THE UNIVERSAL FORCE OF TIME REGISTER OF THE EARTH

Weathering, Soils and Streams: The Register Re-Sorting at the Surface

How Rock Becomes Soil, and Soil Feeds the Sea

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In which the breakdown of rock at the surface of the Earth — the weathering that makes soil, the streams that carry the freed elements down to the sea — is read as the register re-sorting: rock made in the hot, dense deep finding itself off-node in the cool, sparse register of the surface, and relaxing onto the minerals that are stable there, while the elements it releases are carried by the rivers to close the great cycle of the surface.

Tau (T) is the living fabric of time itself — the sole substance of which all physical reality is composed. Every particle, force, wavelength, and conscious experience is a structured configuration of T-flow. There is no gravity, no electromagnetic force, no strong nuclear force as separate entities: all are registers of the single T-field operating across dimensional levels. The conservation law $d\Sigma T=0$ governs all change: T is never created or destroyed, only redistributed.

Introduction — Through the Force of Time

The chapter that follows is, in the conventional telling, the geochemistry of the Earth's surface: the weathering of rock by water and air, the formation of soils, and the chemistry of the streams that drain the land. Read through the Universal Force of Time it is the register re-sorting at the surface — why rock breaks down where the land meets the sky, why it re-forms into the minerals it does, and where the elements it frees are carried.

Leave a fresh rock at the surface of the Earth and it will not last. Rain finds it, air works at it, frost prises it apart; in time the hardest granite crumbles to sand and clay, its substance carried off by streams or gathered into soil. This is weathering, the slow undoing of stone, and it is the source of every grain of soil that feeds the world, every dissolved salt the rivers bear to the sea. It is also, quietly, one of the great chemical engines of the planet — the reaction of the whole solid surface with its own air and water.

White's account gives the chemistry. Rock weathers because the minerals formed at depth — feldspars, micas, the dark iron-magnesium minerals — are not stable at the low temperatures and in the presence of the water and acids of the surface; they react, breaking down into new minerals, above all the clays, and releasing their soluble elements — sodium, calcium, potassium, silica — into solution. Soils are the worked residue of that breakdown; streams carry the dissolved and suspended products off the land; and the composition of river water is the ledger of what the continents are losing to the sea.

The Force of Time reads all of this as the register re-sorting at the surface, and it turns on a single idea already established in this book: heat is T-density. The deep Earth, where rock forms, is hot — a dense-T register; the surface is cool — a sparse-T register. A mineral crystallised in the dense deep sits on a node of the deep register; but lift it to the surface, into the sparse register, and that same address is no longer a node — it is off-node, strained, not permitted to endure. Weathering is the mineral relaxing from its deep-register address onto the addresses that are nodes at the surface: it breaks down and re-forms into the clays and oxides that are stable in the low-density register of the open air.

That reframes the whole surface. Rock does not weather because water is corrosive or air aggressive; it weathers because it is out of register — made for one T-density and now sitting in another. The clays that form are simply the surface-stable nodes; the elements released into the streams are those with no surface node to hold them, swept off in solution as the incompatible elements were swept up into the crust. And the rivers carry that freed material down to the sea, where the next chapter's register — the ocean — receives it. Weathering, soil and streams are one process: the register re-sorting the surface of the Earth to match the sparse density of the sky it meets.

Carry this into the chapter: weathering is the register re-sorting at the surface. Heat is T-density; the deep is a dense-T register, the surface a sparse one. Rock made in the dense deep sits off-node in the sparse surface and cannot endure, so it breaks down and re-forms onto its surface-stable nodes — the clays and oxides — releasing into the streams the elements with no surface node. The rivers carry the freed material to the sea.

SECTION 13.1

Where the Rock Meets the Sky

The surface of the Earth is a frontier: the one place where solid rock is in direct contact with air, water and life. Everywhere else — down through the crust, the mantle, the core — rock meets only rock. But at the surface it meets the atmosphere and the rain, and there it cannot simply endure; it reacts. The land is slowly dissolving into its own sky and sea.

This frontier is where weathering happens, and in the Force of Time it is a boundary between registers — between the dense-T world of the deep, where rock is made, and the sparse-T world of the surface, where it is unmade. The whole chemistry of weathering, soil and streams is what happens when material formed in one register is left standing in another. It is the register re-sorting the skin of the Earth.

SECTION 13.2

Weathering Is the Register Re-Sorting

Weathering is often split into two: physical weathering, which breaks rock into smaller pieces without changing its chemistry, and chemical weathering, which transforms the minerals themselves into new ones. It is chemical weathering that matters most for the composition of the surface — the conversion of hard, deep-formed minerals into soft clays and the release of soluble elements into water.

Figure 13.2. Weathering as re-sorting. A deep-formed mineral such as feldspar, meeting water and air at the surface, breaks down into the clay that is stable there and releases its soluble elements into solution — the register relaxing rock onto its surface nodes.

In the Force of Time chemical weathering is the register re-sorting. A deep mineral, out of register at the surface, relaxes onto the addresses that are stable in the sparse register: feldspar becomes clay, the dark minerals become iron oxides, and the elements that have no surface node — sodium, calcium, potassium — are released into solution because there is nowhere on the surface lattice for them to sit in the solid. Weathering is not destruction; it is re-sorting — the same register-relaxation that ran through every earlier chapter, now working at the surface to bring the rock into agreement with the density of the sky.

SECTION 13.3

Why Rocks Break Down: Out of Register

Why should a mineral perfectly stable in the deep Earth fall apart at the surface? The standard answer is that it formed at high temperature and pressure and is simply out of equilibrium in the cool, wet, oxygen-rich surface. That is correct as far as it goes. The Force of Time says what ‘out of equilibrium’ means.

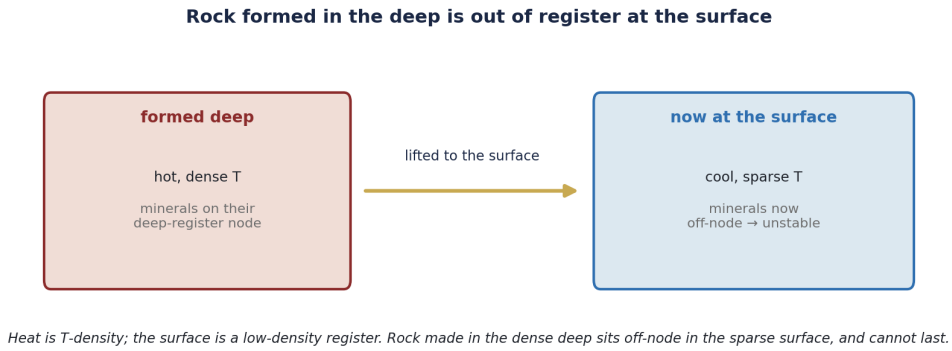

Figure 13.1. Rock out of register. A mineral formed in the hot, dense-T deep sits on a node of the deep register; lifted to the cool, sparse-T surface, that same address is off-node and unstable — and cannot last.

Heat is T-density. A mineral formed in the hot deep is built to a node of a dense-T register; the surface is a sparse-T register, and the mineral’s deep address is not a node there. It is off-node — strained, unpermitted — in exactly the sense that an unstable nucleus was off-node in the chapter on decay. And as there, an off-node configuration cannot endure: it must step onto a stable node, and that step is the weathering. Rock breaks down at the surface because it is out of register — made for one density of time and now standing in another — and the register will not let an off-node address last.

KEY IDEA

A rock weathers because it is out of register. Heat is T-density; a mineral made in the dense-T deep sits off-node in the sparse-T surface, and an off-node address cannot endure. Weathering is the forced step onto a surface-stable node — the same register-relaxation that drives radioactive decay, here working on rock.

SECTION 13.4

Soil: the Worked Layer of the Surface Register

Soil is what weathering leaves behind and life works over: a layer of broken rock, clay, and organic matter, laced with water and air and teeming with living things. It is neither rock nor mere dust but a distinct thing, structured into horizons, and it is the foundation of nearly all life on land — the medium in which plants root and from which the whole terrestrial food web draws.

In the Force of Time soil is the worked layer of the surface register — the zone where the re-sorting of rock, the flow of water, the breath of the air and the T-patterns of life all meet and mingle. It holds the surface-stable minerals the weathering has made, the clays that are the register's new nodes; it holds the water that carries the freed elements; and it holds the living things that, as earlier chapters argued, are themselves T-patterns locked to the Earth's register. Soil is where the surface register is most fully at work — rock, water, air and life brought into one thin, fertile band.

SECTION 13.5

Streams: Carrying the Freed Elements to the Sea

What weathering dissolves, the rivers carry away. Every stream bears a load — elements in solution and fine particles in suspension — and delivers it, in the end, to the sea. The chemistry of river water, the total the continents shed each year, is one of the master balances of the surface Earth: the rate at which the land is being returned to the ocean.

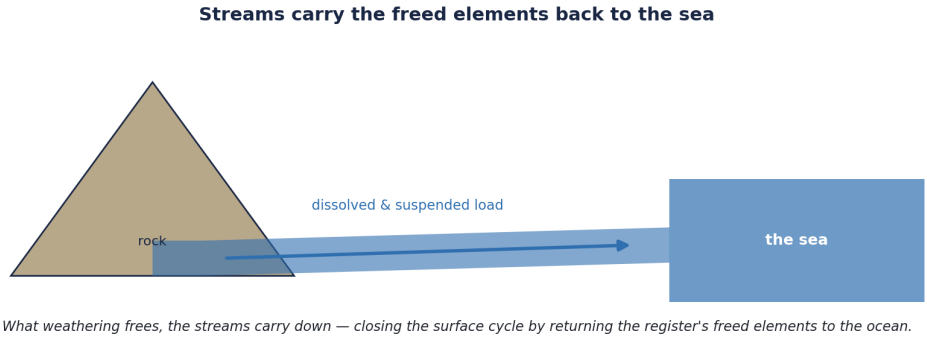

Figure 13.3. Streams carrying the freed elements to the sea. What weathering releases — dissolved ions and suspended clay — the rivers bear down off the land to the ocean, closing the surface cycle.

In the Force of Time the streams are the register's carriers: the elements that weathering freed — those with no node to hold them in the surface solid — are swept into the water and borne downhill to the sea. The river is the return path of the surface cycle, taking what the land could not keep and delivering it to the ocean register, where, as the next chapter will show, it is taken up anew. The dissolved load of the world's

rivers is the tally of what the surface register is shedding — the off-node elements on their way home to the sea.

SECTION 13.6

The Great Surface Cycle

Put the pieces together and a cycle appears. Rock is lifted to the surface; it weathers, making soil and freeing elements; the streams carry those elements to the sea; there they are taken into sediment, buried, and in time returned to the deep, to be made into rock again. The surface of the Earth runs this loop endlessly, and it is what keeps the land fresh, the soil renewed, the sea supplied.

In the Force of Time this is the register breathing at the surface, as the crust chapter found it breathing at the plate scale. Material is lifted from the dense deep, re-sorted at the sparse surface, carried to the sea, and drawn back down to be re-made — a continual re-sorting between the two densities of time. The great surface cycle is the register keeping the skin of the Earth in motion, forever bringing rock into agreement with the sky and returning it to the deep to begin again. Nothing is lost; everything is redistributed — the conservation of T, written across the whole face of the world.

SECTION 13.7

Why This Should Matter to You

Weathering made the soil that grows your food and freed the elements your body is built from; the rivers that drain the land carry the very salts that make the sea the sea. The slow dissolving of rock is not decay but provision — it is how a planet of bare stone becomes a planet of soil and life. Every harvest is a gift of the weathered surface.

And it is all the register re-sorting. Rock breaks down at the surface because it is out of register — made for the dense-T deep, now standing in the sparse-T sky; it re-forms onto its surface-stable nodes as soil and clay; and the streams carry the freed elements to the sea. The land is forever coming into agreement with the register of the surface, and that coming-into-agreement is what feeds us. With the surface cycle read, we can follow the freed elements to their destination — the oceans, the register of water, where the last chapter of the Earth’s story is written.

The Numbers at a Glance

The processes of the surface and their Force-of-Time reading. Measured behaviour is left as measured; the right-hand column gives the register meaning.

Process	What it is	The Force of Time reading
Weathering	rock breaks down	the register re-sorting at the surface
Why rock weathers	out of surface equilibrium	off-node: made dense-T, now in sparse-T
Chemical products	clays, iron oxides	the surface-stable nodes
Released elements	Na, Ca, K, silica in solution	elements with no surface node
Soil	broken rock + clay + life	the worked layer of the surface register
Streams	carry dissolved + suspended load	the register carrying freed elements to sea
River chemistry	what the land sheds	the off-node inventory in transit
The surface cycle	rock → soil → sea → rock	the register breathing between two densities

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