

Radio Entelechy

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How does a mind come up with the idea of how to build a radio?

I

The End Within

Given a radio as the goal, to ask how a mind comes to it is to ask how a mind comes to have any end at all — and *entelechy* names the way of having one.

To have something as a goal is not to hold a picture of it. The acorn holds no picture of the oak; it holds the oak's generative structure — the developmental logic that, given conditions, produces oak. A picture — a description of what the end will look like, a list of its properties — would sit outside the activity as a comparison point. The generative structure sits within the activity as its organizer, already present: the activity issues from it rather than aiming at it. The end is within as generator. *Entelecheia*: having the end within, precisely in this sense.

Knowing is this same structure in the mind, and it comes in two distinct ways: extensional and intensional. To know a thing extensionally is to have a list of its properties — what an outside observer can verify, what the instances exhibit. To know it intensionally is to have internalized the generative structure itself — the form that produces those properties and all that follow from them — not a copy but an isomorph, the same structure regardless of substrate. The triangle drawn in sand is an extensional instance. To know the triangle genuinely is to know not this instance or any other but the generator of all possible triangles — the form no drawn triangle exhausts and no substrate contains. The sand does not travel into the mind. The generator does: isomorphic to the thing's form, free of the thing's substrate.

II

The Coupling

Faraday looking at iron filings does not compile a record of where each filing rests. Through the arrangement he sees the rule that computed it — the structure spread across the region, determining at each point what any object placed there would do. Not the filings: one output of the rule. Not the magnet: the boundary condition. What Faraday builds within his attention is isomorphic to the rule itself — the organizing structure of the region, which the filings made visible but do not contain.

That organizing rule, as Faraday finds it, is static — a generator at rest. The wave adds a dimension: time. In a water wave, no water travels — each molecule rises and falls in place, coupled to its neighbors by a local update rule that takes the neighbors' states now and returns its own next state. Run that rule simultaneously at every point and the pattern propagates globally — the distributed output of the computation. The wave does not move through the water. It is what the water is doing when every point runs the coupling rule. To know a wave is to have the local rule within — not the pattern it generates, which is extensional, but the coupling whose simultaneous execution is the wave.

Even the continuity is extensional: a smooth surface is what countless local rules look like from too far away to resolve them. The continuum is the coarse grain, not the structure beneath it; what looked like a medium was the coupling all along.

That generates the question: does the coupling rule require a physical substrate to implement the neighborhood relation? In the water wave, matter implements the coupling — each molecule physically adjacent to its neighbors. Is that essential?

III

Without a Medium

Maxwell's equations answer: not essential. The electromagnetic phenomena Faraday and others had catalogued were extensional instances — observations of what happened under specific conditions, each with its own empirical law. Maxwell's move is to find the coupling rule that generates all of them and closes on itself: a system whose internal consistency requires a term no observation had yet provided. That term completes the equations. Solve the completed system without assuming a source and it yields propagating solutions — waves whose speed falls out of the equations' own constants. That speed matches the measured speed of light. No one observed the propagation and then described it; it emerged from the intensional structure, from the equations being what they must be in order to close.

Those equations — the coupling rule complete — require no physical substrate to implement the neighborhood relation. They state the coupling directly on spacetime. The ether was the demand for a physical medium to carry what the equations already carry themselves; the equations dissolve that demand — whatever Maxwell still believed. Running the rule is the propagation. There is no carrier. The isomorphic generative structure Maxwell holds within his equations is geometry computing without substrate — the coupling rule whose distributed execution is electromagnetic propagation.

IV

Crystallization

What the mind holds is the structure, not the matter that carries it — the same form could run in any matter shaped to it. To make a radio is to choose one: to build the form a body and let the structure run there, where a hand can point it and send it. It was complete before anyone built it; the building adds nothing but the body. Crystallization, not invention.

A wave at one frequency carries nothing; it is only the form propagating. To carry a message is to shape the wave — to draw one of its measures into the figure of what you mean; the shaping is the message, the wave only what it rides. The figure crosses, and at the far end an apparatus holding the same form does not draw it out of the wave but builds it again. Sending a message does not divide it: it passes whole, takes nothing from its source, rests at neither end, and no one owns it.

Building it again requires the same form at both ends. Two minds need nothing between them — each holds the form free of substrate, as one triangle stands in two minds that never passed it across. Two apparatuses, being matter, cannot hold it that way, so the shared form becomes a thing: a crystal at each end, the same frequency cut into both, the generator kept as geometry. What a mind holds without a token, an apparatus must hold as a stone.

So the radio runs in matter what the intellect held in itself, and casts it across to another. It broadcasts what the intellect was already doing in knowing it.

V

Ends Within Ourselves

A made thing ends. The radio works and the making is over — the activity aims past itself, at a product outside it, and stops where the product begins. Knowing does not end so. To know the structure is already to have known it; the act is complete in itself, its end within it, pointed nowhere past itself. That is what the intellect was doing all along — not reaching for the radio, but holding the generative structure as its own complete act.

So the radio was never the end. It is what that act looks like cast outward into the made world, thrown as far as matter will carry it. The mind did not arrive at the radio; the radio fell out of the mind's knowing, which had its end in itself the whole time. The end was within ourselves; the apparatus is only how far it reached.