Field Verification in the Scientist–AI System

From Pathological Uncertainty to Quality Data

Laboratory of Military Ecotones
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New Euro Vision: exhibitions, marketing, research s.r.o.

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Overview 2 · 15-minute presentation · English

1 Opening

Speaker text · 0:00–1:04

Field verification begins with a question about an object. We must explain what we are looking for, where we expect to find it, and which observation would change our understanding. A sample becomes useful evidence through this relationship.

Our subject is the long-term environmental transformation of territories affected by war. We approach it through the Theory of Military Ecotones and a scientist–AI research system. The programme presented here connects theoretical development, historical reconstruction, site selection, observation, laboratory analysis, and revision of hypotheses. It is a proposed working standard, not a report of completed field campaigns.

The central requirement is straightforward. Every consequential interpretation must remain traceable to its sources, observations, methods, and assumptions. Every unresolved connection must remain visible. Quality data allow another researcher to assess what was investigated and what the results actually establish.

2 Theory directs investigation and remains open to correction

Speaker text · 1:04–2:27

Fieldwork contains assumptions about the object. Selecting a location assumes something about spatial relationships. Selecting a depth assumes something about vertical structure. Selecting a date assumes something about temporal behaviour. An unstated assumption still directs the investigation.

We make these assumptions explicit through the Theory of Military Ecotones. Its working concepts include changes in territorial regime, functional inversion, carrier-dependent boundaries, latent consequences, and transformation trajectories. The theory and the object are distinct: the object continues to develop whether our description is adequate or inadequate. [2, 3]

Before collecting data, we must specify the relationship under examination and plausible competing explanations. We must also describe results that would weaken our preferred hypothesis. If every possible observation can be interpreted as confirmation, the proposed investigation has no effective test.

The obligation runs in both directions. Theory guides the field programme. Field results can alter the research contour, reject a proposed mechanism, or require revision of the theory. We present our framework explicitly; comparing other frameworks would require their assumptions and proposed tests to be equally explicit.

3 Turn uncertainty into a programme of observations

Speaker text · 2:27–3:46

The preceding contribution examined evidence status and pathological uncertainty. Here we take the next step: identify observations capable of resolving specific gaps. Uncertainty associated with an evolving natural process cannot be eliminated once and for all. We can nevertheless make particular relationships clearer.

An unknown source location calls for one programme. An uncertain transport pathway calls for another. An unexplained difference between neighbouring sites may require comparison of their histories, water regimes, or disturbance patterns. Treating these questions as one general shortage of data obscures what should be done next.

For each gap, our proposed record states the question, available evidence, alternative explanations, required observation, expected discriminatory value, and remaining limits. Some gaps are best addressed in archives. Others require field measurements, experiments, or health research. Collecting another soil sample is useful only when it addresses an appropriate question.

This record also prevents a common failure: replacing a difficult question with an easier measurement and then reporting the measurement as if the original question had been answered.

4 Archives establish priorities for field investigation

Speaker text · 3:46–5:04

The publications on Vietnam’s National Archives Centers II and III identify records concerning chemical use, recorded damage, and subsequent investigation. They offer complementary historical perspectives and routes to underused evidence. These publications introduce archival holdings; citing them does not mean we have examined every underlying file. [4, 5]

We propose using such records to develop candidate locations and historical sequences. Each candidate should retain its documentary basis, date range, uncertain place names, and unresolved contradictions. A confidently placed marker on a map must not conceal an uncertain geographical reconstruction.

The next question is what could have happened between the recorded event and the present observation. Materials may have moved. Land use and drainage may have changed. Later interventions may have altered the territory. These possibilities become questions for investigation, not assumed explanations.

The immediate output is a justified list of sites and tests. An archival reference establishes a reason to investigate; it does not by itself verify present contamination, its extent, or its source.

5 Soil is investigated as a changing configuration

Speaker text · 5:04–6:23

The soil protocol treats soil after war as a configurational component of a military ecotone. Its description incorporates pre-war history, military disturbance, changes in water and biota, territorial use, and subsequent development. Chemical contamination is one important aspect of this object. [6]

Our field implementation asks which aspects of that configuration matter for the current hypothesis. If the proposed mechanism concerns transport into a receiving water body, the investigation needs observations that address the connection. If it concerns buried or redistributed material, the choice of depths and locations requires a corresponding rationale.

We do not propose measuring everything. We propose selecting indicators through an explicit relationship between the question, the mechanism, and the observation. A familiar analytical panel may be appropriate, but its familiarity cannot establish that it answers the question.

The resulting soil profile should be open to revision. It records the territory's history, observed conditions, tested relationships, and unresolved processes. A later observation updates that profile instead of disappearing into a separate, disconnected report.

6 Site selection must distinguish explanations

Speaker text · 6:23–7:40

Access affects feasibility. It does not establish scientific relevance. Sampling only where access is convenient can leave the proposed process largely unexamined. The conference abstract therefore requires site selection to follow a process model and an observational purpose. [1]

Our proposed design compares locations where competing explanations predict different outcomes. A candidate source area, a possible transport route, and a receiving area may each answer different questions. Comparison sites need documented histories; proximity alone does not make two sites comparable.

For an illustrative hypothesis about movement through a drainage system, we would first identify observations that could distinguish transport from unrelated local inputs. We would then choose sampling positions, matrices, timing, and comparison locations accordingly. This is a design example, not a finding about a particular Vietnamese site.

If limited access leaves an important part of the proposed relationship untested, the conclusion must retain that limit. We can report a useful local observation without claiming that it represents the wider territory.

7 Combine repeated observation with targeted experiments

Speaker text · 7:40–8:57

A single campaign captures conditions during a limited interval. It may be insufficient for a hypothesis about seasonal movement, episodic redistribution, or a changing territorial regime. Repetition should be designed around the proposed process rather than performed as a ritual.

The abstract proposes reference stations, verification sites, experimental polygons, pilot studies, and repeated observations. [1] We would assign each a specific task. Reference stations provide a documented basis for comparison over time. Verification sites address selected uncertainties. Pilot studies test whether the proposed methods can answer the question before a larger programme begins.

Experiments have a different role: examine a mechanism under specified conditions. Their results require an explicit argument before being extended to field conditions. Likewise, a field association cannot automatically identify its mechanism.

The programme should state when the design will be reviewed. New observations may justify changing locations or adding a test. Such changes require a recorded reason, so that adaptation remains distinguishable from selecting only favourable results.

8 Quality data preserve the conditions of their production

Speaker text · 8:57–10:08

Our working standard defines quality through inspectability. A result must be linked to a sample or observation identifier, location and its uncertainty, date, depth or matrix where relevant, collection method,

handling history, analytical method, and applicable quality controls. Missing information should be recorded as missing.

Laboratory performance and interpretive relevance are separate questions. An accurately measured concentration can still be insufficient for a conclusion about source attribution or territorial development. The analytical result must remain distinguishable from the inference built upon it.

A non-detection must retain the detection limit and the conditions of sampling. It cannot be converted into a general statement that contamination is absent. Similarly, detecting a substance does not alone establish its wartime origin.

We therefore propose preserving raw records, processing steps, exclusions, and revisions alongside interpreted results. Quality data support criticism and reanalysis. Their value does not depend on whether they confirm our initial hypothesis.

9 Reconstruct the pathway from source to possible harm

Speaker text · 10:08–11:27

The proposed dioxin information framework links questions about source, storage, transport, release, environmental distribution, exposure, and long-term biological outcomes. Its practical value lies in organising the connections between different bodies of evidence. [7]

The phrase from a barrel of dioxin to congenital defects a generation later expresses the scope of an investigation. It is not a completed causal explanation. Each transition requires its own evidence. A storage record does not demonstrate a release. A release does not establish a particular person’s exposure. An environmental measurement does not establish the cause of a later health outcome.

Field research can examine specified environmental connections within this chain. Questions about exposure and health require additional research designs and qualified partners. Direct exposure during pregnancy must also remain distinct from a proposed effect across subsequent generations.

The system must retain competing sources, alternative explanations, missing periods, and uncertain links. A complete-looking diagram cannot fill those gaps. Progress consists in establishing particular connections and making the remaining research tasks more precise.

10 AI helps organise the next useful observation

Speaker text · 11:27–12:46

The scientist–AI system operates throughout the proposed programme. AI can assist multilingual document processing, comparison of records, identification of inconsistent dates and place names, and preparation of provisional spatial reconstructions. Important extractions must remain checkable against the original documents.

During design, AI can help compare hypotheses, identify missing information, and propose observations that would distinguish explanations. During analysis, it can help connect new results with the existing record and identify assumptions that now require reconsideration. These capabilities must be evaluated for the actual task; fluency is no measure of reliability.

Our proposed priority is the next useful observation: what could we measure or inspect that would most change the assessment of competing explanations? Cost, feasibility, and expected information value enter that decision together.

AI cannot generate the physical evidence that is missing. It cannot certify a sample's handling, an instrument's performance, or the representativeness of a territory by writing a persuasive account. The expert remains responsible for consequential decisions, checked interpretations, and the claims authorised for publication.

11 Build continuity across archives fieldwork and analysis

Speaker text · 12:46–14:04

The Laboratory's charter connects field observation, sampling, mapping, documentation, analysis by qualified partners, modelling, and interpretation. It provides an organisational basis for the programme. The charter itself is not evidence that every capacity is already operational. [8]

We propose a shared research record in which questions, source documents, site rationales, sample identifiers, analytical results, and decisions remain connected. Responsibilities must be assigned for documentary checking, field recording, analytical quality, and interpretation. A project cannot depend entirely on what one person remembers.

Continuity also requires preserving usable data between campaigns. A later team should be able to understand why a site was selected and what an earlier result established. Where access or hazardous conditions prevent an observation, the resulting gap should remain explicit.

The initial programme can be limited and concrete: reconstruct one candidate area, formulate a small set of competing hypotheses, conduct a justified pilot, and evaluate whether the resulting evidence supports expansion. This produces a reviewable first step without presenting plans as completed research.

12 Closing

Speaker text · 14:04–15:00

Our proposed standard connects an explicit theory to historical evidence, a justified field design, documented measurements, and revision of the research programme.

A successful investigation may confirm a relationship. It may reject one. It may show that the question was poorly formulated or that a decisive observation remains unavailable. Each outcome can improve understanding when its evidential basis is preserved.

The scientist–AI system helps us organise this work and identify what to investigate next. Its effectiveness must be assessed through better questions, more discriminating observations, and conclusions whose limits can be inspected.

For the Laboratory of Military Ecotones, responsibility to the object means allowing the object to correct our account of it. Quality data make that correction possible.

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