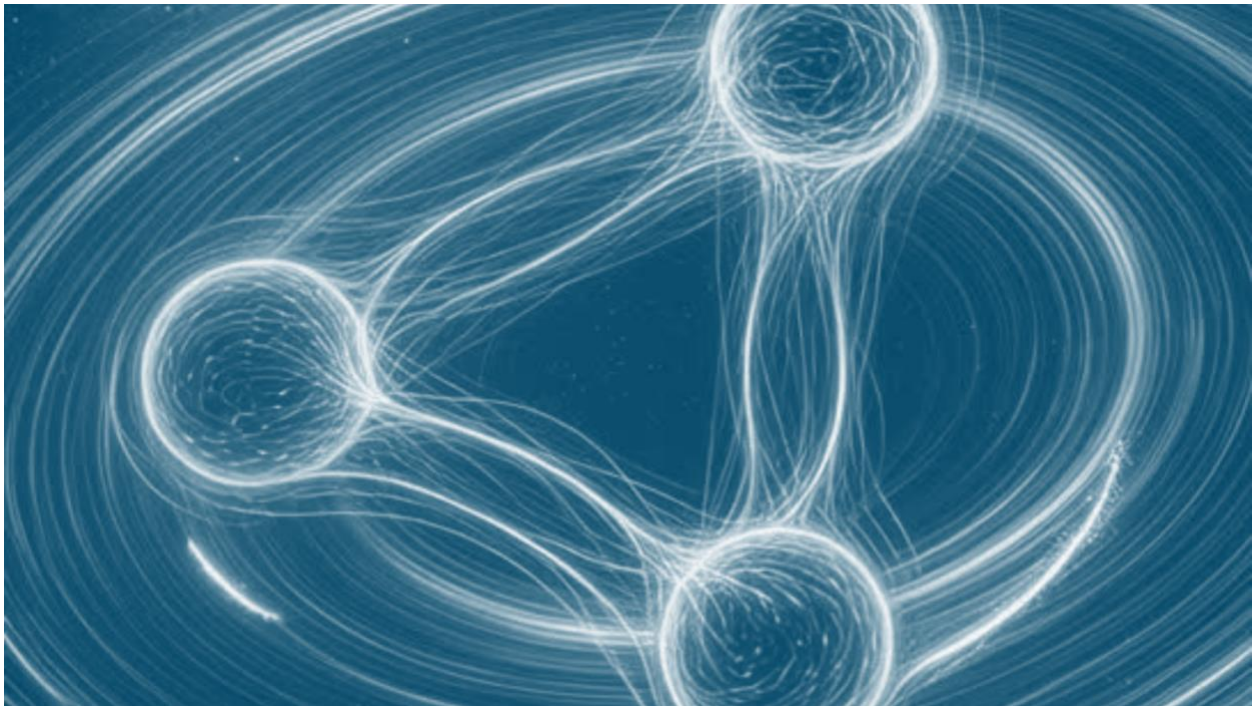


THE **3** ATTRACTORS OF THE FRESH PRODUCE SECTOR

—A conceptual framework for understanding the fruit and vegetable sector—

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PREAMBLE: WHY WE NEED ANOTHER FRAMEWORK

In my book *Freshconomics* (Del Pino, 2024) I gathered and developed the concepts that helped me make sense of this industry throughout my professional career: volatility, the price corridor, the *Freshmarket*, the supply-driven sector, fragility, ergodicity, ruin risk, the efficiency paradox, the *Auctoritas–Potestas* duality, and a long list of others.

What I was missing —and what I propose here— is the level above. Not one more piece, but the framework that allows the pieces to be placed and, above all, that explains why the sector moves in the direction it moves, even though no one has decided that it should.

Because that is the everyday experience of anyone working in this business: the sense that things go where they go regardless of what one does. You improve your company, you invest, you professionalise, you certify, you digitalise, and your margin keeps eroding. You patiently build a commercial relationship and a single season undoes it. You comply with every rule and you remain under suspicion. This is not bad luck, and it is not incompetence. It is that there are forces, incentives and structures that "pull us along".

There are **emergent forces** that arise from the combination of all those pieces. The concepts I describe in the book cluster and interact spontaneously, creating what dynamical systems theory calls **attractors**.

In mathematics and physics, an attractor is the set of states towards which a dynamical system tends to evolve over time, irrespective of its starting conditions. In other words, if you release the system from many different starting points, it ends up in the same place, or circling around the same place.

The clearest analogy would be a celestial body —a star or a planet— that generates a gravitational attraction capturing or drawing in every other object that falls under its influence.

The first benefit of this approach is that it makes the study of our sector more objective, by establishing that the gravitational force exerted by an attractor does not come from anyone in particular. There is no plan; nobody is driving. An attractor is an emergent property of how the variables of the system are connected. There is no culprit to denounce. And this matters in a sector where the conspiratorial explanation —retailers, middlemen, Brussels, the multinationals— is almost always the most popular one.

Our sector, however, does not sit within a single **basin of attraction**. It sits within several at once, subject to simultaneous forces whose pushes and pulls compete, add up and get in each other's way. Hence the sense of vertigo and uncertainty.

Moreover, these attractors are themselves dynamic: they evolve over time, altering both the system around them and the interaction between them. Just as stars follow a life cycle, attractors also evolve through a sequence of emergence, consolidation, maximum *pull*, collapse and seeding.

I should note that neither the concept of the attractor nor its use to explain an entire sector is new. What is novel in this essay is the adoption of this particular framework to address the current state of our

business: to explain and assess the relative intensity of the attractors and, above all, the phase of the cycle in which each of them stands.

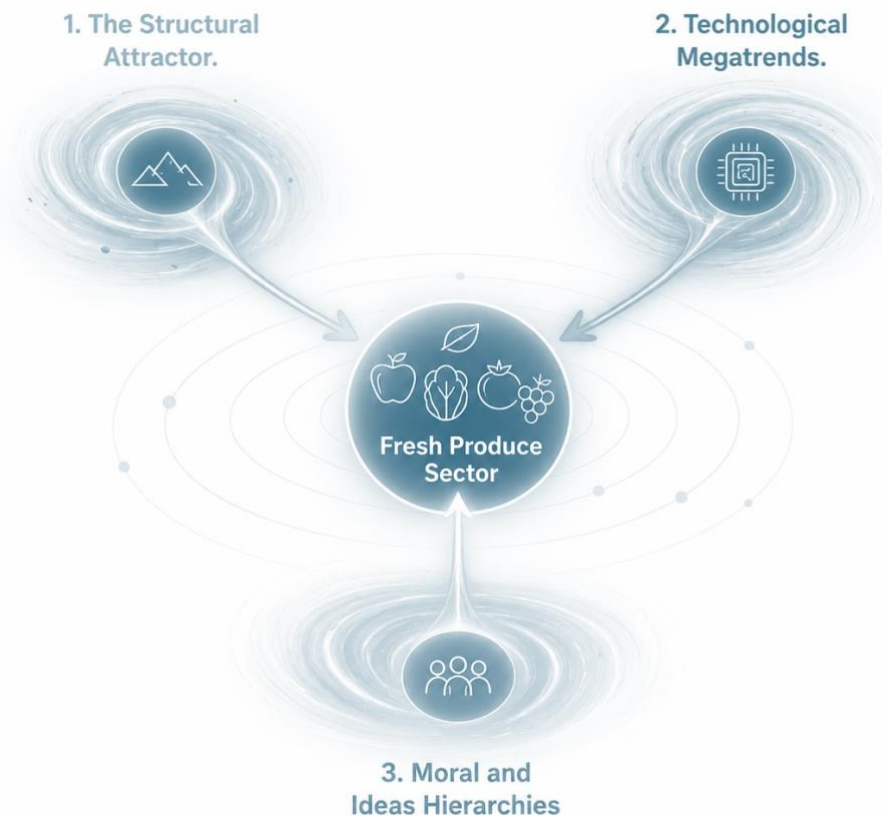
In short, this is a seminal text that does not claim to solve anything. It aims to reveal an invisible structure that affects us all and that, at present, strikes me as especially conspicuous.

**See the explanation of the stellar analogy and the relevant vocabulary in the appendices at the end of this essay.*

THE THREE ATTRACTORS

My proposal is that the behaviour of the contemporary fresh produce business can be explained, in essence, by the combined action of **three major attractors**:

1. **The Structural Attractor.** The intrinsic nature of the business.
2. **Technological Megatrends.** The force capable of reordering the system.
3. **The Dynamics of Moral and Ideas Hierarchies.** The spirit of the age turned into regulation.



ATTRACTOR I. THE STRUCTURAL ATTRACTOR

The background gravity

This attractor is neither a young star nor a dying one. It is the mass of the system itself. It is the background gravity of the fresh produce business, the force that curves the space in which everything else happens. It has been there for as long as trade in fresh products has existed, and it feeds on a fuel that is the very nature of our products.

Almost all contents of *Freshconomics* (Del Pino, 2024) are, in retrospect, a description of this attractor. I list here some of its most prominent components, not as an exhaustive inventory but as a summary cartography of this gravitational mass:

Volatility. The connecting thread of the sector, the variable that appears in every chapter of the book. Variation in frequency and intensity, hard to predict, which we apply to quantities supplied, quantities demanded and prices. Natural or intrinsic volatility, and behavioural volatility: the kind we generate ourselves through our own decisions.

Uncertainty and risk. These are not the same thing, even though we use them as synonyms. In some cases we can estimate risk —the impact of weather, of pests and diseases— but we cannot do so with uncertainty. Our business contains far more uncertainty than we are willing to admit when we sit down to plan or to present a budget.

The condition of being a supply-driven sector. The rigidity of supply in the short term, combined with its enormous variability. What is planted and ready to harvest is the instantaneous supply; however much prices rise, we cannot produce more in the short term. The sector is inevitably structured around its greatest source of volatility, and that source is supply.

Perishability. It concentrates all volatility into the short term and rules out the stock-based management that it is possible in *commodities*. Our product does not wait. What does not flow to market is lost.

Product heterogeneity. *Freshmodities* are not homogeneous. That heterogeneity is simultaneously our buffer —it allows specifications to be relaxed in order to regulate the volume placed on the market— and our problem: it makes the single price, the clean reference and the simple contract impossible.

Fragility, as defined by Taleb (2012). Something fragile is damaged by volatility; something antifragile benefits from it. We are fragile. A single incident can put us out of business. And because we are not antifragile, the distinction between risk and **risk of ruin** ceases to be academic and becomes the management's first obligation.

Non-ergodicity. Probably one of the most important concepts I incorporated into the book. The average of the sector is not your average. The hundred gamblers who go to the casino once and the gambler who

goes a hundred times are not playing the same game: for the latter, get busted on any given day eliminates every subsequent day. Treating a non-ergodic system as if it were ergodic feeds risk of ruin directly.

Asymmetries. Of information, of bargaining power, of price transmission, of the impact of one and the same event across different time frames or on different links of the chain.

Differences in scalability. And here lies the most underrated structural piece of all. In production, diseconomies of scale appear far earlier than they do in distribution. That limits the viable size of the fresh produce company and generates, naturally and without any conspiracy, fragmentation upstream and concentration downstream. The imbalance of power arising from size is not an abuse: it is a geometric consequence of the activity. We cannot eliminate it. We can modulate it if we understand how it works.

Islands of efficiency. The efficiency paradox described by *Modig* and *Åhlström* (2012): the more you fine-tune individual processes to their maximum, the more inefficient the system as a whole becomes. Each link optimises its own island and the archipelago —the value chain— is impoverished.

The permanent prisoner's dilemma. Individual logic says defect; collective logic says cooperate. And because each player fears ruin, each player defends himself. Defensive attitudes are not a problem of character: they are the rational response of a fragile agent in a non-ergodic system with scarce and asymmetric information.

A people's business. A business where a man's word is still worth more than a contract, where the relevant information travels through conversations rather than databases, and where personal trust is critical infrastructure. A sector where the contextual knowledge held by individuals is the difference between success and failure.

The diagnosis: gravity has not increased

My diagnosis is that in recent years the structural attractor **has been manifesting itself more forcefully**. Its effects are being felt with a harshness I do not recall from previous decades: sustained margin erosion, greater volatility in production and supply, greater variability in the quality of the produce marketed, price wars, the continuous entry and exit of new origins and suppliers, insolvencies and bankruptcies, the arrival of investment funds, severe difficulties with generational succession and a growing problem of labour availability, among many other symptoms.

But beware of the easy explanation. The gravity of a body does not increase. What has happened, in "stellar terms", is that **we have lost radiation pressure**.

A star is stable because inward gravity is offset by outward pressure. For decades, the fresh produce sector had its own radiation pressure (its own outward forces): margins sufficient to absorb a bad year, patient family capital, available and inexpensive labour, growing markets that forgave mistakes, climatic and logistical barriers to entry that protected established origins, and a certain social standing that did not demand permanent social justification.

All those sources of compensating pressure have weakened at the same time. And when radiation pressure falls, gravity need not increase by a single gram: the collapse begins all the same.

This reformulation is not a rhetorical game. It changes the focus of action entirely. If you believe the problem is that gravity has increased, you will look for culprits and demand that someone reduce it — usually the legislator, and usually in vain. If you understand that the problem is the loss of internal pressure, you will have to acknowledge that there are options for rebuilding that pressure as a sector: margin, critical size where possible, non-ergodic diversification, liquidity for several cycles, differential value, broad and low-friction relationships.

Gravity is not negotiable. Radiation pressure can be generated, and it is everyone's decisions that rebuild it.

ATTRACTOR II. TECHNOLOGICAL MEGATRENDS

The star that has not yet ignited

If the structural attractor is the background gravity, the second attractor is a **protostar**. A cloud of gas that has been contracting for decades, whose core is visibly heating up, and which has not yet reached the ignition threshold in our sector.

And that last point is the relevant one. Fusion has already ignited in large-scale commodity agriculture: cereals, oilseeds, broadacre crops. There, satellite monitoring, precision agriculture, autonomous machinery and advanced genetics have been developing for years with measurable impact. In fresh produce, by contrast, the process is obviously slower.

It is worth understanding why, because this is neither coincidence nor clumsiness on the part of the sector:

Our product is not homogeneous. It is heterogeneous, perishable, fragile, with variable geometry and variable ripeness. Everything that broadacre agriculture resolves with a combine harvester is resolved here through direct human intervention and contextual decisions.

Our scale is limited. Producers' fragmentation —which, let us recall, is a structural consequence of diseconomies of scale— hinders the adoption, the investment and the diffusion of technological solutions among thousands of small operators who can hardly finance them individually.

Our cycles are short and our margins narrow. A sector that lives in the short term and with eroded margins invests little in technologies whose returns are capitalised over the long term. The technologies that do get adopted are those perceived to deliver an immediate return.

And our regulatory attractor brakes selectively. A good part of the biotechnology that could change the game has been —and to some extent still is— blocked or slowed down by the third attractor. The three attractors interact; we shall return to this.

The elements of the protostar

The materials accumulating in this molecular cloud are many, but a few examples will serve: satellite monitoring and remote sensing, machine vision, artificial intelligence, new gene-editing techniques (NGTs), robotics, the automation of harvesting and handling; new smart materials for structures, protection, packaging and edible post-harvest coatings; drones for treatment and monitoring; new fertilisers and biostimulants; and new techniques for fighting pests and diseases.

In the book I focused on NGTs under the narrative of **the Green Software Revolution**: if the genetic code of plants is a programming language, and gene-editing techniques and technologies such as CRISPR are the text editor, then food becomes programmable. Any desirable attribute —shelf life, resistance to pathogens, flavour, nutritional content, post-harvest behaviour— potentially becomes a line of code. And if that happens, our business starts to look far more like a software business than an agricultural one, with everything that implies in terms of intellectual property, margins, innovation cycles and the concentration of power.

But the green software narrative is only one of the possibilities. Any of the other technologies on the list, or more probably a combination of several, could produce the leap. The important point of the framework is this: **a technological ignition does not improve the system, it reorders it**. It creates a new universe with a different distribution of masses, and therefore with different orbits and different winners and losers.

Mitigation, not solution

I say mitigation and not solution quite deliberately. Thomas Sowell put it as follows: "there are no solutions, there are only trade-offs" (Sowell, 2007, p. 118). Anyone who promises you that technology will solve the problems of the fresh produce sector is not being honest.

What technology can do is generate its own gravitational *pull* and take us to a different equilibrium. An equilibrium, not a paradise. And it is worth listing the likely tolls of that new equilibrium, because the framework is only useful if it also predicts the uncomfortable:

It may reinforce the structural attractor rather than offset it. If value shifts upstream, towards the owners of genetics, data and algorithms, we shall have greater concentration in a new link of the chain and a production base that is even more dependent. Technology does not distribute power by default; it redistributes it towards whoever controls the scarce or patentable asset.

It may increase volatility before reducing it. A technology that raises yields unevenly across origins generates, during its adoption phase, brutal competitive differences, massive entries of new suppliers and price wars. The transition is more volatile than the starting point.

It may collide head-on with the third attractor. The social acceptability of gene editing, of the automation of agricultural employment or of the intensive use of data has not been settled.

And its dynamics are unpredictable. The investment interest of large multinationals and of the governments of powerful nations in this field guarantees that the *pull* will grow. It does not guarantee when ignition will occur, nor what shape the resulting system will take. Let us recall Dornbusch's law, which I quote in the book: crises —and technological revolutions— take longer to arrive than one can imagine, but when they do arrive, they happen faster than one can imagine.

My diagnosis, in terms of the stellar cycle, is that this attractor lies **between the emergence phase and the consolidation phase**. The cloud is contracting, the core is heating up, and we do not know whether ignition will come in five, ten or twenty years. What we do know is that the position we occupy when it ignites will determine our orbit for the following decades. And that the positions taken beforehand may determine how exposed we are to its gravitational influence.

ATTRACTOR III. THE DYNAMICS OF MORAL HIERARCHIES AND IDEAS

The massive star in its late phase

The third attractor is the most human and the most uncomfortable to analyse, because analysing it is easily mistaken for campaigning against it. I shall try to maintain the distinction.

Societies are engaged in a permanent dynamic of restructuring: of resignifying words, of reassigning moral legitimacy, of reordering the hierarchies of prestige among ideas. Who has the right to speak, about what, and in whose name. Those shifts in moral hierarchy and in the standing of ideas almost always end up being translated into regulation.

In the book I approach this territory through the Roman dualism ***Auctoritas–Potestas***. *Auctoritas* is moral authority, the symbolic representation of socially recognised truth. *Potestas* is power, which emanates from the legitimacy of laws, institutions, judges and the law enforcement agencies. Power does not need moral authority in order to be exercised, but it does need it in order to be sustained over time.

What is distinctive about our own age is not the eternal conflict between the two —that has been going on since Rome— but the fact that both are undergoing simultaneous transformations. *Auctoritas* faces a diversification of values: there is no longer any agreement on what the shared values are, and therefore no moral authority is complete or unchallengeable. *Potestas*, for its part, is experiencing a crisis of legitimacy at the very moment when technology is reinforcing its executive capacity. And faced with that crisis of legitimacy, the legislator tends to reinforce, through his actions, the messages that dominate society.

From that process emerge the rules that delimit our playing field. And their influence is so great that —as I wrote in the book, and I stand by it— companies and farmers disappear far more often through regulatory change than through competitive pressure.

The formation of this attractor

The historical trajectory of this attractor is well documented, and I summarise it here because it explains its present strength.

The intellectual precursors: Hardin's tragedy of the commons (1968) and the Club of Rome report *The Limits to Growth* of 1972 (Meadows et al., 1972). **The ignition point:** the 1987 Brundtland report, *Our Common Future* (UN, 1987), which defined sustainable development and whose fundamental novelty was to establish respect for the environment as an implicit prerequisite for any economic and social development. The moral authority of the United Nations did the rest. **The consolidation:** the 2030 Agenda and the 17 Sustainable Development Goals in 2015.

A textbook example of how an *Auctoritas* determines the field of action of a *Potestas*. And around it, the drivers of this change: a loosely connected conglomerate of interests, social movements, NGOs, *influencers* and gurus that is often grouped under the label of *The Food Movement*. Animal-rights advocates, ecologists, environmentalists, *foodies*, champions of *slow food*, of ethical trade, of food sovereignty. Their causes are at times contradictory and their solutions incompatible, but they are united by a common diagnosis: that the current food production and supply chain, with its industrial orientation, carries an unsustainable social, environmental, health and cultural cost.

And, as a finishing touch, the successive food scares —mad cow disease, bacterial outbreaks, and so on— that have amplified the discourse of these various social movements.

The *Zeitgeist* and the presumption of guilt

The result of that whole process is what I call the **fresh produce *Zeitgeist***: the spirit of the age, the dominant cultural climate from which no professional in the sector can stand apart, however much he may disagree with it.

And the central feature of this *Zeitgeist* is an asymmetry of treatment and consideration that many professionals find insulting and which, nonetheless, must be accepted as a fact of reality by anyone who wishes to go on working in the sector: "**we are guilty until proven innocent; and even having proved our innocence with a whole arsenal of certifications, audits and third-party verifications, we shall remain under suspicion**".

Failing to accept this leads to extremely serious strategic errors. And it is worth noting that the suspicion is not concentrated on a single link, but spread across them all; each one bears its own particular accusation:

- **Farmers:** "they pollute, deplete aquifers, damage biodiversity and create occupational hazards".
- **Intermediaries:** "they unfairly take a share of the pie without adding value".
- **Modern retail:** "it hoards power and dictates its rules to consumers and to the rest of the chain".

- **Seed companies and professional plant breeders:** "they control life and patent it".
- **Crop protection and fertiliser companies:** "they pollute and, in the crudest version of the story, they poison us".

No one is left out. A narrative in which absolutely every link is guilty or suspect is not a sectoral diagnosis; it is a moral position on the modern production of food. And as a moral position, it cannot be refuted with data. It has to be navigated through the emotions it arouses.

The regulatory tsunami

Until very recently, this attractor has exerted the greatest immediate gravitational *pull* on our management decisions, and it has produced an unprecedented volume of regulation, including: due diligence in supply chains, deforestation regulations, environmental protection, drastic reductions in authorised plant protection products, prohibitions on cultivation techniques, restrictions on various types of fertilisation, restrictions on access to and use of water, plastics reduction, recyclability requirements, food waste, and legislation on biodiversity and nature restoration.

To all of this must be added a second impulse: that of private initiative. In the past, public authorities were the only ones setting the rules of the game; today we also face an enormous list of additional requirements advanced by our customers, with their own certification schemes, their own audits and their own thresholds, often more demanding than the law.

And there is a methodological problem that undermines the entire edifice, one I address in detail in the book: we are trying to solve **complex problems with regulatory tools designed for simple and complicated problems**. A simple problem is solved with a recipe —a checklist. A complicated problem is solved by experts who decompose and recompose it in order to shape an improved solution. But a complex problem involves so much interaction between its parts that its behaviour cannot be predicted from knowledge of those parts, and within it "2+2" may perfectly well not be "4". Social dynamics and environmental problems are complex. Certification and audit systems, which impose standard, specific and quantifiable measures, are not suited to them.

Hence the only sensible strategy is **liminal and tentative action**: operating at the edges of the problem, where the debate is still alive, with provisional, pragmatic solutions that remain congruent with the prevailing trend. What is considered sustainable today may not be so tomorrow. That frontier at the edges of the problem is identified by locating where there is friction, where there is debate. There, room for manoeuvre still exists.

The diagnosis: deceleration before collapse

And here is my diagnosis, which is the riskiest part of this essay and which I offer for what it is: a working hypothesis, not a certainty.

I believe this attractor **has not yet completed its cycle towards maximum gravitational pull**. There is regulation still to come, implementation still to be carried out and private requirements still to be tightened. But I also believe that a **slowdown of the phenomenon** is visible on the horizon, together with a possible **onset of gravitational collapse within five to ten years**.

The signals supporting that hypothesis are the ones we would observe in a star beginning to run out of fuel. The fuel of this attractor is **shared moral legitimacy**, and that fuel is consumed when: the regulatory burden begins to be perceived as a cost of living and a cost of competitiveness; food security and food sovereignty return to the agenda for geopolitical reasons; the second-order effects of well-intentioned measures become visible and quantifiable; and the very *Auctoritas* that sustained the consensus fragments into currents that no longer recognise one another.

If that hypothesis is correct, what comes afterwards is not the disappearance of the force. It is the **seeding**. The substantial elements this attractor has manufactured over its lifetime —traceability, impact measurement, the professionalisation of compliance, environmental awareness, the demand for accountability, and so on— will remain dispersed in the medium and will form part of the raw material of the next *Zeitgeist*. A new spirit of the age, made from a different combination of today's emerging forces, from which the participants in this sector will likewise be unable to stand apart, and with whose influence they will have to learn to live.

The ingredients are purely human: the desire for health and well-being; the yearning for fairness and social justice; the social virtue brought by transparency and trust in institutions; the anchoring of identity, territory and culture; and respect for nature.

I should record here the most serious objection to my own diagnosis, because a framework that admits only confirmations is worth nothing: it is perfectly possible that what we are witnessing is not the beginning of a collapse but a **tactical pause** within a long expansionary phase, and that real pressure — not perceived pressure— may accelerate the attractor once again with greater force than it has ever had. Anyone managing a company would do well to prepare orbits for both scenarios.

Because we clearly cannot withdraw from this force. We can only escape tangentially from some of its effects while maintaining stationary orbits ever closer to the attractor: **strict compliance in regulatory matters and liminal adaptation, at the frontier of the acceptable, in everything else**.

THE THREE-BODY PROBLEM

So far I have described the three attractors separately, which is the only way to describe them. But the sector does not experience them separately, and this is where the framework acquires its true explanatory power.

In 1889, Henri Poincaré (Poincaré, 1890) demonstrated that there is no general mathematical formula for solving the motion of three bodies interacting under gravitational attraction —the famous three-body

problem. With two bodies, the orbits are perfect ellipses, predictable for ever. Add a third and the system becomes sensitive to initial conditions: it remains perfectly deterministic, yet it is impossible to predict over the long term.

This is a good framework for explaining an experience we all share in this sector: that market and production phenomena are **hard to predict without being random at all**. It is not that we fail to understand the causes. It is that understanding the causes is not enough.

It also explains why the best forecasts fail systematically over the medium term, why five-year strategic plans have such a poor reputation in the sector, and why the most experienced people end up developing that characteristic blend of scepticism and permanent alertness captured in the sector's own adage: "only the paranoid survive".

From the interaction of the three attractors arise phenomena that none of them would produce alone. Three examples:

Resonance. The moral attractor bans an active substance used in crop protection. The structural attractor translates that ban into greater variability of quality and lower agricultural yields. The result is more supply volatility, more pressure on margins and greater fragility for the grower. A decision taken entirely within the domain of the third attractor ends up amplifying the first.

Interference. The technological attractor offers a solution —gene editing, for example— whose deployment the moral attractor holds back. The stellar cloud goes on contracting, ignition is delayed, and in the meantime structural gravity continues to act unopposed. The cost of that delay appears in no set of accounts.

Syzygy. When the three attractors align, the tides add up: a climatically adverse season (structural), in the year a demanding regulation enters into force (moral), with a competing technology that has just cut costs in a rival origin (technological). That is not a bad season. That is a redrawing of the map, or the perfect storm that lays waste to a territory.

And over all these phenomena acts the **Roche limit**: what tears companies apart is not the absolute force of the attractors but the **gradient**, the difference in force between their two extremes. This is why those who suffer most are neither the smallest nor the largest, but those who are "stretched", misaligned between the needs of their production base and a concentrated customer whose strategy pushes beyond the threshold of differential stress that would allow the company to survive.

ORBITAL MECHANICS FOR PROFESSIONALS

This conceptual framework is exploratory and is intended to make professionals in the sector think. In that spirit, these are the practical consequences I draw from it, ordered from the most general to the most concrete.

First: learn to distinguish anomaly from gravity. Faced with any phenomenon that worries you, the first question must be whether it is a fluctuation (wind, short-term conditions, cycle) or the manifestation of an attractor. With wind, you wait; with gravity, you orbit. Almost every serious strategic error I have seen in the sector arises from confusing the two: waiting for something to pass that is not going to pass, or reorganising the entire company because of something that was transitory.

Second: do not fight gravity; choose your orbit. Fighting an established attractor head-on is an unequal struggle that ends in defeat, and it makes no difference what one thinks or feels about the justice of the matter. If you are a business professional, your obligation is to perceive reality accurately and to operate within it. Four orbits are available: **compliance**, where the rule and the requirement are hard and clear; **liminal action**, where the debate remains open; **gravity assist**, where the force can be turned into competitive advantage; and **Lagrange points**, wherever niches of stable equilibrium exist.

Third: the generation of compensating "radiation pressure" is a phenomenon of sectoral aggregation. This is the direct consequence of the diagnosis of the first attractor. Everything that sustains the sectoral structure from within —margins, sound financial practices, productive diversification that does not concentrate risk, differential value, knowledge clusters, ancillary industry, size wherever scalability permits it, broad and low-friction commercial relationships— is compensating pressure. It is also achieved through collaboration along the value chain. Shared information, shared metrics, shared benefits and trust are not wishful thinking. It is a path that carries its own risks, but it makes it possible to reduce both systemic friction and individual fragility at the same time.

Against gravity, the sectoral "radiation pressure" that we generate is the only thing that works. But it is achieved through the conjunction of everyone's decisions, or at least those of a sufficient majority to maintain the critical mass needed to keep "radiating".

Fourth: avoid the point of no return. The first obligation of the game is to stay in the game. In a non-ergodic system, survival is not a conservative strategy: it is the condition of possibility of every other strategy. Any decision that carries risk of ruin must be assessed separately, outside the ordinary cost-benefit analysis, because expected value deceives us when one of the possible outcomes throws you out of the match. The *Barbell* strategy (Taleb, 2012, p. 149) —extreme prudence in what can kill you, many small bets on what can transform you— is the operational translation of living between three attractors whose joint behaviour cannot be predicted.

Fifth: position yourself before ignition, not after. By the time the trend has become the rule, you should already have anticipated it and chosen your strategy. This applies to technology and it applies to regulation. And no, investments need not be brought forward. Cheap positions are taken while the cloud is still cold and has not yet turned into a blazing star.

And finally: prepare orbits for more than one scenario. If my diagnosis about the collapse of the third attractor is correct, anyone who has built their entire value proposition on the current *Zeitgeist* will have

a problem. If it is incorrect, the problem will belong to whoever bet on its disappearance. A robust company does not get the future right: it survives several futures.

CONCLUSION: ATTRACTORS ARE NOT CHOSEN, THEY ARE INHABITED

This framework offers no consolation, and it does not pretend to. It points out that there is a background gravity that will not disappear, because it is made of the very nature of our products. It shows that there is a force capable of reordering the system that has not yet fully ignited in our sector, and that when it does ignite it will bring not solutions but disruptive change. And it warns that the moral framework within which we work today, which for decades has been the most visible force acting on our decisions, is probably running out of fuel without our knowing what will come next.

But it also says something more. Stellar collapses leave no void. They leave a cloud enriched with the essential elements the star manufactured throughout its life, and from that cloud the next stars are born. Everything we have learned under the *pull* of these attractors —to measure, to trace, to certify, to cooperate, to survive impossible seasons, to read a market without information— is not lost in the collapse. It is precisely the material from which whatever comes next will be made.

In the book I said that what I was offering was a compass, not a map; that the detailed map belongs to each company and that it is we, as professionals, who have to interpret the signs along the way. This essay is a look at how gravitational forces —the attractors— alter the readings of that same compass. The compass, if you manage to calibrate your own, does not point north; it points to **where the mass is**.

And knowing where the mass is does not tell you where to go. But it tells you, with a precision no seasonal forecast will ever achieve, where you are going to fall if you do nothing.

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APPENDIX I. THE STELLAR ANALOGY: THE LIFE CYCLE OF AN ATTRACTOR

Attractors are not eternal. They are born, they consolidate, they reach a maximum of influence and they collapse. To describe that cycle I can find no better image than the life of a star, which has the added virtue that its engine is literally gravitational.

Phase 1. Emergence (the molecular cloud and the protostar). A star does not begin as a star. It begins as a cloud of gas and dust: cold, diffuse, scattered across an enormous volume of space. Nothing in that cloud looks important. But a single perturbation —the shock wave of a nearby supernova, for instance— is enough for the cloud to begin contracting upon itself. Matter accumulates, density grows, temperature rises. There is already *pull*, but it is weak and local. A distracted observer would see nothing worth mentioning.

Phase 2. Consolidation (ignition). When the core temperature reaches the critical threshold, nuclear fusion ignites. That is the moment when the protostar becomes a star. From then on the object is visible from very far away, it organises the matter around it, it forms planets, it defines a system. A structure has been born.

Phase 3. Maximum *pull* (the main sequence). This is the long phase, the "normal" phase, in which the star lives in **hydrostatic equilibrium**: gravity pulls inward and radiation pressure pushes outward, and the two forces offset each other with astonishing precision for millions or billions of years. It is the phase of maximum influence over everything that orbits around it.

A star is not an object that pulls; it is an object that pulls and pushes at the same time. What we perceive as stability is the result of a permanent contest between two opposing forces.

Phase 4. Collapse. When the core's fuel is exhausted, radiation pressure falls and gravity, which had never gone away, suddenly wins the contest. The star swells, becomes unstable, and ends up collapsing. Depending on its mass, the end will be a planetary nebula with a white dwarf at its centre, or a supernova leaving behind a neutron star or a black hole.

Phase 5. Seeding. The collapse does not leave a void. It leaves a cloud enriched with all the heavy elements the star manufactured during its life —carbon, oxygen, iron— dispersed through space. That cloud is the raw material of the next generation of stars. No attractor ever dies completely: its products are the material from which the next one is made.

APPENDIX II. CONCEPTS AND VOCABULARY OF THE FRAMEWORK

- **Attractor.** The set of states towards which a dynamical system tends to evolve over time, irrespective of its initial conditions. It is not a destiny, a plan or a conspiracy: it is an emergent property of how the variables of the system are connected.
- **Basin of attraction.** The set of states from which a system ends up falling under the attraction of a given attractor. The fresh produce sector belongs to several basins simultaneously.
- **Gravitational pull.** The intensity with which an attractor conditions the decisions of the agents in the system at a given moment.
- **Life cycle of an attractor.** Emergence → Consolidation → Maximum *pull* → Collapse → Seeding. Analogous to the stellar life cycle.
- **Hydrostatic equilibrium.** The state of a star in which inward gravity is offset by outward radiation pressure. Applied to the sector: stability is not the absence of forces, but the offsetting of opposing forces.
- **Radiation pressure (sectoral).** The set of internal forces that offset the *pull* of the structural attractor: margin, liquidity, diversification, differential value, viable scale, low-friction relationships and social acceptance.
- **Structural Attractor.** The first attractor. The background gravity of the business, derived from the nature of fresh products: volatility, supply-driven condition, perishability, heterogeneity, asymmetries, fragility, non-ergodicity and differences in scalability.
- **Technological Megatrends.** The second attractor. A protostar in the emergence/consolidation phase; it includes biotechnology, AI, robotics, remote sensing, new materials and mechanisation. Its ignition could reorder the entire system.
- **Dynamics of Moral Hierarchies and Ideas.** The third attractor. The permanent restructuring of moral legitimacy and of the pre-eminence of ideas, which crystallises into public and private rules. It is expressed in the fresh produce *Zeitgeist*.
- **Fresh produce *Zeitgeist*.** The spirit of the age applied to our sector. Its central feature at present is the presumption of guilt: "we are guilty until proven otherwise and, even once innocence is proved, we remain under suspicion".
- **Stationary orbit.** A position of permanent falling offset by tangential velocity. Equivalent to strict regulatory compliance: you do not escape the attractor, but you do not crash into it either.
- **Tangential escape / Liminal action.** The strategy of operating at the frontier of the problem, where the debate remains open and definitions have not yet crystallised, with provisional, exploratory solutions that are nonetheless congruent with the prevailing trend.

- **Gravity assist.** Using the force of an attractor to gain speed instead of losing it. In management terms: turning a regulatory or reputational requirement into a competitive advantage or a barrier to entry. Certification as a barrier to entry, sustainability as an attribute of value, the rule as a defensive moat.
- **Lagrange points.** Positions of stable equilibrium between competing forces, sustainable with low energy consumption. In the sector: specialities, product clubs, varietal niches and strategically aligned chains.
- **Roche limit.** The distance below which a body disintegrates under tidal forces. What destroys is not gravity but its gradient. It describes companies that are "stretched" (misaligned) between the needs of a highly fragmented supply base and a customer moving strategically away.
- **Resonance.** One attractor amplifies the effects of another instead of offsetting them. A decision taken entirely within the domain of one attractor —a regulatory restriction, for example— reaches the system converted into more volatility, more variability of quality and more fragility: that is, into a reinforcement of the structural attractor. The cost does not appear where the decision was taken.
- **Interference.** One attractor slows or delays the development of another. The typical case is the moral-regulatory attractor delaying the ignition of the technological one: while the delay lasts, structural gravity goes on acting without a counterweight. Its cost is invisible because it is an opportunity cost, and it appears in no set of accounts.
- **Syzygy.** The alignment of the three attractors, whose forces then add up. The origin of systemic crises and of major redrawings of the sectoral map.
- **Three-body problem.** Poincare's result (1889): a system of three bodies in gravitational interaction is deterministic, yet it has no general predictable solution. It explains why the phenomena of the sector are hard to predict without being random.
- **Trade-off.** In the sense in which Thomas Sowell uses it: there are no solutions, only compromises between imperfect alternatives. A compulsory rule of interpretation for any promise of a technological or regulatory solution.
- **Escape velocity.** The minimum speed required to leave a gravity well. In our sector it is extremely expensive, and very few reach it.