Soil After War as a Configurational Object of the Military Ecotone

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Slide 1 Soil After War as a Configurational Object of the Military Ecotone

00:00–00:50 / 50 seconds

This presentation sets out a new theoretical understanding of soil after war. Its starting point is the theory of military ecotones: war changes the regime in which a territory functions. Soil enters that regime through altered impacts, relations and subsequent development. We therefore investigate a configuration that has a history and continues to change. The question extends beyond the substances found in a sample. It concerns what the soil retains, transforms and transfers, and how those roles change over time. The protocol defines concepts and an empirical research architecture for this object. I will concentrate on that definition and its consequences for observation. The final part explains how the approach can develop through projects capable of testing its own propositions.

Slide 2 The beginning of the soil military ecotone

00:50–01:41 / 51 seconds

The beginning of the object is a central distinction. Soil becomes part of a military ecotone when war changes the territorial regime and thereby changes the conditions of its functioning, development or use. Detection of a particular military pollutant is not required by this definition. A population may leave agricultural land. Cultivation and drainage maintenance may cease. Vegetation and water relations may subsequently change. These are possible consequences of the regime change even without a newly detected chemical release. We must distinguish the start of that change, the appearance of a transformation, its scientific recording and its administrative recognition. Those dates describe different events. The theory directs observation toward the developing process rather than allowing the first measurement to define when the object began.

Slide 3 The meaning of a configurational object

01:41–02:32 / 51 seconds

A configurational object is an object whose condition depends on a historically formed combination of impacts, functions, relations and trajectories. This definition has a practical consequence. The same measured substance can acquire different significance in different configurations. Its origin, chemical form, mobility and relation to water or organisms matter. A genetic soil body may retain much of its physical identity while its operating conditions change substantially. The theory does not require war to create an entirely new natural soil body. It identifies a changed configuration that requires investigation in its own terms. Listing pollutants cannot fully describe that configuration. The research

must explain how the components connect, which connections have evidence and how their arrangement changes after the initial military event.

Slide 4 Four elementary transformations

02:32–03:24 / 52 seconds

The protocol distinguishes four elementary transformations. Addition introduces substances or energy, including fuel, metals, debris and heat. Destruction changes structures and processes, for example through horizon mixing or damage to drainage. Cessation stops former impacts such as cultivation, irrigation or the application of agricultural chemicals. Reorganisation changes use, access and the relationships between people and territory. These transformations can occur together. An industrial installation may release material during destruction while its chronic emissions cease. A field may become a defensive position and later remain inaccessible. The resulting condition depends on the sequence and interaction of changes. Functional inversion names the change in a territory's primary function under the military regime. This framework makes the disappearance of an earlier activity as scientifically relevant as a new input.

Slide 5 Soil as carrier, archive and active medium

03:24–04:17 / 53 seconds

Soil occupies several positions within the military ecotone. It carries the material trace of an event and preserves layers of earlier impacts. It also participates in transformations that change what that trace becomes. Soil can retain a substance, alter its availability or participate in its redistribution. The proposed field therefore asks what the soil archives, what it transforms and what it transfers to other media. A retained trace does not come with a ready explanation of its origin. Its interpretation requires territorial history, spatial evidence and a defensible account of process. These roles also explain why soil cannot be reduced to a passive container of contamination. Understanding the military ecotone requires investigating soil as one of the media through which the initial disturbance becomes a continuing ecological process.

Slide 6 Pre-war history and the actual soil condition

04:17–05:10 / 53 seconds

War never enters an empty history. Agriculture, industrial activity, erosion, land reclamation and earlier conflicts may already have transformed the soil. Pollution stratigraphy reconstructs these successive layers and regimes of impact. Detection after the beginning of war does not by itself establish military origin. Conversely, war can change the mobility or transfer of a substance that was already present. The protocol calls retention of an earlier classification name after substantial functional change taxonomic inertia. A name such as chernozem remains useful, but cannot establish the current configuration. Before-and-after comparison must distinguish measured conditions, documentary evidence, administrative records and unknown characteristics. Missing pre-war observations cannot be replaced by an assumption of satisfactory conditions. Historical reconstruction is part of causal attribution rather than an introductory description that can be omitted.

Slide 7 An abandoned agricultural territory

05:10–06:06 / 56 seconds

Consider an agricultural territory where war-related danger prevents continued use. This is a conceptual example, not a reported field result. Cultivation stops, and maintenance of drainage or irrigation may also stop. Changes in water conditions and vegetation can alter the soil's development. The research object includes the cessation of earlier impacts and the later trajectory. A programme restricted to a list of military chemicals would not test this configuration adequately. The relevant observations would include the timing of abandonment, the previous management system, water levels, vegetation and changes in soil properties. Comparable sites and historical records would help distinguish the proposed war-induced relation from other causes. The example demonstrates the meaning of the definition: a military regime can transform soil through changes in territorial functioning without requiring a new chemical substance as its entry condition.

Slide 8 Carrier-dependent boundaries

06:06–07:00 / 54 seconds

The object has several boundaries. The outline of a crater can describe direct physical disturbance. Water movement, displaced material and biological transfer can connect that site with other locations. A regulatory boundary describes permission or restriction and has a different basis. The protocol uses carrier-dependent boundary for the spatial and temporal limit of a process determined by a particular material carrier. We therefore need to ask what moves, through which medium and under which conditions. One line on a map cannot describe every connection. Nor does the theory assume unlimited spread. The boundary of each proposed relation requires evidence at the relevant scale. A soil sample can establish a local value. Its significance for a wider territory depends on the history and process connecting the observation with that territory.

Slide 9 Different parameters have different trajectories

07:00–07:52 / 52 seconds

A soil military ecotone has no universal end date. Parametric asynchrony names the difference in the rates and directions of change among its characteristics. Visible damage may disappear while a material process continues. A critical residual parameter is an indicator that retains environmental or functional significance after most other characteristics have normalised. Its importance must be demonstrated. The protocol does not treat every microscopic residue as evidence of an eternal ecotone. It also distinguishes latent and reactivated states. A consequence may persist without apparent expression under current use, then become relevant when moisture, construction or land use changes. These are possible trajectories that observation must distinguish. The end of hostilities, a restored crop yield and completion of a particular ecological process cannot serve as interchangeable dates.

Slide 10 Eight groups of indicators

07:52–08:48 / 56 seconds

The protocol proposes eight initial groups of indicators. They cover land use, pollutants, physical soil transformation, freshwater conditions, biological change, flows of substances, human presence, and control and observability. This is an open research framework. The indicators selected for a project

depend on territorial history, the morphology of military activity and the relations being tested. The eighth group needs explicit distinction: it describes society's ability to observe the soil rather than a direct property of the soil. Lost archives, changed methods or sampling restricted to accessible locations affect what the research can establish. The framework therefore records both the changing object and the conditions under which knowledge of it arises. A missing observation cannot silently become an observation of absence. The list must develop as new results expose gaps in the original programme.

Slide 11 Research polygons and micropolygon sites

08:48–09:40 / 52 seconds

The theory translates into fieldwork through research polygons and micropolygon sites. A polygon contains a particular combination of military activity, pre-war conditions and subsequent transformation. A micropolygon is a local site for detailed repeatable study. Its scale follows the process under investigation. Sampling can compare depths, the centre and periphery of an impact, or different times. Each sample belongs to that spatial and temporal context. The protocol proposes a passport of representativeness recording soil condition, history, water regime, military morphology and the limits of transferring results elsewhere. A reference site also requires reconstruction. Calling it a control does not make it clean or historically equivalent. This architecture provides a way to examine particular configurations without presenting one sample as a description of an entire territory.

Slide 12 The hypothesis–evidence relation

09:40–10:32 / 52 seconds

The primary cognitive unit is the hypothesis–evidence relation. It connects a proposed source, a medium, a transformation, a transfer and a consequence while recording the evidence status of each link. The table illustrates a possible source–soil–water relation. It reports no established case. Finding a substance in soil would establish one observation, not every step in that relation. A project must show which links have support and what could change the status of the others. The protocol also proposes infectious soil science as a research direction concerning environmental configurations and microorganism properties. Those causal propositions require separate tests. The broader point is methodological: locating a process in soil does not give one discipline exclusive competence over every subsequent relation. The evidence must follow the proposed connection across media.

Slide 13 Field observations, experiments and research memory

10:32–11:26 / 54 seconds

Field and experimental work have complementary functions. Fieldwork identifies actual configurations and the morphology of change. A controlled experiment tests a particular mechanism under specified conditions. The result must return to the field model with its domain of transfer stated. That domain includes the conditions under which the experimental relation can reasonably explain the observed territory. Universal extrapolation would erase the configuration the theory asks us to investigate. A relational database and GIS should connect military events, sites, samples, methods and hypotheses. AI can assist comparison, identify gaps and retain rejected explanations. The expert remains responsible for interpretation and the quality of the research. The system must preserve the history of revision so that another researcher can see how a measurement changed a proposed relation or required a different model.

Slide 14 The open dynamic soil profile

11:26–12:19 / 53 seconds

The intended result is an open dynamic profile of soil as a component and active medium of the military ecotone. It records the actual condition, pre-war history, regime change, impacts, transfer pathways and trajectories. It also records gaps, alternatives and tests that have not been conducted. The profile remains open because the object changes and evidence can change the explanation. Its versions preserve that history. Standards may be applied to the profile for a particular regulatory purpose. They cannot replace the underlying measurements or the relations being investigated. An administrative change does not retrospectively change the soil. This separation gives the scientific result a precise form. It allows different decisions to refer to the same empirical record while keeping those decisions distinguishable from knowledge of the process.

Slide 15 The approach has a right to project-based testing

12:19–13:14 / 55 seconds

This understanding of soil deserves development through projects that can test it on its own terms. The right to empirical testing is a proposed organizational principle, not a claim that the theory is already true or that every idea deserves equal funding. A suitable project must retain the configurational question in its sampling design, indicators and duration. It needs access to territorial history, samples and methods capable of examining the proposed relations. Merely adding the theory's name to a programme that measures only a fixed regulatory list would not test it. The protocol on empirical testing proposes open review of the initial assumptions and symmetrical criteria for competing approaches. Our theory accepts the same requirement. Unsupported war-induced relations, alternative explanations and concepts that add no diagnostic capacity must lead to recorded revision.

Slide 16 The theoretical and methodological sequence

13:14–14:06 / 52 seconds

The soil protocol is the main source for this understanding and the empirical architecture developed from it. The paradigm paper supplies the broader theory of military ecotones. The other two protocols address the conditions under which the object receives scientific attention and a new approach obtains opportunities for testing. Their roles differ. The institutional problem explains part of the context, but it cannot replace the study of soil. Conversely, defining the soil object does not automatically provide access to a field site or analytical infrastructure. Together these documents connect the theoretical proposition with a programme of research. The essential next step is empirical: investigate whether the configuration makes previously disconnected observations intelligible and whether the proposed relations survive the tests designed to examine them.

Slide 17 Soil as a developing configuration

14:06–15:00 / 54 seconds

The central proposal is now explicit. Soil after war is a configurational object within the military ecotone. Its study begins with the change in territorial regime and follows the resulting impacts, relations and trajectories. Chemical measurements remain important, but their meaning depends on the object in which they occur. Pre-war history, cessation of earlier activity, transfer across media and

later reactivation belong within the research question. Polygons, repeated local observations and experiments give that question empirical form. The theory should develop through projects that preserve its distinctive object while accepting correction when the evidence fails. We are proposing a way to investigate the soil process as it actually continues. The result must remain connected to that process through an open dynamic profile and a visible record of how its explanation changes.

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