

Spiral Realism: The Exponential Acceleration of Information

The flow of information accelerates exponentially, but its geometry is spiral — each bend is transformed, yet structurally returns to what it was. Whoever sees the spiral has, in the current bend, an advantage that no one has who lives it as unprecedented novelty.

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Acceleration · Attention · Media · Memetics

I. MORNING ON THE SCREEN

The average modern person, before their first morning contact with another human being, will witness more events than their great-great-grandfather lived through in a lifetime. News of a war on another continent, a photograph of a celebrity in a bad mood, a description of a sports result, an irate political comment, a cooking video, a quotation from a philosopher, a watch advertisement, a short message from a friend, a notice of a natural disaster, a book recommendation, an unemployment statistic, a joke, a condolence, a restaurant review, a call to action, a request for attention.

All of this in the eight or so minutes spent brushing teeth and drinking coffee. None of these inputs was actively sought. They flowed in on their own, in sequence, at a rhythm with one common denominator: optimization for the capture of attention, which is itself optimized for the next morning cycle, tomorrow.

The phenomenon has no precedent in human history. People in archaic societies were continuously exposed to environmental signals — the murmur of the river, warning calls of birds, sounds of the forest; information was always present. What is new in the present situation is the structural character of the flow that brings it: its speed exceeds the cognitive capacity that could make sense of it, its topology has no geographical interface, its origin is recognizably asymmetric (few producers, many recipients), and its economic model is the extraction of attention rather than the transmission of meaning.

What has happened to information in the last three decades, why the classical model of linear progress can no longer describe it, what a more accurate topological model of its growth looks like, and what this means for a person who cannot stop existing in the flow but does not want to be in it merely as a passive instance of replication — that is the topic of what follows.

The question is structural. The flow of information consciously oppresses no one; it is a mechanic with its own logic — and whoever does not know that logic makes decisions that are not their own.

II. WAS INFORMATION EVER LINEAR?

Every generation tends to view its informational moment as historically unprecedented and the previous as slower, calmer, more linear. This impression is, in large part, an illusion. Empirical models of knowledge growth show that human civilization has been accelerating its informational production at least since the emergence of writing — and that the rate of acceleration is itself accelerating.

Henry Adams, an American historian and grandson of two presidents, formulated in 1909 a thesis¹ he called the *law of acceleration*. He observed that the speed of social and technological progress grows along an exponential curve and that each succeeding age reveals how slow the preceding one had been. Adams did not write this in celebration; he wrote it with the anxiety of a man who suspected that acceleration has a dynamics of its own that escapes the control of those who carry it.

Buckminster Fuller in the 1980s estimated that the doubling time of human knowledge had been roughly 100 years up to 1900; about 25 years by 1945; and about 12 years by 1980². His estimates were rough and methodologically open to criticism — the definition of „knowledge“ is contested and the quantification of its doubling time requires simplifications. But the direction is beyond dispute: human informational production *accelerates*, and *accelerates ever faster*. That is a structurally exponential dynamic.

Ray Kurzweil³ in 2001 formalized this observation as the *Law of Accelerating Returns*: technologies that improve the capacity to produce technology trigger positive feedback that manifests as exponential growth. Moore's Law (the doubling of transistor density every 18–24 months) is just one of many exponentials; similar curves exist for compute per dollar, sequenced genomes per year, the number of scientific publications, the volume of digital data.

This exponential dynamic was never linear — it was only *perceived as linear*, because within a single human generation (on the evolutionary-statistical scale about 25 years) an exponential with a long doubling time subjectively resembles a straight line. Acceleration felt like progress; progress felt like linearity. The illusion of linear growth is the illusion of a limited observation window.

The nature of the curve has not changed in the last three decades — it has always been exponential. What has changed is a structural property that may be called the *perceptual horizon*: the time over which acceleration is still subjectively invisible. In the nineteenth century this horizon was decades; in the twentieth, years; in the twenty-first, months or weeks. The moment the perceptual horizon becomes shorter than the cognitive cycle by which consciousness forms understanding, acceleration becomes consciously felt — and this is the situation we are now in. An existing phenomenon has, for the first time in history, crossed the threshold of cognitive visibility.

III. THREE MODELS OF GROWTH

For a precise discussion of the present dynamics of information, three mathematical models that are often confused are useful, and the distinction among them matters considerably for practical orientation.

Linear model. The system passes from state A to state B through a constant increment per unit time. If the annual increment of knowledge were constant, after 50 years there would be 50 times as much knowledge; after 100 years, 100 times as much. This model never fully fitted the growth of human knowledge, but it is the model human intuition operates with, because the evolutionary environment in which the human brain was shaped had characteristic times long enough for exponential changes to appear linear.

Exponential model. The increment per unit time is proportional to the current size of the system. The more the system knows, the faster new knowledge is produced in it, because new knowledge arises by combination of existing knowledge. This model accurately describes the long-term trend of human in-

formational production and is the mathematical skeleton of the Adams–Fuller–Kurzweil tradition. Its property is that, on a sufficiently long timescale, it produces *singularities* — points at which the curve almost turns vertical and the rate exceeds any finite bound.

Spiral model. Growth is at once cyclical (a return to similar themes, questions, problems) and progressive (each return takes place at a higher informational level, with more tools, in greater detail). The spiral, as a geometric object, combines both features — sitting between the pure repetition of the circle and the pure progress of the line.

The spiral as a mathematical object has been studied since antiquity (Archimedes), but its most important form — the *logarithmic spiral* — was described by Jakob Bernoulli in 1692⁴. Bernoulli named it the *spira mirabilis*, „the miraculous spiral", and asked that it be carved on his grave with the inscription *Eadem mutata resurgo* — „transformed, I rise again the same". The reason for his fascination was its property of *self-similarity*: every bend of the spiral is structurally identical to the previous one, only with a larger radius. The spiral looks the same at every scale. It grows, but does not lose its identity.

This geometric object recurs in nature: the nautilus shell, sunflower rosettes, galaxies, hurricanes, the growth dynamics of certain plants. It is the form some accelerated processes spontaneously adopt, because it respects both growth and structure — no decoration.

In the context of information and knowledge, the spiral model is more accurate than the exponential for two reasons. *First*, human intellectual history shows a recurring debate over the same fundamental questions (the nature of consciousness, the nature of justice, the nature of community, the nature of truth), which returns in each generation with new tools and in a new substrate. *Second*, technological and cultural cycles have a recognizable structure — Carlota Perez⁵, in her theory of *technological surges*, documented that the last five technological revolutions (from the 1771 industrial revolution to the 1971 information revolution) share the same internal structure (irruption → frenzy → turning point → synergy → maturity). Each surge is structurally similar to the previous one, but larger — that is the topology of a spiral.

Cyclical features of generational dynamics — popularized outside the academic mainstream by Strauss and Howe⁶, documented more methodically in the cohort sociology of Karl Mannheim and in current Pew Research generational studies — show that intergenerational returns of certain configurations (toward authority, toward the market, toward the past) are recognizable, though not predictable with the mechanical precision of the Strauss-Howe version.

And Kuhn's theory of paradigmatic revolutions, which essay N. 4 already mentioned, is likewise spiral: every scientific revolution returns to questions that the previous paradigm considered solved and re-opens them in a new substrate. Newton's „what is gravity?" is structurally identical to Einstein's „what is gravity?" — but Einstein has electromagnetism and non-Euclidean geometry available to him, which were not available to Newton. The same question, a different horizon of tools.

IV. SPIRAL REALISM

If the spiral model describes the dynamics of knowledge and information more accurately than the linear or exponential, the question arises what practical consequences this has for someone trying to orient themselves in this flow. The starting position — *spiral realism* — can be formulated in four theses.

First thesis: questions repeat, answers grow. The current debate on the regulation of artificial intelligence is structurally identical to the debate on the regulation of the press in the eighteenth century, the telegraph in the nineteenth, the radio in the twentieth, and the internet in the 1990s. Each time the same frames are used to argue (freedom vs. responsibility, concentration of power vs. democratic control, speed of innovation vs. protection of the citizen). Each time the debate formally resembles the previous one. But each time new analytic tools, new empirics, new precedential case-law are available. Spiral character means that whoever knows the previous bend of the spiral has equipment that allows them to recognize the same question earlier and address it faster.

Second thesis: self-similarity is recognizable. Bernoulli's *spira mirabilis* has the mathematical property that the local shape of the spiral is the same at every point. For the observer, this means that understanding one bend suffices to understand all of them. In intellectual history, this means that the structure of the current problem is recognizable from its previous instances — provided the observer can see *structure* rather than only *substrate*. This is again the thesis of structural isomorphism described in essay N. 4.

Third thesis: leaps inside the spiral are faster than circumnavigating it. If the spiral has a self-similar structure, it is possible to leap from one of its bends directly to the next — through inner geometry — without traversing the bend's entire length. Practical application: whoever recognizes that the current problem is an iteration of an earlier one can immediately transfer insights from its previous instance, instead of deriving them from scratch. This capacity — the *informational leap* — is a structural position, not a skill in the classical sense, and requires what the N. 1–5 series collectively called *structural seeing*.

Fourth thesis: without the capacity to leap, the observer becomes a floating body in the flow. Whoever cannot recognize that the current narrative is an iteration of an earlier one is forced to react to it as if it were new. That means: every cycle of information shakes them anew, every moral panic convinces them anew, every hype seems unique, every „this is new“ hits them at full force. This is not intellectual weakness; it is a structural position in the flow. A floating body has no *agency*, only *direction*, and that direction is set by the waves, not by the floating body itself.

A distinction: *spiral realism* is not identical with *Spiral Dynamics* by Beck and Cowan⁷, which describes the development of value structures in human consciousness following Clare Graves's model. The Beck–Cowan model is developmental-psychological and describes stages of individuals and cultures. Spiral realism as formulated here is *informational-topological*: it describes the structure that the growth of information and knowledge has, and its consequences for the position of the observer. The two models share the spiral as a geometric metaphor, but their substrate differs. No commitment to Beck–Cowan is implied; the theses hold independently of that framework's validity.

V. THE ASYMMETRY OF PRODUCTION AND RECEPTION

The principal structural change of the last twenty years, which has accelerated with the arrival of large language models from 2022 onward, is the shift in *the ratio between the speed of production and the speed of reception*.

In an archaic situation, the speed of production of information was limited — the craftsman, the scribe, later the printer, the publisher. The speed of reception was likewise limited, but the human reader was approximately synchronized with production: a book was written over years and read over months, a magazine was written over weeks and read over hours. Asymmetry existed (one producer, many readers), but it had no structurally catastrophic character. Most of the information that flowed to the reader was filtered by institutions (publishers, editors, academies) that bore responsibility for its quality and had verification processes.

The internet of the 1990s set this ratio in motion. The producer detached from institutional filters; any individual could publish, any individual could aggregate the published. The asymmetry of production/reception widened by orders of magnitude, but the human reader still had to invest human time into the production of text. If the producer wrote for an hour, the reader read for minutes.

Generative AI from 2022 onward has shifted this ratio again by orders of magnitude. A large language model can produce readable text at a rate of hundreds of words per second; the human reader reads about three words per second. The asymmetry is therefore structurally on the order of 1:100 and higher.

Carlo Cipolla, in another connection, formulated (and after him Alberto Brandolini⁸) a thesis that may be called *the law of asymmetric effort*: the amount of effort required to refute imprecise information is an order of magnitude greater than the effort required to produce it. If generative AI lowers the cost of production by 100x, but the cost of refutation remains the same, asymmetry grows linearly with the speed of production. This mathematics is not an estimate. It is mechanics.

Empirical confirmation of this mechanic: Vosoughi, Roy & Aral⁹, in a 2018 *Science* study, showed that on Twitter false news spread on average six times faster than true news and reached a much wider audience. Their data came from a period *before* the rise of generative AI. If the asymmetry of spread rate had already reached 1:6 then, one may assume that since the rise of widely available generative AI from 2022 onward, this ratio has shifted by several further orders of magnitude.

The consequences of this asymmetry are structural. *First*, the space of the informational flow fills faster than the reader can parse it. *Second*, the quality of information drops, because producers compete for attention, not for truth, and optimization for attention is not the same as optimization for truth (often it is the inverse). *Third*, the reader's capacity to identify the source of information drops, because all sources look the same in the last phase of distribution — as text on a screen.

Empirical from inferential: *empirically established* — the asymmetry of production and reception exists and is growing. Generative AI has widened it by orders of magnitude. False news spreads faster than true news. Attention is the business model. *Inferentially*: this asymmetry destabilizes the cognitive capacity of

the average reader. *Speculatively*: this situation is structurally unsustainable, and either the attention economy will be rebuilt, cognitive capacities will adapt, or there will be a systemic crisis of trust in information as such. Which of these three paths will be realized is, at present, unpredictable.

VI. THE INFORMATIONAL LEAP

If spiral realism is the more accurate description of the dynamics of information, and if the capacity to recognize self-similarity enables leaps within the spiral, the practical question becomes what specifically *the informational leap* means.

Three types of leap that are structurally recognizable and can be discussed concretely.

Leap one: recognition of iteration. The current narrative — political, technological, cultural — is almost always an iteration of an earlier one. The debate on AI safety from 2020 onward is an iteration of the debate on nuclear safety from 1945 onward, which was an iteration of the debate on the regulation of the press from 1450 onward. Whoever knows the structure of the previous iteration can see what arguments will appear, what coalitions will form, what compromise solutions will eventually be agreed. This is not divination; it is a topological reading of a self-similar spiral. The recognition of iteration radically shortens the time required to orient oneself in the current cycle.

Leap two: identification of structural isomorphism. This is the topic of essay N. 4. The current problem in one discipline is structurally identical to a solved problem in another. Whoever recognizes this formal accord obtains an existing solution, instead of deriving one from scratch. Practical application: the problem of coordinating asymmetric agents is being solved by economics (mechanism design), biology (signalling theory), law (contract law), computer science (distributed systems). Whoever has competence in one of them can use it in the others by structural translation.

Leap three: leaving the narrative to find the interest. Most narratives that appear in the informational flow have not only propositional content (what they claim) but also an interest structure (whom they benefit). The classic strategy of reading *who profits from the current narrative* is from the sphere of legal thinking (Latin *cui bono?*), where it has a thousand-year tradition. Applied to the present informational flow, this strategy yields a great saving of attention: if you recognize the interest structure, you can ignore a substantial part of the flow, because you know what it will claim before you have read it.

These three types of leap are not techniques that can be learned from a manual. They are operative expressions of *structural seeing*, which is the topic of this entire series. The training that leads to them is long and indirect: studying history (recognizing iterations), studying multiple disciplines (recognizing isomorphisms), experience with reality under pressure (recognizing interests). None of these training paths is replaceable by a shortcut.

And here is the structural point: spiral realism is not a comfortable position. It requires an investment whose return is long-term and whose immediate effect is smaller than that of any rapid adaptation strategy (more notifications, more sophisticated filters, different apps). But it is the only position that structurally changes the ratio between flow and observer — all the others merely locally optimize a floating body.

VII. THE CONSUMER AS VECTOR

If a higher-quality position in the flow of information requires the capacity for leaps, and if this capacity requires a long investment, it is legitimate to ask what becomes of someone who does not, or cannot, make this investment. The answer is structural, not moral.

Richard Dawkins, in *The Selfish Gene* (1976)¹⁰, introduced the concept of the *meme* — a cultural unit that replicates across minds by the same logic as a gene across organisms. Susan Blackmore, in *The Meme Machine* (1999)¹¹, extended this concept: in the memetic view, the human mind is a *substrate* in which memes reproduce, and much of what we take for our own thinking is, in fact, the execution of replicational logic of the memes that have colonized that substrate.

The memetic perspective is contested in its strong form (whether memes are genuine replicators with their own fitness, or a metaphorical construct). But as a *structural description* of the information flow, it is remarkably useful. The flow of information, in the memetic view, is not primarily a transmission of meaning; it is a competition of replicators for a limited substrate (human attention). Replicators that are more successful in the competition obtain a larger share of substrate — not because they are more true or useful, but because they have properties that grant them a replicational advantage (emotional polarity, ease of memorability, coherence with existing memes in the given substrate).

In this perspective, the passive consumer of the information flow is structurally a vector of replication, not an author or a filter. Their function in the information ecosystem is the passing on of the meme, not the decision of what is true. Their attention is extracted as a resource — much like a plant extracts sunlight, or a bacterium extracts glucose. This is a structural role into which the topology of the system pushes them, carried without personal blame.

Shoshana Zuboff¹² in *The Age of Surveillance Capitalism* (2019) described this situation from the opposite end — from the perspective of the economic model that performs the extraction. In her account, the attention economy takes shape as a market: consumer attention is the commodity, their data the raw material, the modelling of their future behaviour the product, and the customers are advertisers and political actors. The economic model of surveillance capitalism is the declared and published business principle of the largest technology companies, formulated in their own terms in their annual reports — no conspiracy required.

Mike Goldhaber¹³ anticipated this position as early as 1997 in his foundational text on the *attention economy*: in an economy of informational surplus, the scarce resource is attention, not information. Whoever has attention has power. James Williams¹⁴, in *Stand Out of Our Light* (2018), documented that this extraction has cognitive costs — attention drained by this market is missing in other activities that would otherwise have deserved it, including the capacity to form long-term intentions, to maintain meaningful relationships, and to sustain structural seeing.

A consumer whose attention is permanently extracted by the surface flow never reaches the depth at which their own initiative could form. Below the threshold of sustained attention nothing new takes shape — a property of the information ecosystem, not a personal failing of the one who lives inside it.

And here spiral realism poses a concrete choice. Either the observer remains in the position of a vector, in which their attention is a commodity and their decisions are expressions of memetic pressures that govern them. Or they invest, over the long term, in the capacity to make informational leaps, which structurally changes the ratio between flow and observer. There is no comfortable middle path — only the illusion of one, which the flow itself produces in order to keep its vectors in their role.

VIII. WHERE YOU STAND IN THE TOPOLOGY

The closing question is not „how to save oneself from the flow of information". The flow is a structural condition of the present human situation, which cannot be evaded by wishing or by retreat into privacy. The question is: *where in the topology of the spiral do you stand and what relation to its motion do you take.*

Three positions that are structurally recognizable.

A floating body in the current. The observer is carried by the flow, reacts to every cycle as if it were new, their attention is systematically extracted, their decisions are expressions of memetic pressures. This position is the default — the structural state into which one drifts automatically without conscious effort. Characteristic features: the feeling that something unprecedented is happening *now*; the feeling that one must react immediately; the feeling that whoever does not react is falling behind.

A standing point in the current. The observer attempts to ignore the flow — turns off notifications, leaves social networks, reads only classics, devotes time to deep work. This position is often recommended in the popular literature (digital minimalism and similar frames) and has its merits. But structurally it is unstable: the standing point in the current is exposed to the same continuous pressure as the floating body, and merely offers it passive resistance. Over the long term that resistance erodes unless complemented by active structural orientation.

A spirally moving observer. The observer does not try to escape the flow but actively moves *within the geometry of the spiral*: they recognize iterations, leap structural isomorphisms, identify interests beneath narratives. Their attention is not passively extracted but actively allocated — and that allocation is struc-

turally guided by what is *long-term self-similar*, not by what is *short-term loud*. This is the position that the entire series of five preceding ones — and this — calls structural seeing.

The third position is the most demanding, because it requires an investment whose return is non-linear and whose immediate effect is smaller than the return on the first or second. But it is the only position that structurally changes the ratio between observer and flow — the observer moves through the flow with intent, instead of being moved by it.

On Bernoulli's grave the inscription read: *Eadem mutata resurgo* — transformed, I rise again the same. For spiral realism the sentence has an operative meaning: the observer who sees this structural sameness in the current bend has at their disposal equipment no one has who is living the bend for the first time. The substrate changes, the schema returns, and the ratio between flow and observer shifts according to which of the two learns to read the other.

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