

No One Gives You Your Destiny

Learning from Experience: Effort, Mistakes, Independence, and Freedom

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About This Book

This account explores academic, scientific, professional, and entrepreneurial experiences that shaped my understanding of personal autonomy. From my first jobs while studying chemistry and my time in Manchester to an industrial doctorate, workplace conflicts, and the founding of 3Dresyns, I describe the decisions I made and what their consequences taught me. I do not intend to portray a perfect career or turn my memories into rules that apply to everyone. I want to show that opportunities can be sought out and created, but they also require preparation, initiative, and responsibility. Curiosity, effort, and personal projects have helped give substance to everyday life. As I understand it, freedom does not mean acting without limits; it means developing one's individuality while respecting others' individuality and accepting the costs of one's choices.

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Contents

Introduction. No One Is Born Knowing Everything.....	5
Prelude. Before University: Choosing Science.....	5
I. Learning to Stand Up for Myself.....	6
1. Afternoons at Kraft.....	6
2. Standing Up for a Scholarship.....	7
3. Manchester and the Return Home.....	8
II. Learning Through Work.....	9
4. The Laboratory and Spanish Guitar.....	9
5. A Doctorate Between Industry and University.....	10
6. Numbers That Looked Scientific.....	11
7. Losing a Job and Finding New Doors.....	14
III. The Price of Speaking My Mind.....	15
8. Hierarchies at BFGoodrich.....	15
9. Recognition and Closed Doors.....	16
10. A Bicycle on the Deck of the Titanic.....	17
IV. Out of the Frying Pan and into the Fire.....	18
11. Autonomy and Family.....	18
12. Changing Conditions.....	19
13. Working Without the Tools.....	19
14. The End of Kromachem.....	20
V. Building My Own Freedom.....	21
15. Independence Before I Needed It.....	21
16. Resyner Technologies and 3Dresyns.....	22
17. Learning to Say No.....	23
18. Independent-Minded and Cooperative.....	23
Conclusions. Choosing a Direction.....	24
Epilogue. The Path We Build.....	25

Introduction. No One Is Born Knowing Everything

We come into the world knowing virtually nothing about the institutions, work, or decisions that will ultimately shape our lives. We learn by living. Some lessons come from people who believe in us. Others arrive after disappointment, mistakes, or situations that force us to act.

I have studied, conducted research, worked in different countries, and developed industrial projects. I have also encountered contradictions, workplace tensions, and procedures that failed to meet the standards of rigor I expected. I did not always respond in the best way. Sometimes I trusted too much; at other times I was too direct; and sometimes I decided to leave.

These pages are not intended to prove that I was always right or to compile a list of grievances. They are personal memories of decisions that helped shape how I understand freedom, knowledge, and responsibility. Others may remember the same events differently.

Over the years, I have come to understand that autonomy is built through knowledge, relationships, experience, and resources. Knowing when to say no is as important as knowing when to say yes. But independence does not mean ceasing to cooperate or to share what we have learned.

Prelude. Before University: Choosing Science

During my school years, I gradually discovered an inclination toward the natural sciences that did not always match the expectations around me. I particularly remember deciding, at about sixteen or seventeen, to move from a mixed curriculum to a science-oriented one. It was my decision, and it meant accepting that I would have to catch up in certain subjects.

For part of my childhood and adolescence, I found it difficult to sit down and do homework. I could pass my courses without sustaining the daily effort that schoolwork demanded, but this approach had its limits. By the time I reached upper secondary school, I began changing my attitude: I decided to devote more attention to studying and direct my education toward science. This did not happen because learning had suddenly become easy. It was a personal decision to learn with greater interest and consistency.

My mother was a good educator. She instilled in me a sense of responsibility toward my studies and helped me understand that decisions have consequences. My father taught me how to understand what I read, identify main ideas, and prepare outlines and summaries. My stepfather, Joserra, helped me as a teenager

overcome difficulties with science subjects by reading textbooks and learning to work independently. That help had a lasting meaning for me: I began to see that studying was not simply about passing exams, but about learning how to learn.

Outside the classroom, I found more immediate sources of motivation. From the age of twelve I played field hockey and indoor hockey. I also enjoyed outdoor activities. That restlessness partly explains the difference between my resistance to homework and my willingness to make an effort when something aroused my curiosity.

My academic path was not without difficulties. During COU, the pre-university orientation year in Spain, I had to retake a chemistry examination in September. That summer I met a teacher who helped me study and, for the first time, truly understand chemistry. In the school's September examination I scored nine out of ten. Later, in the university entrance examinations known as Selectividad, I earned four scores of nine out of ten: in chemistry, biology, physics, and mathematics. Those results meant a great deal to me because they contrasted with the period when I struggled to do my homework. I discovered that my relationship with studying could change when I understood what I was learning and genuinely committed myself.

At Colegio Larramendi in San Sebastián, I particularly remember Pablo Areso, my biology teacher, who awakened my interest in botany, identifying species by their leaves and scientific names, and evolution. Through his connection with the Aranzadi Science Society, I was able, at about seventeen, to participate in the excavation of an Iron Age burial mound in Idiazabal and in caving and cave-surveying activities around Aralar. That learning beyond the classroom combined observation, teamwork, and scientific curiosity. Before studying chemistry at university, I had already discovered that learning could also mean taking the initiative to search, observe, and explore.

I also worked for UPS during university. With the money I earned, I paid for a summer stay in London to study English and explore the city and its museums. It was a concrete way of turning work and savings into opportunities for learning and personal independence.

I. Learning to Stand Up for Myself

1. Afternoons at Kraft

I was studying chemistry at the University of the Basque Country when an opportunity arose to work part-time at a chemical company in Urnieta. As I recall, I was initially the only person in my class interested in the position. I attended

university in the mornings and worked four hours each afternoon at Kraft, where I saw firsthand the production of lubricants, silicones, and antifreeze products.

It was not an especially comfortable life. I had less time to study and rest, but I was happy: for the first time, I could compare my knowledge with the daily operation of a factory. The company allowed me to continue working full days in July.

I remember a small incident from that summer. A fellow student whose father worked there assured me that I owed my position to her. On another occasion, she blamed me for an object that she herself had dropped. These seemed insignificant incidents, but they made me reflect on two things I would encounter again throughout my career: how readily some people claim credit for others' achievements and how difficult others find it to admit their mistakes.

The most interesting thing about that job was not the minor dispute, but realizing that I could function in an industrial environment before I had even finished my studies. University taught me chemistry; the factory taught me that behind every product were operators, managers, production schedules, materials, and problems to solve. That connection between theory and practice would guide many of my later decisions.

2. Standing Up for a Scholarship

In the early 1990s, I learned about the Erasmus programme through a presentation by Mr. A, a physical chemistry professor. I wanted to improve my English and study abroad. I applied and was not awarded a place. I tried again the following year, again without success.

I began looking into the selection criteria because, according to the information available to me, there appeared to be striking differences between awards made to students in Spanish-language and Basque-language teaching groups. My academic record was good, and I felt I deserved at least an explanation. I did not know all the applications or all the criteria applied, so what I could defend with certainty was my right to ask questions and appeal.

I went to Mr. A's office. The conversation was tense. I explained my doubts and my intention to use formal channels if I did not receive a satisfactory answer. About a week later, the university administration informed me that I could go to Manchester Metropolitan University.

I prepared for that conversation with my two rejected applications, academic record, and questions about the procedure in mind. The difference in authority between student and professor made it difficult to challenge a decision without

turning a disagreement into a personal confrontation. I wanted an explanation, not a favour. The later award opened a decisive opportunity, but I never learned about the internal deliberations and cannot attribute the decision to that conversation with certainty.

I do not remember my appeal as a heroic act. I was a student who needed to understand why rules seemed to be applied in ways I could not justify. I might have been mistaken in my interpretation, which was precisely why I wanted to know the criteria. I learned to distinguish suspicion from proof: asking questions was legitimate; attributing intentions required more evidence. That distinction stayed with me years later when I had to discuss laboratory results or business decisions.

The experience's true significance became apparent in England. Working in another language and learning new research practices broadened my possibilities beyond anything I had imagined while preparing the appeal. That stay also began an academic relationship that would later help make my industrial doctorate possible.

3. Manchester and the Return Home

In Manchester, I completed my final-year project under the supervision of Mr. X, who would become my doctoral supervisor, working on the synthesis of anthraquinone- and benzophenone-derived photoinitiators. I discovered a research environment that greatly expanded my horizons. An opportunity to continue toward a doctorate emerged there.

That first final-year project must not be confused with the industrial doctorate I undertook later. On my first stay, my task was to learn how to conduct research within a university team and finish my chemistry education. Years later, I would return to Manchester with questions arising from industrial formulation problems and a different relationship with instruments and results.

The experience involved more than learning synthesis techniques. It forced me to study and work in English, explain results outside my usual environment, and recognize that the same discipline could be organized very differently. I returned with new questions about research and the kind of professional career I wanted to build. Although I decided to come home, Manchester did not simply become an academic interlude left behind.

The offer to continue researching in England came while I was still deciding what kind of life I wanted. This was not a purely academic choice: returning to San Sebastián meant maintaining a personal relationship and coming back to familiar surroundings; staying in Manchester meant continuing with a research group I

already knew. I returned. I do not describe it as an obvious mistake, because I valued things other than a scientific career at the time. The opportunity came around again when I was able to combine industrial work with a doctorate.

Back in Spain, I joined CIDEMCO, a research centre where I spent about a year and a half. I arrived enthusiastically, but I was disappointed by certain experimental procedures and organizational practices I observed. From my perspective, some projects showed too wide a gap between the rigor one might expect and the reality of the work. I do not mean to extend that impression to the entire institution: it is my memory of the situations I experienced.

At CIDEMCO, I also discovered a tension that would recur in my career: the difference between meeting outside expectations and conducting a measurement independently of its outcome. In certain tests, I wondered whether the practices I observed allowed the experimental evidence sufficient autonomy. That is an impression based on my experience, not a comprehensive assessment of the centre. What affected me directly was deciding to seek an environment where I could learn more freely.

I was also surprised by the energy some colleagues devoted to criticizing salary differences rather than directly negotiating their own conditions. I preferred to look for alternatives. I began sending CVs abroad again and received two offers. I chose Swale Process, in Manchester.

II. Learning Through Work

4. The Laboratory and Spanish Guitar

Swale Process worked with industrial inks and varnishes, including ultraviolet-curing systems. I joined eager to modernize formulations and broaden my knowledge. The technical director, Mr. Y, trusted me and gave me extraordinary freedom to organize my work between the factory, the university, and my home.

Some colleagues jokingly called me ‘Spanish Guitar’ and asked whether I still worked there. I played along, saying I spent my time on holiday and playing the guitar. In reality, some of my working days were extremely long. I was not interested in looking busy, but in obtaining results.

The joke reflected something I recognized from other encounters with national stereotypes: the assumption that a Spaniard must take work less seriously. I preferred to respond with humor. But my actual working days told a different story: factory trials, measurements at the university, and results to study afterward. I did not need to prove my commitment by remaining visible in one office.

Applied research taught me another discipline: a formulation that worked on the laboratory bench had to remain reproducible when the batch, the operator, or production conditions changed. That practical demand influenced how I assessed university experiments. A promising result was no longer enough; I wanted to know under what conditions it could be repeated and which variables might make it disappear.

Mr. Y, the technical director, made this way of working possible. He trusted me and gave me room to organize my experiments. When Mr. Z, the laboratory manager, proposed additional tests, I preferred to refer priorities to Mr. Y so that I would not receive conflicting instructions. This was not stubbornness: every additional request consumed time and resources and needed a purpose. I learned the value of protecting a project while continuing to cooperate with colleagues.

The freedom Mr. Y gave me was tangible. Some weeks required concentrated formulation work, while others called for comparing results with the university. The arrangement worked because my contribution was judged by useful results and my ability to explain how they had been obtained. That trust allowed me to assume responsibilities I would hardly have developed under continuous supervision of my working hours.

5. A Doctorate Between Industry and University

During my first week at Swale Process, I proposed a collaboration with Manchester Metropolitan University that would use scientific equipment to solve real formulation problems. The company agreed, and I was able to undertake a doctorate while continuing to work. It was an opportunity I had helped create myself.

I investigated relationships between composition and properties in UV flexographic inks, UV offset inks, and overprint varnishes. My aims were to improve processes, rationalize raw materials, and formulate products meeting specific industrial needs. According to the results recorded in my professional experience, approximate reductions of fifteen per cent were achieved in raw-material costs and production times. That does not mean every formulation improved by the same proportion.

The doctoral proposal arose from my own initiative, not from luck. I recognized an opportunity both for myself and for the company, because the university had analytical resources the company lacked. The arrangement benefited both sides. For me, it was an exceptional chance to develop industrial products using the university's scientific equipment.

I was particularly keen that the doctorate should not turn into research detached from industrial needs. It began with formulation problems involving the inks and varnishes we needed to manufacture. The experiments had to provide information and solutions for producing better products with lower raw-material and production costs. That connection between laboratory and factory motivated me far more than conducting experiments merely to accumulate results.

But that period's most lasting contribution was not solely industrial. At the university I encountered measurement problems that would transform how I understood science.

6. Numbers That Looked Scientific

In a laboratory, it was tempting to trust a digital display because it showed results to several decimal places. But those figures did not, by themselves, describe the measurement's quality. I came to understand this through procedures that had initially been presented to me as routine.

Two techniques were fundamental to my research: real-time infrared spectroscopy, or RTIR, for monitoring photopolymerization, and luminescence measurements for studying phosphorescence quantum yields. When I began using them, I discovered sources of variability that, in my view, were not adequately controlled.

The two techniques shared one difficulty. Results depended not only on the substance being examined but also on sample preparation, instrument stability, the time between measuring the reference and sample, and small physical changes in the setup. The harder I tried to repeat measurements, the clearer it became that the entire method, not just the instrument, had to be part of the analysis.

A postdoctoral researcher showed me how she adjusted photoinitiator solutions to an absorbance of approximately 0.05. When I removed and replaced the quartz cuvette, I found, under certain conditions, very large relative variations for such a small signal. I felt it was unreasonable to rely entirely on that direct reading for sample preparation. The procedure I developed started with a solution having greater absorbance, within a more favourable instrumental range, and used controlled volumetric dilutions to reach the final concentration.

The phosphorescence problem was different. We worked at low temperatures and used benzophenone as a relative reference. I observed its signal varying over the course of a session. If the reference was measured in the morning and the samples several hours later, a comparison could mix properties of the substances with changes in instrument response. I chose to measure references close in time,

before and after each sample. There was also frost: moisture in the room could condense on cells cooled with liquid nitrogen, changing the optical conditions. I could not determine all the causes of the drift with certainty, so it would be incorrect to attribute it solely to cooling or a particular manufacturing defect.

What I observed was the time-dependent change in the reference signal. My interpretation that it might be associated with progressive cooling or the detector's thermal state was not proof of the mechanism. My experimental response was therefore pragmatic: measure benzophenone before and after each sample, shorten the interval between reference and sample, and check whether the signal continued to change.

I considered it particularly dangerous to treat benzophenone as an automatic guarantee of accuracy. A standard cannot replace instrument control. A relative comparison is defensible only when the relationship between reference and sample conditions is understood. Measuring before and after was therefore not merely an extra protocol formality: it was a way to determine whether conditions had changed during the session. This distinction stayed with me for years.

I was especially troubled that such obvious environmental conditions were barely treated as experimental variables. Frost did not appear in a column of results; it formed directly on the cell. Without recording its presence, development, and removal, one could not assume that the optical geometry remained unchanged. This uncertainty was distinct from the instrument's time-dependent drift, although both could affect reference-to-sample comparisons.

In real-time infrared measurements, baseline fluctuations could be seen near the acrylate band at approximately 812 cm^{-1} . The arrangement of polyethylene films in the reference beam, intended to compensate for interference, appeared to introduce further variations. After changing that arrangement, I observed improved stability, although any modification required checking its effects on the analytical bands. It was a practical lesson: an instrumental correction can itself become another source of error unless we understand the entire system.

When monitoring a reaction, there was a temptation to attribute every decrease in the selected band to consumption of double bonds. But when the baseline fluctuated, the calculation inherited uncertainty that did not disappear simply because a conversion percentage was reported. I tried simplifying the reference configuration and comparing repeated measurements before interpreting differences between formulations. My goal was not to obtain an impressive number, but to understand how much confidence I could place in it.

I also remember a doctoral student from Bucharest who asked me how to use the luminescence instrument. She soon had to present quantum yields for several polymeric photoinitiators. I asked whether she had studied the equations and assumptions underlying the technique; she said she would take the measurements first and read the theory afterward. I told her she was putting the cart before the horse. I was concerned that obtaining numbers on time seemed more important than understanding what they represented. I could not know whether her final results were correct, but the exchange highlighted the distance between following a protocol and mastering it.

I do not know all the checks she later performed and cannot claim that her final results were invalid. The incident struck me because it condensed the problem I was experiencing: having an instrument and a deadline cannot replace an understanding of what is actually being measured.

I also remember another doctoral student from that period. When I tried to discuss reproducibility problems, he regularly maintained that everything was fine with his results. I could not know whether his results suffered from the same difficulties. What concerned me was the reluctance I perceived to reconsider a procedure as a thesis neared completion. I realized that academic schedules and the need to finish could compete with the time needed to question a method.

That tension was not limited to my colleagues. I too had industrial deadlines, results to deliver, and a thesis to complete. Precisely for that reason, I felt it essential to check first whether a measurement supported the conclusion we sought. In a laboratory, repeating what we were taught may be comfortable; demonstrating that it still works under our own conditions is a different task.

I expressed my concern to Mr. X, my doctoral supervisor: if procedures had important limitations, we needed to consider what those limitations meant for earlier work. I remember estimating that many publications might potentially have been affected; I had not audited them individually, so that estimate was not a count of invalidated articles. As I remember it, his response was to recommend publishing the new procedures without initiating a general public review of the past. I found that disappointing. Over the years, I have learned to distinguish that conversation from what the evidence can actually establish: my experience with the instruments does not, by itself, prove that all previous publications were wrong.

Looking back, I distinguish three levels that frustration once led me to conflate: the variation observed in my instruments, hypotheses about its causes, and possible consequences for other people's results. The first could be measured; the second required controls; the third would require reviewing other people's

samples, protocols, and data, which I did not have. Learning to separate these levels was one of the doctorate's most lasting lessons.

I did not want to turn that conversation into a personal accusation. My concern was practical: if we modified a method because we had observed major sources of variability, we needed to document the conditions that justified the change.

Equally, we needed to avoid the opposite, equally unwarranted conclusion that every earlier result was invalid without examining it. Between complacency and sweeping accusation lay a much more demanding task: reconstruct the measurement conditions and test their effects.

Eventually, I stopped seeing error solely as an individual's mistake. I began to see it as the possible outcome of a chain: sample preparation, environmental conditions, calibration, reference measurements, signal processing, and final interpretation. This way of thinking would reappear decades later in my publications on scientific methodology.

Decades later, I developed the Hidden Error Budget series to explain how instruments, standards, environmental factors, and inferences can introduce hidden uncertainty. Those university frustrations had ultimately become part of a methodological outreach project. A measurement is not reliable because it has many decimal places. It is reliable when we understand what it means, control its conditions, and know its limits.

7. Losing a Job and Finding New Doors

After approximately twenty-one months at Swale Process, I lost my job amid the company's financial difficulties. I was disappointed because I had worked intensely and achieved results I was proud of. Yet job security does not depend solely on individual performance. I negotiated an arrangement that allowed me to concentrate on finishing my thesis. For approximately seven months I worked from my Manchester flat, analysing results, preparing papers, and writing more than two hundred pages of my doctoral thesis.

That period produced nine publications related to my research and a qualification that transformed my professional prospects. I received numerous opportunities, which I remember as nine job offers, from European and American companies.

Some opportunities required travel for interviews outside Spain, including DSM Desotech in the United States and Sun Chemical in Belgium. This changed my perspective after the dismissal. Not long before, my main concern had been finding enough time to finish the doctorate; now I had to compare job offers, responsibilities, terms, and technologies. My decision to join BFGoodrich was not

based only on pay. I was attracted by the chance to broaden my experience with other resin families and industrial applications, particularly water-based systems. Writing the thesis demanded a different discipline from my laboratory work. In previous months, I had moved from formulation to formulation, from factory to university, and from testing to industrial visits. Now I had to remain seated for hours, organize data, interpret trends, and decide which claims were truly supported. The research finally took shape when I could explain its limitations as well as its results. I finished the doctoral research two years and four months after starting, so I had to wait until completing three years before I could defend the thesis and obtain my doctorate. I joined BFGoodrich in Barcelona in 1998, while the formal award of my doctoral degree came in 1999, after a brief trip to Manchester for the defense.

An unpleasant dismissal had coincided with the start of a new stage. Not because losing my job was good, but because I was able to turn accumulated experience into an alternative.

III. The Price of Speaking My Mind

8. Hierarchies at BFGoodrich

At BFGoodrich I encountered water-based resin technologies and sectors such as graphic arts, specialty papers, and nonwoven materials. The work was international and technically stimulating, but the commercial structures in Barcelona had a history I barely knew.

One of the first points of friction arose when I asked the sales staff to write their visit reports in English. The company operated internationally and had provided them with language training. I offered to help at first, but some saw my request as an imposition by a newcomer. Mr. B, head of the paint-resins sales team, used a football analogy: a coach who fails to look after his players ends up being dismissed by them. I replied that a coach might also leave if the club did not allow him to do his job.

Over several weeks I recorded incidents, dates, and proposed solutions. I wanted to show that the conflict was not simply interpersonal: two business areas had different profitability and needs, while responsibilities had been poorly allocated. When I presented my report to the American director, I remember him exclaiming, ‘Good heavens, Juan, I’ve left you with the hyenas.’ My proposal was more modest than his reaction suggested: separate functions, allocate resources proportionately, and prevent two managers from giving conflicting instructions to the same people.

There was an uncomfortable side to the episode. A sympathetic response from the director was not enough. We would still have to work with the sales team after he had left. I learned that escalating a problem in writing can clarify responsibilities, but it cannot guarantee renewed trust among colleagues who must continue working together.

Later I wondered whether keeping quiet would have benefited me more. There is no demonstrable answer. At the time, I believed that documenting both the incidents and possible solutions was the responsible course. Today I would add a safeguard: be equally rigorous about what we observed, what we inferred, and what we still do not know.

From my perspective, I had acted properly: I reported problems and proposed alternatives. But I came to understand that, in some organizations, informing a superior about what is happening can be perceived as disloyalty.

Another discussion I remember concerned how the sales team should divide its time. Some argued for devoting more effort to the area with greater turnover, while I felt profitability should also be considered. An activity can sell more yet generate a smaller margin; another, with lower revenue, may have greater strategic value. I was not trying to take over the team's resources. I wanted priorities set by explicit criteria rather than by seniority or the informal weight of each division.

The episode left me with a discomfort I took time to articulate. A report documenting problems, dates, and alternatives may help resolve them, but it can also become a symbol of confrontation for those who feel challenged. I had concentrated on the substance of the document. I had not sufficiently anticipated the personal reaction it might provoke.

9. Recognition and Closed Doors

The President's Award I received in 2001 as technical service manager for EMEA remains a significant fact of that period. It would be unfair to describe BFGoodrich solely through internal conflicts. I learned enormously about industrial applications, international customers, and water-based resins. Yet professional recognition coexisted with a sense that my interest in technical marketing had no defined path within the organization.

The award did not settle my aspirations. I could be grateful for the recognition and still ask what real opportunities existed to expand my responsibilities. Over time I realized that this tension was more interesting than a simple story of good people and bad people: an organization could value my technical results without offering the professional path I sought.

Meanwhile, I was preparing catalogues, technical information, and market studies. I recall that Mr. C in the United States praised marketing studies coming from Europe without initially knowing that I had produced them. The episode gave me a kind of satisfaction different from any hierarchical argument: somebody valued the tangible outcome of my work.

Before I joined BFGoodrich, an executive offered me a marketing master's degree at ESADE to encourage me to choose his job offer. I had taken that offer into account in my decision to work there. Some months after joining, when I reminded him of the commitment, I received a response I remember clearly: 'Did I promise you anything?' That experience taught me not to treat important verbal promises as guaranteed terms. Trust matters; documentation protects both parties.

On another occasion I travelled to the United States after being invited to discuss a possible marketing role. As I remember it, the eventual schedule gave me far fewer opportunities for conversation than I had expected. It was puzzling, although I do not know the organizational reasons for the lack of meetings. I returned feeling that my technical work was recognized, but that the route toward new responsibilities was unclear.

For years I wondered whether I might have progressed further if I had kept certain criticisms to myself. I cannot know. I have learned that frankness must be combined with prudence, but I have never felt comfortable building a career through flattery.

During my BFGoodrich years, amid the business transition I associate in my memory with the sale to Noveon, I used a slowdown in certain activities to carry out laboratory studies. As I recall, that work led to four industrial publications. Even in a commercially oriented company, I continued looking for opportunities to research, verify results, and share knowledge.

10. A Bicycle on the Deck of the Titanic

I began to picture myself pedalling a bicycle on the Titanic's deck. I could exert tremendous effort, but my pedalling would not change the ocean liner's direction. This was not a criticism of every colleague, many of whom were exceptional, but of my scope for action within that structure.

There were telephone meetings lasting two or three hours, with numerous participants on both sides of the Atlantic. Sometimes I would get up, return to my office, and find the discussion still practically at the same point. I do not deny that an international company needs coordination. What exhausted me was the gap between time spent and decisions made. Cycling around the Titanic expressed

that imbalance: plenty of local energy, little influence over the direction of the whole.

I thought about the contrast with my earlier projects. In Manchester I could formulate a hypothesis, prepare an experiment, review an anomaly, and decide what to do from the results. In those telephone conferences, by contrast, discussions often started over before agreed actions had been carried out. It was not size in itself that tired me; it was the distance between effort and the ability to act.

I wanted more time for my family, flexible work, and a return to technology I knew well. In 2004 I accepted a position at Kromachem, a British family business supplying raw materials for inks, varnishes, and UV systems. I thought a small organization would be more agile. I still had much to learn.

IV. Out of the Frying Pan and into the Fire

11. Autonomy and Family

The flexibility I found at Kromachem took on particular value in my family life. I wanted to share more with my children, Bernat and Unai, than whatever time remained after work. It mattered to me to adapt visits, travel, and commercial duties to their daily lives while continuing to meet customers' needs. That autonomy was genuine for a substantial part of my time at the company, and it would be unfair to forget it when recounting the ending.

Freedom to organize my hours did not mean a lack of work. I still had to prepare visits, travel, answer technical questions, and maintain customer relationships. The advantage was arranging those duties in a way that made more sense for my life. Being at home did not replace attention to customers, but it avoided a compulsory presence in an office merely to be seen.

My interest in buying, selling, and renovating homes provided a change from commercial routine. I evaluated possibilities, bought properties off-plan, costed renovations, organized building work, and in some cases sold the transformed properties. The activity required financial caution, since property values can fall with market fluctuations whether or not renovations are involved. But it connected with something I enjoyed both in chemistry and beyond it: moving from a vision to its realization and finding out whether an idea could truly become something useful.

12. Changing Conditions

In my early Kromachem years, I particularly valued not being judged by the hours I spent at a desk. I visited customers, answered technical enquiries, and tried to develop the market. I could organize my travel to fulfil those duties without giving up being present at home. That part of the experience was genuinely positive and deserves as much space in my memory as the later conflicts.

When I joined, I negotiated a sales-related commission scheme which I recall as ranging between two and four per cent. Over time disagreements emerged about its continuation and a proposal to replace it with a lower or discretionary bonus. I continued working because I valued family stability, although I interpreted the change as a loss of the terms I had understood when I joined.

At a trade fair during my final years, I heard remarks about colleagues and salary reductions that I considered inappropriate in a professional setting. Afterwards I expressed my disagreement in writing and asked for more respectful treatment. That experience made me reconsider a comfortable assumption: a small organization may offer agility and closeness, but neither quality guarantees good management practices.

I stopped believing that a small company was, by definition, better than a large one. The Titanic might be slow. A speedboat could manoeuvre quickly, but it could also crash if its pilot lacked judgment.

13. Working Without the Tools

After I expressed my disagreement, my work computer was taken away for replacement, and the new one was unavailable for what I recall as seven or eight months. In the meantime I was still asked to complete tasks that required suitable equipment. To me, the deterioration in practical working conditions mattered far more than any remark I might have made privately about a superior.

I did not need a particularly sophisticated computer. I needed one that allowed me to prepare documents, consult commercial information, and respond normally to customers. During those months I ended up working from my phone on tasks never designed for a small screen. The problem was evident in everyday work: the organization requesting reports was slow to restore an essential tool for writing them.

When I finally received another machine, it did not work as I had expected either. Its limitations prevented me from carrying out computer-based tasks normally. It

was frustrating: results were demanded without the tools needed to achieve them. I started keeping communications and dates, and consulted a lawyer.

I could not prove that those decisions were intended to cause me to resign. What I could document was what I had requested, when a response arrived, and which resources had been available. I had learned that in a dispute evidence matters more than impressions.

14. The End of Kromachem

At a meeting in Manchester, company representatives were present along with someone introduced as an external human-resources specialist. A former colleague, who then had new supervisory responsibilities over me, also attended. The conversation felt more like a disciplinary review than an open examination of the problems. I would not describe that impression as proof of wrongdoing. I can recount how I experienced it and why it strengthened my sense that trust had deteriorated.

To reconstruct that deterioration, I prefer to rely on what I experienced directly: communications about working equipment, requests for reports, changing supervisory demands, and the Manchester meeting. I cannot know every internal motivation of the people involved. During a conflict, it is easy to read every decision as part of a plan; that is why I came to value documents and dates so highly.

One of the most painful things was watching certain relationships change. That former colleague had been close to me; we had shared family hospitality in Spain and Germany. Toward the end, he occupied a different hierarchical position and our relationship grew distant. I do not know what pressures or personal reasons were involved. What I mainly remember is the feeling that organizational roles could alter bonds I had regarded as solid.

The strain eventually affected my health and I sought medical care. Following a period of medical leave, my employment ended. The company cited organizational reasons which I disputed, and the conflict concluded with an out-of-court settlement with legal assistance. It would be wrong to present that settlement as a court judgment, or to state its precise terms without reviewing the document. For me, above all, it marked the end of a period I was already leaving behind through another project.

Looking back on the dispute, I remember interpreting certain incidents at the time as possible attempts to bring about my departure. I cannot assert that this was the intention of those making the decisions. Nor do I want the account of those years to erase what I had genuinely valued: the autonomy to serve

customers from home, the ability to organize travel, and closeness to my children. Professional experiences are often contradictory. An employment relationship can offer very good conditions for years and end in a way we remember painfully. Reducing it to a single label would misrepresent my own story.

That chapter of my life had ended, but my business project was not born after the dismissal. It had already begun.

V. Building My Own Freedom

15. Independence Before I Needed It

Alongside buying, selling, and renovating properties, I personally fitted out and decorated homes for tourist rentals. This was not simply a matter of transforming a property and selling it: renting meant keeping it operational, managing its use, and turning renovation work into recurring income. The activity has remained part of my income and my approach to diversifying personal resources.

I enjoyed the creative side of imagining a home, renovating it, and giving it an identity of its own as much as the practical and financial side. Having several sources of income did not guarantee success in a business venture, but it did help ensure my professional choices did not depend entirely on one employer.

Financial autonomy did not arrive suddenly or as a gift. It came from accumulated decisions: consulting projects involving 2D, 2.5D, and 3D systems before founding 3Dresyns, saving, investing, assessing risks, and building a modest portfolio while I was still employed. Not every property project is a safe investment, and no individual outcome can be generalized. In my case, however, those resources enabled me to launch the company with less dependence on outside financing.

Buying, selling, and renovating a home or a farmhouse (masía) also appealed to me creatively. I had to see potential where others saw decay, calculate how much investment was reasonable, and cope with the unexpected events that arise during construction. Buying, transforming, and selling was not a financial abstraction: it demanded work, planning, and the ability to correct mistakes.

The resources I gradually accumulated did not make me invulnerable. But they meant I was not dependent on one source of income or a single employment relationship. It is difficult to appreciate that difference until you must choose between accepting a condition and walking away.

I realized that self-sufficiency is not just a matter of character. People may be certain of their rights yet lack the resources to defend them without jeopardizing

family stability. Money does not guarantee freedom, but complete financial dependence can limit it profoundly.

In my case, that portfolio and the knowledge I had acquired made it possible to pursue my own project. Not everyone starts from the same circumstances, and investments do not all yield the same results. That is why I have never thought it right to turn my experience into a universal recipe.

16. Resyner Technologies and 3Dresyns

My decision to move into additive manufacturing did not arise suddenly. During my years at BFGoodrich and Kromachem, I also provided independent consulting services involving 2D, 2.5D, and 3D resin and coating systems, in fields that did not compete with my employers. Those projects exposed me to technologies and applications beyond my regular duties and gradually brought me closer to 3D printing.

Through that experience I recognized a technical and business opportunity in developing resins for additive manufacturing. I could apply the knowledge I had accumulated about photopolymers, formulation, and curing to my own project. The creation of 3Dresyns thus arose from an opportunity that had matured over years, not an improvised reaction to the end of my relationship with Kromachem.

On 26 September 2016 I incorporated Resyner Technologies S.L. and began developing 3Dresyns. The public platform launched in February 2017. The chronology matters: the company already existed before my employment relationship with Kromachem ended.

Incorporating a company while still working at Kromachem involved two decisions that are sometimes confused. On one hand were the employment disagreements I was experiencing; on the other was my aim to bring decades of experience in formulation, ultraviolet curing, applied research, and customer relations together in a venture of my own. I did not need to await the outcome of an employment relationship before beginning to build that alternative.

Self-financing naturally shaped the pace. I could move forward cautiously, choose what to develop, and reinvest some of the revenue. For me, retaining full ownership was a tangible way to preserve autonomy.

The difference from my previous jobs was tangible. When a technical decision failed, I could no longer attribute its cost to a department or wait for a hierarchy to correct course. Keeping the organization small gave me room to decide, but forced me to set priorities. My independence rested less on proclaiming it than on accepting its daily costs.

I had worked with photoinitiators, polymers, inks, coatings, and industrial applications. I wanted to put that knowledge to use in a company specializing in resins for additive manufacturing. I preferred a small organization with technological and commercial autonomy.

Incorporating the company did not mean I could immediately apply everything I had learned. I had to decide which products were worth developing, how to handle technical enquiries, and which commitments a small company could reasonably undertake. My experience with formulations and international customers helped, but it did not replace the daily work of organizing an independent business. I wanted decisions to be quick without abandoning the discipline of verifying results before making promises.

I did not intend to prove that I could do everything alone. Business requires suppliers, customers, collaborators, and external professionals. My aim was different: to retain the freedom to choose the collaborations and commitments I considered appropriate. Owning the company did not remove dependence on the market, but it avoided an additional dependence on shareholders that I did not wish to accept.

17. Learning to Say No

I learned to question and reject confidentiality agreements with multinational companies that placed disputes under the jurisdiction of foreign courts. Accepting a distant jurisdiction could turn a relatively small disagreement into an enormous financial risk.

From that came another lesson: not every customer is a suitable customer, and not every project deserves to be accepted. Saying no is also a way of protecting the company. Independence does not eliminate difficulties, but it allows us to decide how to confront them and which ones should not be accepted as inevitable.

18. Independent-Minded and Cooperative

The education I received from my mother and father helped me reconcile two aspects of my character: the wish to work independently and the willingness to collaborate with others. I enjoyed working on my own, but I also liked explaining things and making knowledge available to others. Sharing a well-reasoned method is not the same as indiscriminately handing over confidential industrial developments. I learned to distinguish between the two.

When I wrote years later about hidden measurement errors, my thoughts returned to the hours spent in front of the luminescence instrument and to the infrared spectra whose baseline would not remain stable. I did not intend to

generalize automatically from those instruments to every laboratory. I wanted to explain an idea I had learned in practice: before interpreting the behaviour of a formulation, we must understand the contribution of the measurement system itself.

Perhaps the most lasting satisfaction has not been attaining a particular position or proving that others were wrong, but being able to transform what I learned into something useful. Companies change; the knowledge we can understand and share may continue to grow.

Conclusions. Choosing a Direction

‘Juan, you’re so lucky!’ People have often said that when they hear about certain personal or professional achievements. I usually reply that you make your own luck. I do not mean that chance does not exist or that everyone has the same opportunities. I mean that preparation, action, and attentiveness increase our chances of taking advantage of them. An opportunity may arise more than once: the train does not necessarily come only once. We can also move toward the train we want to catch.

People have often called me someone who can never sit still. I recognize in that expression my tendency to stay active, imagine possibilities, and move from an idea to the work needed to bring it about. That creative restlessness has accompanied me in chemistry, research, formulation, property renovations, and building a company. It is not about doing things without stopping: it has meaning for me when it pursues worthwhile, healthy, and achievable goals.

Personal initiative cannot replace knowledge or material resources. ‘Where there’s a will, there’s a way’ captures only part of reality. Wanting something may set us in motion; learning, making a plan, putting in effort, and correcting mistakes are what allow us to advance. I like visualizing a possibility and then trying to turn it into a series of small decisions, one step at a time. Things do not always work out, or happen as quickly as imagined, but every attempt offers information for choosing the next step.

I believe having a personal project gives meaning to many ordinary days. It need not be a business or a brilliant career: it might be studying, cultivating a hobby, caring for something, building, creating, or sharing knowledge. A day has twenty-four hours, and a lifetime usually offers room for different projects and stages. Keeping goals that interest us helps us spend our time on activities we find valuable, without making work or performance the sole measure of our existence.

I have also learned to value individuality. I do not want to live at the mercy of other people's opinions, but neither do I confuse independence with indifference toward others. The freedom I seek means respecting other people's space, cooperating when appropriate, and taking responsibility for my actions. Self-sufficiency is built on knowledge and resources, but it does not require isolation. A rich life can be rich in learning, relationships, and everyday accomplishments, not only in material things.

Sometimes I imagine life as a voyage on which we must row. We may encounter favourable or adverse currents; if we simply drift, we might arrive at a good harbour, or somewhere we would never have chosen. Rowing does not guarantee reaching the destination we first intended, either. But choosing a direction, observing our surroundings, and adjusting course give us a greater part in shaping our lives. That, to me, is the relationship between initiative, experience, and freedom.

Epilogue. The Path We Build

Looking back, I see a life made up of decisions that once seemed unconnected. The opportunity to work while studying brought me closer to industry. An Erasmus scholarship took me to Manchester. My doctorate taught me to distrust false precision. Companies enabled me to learn and to recognize the limitations of their structures. Flexible employment, my consulting services, and personal investments helped me build an alternative. And that alternative ultimately took the form of 3Dresyns.

It was not a perfectly designed plan. There were mistakes, difficult decisions, and missed opportunities. Nor do I believe there is a perfect organization or a life without conflict. What matters is learning to distinguish what we can change, what we must temporarily accept, and when it is time to build another path.

Today I value my family, the ability to develop projects of my own, and the satisfaction of continuing to learn. I do not need to portray every decision as a success. Some were made with incomplete information; others arose from circumstances I had not chosen. What mattered was preserving the ability to adjust course and build something of my own with the knowledge and resources actually available.

No one gives you your destiny, but you can learn to build it and reach it yourself.