From Scientific Recognition to Scientific Explanation

Organising Investigation of Long-Term Military Environmental Contamination

Laboratory of Information Systems / Laboratory of Military Ecotones

Overview 2 / Artificial Intelligence and Research on the Consequences of War / 15 minutes

Scientific Recognition

Recognition concerns the investigated object

Working boundaries and relationships become clearer

Explanation addresses how the process operates

Social recognition of a researcher is a separate question

Knowledge before recognition

Accurate local results can remain disconnected

Integration concerns relationships and their grounds

Project boundaries may exclude part of the object

More information can reveal additional uncertainty

A continuing research example

An archival record points to a candidate location

Later soil and water observations require interpretation

Place, time and source relationships remain provisional

The example illustrates a design, not a completed finding

The Pre-Theoretical Domain

Existing theories and hypotheses remain available

A mature explanation of the whole object may be missing

Early explanations guide inquiry under explicit limits

Recognition can continue within explanatory research

The Relational Field

Each proposed relationship has an evidential status

Observed association differs from inferred causality

Contradictions remain available for examination

New evidence may change the research contour

Process Morphology

Morphology concerns the developing form of the process

Patterns can connect space, time and environmental compartments

Changes in the object differ from changes in its description

A recognisable pattern still requires causal testing

Explanatory possibilities and testing

Different mechanisms may account for the same pattern

Tests compare outcomes predicted by the alternatives

Explanations retain their scope and assumptions

Supported explanations continue to face new evidence

Persistent and pathological uncertainty

A developing object can generate new questions

Productive uncertainty retains its origin and consequences

Pathological uncertainty conceals or confuses evidential grounds

Progress concerns identified gaps and tested relationships

Scientific Navigation

The next action follows the current state of recognition

Archive checks and field tests address different gaps

Changes of direction retain reasons and previous assessments

Decisions remain reviewable under limited resources

The scientist–AI contribution

AI assists comparison and provisional reconstruction

Experts check sources and consequential interpretations

Alternative descriptions remain explicit and testable

The architecture also supports research without AI

Operational Specification Version 1.0

The initial object and questions remain revisable

Integration occurs throughout disciplinary work

Source context and significant decisions remain traceable

The final output states what became recognisable

What the next investigator inherits

Research preserves its questions and remaining limits

Earlier findings retain their historical conditions

Interventions can become part of the developing object

Later projects can continue and challenge the record

Sources 1–4

[1] Series 1 / The Scientist–AI System
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[2] Series 2 / Authorship and control
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[3] Series 3 / Responsibility to the Problem
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[4] Series 4 / AI-Assisted Hypothesis Generation
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[5] Series 5 / Evidence Status and Pathological Uncertainty
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[6] Series 6 / Field Verification
DOI 10.66659/2qwv2037

[7] Series 7 / The Integrated Working Standard
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[8] Methodological article / Scientific Recognition and Explanation
DOI 10.66659/db5ekw49

[9] Operational Specification / Version 1.0
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[10] Working book manuscript / Unpublished draft / 2026
Selected chapters / Manuscript in development

Recognition and explanation in one programme

The series connects inquiry with evidence and correction

Recognition clarifies the object we seek to explain

Testing strengthens explanations within stated limits

A usable record supports the next investigation