

POLIS V12: The Complete Geography Series – 12 Giants

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“Tensional Reinterpretation of Six Founders of Modern Geography”
and “Tensional Reinterpretation of Six More Geographic Pioneers”.*

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Abstract

Within the POLIS V12 tensional ontology, every geographical system is a polis constituted by three meshes (solid, liquid, gaseous) and governed by the closure condition $\epsilon = \sum K_m(2 + K_m) = 0$, with $T = K_{\min}$ as the tensional origin. This paper applies the framework to six foundational figures of geography: Eratosthenes (first geographer), Alexander von Humboldt (physical geography), Carl Ritter (regional geography), Paul Vidal de la Blache (human geography), Friedrich Ratzel (political geography), and Ellsworth Huntington (climate and civilisation). Each classical contribution is reinterpreted as a tensional configuration: Eratosthenes's circumference as global K ; Humboldt's isotherms as K contours; Ritter's regions as natural K units; Vidal's genre de vie as local K adaptation; Ratzel's Lebensraum as required K territory; and Huntington's climatic determinism as T influence. The universal equations remain unchanged; no free parameters are introduced.

1 Introduction

POLIS V12 is a closed, parameter-free tensional conservation theory built on four axioms (Tensional Ontology, Harmonic Ground $H = 1$, Tensional Conservation, Data Origin $T = K_{\min}$). The governing equation, after normalisation, is

$$\epsilon = \sum_{m=1}^n K_m(2 + K_m) = 0,$$

with $K_m = (v_m - T)/(v_{\max} - T) \in [0, 1]$. The disequilibrium index is $\text{IDT}^* = \epsilon/(1 + \epsilon)$. All real geographical systems reside in Phase 4 ($\text{IDT}^* \geq 0.70$) unless artificially uniform. The Rolling Law $2\pi r_p = V_{\text{orb}}T_{\text{rot}}$ applies fractally at all scales.

This paper reinterprets six key geographical contributions within this tensional ontology. No classical primacy is assumed; tension is the primitive.

2 Eratosthenes – First Geographer and Circumference

Eratosthenes calculated Earth's circumference using the angle of shadows at Syene and Alexandria. In POLIS V12, the circumference $C = 2\pi R$ is the base K scale for the planetary polis. His measurement $C \approx 252,000$ stadia (about 39,690 km, close to actual) set v_{\max} for Earth's size. Eratosthenes also invented the system of parallels and meridians (a K grid). He compiled a world map in his *Geographika*. The concept of "oikoumene" (inhabited world) is a subset of K values suitable for human habitation.

Eratosthenes's sieve (prime numbers) is a tensional filtering method: K numbers that survive are prime (no divisors). His library at Alexandria was a large mesh of knowledge.

3 Alexander von Humboldt – Physical Geography and Isotherms

Humboldt mapped isotherms (lines of equal temperature) and studied vegetation zones. In POLIS V12, an isotherm is a contour of constant K_{temp} . His "Naturgemälde" (single diagram illustrating physical geography) integrated latitude, altitude, plant distribution, and geology – a multi- K visualisation. The Humboldt Current (cold water upwelling off Peru) is a tensional feature (upwelling = liquid mesh rising). His concept of "Kosmos" attempted a unified description of the physical world – a tensional atlas.

Humboldt's ascent of Chimborazo (Ecuador) recorded K (temperature, pressure) with altitude. He pioneered the use of isolines (contours) to represent continuous K fields.

4 Carl Ritter – Regional Geography and Comparative Method

Ritter stressed the "unité géographique" (geographic unity) of regions. In POLIS V12, a region is a natural polis with characteristic K distribution (topography, climate, culture). His comparative method contrasted different regions to identify K patterns. Ritter argued that geography should describe the "Erdkunde" (science of the Earth) as a whole. He emphasised the influence of Asia on Europe – a tensional transmission of K across a land bridge.

Ritter's teleological view (Earth as a promoter of human development) sets T (directional progress). His work influenced environmental determinism.

5 Paul Vidal de la Blache – Human Geography and Genre de Vie

Vidal opposed environmental determinism, emphasising human agency and local adaptation. In POLIS V12, "genre de vie" (way of life) is the stable K configuration of a community, shaped by both environment and history. "Possibilism" holds that the environment provides options (T constraints) but humans choose K activities. The pays (small region) is a basic tensional unit. Vidal's tableau de la géographie de la France is a monumental regional study.

His concept of "circulation" (movement of people, goods) is the liquid mesh of the region. "Mise en valeur" (development) increases $K_{\text{production}}$.

6 Friedrich Ratzel – Political Geography and Lebensraum

Ratzel applied biological concepts to states, viewing them as living organisms needing space (Lebensraum). In POLIS V12, a state is a polis that requires a certain $K_{\text{territory}}$ to

survive. Ratzel's seven laws of territorial growth are tensional rules (e.g., territory expands by absorbing smaller K units). The concept of "boundary" (frontier) as a contact zone (liquid mesh) rather than a line. His work influenced Geopolitik (later misused by Nazis). Ratzel's anthropogeography studied human distribution in K terms (density, migration). The sea as a historical space (mare nostrum) is a liquid mesh that facilitates K exchange between coastal polises.

7 Ellsworth Huntington – Climate and Civilisation

Huntington argued that climate strongly influences civilisation's development. In POLIS V12, climate sets the external T (temperature, rainfall) that shapes $K_{\text{civilisation}}$. He claimed that the optimal climate ("stimulating") is variable temperate zones (high $K_{\text{innovation}}$). The "civilisation index" (based on cultural achievements) correlates with K_{climate} . Huntington's "pulse of Asia" thesis linked central Asian droughts to migration waves (tensional pulses). His book "Civilization and Climate" (1915) quantified these correlations.

Critics note that correlation does not imply causation; his $K_{\text{civilisation}}$ metric is subjective. Nonetheless, Huntington pioneered quantitative climatology.

8 Conclusion

The six foundational contributions to geography are coherently reinterpreted within the POLIS V12 tensional ontology. Mathematical geography, physical geography, regional geography, human geography, political geography, and climatic determinism all become natural consequences of the closure condition $\epsilon = \sum K_m(2 + K_m) = 0$ and the fractal hierarchy of geographical polises. No free parameters are added.

Zenodo references

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Abstract

This paper extends the POLIS V12 tensional reinterpretation to six additional geographical giants: Halford Mackinder (heartland theory), Carl Sauer (cultural landscape), Yi-Fu Tuan (humanistic geography), David Harvey (critical geography), Edward Soja (spatial justice), and Doreen Massey (space and power). Each is re-read as a tensional configuration: Mackinder's pivot area as central K node; Sauer's cultural landscape as layered K ; Tuan's topophilia as K attachment; Harvey's accumulation as Phase 3; Soja's thirdspace as tensional hybrid; and Massey's power geometry as differential K access. The universal equations remain unchanged; no free parameters are introduced.

9 Introduction

As in the companion paper, POLIS V12 rests on four axioms. After normalisation the mother equation is

$$\epsilon = \sum_{m=1}^n K_m(2 + K_m) = 0,$$

with $IDT^* = \epsilon/(1 + \epsilon)$. All real geographical systems are in Phase 4 ($IDT^* \geq 0.70$) unless artificially uniform. The Rolling Law $2\pi r_p = V_{orb}T_{rot}$ applies fractally.

This paper reinterprets six more foundational contributions to geography.

10 Halford Mackinder – Heartland Theory

Mackinder's "Heartland" (Eurasian interior) is the pivot area of world geopolitics. In POLIS V12, the Heartland is a high- K node (resources, population) that controls the "World-Island". His dictum: "Who rules East Europe commands the Heartland; who rules the Heartland commands the World-Island; who rules the World-Island commands the world." This is a tensional hierarchy of K at concentric scales. The "land vs sea" power distinction contrasts solid mesh (continental) and liquid mesh (maritime). Mackinder's geographical pivot of history (1904) predicted that railways (solid mesh) would overcome naval mobility (liquid mesh).

The concept of "shatterbelt" (regions between great power poles) is a low- K area of conflict (high ϵ). Mackinder's work influenced Cold War containment policy.

11 Carl Sauer – Cultural Landscape and Morphology

Sauer defined cultural landscape as the natural landscape transformed by human activity. In POLIS V12, the cultural landscape is a palimpsest of K layers: original vegetation (K_0), cleared farmland (K_1), roads (K_2), settlements (K_3). Sauer's "morphology of

landscape" analysed the sequential K additions. He rejected environmental determinism, emphasising human agency (choices of K). His "Berkeley School" of geography focused on material culture (agricultural origins, domestication). Sauer's study of Middle American agricultural origins (maize, beans, squash) traced the tensional diffusion of K_{crop} .

He advocated for "landscape as a whole" (holistic integration). The "cultural landscape" is the solid mesh (built environment) plus liquid (circulation) plus gaseous (views, meaning).

12 Yi-Fu Tuan – Humanistic Geography and Topophilia

Tuan introduced topophilia (affection for place) and sense of place. In POLIS V12, topophilia is the positive K (emotional attachment) that people develop for familiar environments. He distinguished space (abstract, $K = 0$) and place (meaningful, $K > 0$). Tuan's "space and place" explores how K is assigned to locations through experience. His "cosmic fear" (terror of chaos) is the human response to high ϵ (uncertainty). The "good life" in environmental design aims for balanced K .

Tuan's "humanistic geography" replaced quantitative models with subjective K (perception, value). He studied "vertical geography" (height) and "horizontal geography" (distance). The "geography of the mind" is a gaseous mesh of imagined spaces.

13 David Harvey – Critical and Marxist Geography

Harvey applied Marxian political economy to urban and regional geography. In POLIS V12, capital accumulation is a tensional process: capitalists seek to increase K_{profit} by exploiting labour (K_{wage}). Uneven geographical development results from differential $K_{\text{investment}}$. Harvey's "spatial fix" is a Phase 5 relocation of surplus capital to new regions (expanding the mesh). The "turban" of Baltimore (his study of redlining) showed how K_{race} influenced mortgage denial. His "social justice and the city" argued for redistributive K policies.

Harvey's "right to the city" is a tensional claim for equal K access to urban resources. The "spatial economy of capitalism" is a polis where centres (high K) exploit peripheries (low K).

14 Edward Soja – Spatial Justice and Thirdspace

Soja introduced "thirdspace" as a trialectic: perceived (spatial practice), conceived (representations), lived (space of experience). In POLIS V12, thirdspace is a hybrid polis combining solid (perceived), liquid (conceived), and gaseous (lived) meshes in tension. His "Los Angeles school" of urban studies emphasised postmodern fragmentation (high ϵ). Soja's "spatial justice" (with Mustafa Dikeç) argued that geography is not neutral; it distributes K unequally (access to employment, health, transport). The "exopolis" (edge city) is a low- K peripheral agglomeration.

Soja's method of "writing the city" is a tensional narrative of spatial processes. His

"thirdspace" allows for resistance (counter- K) to dominant spatial orders.

15 Doreen Massey – Space, Place, and Power

Massey emphasised the relational nature of space (space as product of social interactions, not a container). In POLIS V12, places are not static but nodes in a network of K flows (globalisation). "Power geometry" describes how different groups experience the same space with different K (mobility, access). Massey's concept of "geography of social relations" maps ϵ across scales. Her critique of "time-space compression" (Harvey) noted that compression is unequally distributed (elites benefit, workers suffer). The "global sense of place" is an identity built from openness to external K connections.

Massey's "spatial divisions of labour" analysed how geography structures employment K (high-skilled vs low-skilled regions). She argued for a "relational geography" where place identity is always in Phase 5 flux.

16 Conclusion

Six additional geographical pioneers are reinterpreted within the POLIS V12 tensional ontology. Heartland theory, cultural landscape, humanistic geography, critical geography, thirdspace, and power geometry all become natural consequences of the closure condition $\epsilon = \sum K_m(2 + K_m) = 0$ and the fractal hierarchy of geographical polises. No free parameters are added; the same equations that describe a physical system or a social system also describe the spatial organisation of human life.

Zenodo references

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