile reaches 46/57, 10/15, and 4/9. The stronger structural result is the knockout behavior. Removing all 43 relations that terminate directly on observer targets leaves 14 indirect relations across 10 classes; these still reconstruct the same four-primitive profile uniquely. Removing every primary relation containing the literal full-observer value 612 also leaves a unique reconstruction.

Source-block redundancy is substantial inside the same primary object. Four of nine individual blocks are uniquely identifying; 28/36 two-block subsets, 80/84 three-block subsets, 125/126 four-block subsets, and all 126 five-block subsets identify the documented profile uniquely. These overlapping subsets are not separate statistical trials; they show redundancy of the constraint network.

A context-fixed identity-randomization run generated 100 million coherent replacement profiles while retaining Dickinson context and relational consistency. There were zero joint full matches; the maxima were again 46/57, 10/15, and 4/9. The one-sided 95% zero-hit upper bound [27] is 2.99573×10^{-8} under that generator. A broader symbolic support contains one full primitive tuple among 8,500,140,000 declared tuples, but this is retained only as a conditional sensitivity result rather than a historical p-value.

The Dickinson contribution is therefore distributed observer reconstruction: within the declared system the observer behaves as a recoverable structural variable rather than merely a supplied target. The chronology of staged source exposure makes this result compatible with several time-symmetric or retrocausal interpretations, but it does not distinguish among them and is not described as proof of dynamic rewriting.

H. The 14–15 July sequence as a compact chronological bridge

The July sequence is a compact bridge between retrospective architecture and stronger prospective practice. A Day-1 package containing the value 2378 was publicly deposited on 14 July 2026. On 15 July, the full Hebrew Gregorian-date phrase also had value 2378 and the value acquired additional observer-linked roles in a separately timestamped record.

Under the released generators and gates, exhaustive Gregorian scans cover 73,414 dates from 1900 through 2100 and 73,413 adjacent date pairs. Day 1 is the sole complete hit, Day 2 is the sole complete hit, and the adjacent pair is the sole complete pair. The Day-2 object also survives removal of the authored phrase family as an 8/8 residual structure. The cross-day bridge itself was evaluated after Day 2 existed, so the correct statement is exact temporal selectivity under a prior public Day-1 deposit, not a blinded pre-outcome prediction.

I. Cross-case result summary

IV. ROBUSTNESS, SEARCH FREEDOM, AND ADVERSARIAL ANALYSIS

A. Why no single null model is sufficient

The phrase ' the null model' can obscure the fact that RTM contains different freedom dimensions. Observer identity, semantic role, wording, representation, source choice, operation grammar, chronology, target choice, and stopping are not the same variable and are not adequately challenged by one common randomizer. The analysis therefore uses a distinct-control map: each test varies a specified dimension while holding others fixed.

This design prevents two opposite errors. The existence of an unimplemented extension does not erase uniqueness already established in a declared finite space. Conversely, success under one control dimension does not license a universal probability statement about every possible discovery process. The manuscript treats unlogged historical choices as a limitation on universal surprise claims, not as a demonstrated generative model unless a competing process is actually specified and shown to reproduce the architecture.

In cases where a finite possibility space is exhaustively enumerated, uniqueness is an exact mathematical result within the declared space. Monte Carlo and null-model simulations instead provide model-conditioned statistical evidence under the specified generator and comparison space.

B. Observer, role, source, and target controls

Table V summarizes the implemented controls for major dimensions of analytical freedom and the corresponding remaining boundaries.

C. Explicit adaptive-search stress tests

A Stage-1 max-over-K stress test uses simulated researcher trajectories rather than treating individual candidate worlds as independent trials. Each trajectory receives a search budget, retains the strongest World Cup candidate and the strongest Dickinson candidate, and is counted as a reproduction only if both complete frozen objects are satisfied. In the stronger run, 100,000 trajectories with $K = 256$ generated 25.6 million raw candidate worlds per case. No World Cup trajectory reached 61/61 constraints and 13/13 blocks; the best alternative reached 39/61 and 5/13. No Dickinson trajectory reached 57/57, 15/15, and 9/9; the best reached 44/57, 10/15, and 2/9. Consequently no joint full reproduction occurred.

The integrated omnibus historical-search sensitivity broadens the simulated freedom while remaining finite. The method was frozen against the prior release before execution. Each of 10,000 researcher trajectories receives 512 draws in each of 55 implemented families: four World Cup role-allocation families, three Dickinson coherent-profile families, and 48 generic adaptive families crossing source/value generators, target spaces, and date modes. This produces 281.6 million candidate evaluations, but the inferential denominator is 10,000 researcher trajectories.

The omnibus result is 0/10,000 primary World-Cup-plus-Dickinson reproductions and 0/10,000 strict all-layer reproductions. World Cup full completion is 0/10,000; Dickinson full completion occurs in 9/10,000; and the generic adaptive gate is reached in 3,577/10,000. The one-sided 95% zero-event upper bound for the primary trajectory-level reproduction rate is 2.99528×10^{-4} under this declared omnibus null. The candidate count is not used as a probability denominator, and the result is not represented as a universal model of all historical researcher choices.

D. Negative and nonsupportive controls

The audit record retains nonsupportive outcomes. In particular, a broad representation-invariance test did not support the intended invariance claim and is preserved rather than suppressed. A later, narrower representation-selectivity analysis finds that the standard Hebrew mapping is non-typical but not unique within a same-weight permutation family. This constrains any claim that the canonical mapping is physically privileged.

Likewise, Ford Capri network density alone is not unusually extreme under its reported comparator; the evidential object is the conjunction of complete 123/123 satisfaction with network organization. Close optimization results in 9/11 and Titanic are also retained because they demonstrate that flexible search can exploit redundancy. These negative and near-hit findings are methodologically important: the argument depends on complete architecture and explicit score ontology, not on suppressing inconvenient alternatives.

TABLE IV. Cross-case summary of pressure conditions, main results, and principal boundaries.

Case	Pressure condition	Main result	Primary boundary
9/11	Archive-scale depth	365/365 and 324/324 observer catalogues; GA 320/324	Rich-source breadth; no universal search-process p-value
Titanic	Semantic roles	Unique complete assignment across 11! role permutations	Exact only in frozen role inventory
Ford Capri	Source contraction	123/123; one exact encoded-family solution	Support does not exhaust all possible families/grammars
Subscriber	Record-state transition	133/133; 31/31 blocks; 14/133 max-over-choice	Two-state discovery remains retrospective
Live F01/F02	Chronology	24/24 and 29/29; 38/38 and 61/61 checks	Chronology-constrained, not backward-signaling proof
World Cup	Global role space	2 states / 3.495×10^{19}; one structural class; selective knockouts	Conditional on frozen role support
Dickinson	Latent observer reconstruction	Unique 57/15/9 profile; unique after direct-target knockout	Adaptive historical discovery still limits universal p-value
14–15 July	Cross-day carryover	Unique daily and adjacent-pair hits in exhaustive date scans	Bridge evaluated after Day 2

TABLE V. Implemented controls for major dimensions of analytical freedom.

Freedom dimension	Implemented response	Remaining boundary
Observer identity	Millions of alternative observer profiles; coherent profile replacement; prospective matched-vs-mismatched design	Generalization to externally sampled populations remains future work.
Semantic roles	Titanic exhaustive 11! assignment; Subscriber/July permutations; World Cup exact role enumeration	Role schemas themselves remain case-defined.
Known targets	Dickinson direct-target knockout and literal-612 knockout	Does not reconstruct a universal search history.
Source richness	Ford Capri bounded object; source ablation; Dickinson block removal	Independent prospective object assignment remains stronger.
Authored wording	Exact strings, variants, authored-family ablation, wording stress in selected cases	No universal distribution over all possible natural-language phrasings is assumed.
Operation grammar	Finite grammars, perturbations, optimizers, max-over-choice, adaptive simulated search	One common preregistered grammar across the full corpus is still a prospective extension.
Representation	Alternative mapping tests and same-weight mapping permutations	Canonical mapping is not claimed to be uniquely privileged.
Chronology	Timestamped messages, preserved record states, public Day-1 deposit	Some analytic closures remain retrospective.

V. CROSS-CASE SYNTHESIS

A. A structural invariant under changing pressure

The main cross-case observation is recurrence of the same motif family while the evidential environment changes. Exact identity convergence, multi-anchor resolution, cross-path convergence, loop or fixed-point return, role-specific family resolution, cross-unit node re-entry, and observer-linked checksum architecture are primary motifs across all five book-length environments. Record-state transition and timestamped external carryover appear only in the later cases because they are additional pressure conditions rather than universal requirements.

The cumulative proposition is therefore qualitative but testable: across materially heterogeneous record environments, the matched observer registry repeatedly participates in exact event/record reconstruction, multi-anchor role resolution, recursive re-entry, and checksum motifs, while complete case-specific objects remain separated from implemented observer, role, record, or construction-freedom alternatives.

B. Why the cases are not multiplied

The five principal cases use different sources, targets, score grammars, dependency reductions, null generators, and discovery histories. Multiplying p-values would assert independence that has not been established and would obscure dependence introduced by one research program and one observer registry. The manuscript therefore reports deterministic correctness, model-conditioned selectivity, and cross-case architectural recurrence as separate inferential statements.

The third statement – recurrence across changing pressure conditions – is not a hidden probability claim. Its evidential meaning is that a conventional explanation must account not only for isolated equalities but also for role specificity, dependency structure, chronology, state transitions, finite-space uniqueness, knockout reconstruction, and recurrence after source contraction.

C. Minimum empirical implication

The minimum empirical implication supported by the manuscript is deliberately bounded: within the tested operational domain and declared comparison spaces, the complete measurable organization of the relevant records cannot be adequately treated as structurally and statistically independent of the matched observer-linked information relation. This statement is stronger than ' interesting coincidences exist' but weaker than a claim that consciousness creates reality or that a specific microscopic mechanism has been identified.

The cross-temporal character arises because records associated with distinct times participate in one role-preserving architecture. The present corpus does not determine whether this organization should be understood dynamically, globally, relationally, or as the result of a sufficiently powerful yet unmodeled selection process. That mechanism question is logically downstream of the empirical architecture.

VI. DISCUSSION

A. From coincidence to architecture

The principal conceptual move in RTM is from isolated numerical coincidence to architecture. In a flexible numerical system, a single exact equality is weak evidence because the space of possible sources, phrasings, targets, and operations can be large. The present work therefore defines success at the level of labeled networks. Correct semantic position, source order, dependency structure, repeated intermediate nodes, self-reconstruction, and complete resolution are part of the object rather than post hoc narrative decoration.

The strongest results illustrate different forms of overdetermination. Titanic holds the same values fixed and shows that semantic reassignment breaks complete architecture. World Cup solves a large finite role space and retains residual selectivity after removing entire components. Dickinson removes the majority of direct observer-target relations and still reconstructs the same observer profile from indirect constraints. Subscriber makes physical record transition part of the network, and live-time cases add documented temporal order.

B. Relation to quantum foundations: from foundational constraints to a macroscopic observer-record test

RTM is not presented as a derivation of Wigner's-friend physics. It is presented as a macroscopically accessible observer-record test directed at the same structural questions that independent quantum-foundational programs have made explicit: whether observed facts are absolute, whether physical records are invariant, how an informational observer persists through time, and whether a purely forward factorization of temporal explanation is compulsory.

Proietti et al. [7] and Bong et al. [8] show that observer-independent or absolute observed facts participate in no-go structures rather than functioning as untouchable background assumptions. Baumann and Brukner [9] go further at the record level: in a coherent Wigner's-friend description, Wigner's measurement can alter the friend's memory register. Quantum Darwinism provides the complementary classicality baseline by explaining how environmental redundancy makes stable information available to multiple observers [10].

Relational and informational approaches identify an adjacent structural layer. Di Biagio and Rovelli [11] formalize relative facts in terms of relative information; Terris [12] argues that a scientifically adequate observer must sustain and organize records across time; and Zwirn [13] emphasizes the internal coherence of perspectival structures rather than a global observer-independent inventory. These themes align closely with RTM's empirical object, which is a dependency-aware architecture linking records at different times to one matched observer registry.

Temporal structure supplies a second bridge. Mukherjee and Hance [14] place No Retrocausality inside a timelike no-go theorem; Adlam [15] argues that Wigner-friend/black-hole analogies motivate intrinsic relational and retrocausal or teleological responses; and Stapp [16] develops an effective-past construction in which present observation changes the effective history and the records available within that history, while explicitly denying alteration of an actual past event. These works do not establish the RTM mechanism, but they show that observer, record, and temporal direction are already coupled foundational questions inside quantum theory.

The scientific bridge proposed here is therefore stronger than a loose philosophical analogy but weaker than a quantum derivation. RTM reports a macroscopic phenomenology that targets the same observer-fact-record-time problem. If a blinded multi-observer RTM effect is independently reproduced, the next task would be to determine whether the responsible mechanism is quantum, time-symmetric, relational, cognitive, statistical, or something else. Without that further bridge, RTM is not itself evidence of a Local Friendliness violation or of a specific microscopic quantum process.

C. Relation to relational and observer-state approaches

Relational accounts treat facts and information as correlations relative to systems rather than automatically global properties [11]. Terris [12] emphasizes a diachronic informational observer capable of storing and integrating records across time, while Zwirn [13] develops a perspectival account of extended observer scenarios. Müller [18, 19] places the observer's informational state at the starting point of a formal predictive program. None of these frameworks predicts the Hebrew encoding or RTM closure architecture.

The relevance is that observer-linked information becomes a legitimate physical or informational variable rather than an external label with no explanatory role. RTM contributes a macroscopic empirical observable: a dependency-aware architecture that can be scored under matched and mismatched observer registries, subjected to knockouts, and tested prospectively.

D. Candidate mechanism families, including conscious observation

The phenomenological result does not uniquely determine a microscopic mechanism. Candidate families discussed in the full RTM program include dynamic retrocausation without controllable backward signaling; time-symmetric or history-level global constraints; relational consistency among observer-linked record states; selection over globally consistent histories; observer-information-state dependence; conscious observation; and other informational or physical mechanisms capable of reproducing the observed specificity, chronology, and robustness.

The current data do not choose among these families. In particular, the corpus does not require literal visible rewriting of an earlier record and does not establish backward communication. A time-symmetric or history-level model may account for a cross-temporal solution without positing a sequence in which a later observer dynamically modifies an already settled past. Conversely, a sufficiently realistic adaptive-search model could weaken the observer-linked interpretation if it reproduces the same architectures at comparable rates.

Conscious awareness deserves explicit treatment because the principal corpus observer is a conscious human who selects questions, encounters records, and performs measurements. However, this fact alone does not isolate consciousness as the causal variable. The observer's relational identity, informational state, measurement choices, physical interactions, and conscious awareness covary in the present corpus. The current result is therefore observer-linked organization, not a demonstrated consciousness-causation effect. Consciousness becomes a testable mechanism hypothesis only when future experiments hold the other variables fixed while varying conscious access, for example through blinded human, automated, delayed-access, and appropriately defined AI or non-conscious control conditions.

E. Why gematria is not the proposed mechanism

A recurrent misunderstanding would be to interpret the Hebrew mapping itself as the physical claim. This manuscript explicitly rejects that inference. The encoding functions as a deterministic ruler that exposes relations among otherwise heterogeneous fields. The physical or informational phenomenon, if the observer-linked interpretation survives independent testing, would be the structured relation among records and the matched observer registry. The mapping may ultimately prove contingent, replaceable, or merely one convenient operational representation.

The representation-control results support this caution. Standard Hebrew character values are not uniquely optimal under every tested same-weight permutation family. That result is not a failure of arithmetic; it is evidence against assigning physical privilege to the encoding without further work.

VII. LIMITATIONS

A. Retrospective discovery and incomplete search history

The largest limitation is retrospective discovery. For the early historical corpus, there is no complete machine-readable log of every source considered, phrase formulated, branch abandoned, operation attempted, or stopping decision made. This prevents a defensible universal probability for inventing the entire corpus under unrestricted exploration. Case-specific finite-space and Monte Carlo results remain valid only inside their declared supports and do not remove this limitation.

B. One analyst and one principal observer registry

The corpus was assembled by one principal analyst and is centered on one observer-linked relational registry. Public books, code, outputs, hashes, and support packages improve auditability, but they do not substitute for independent conceptual replication or adversarial reimplementation. The strongest generalization claim therefore requires new observers, independent custody, and blinded scoring.

C. Representation and language freedom

Exact strings are preserved and many wording or representation controls are implemented, but there is no universal probability distribution over all possible natural Hebrew phrasings or all deterministic character encodings. Authored language is therefore kept separate from externally printed or non-linguistic fields wherever possible. The most persuasive future tests should freeze the eligible language and representation family in advance.

D. Heterogeneous verification maturity

The cases differ in verification maturity. Some objects have complete executable manifests, exact enumeration, and large reruns; others depend more heavily on historical case files, author-reported chronology, or older simulation layers. The present journal version therefore emphasizes the best-audited objects and treats ancillary findings as supporting architecture rather than assigning every case the same evidential status.

E. Physical interpretation remains open

No microscopic coupling equation, Hilbert-space model, quantum channel, dynamical law, or scaling theory is yet provided. This limitation does not make RTM a merely theoretical proposal: the reported architectures, exact finite-space results, knockouts, and model-conditioned anomalies are empirical claims evaluated within their declared domains. It means instead that the mechanism remains unresolved. The connection to quantum foundations is therefore a candidate empirical bridge rather than a completed derivation. Failure of future matched-observer prospective tests would materially weaken both the general phenomenological claim and any physical interpretation built upon it.

VIII. PROSPECTIVE AND INDEPENDENT TESTING PROGRAM

A. Independent reconstruction of the existing corpus

A first independent study should receive frozen source inventories, exact strings, observer registries, dependency definitions, executable manifests, and version hashes. An external team should authenticate a defined sample of source records, recompute Hebrew values and arithmetic, reimplement score objects without the original code, reproduce exact scans and selected Monte Carlo batteries, and publish discrepancies under a new persistent record. This tests correctness and reproducibility rather than observer specificity.

B. Decisive prospective falsification test

The decisive prospective falsification study is a blinded matched-versus-mismatched observer matrix. Recruit n consenting participants and freeze a common-schema registry A_i for each participant under privacy-preserving custody. Acquire one matched record environment R_i per participant under a common protocol while the scoring analyst remains blinded to identity. Compute the complete matrix $S_{ij} = S(R_i, A_j)$.

The preregistered primary statistic should measure the diagonal advantage: the mean score of matched record-registry pairs minus the mean of mismatched pairs for each participant. Participant labels should be permuted exactly when feasible or by plus-one Monte Carlo [28]. Eligibility, source acquisition, language and date conventions, permitted operations, branch budget, maximum depth, motif definitions, dependency blocks, null generators, seeds, stopping rule, and negative-result retention should all be frozen before analysis.

RTM predicts a positive diagonal advantage. The preregistered falsification criterion is explicit: if the matched-versus-mismatched diagonal advantage is centered near zero with adequate precision and the predeclared design has sufficient statistical power, the prospective matched-observer generalization is materially falsified or constrained, even if the historical arithmetic remains correct. An independently reproduced positive diagonal would instead shift the central problem from historical selection to mechanism.

C. Prospective source-contraction and record-state tests

A second prospective design should assign each participant a small externally selected physical object or record packet with a fixed field schema. The analyst may not choose the object after inspecting its fields. This directly generalizes the Ford Capri pressure condition. A third design should preserve objectively timestamped before/after states of one record under independent custody, extending the Subscriber contribution without relying on retrospective artifact discovery.

D. Automated live-input protocol

A live protocol should use server-side timestamping, automatic ingestion of raw fields, predeclared target registries, fixed transformation grammar, fixed maximum search budget, and automatic retention of every failed branch. Later external outcomes should be scored only after their release. This would directly test chronology-constrained completion while eliminating much of the manual flexibility that remains in the present live-time case files.

IX. CONCLUSION

RTM reports a recurrent form of observer-linked organization in heterogeneous records. The central empirical object is not a collection of isolated exact equalities but a role-preserving, dependency-aware architecture in which event data reconstruct event data, distinct paths converge and re-enter earlier nodes, family and observer variables occupy specific relational roles, and later cases add physical record-state change, documented chronology, finite global role resolution, and latent observer reconstruction.

The strongest current results apply different pressure conditions to that reported invariant. Titanic establishes exact semantic-role specificity over all 11! assignments of a fixed inventory. Ford Capri shows that the motif family survives severe source contraction. Subscriber makes preserved record-state transition part of the object.

Live-time cases make source order observable. World Cup supplies exact global role resolution in a complete finite support with whole-component residual selectivity. Dickinson reconstructs the same observer profile after direct-target removal and source-block ablation.

These results are not combined into one universal probability. Their evidential force is architectural and constraint-based. RTM is therefore an empirically instantiated phenomenological model supported by measured architectures and, in the strongest bounded analyses, by exact finite-space results and extreme model-conditioned anomalies. Retrospective discovery, incomplete search logs, representation freedom, and author-led analysis remain important limitations, and the manuscript separates deterministic correctness, model-conditioned selectivity, bounded phenomenology, and physical mechanism.

The quantum-foundational relevance follows from the scientific problem rather than from a claimed microscopic derivation. Independent work has already made observer-dependent facts, mutable or persistent records, informational observer continuity, and No Retrocausality legitimate variables of foundational inquiry. RTM contributes a macroscopic empirical test framework for that same observer-fact-record-time problem. Conscious awareness is one plausible mechanism candidate, but the present corpus does not yet isolate it from observer identity, information state, and measurement interaction.

Within the tested operational domain, the critical next question of external generalization is prospective: do independently acquired records preferentially form the same complete architecture with their matched observer registries rather than with mismatched registries under a fully frozen protocol? A blinded multi-observer answer to that question would determine whether the present macroscopic bridge deserves mechanistic development. A reproduced matched-observer advantage would shift the problem toward mechanism; a well-powered null result would materially constrain or falsify the generalization.

DATA AVAILABILITY

Public case files, validation repositories, executable manifests, and supporting source records are available through the RTM public code organization and persistent Zenodo records cited in Refs. [29–32]. This manuscript is a condensed presentation of RTM Master v0.28.23 and introduces no new numerical result beyond that source. The analyzed manuscript corpus is frozen as RTM Journal Corpus v1.0 with a cutoff of 5 September 2026. The version-locked Supplement/Repository for submission is intended to preserve the full closure ledgers, exact Hebrew strings, provenance records, audit tables, manifests, hashes, random seeds, executable code, null-model outputs, and retained negative or nonsupportive results. The main text retains the definitions, score objects, principal numerical results, and inferential boundaries needed to evaluate the argument.

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ETHICS, PRIVACY, AUTHORSHIP, AND COMPETING INTERESTS

The manuscript is authored by Eran Harpaz as an independent researcher. Personal observer-registry fields used in the historical corpus are treated as fixed research inputs. Any future multi-observer study should use informed consent, privacy-preserving identifiers or escrow, preregistered access rules, and independent governance. No external funder is reported in the source manuscript. The author's prior books and public RTM materials constitute a publication interest and should be disclosed to the journal.

[1] Y. Benjamini and Y. Hochberg, Controlling the false discovery rate: A practical and powerful approach to multiple testing, Journal of the Royal Statistical Society B **57**, 289 (1995).

[2] J. P. Simmons, L. D. Nelson, and U. Simonsohn, False-positive psychology: Undisclosed flexibility in data collection and analysis allows presenting anything as significant, Psychological Science **22**, 1359 (2011).

[3] A. Gelman and E. Loken, The garden of forking paths (2013), unpublished manuscript.

[4] R. Berk, L. Brown, A. Buja, K. Zhang, and L. Zhao, Valid post-selection inference, The Annals of Statistics **41**, 802 (2013).

[5] C. Dwork, V. Feldman, M. Hardt, T. Pitassi, O. Reingold, and A. Roth, The reusable holdout: Preserving validity in adaptive data analysis, Science **349**, 636 (2015).

[6] B. A. Nosek, C. R. Ebersole, A. C. DeHaven, and D. T. Mellor, The preregistration revolution, Proceedings of the National Academy of Sciences **115**, 2600 (2018).

[7] M. Proietti *et al.*, Experimental test of local observer independence, Science Advances **5**, eaaw9832 (2019).

[8] K.-W. Bong *et al.*, A strong no-go theorem on the wigner's friend paradox, Nature Physics **16**, 1199 (2020).

[9] V. Baumann and C. Brukner, Wigner's friend's memory and the no-signaling principle, Quantum **8**, 1481 (2024).

[10] Z. Zhu, K. Salice, A. Touil, *et al.*, Observation of quantum darwinism and the origin of classicality with superconducting circuits (2025), arXiv:2504.00781v2.

[11] A. Di Biagio and C. Rovelli, Relative information, relative facts (2026), arXiv:2510.11349v2.

[12] B. Terris, The informational observer in relational quantum mechanics (2026), arXiv:2603.02978v2.

[13] H. Zwirn, Is quantum mechanics universal? extended wigner's friend experiments and non absoluteness of events (2026), arXiv:2606.01349v1.

[14] S. Mukherjee and J. R. Hance, Limits of absoluteness of observed events in timelike scenarios: A no-go theorem (2026), arXiv:2510.26562v3.

[15] E. Adlam, What do black holes teach us about wigner's friend? (2026), arXiv:2604.17839v1.

[16] H. P. Stapp, Retrocausal effects as a consequence of orthodox quantum mechanics refined to accommodate the principle of sufficient reason (2011), arXiv:1105.2053v3.

[17] J. A. Wheeler, Law without law, in *Quantum Theory and Measurement*, edited by J. A. Wheeler and W. H. Zurek (Princeton University Press, 1983) pp. 182–213.

[18] M. P. Müller, Law without law: From observer states to physics via algorithmic information theory, Quantum **4**, 301 (2020).

[19] M. P. Müller, Algorithmic idealism: What should you believe to experience next?, Foundations of Physics **56**, 11 (2026).

[20] E. Harpaz, *The 9/11 Identity Matrix: Forensic Pattern Convergence Across Time, Data, and Observer Identity* (Independently published, 2026) current 100-Evidence-Unit digital edition.

[21] E. Harpaz, *The Titanic Identity Matrix: A Forensic Analysis of the Titanic Wreck Coordinates and Recursive Time Structure* (Independently published, 2026) current 190-chain/85-unit digital edition.

[22] E. Harpaz, *The Ford Capri Identity Matrix: One Car. One Photograph. Complete Identity Resolution* (Independently published, 2026) current 20-finding/123-equation digital edition.

[23] E. Harpaz, *The Living Subscriber: Retrocausality of Identity in a Card from 2000* (Independently published, 2026) current research edition with two-state addendum and statistical appendix.

[24] E. Harpaz, *The Result Was Already Encoded: A Live-Time RTM Case File* (Independently published, 2026) current locked-ledger digital edition.

[25] Emily Dickinson Museum, Emily dickinson; and 1865–1886: The later years (2026), accessed July 2026.

[26] Dickinson Electronic Archives, Letters 166, 167, and 728 and associated editorial notes (2026), accessed July 2026.

[27] J. A. Hanley and A. Lippman-Hand, If nothing goes wrong, is everything all right? interpreting zero numerators, JAMA **249**, 1743 (1983).

[28] B. Phipson and G. K. Smyth, Permutation p-values should never be zero, Statistical Applications in Genetics and Molecular Biology **9**, Article 39 (2010).

[29] RTM111ER, Rtm public code organization and case-specific validation repositories, GitHub (2026).

[30] E. Harpaz, The reflective time model: Convergence of empirical data on biographical anchors across four independent domains, Zenodo (2026).

[31] E. Harpaz, Observer-linked arithmetic convergence in a same-day hebrew date query: An rtm case report from 14 july 2026, Zenodo (2026).

[32] E. Harpaz, Same-day observer-linked convergence and cross-day numerical carryover on 15 july 2026, Zenodo (2026).