



SuperPosition

L'Innovation Inspirée
de Jeanne d'Arc

Philippe Cartau

Extract
from
Preface

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Extract - Introduction

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Cover: montage by the author from a painting by Albert Lynch and an image by Gerd Altmann

Back : Sketch of Clément de Fauquembergue, Clerk of the Parliament, May 10th 1429

Superposition, Innovation inspired by Joan of Arc

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To the enthusiasts,
Without doubt

*Innovation in France and Europe goes back to before Joan of Arc.
It is not something we have to acquire but a gift we have to find
anew.*

Preface

In 2005, Chris Anderson released "The Long Tail", arguing that market offering would tend to widen and refine with the Internet. A Netflix could propose movies never before offered due to high storage and low display costs, while Amazon would give access to unknown and previously inaccessible products. Niche and customized offerings would overtake the standardized.

While there is no doubt Andersen put his finger on a fundamental dynamic of the markets at the beginning of the 21st century, namely extreme fragmentation, the most interesting part is still to come in understanding how this dynamic manifests itself and the interpretation that can be made of it. To some extent, the evolution of the web has shown the opposite. Well over a billion people use a single social network; about the same number of people go through the same platform to order relatively similar products, even if different in name; the competition doesn't even exist at the level of a premium¹ computer; and searching for anything, even a needle in a haystack, is almost always done through a single portal.

It is this same portal, moreover, which provides us with a choice of articles through its news appendix, which itself seems to become more and more limited as we browse and create a history for it to « personalize » our experience. Claiming to understand and anticipate our desires, its algorithms recommend the same topics over and over again, inevitably reducing the range of options and thus the information it can feed on. It's a vicious circle. The same is true for clothes. If you're not convinced, look for sneakers on your favorite platform. Chances are, the range of what's on offer will dwindle. At no point will it offer you a

change of scenery or perspective with a new style or by giving it meaning.

These recommendation algorithms are too reminiscent of the loss of energy that entropy imposes on us. The liquid that holds an ice cube rarely tends to warm up, the ice cube rarely tends to cool down. Sooner or later one will melt into the other and we will not see any difference. There is cause for concern because sclerosis is the result of restricting the choice too much.

In the same way, a few big ideas have taken over and dominate the world of innovation and entrepreneurship, indiscriminately mixing the technological and the human. The Lean Startup has sold a million copies, while Steve Blank's book², which inspired Eric Ries, has only sold a tenth of them, a good part of which was probably sucked into the vortex of his disciple³. Lean Startup is the modern bible of startup entrepreneurs, even though ⁴many of us have pointed out its limitations while other authors who are just as relevant remain unknown⁵. If Steve remains less known than Eric, it is only for marketing and UX⁶ reasons, not for his relevance.

Generally speaking, in order to speak the same language to an ever wider audience, we have to refer to the same global success stories and therefore to an ever smaller sample of simpler examples and ideas. Referring to Criteo and Blablacar on a smaller scale certainly allows us to highlight local success stories and their related characteristics, but we put them aside because these references are only of French national notoriety. Simplification takes over, the basis of a reflection become rounded around a common denominator and diversity as well as debate fade away.

Thus, the imperatives of diffusion condition part of the message. In the world of startups, we only know a tiny part of what is being done. We talk mostly about what is well known, to a lesser extent about what is less known, and very rarely about what is no longer⁷ known. However, to speak of innovation with its failure rate of roughly 70% should imply, if only for reasons of parity, to speak more often of the disappeared than of the champions. Furthermore, this same imperative leads to a convergence of ideas serving as standards rather than as a breeding ground for reflection: follow the flag, not your thought.

Yet, doesn't innovation, by definition, aspire to an enriching divergence? Diffusion is becoming faster and faster, ever easier. Yet,

doesn't real innovation require a patient work of understanding and acceptance?

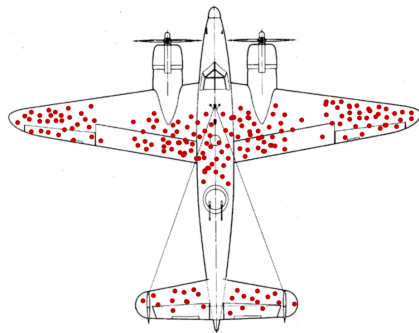
Talking about the missing, thinking outside the box, inviting patience would be the most relevant way of approaching innovation, even if it is not the best strategy to gain an audience quickly. To go fast and cheaply, one should rather piggy-back⁸ on a trendy theory: to ride a pig, better to know it. To be sure to find a minimum acceptability it is wiser to offer a me-too⁹ on a growing market. However, it is quite the opposite that I propose to do here, a real adventure with much unknown.

There is not one, but many approaches to innovation. This narrative aims to inject new energy into the tepid molasses of mainstream innovation. We will counter artificial intelligence with editorial soul, we will sow doubt among statistics with the irreverence of opinion, we will open the horizon to fractals. It is in the heart of a complete experience in the lair of a local ecosystem littered with as many liquidated hopes as flourishing successes that I propose you to venture.

Innovation as we know it, with its almost *Taylorian* intensity and aspirations, can only be described within an ecosystem. If the best known¹⁰ remains a model for many, it does not escape the rules of maturity, including the one described by Clayton Christensen¹¹, namely that the more you have to lose, the less you innovate.

Moreover, while there may be advantages to being first, followers can duplicate at lower cost and improve. Many other ecosystems are emerging and taking a growing part in the global competition of innovation. The Toulouse metropolis is one of these contenders.

This ecosystem, in which I have been evolving for almost 15 years, has great potential, even if the factors that will enable it to be unleashed are slow to fall into place.¹² The metropolis has nothing to be ashamed of and can boast of having seen the birth of many precursors, whether in



participatory financing, IoT¹³ or artificial intelligence applied to cybersecurity, each time even before the dedicated term was known¹⁴. Other projects have flirted with strong concepts, be it Goojet offering mobility to websites, Rapidocteur anticipating Doctolib, Tableonline offering an alternative to The Fork or BSNet offering secure remote storage, ready to compete with Dropbox - in 2012 that meant something. « Solidarity » technology is not to be outdone. Since 2007 Vivéole's ambition was to reduce the digital divide by offering broadband to households in white areas thanks to satellite internet. And now, at the beginning of this third decade, the city is positioning itself as a leader in space-related innovation¹⁵.

In addition to innovation, there is another element that abounds in space, namely dark matter, and it does not just stop at the limits of the stratosphere. In the field of innovation black matter is everywhere and it bears in its memory the invisible part of innovation.

Just as matter cannot claim gravity without the dark matter that escapes¹⁶ us, success stories cannot justify their presence without the invisible experience of past projects. To understand innovation requires a global vision. Yet, we hear mostly the voice of those who remain, but they cannot speak for those who have not returned¹⁷.

The cognitive bias associated with a small panel of examples distorts reality too much, to a point which we cannot ignore if we believe in the social and economic benefits of innovation. Entrepreneurs more talented than the superstars we know have fallen by the wayside simply because the smaller market they were tackling did not allow for as many iterations as a larger market would. This is akin to playing hangman, where the word to be found corresponds to the market fit¹⁸, except that here, one entrepreneur is given two pieces of wood to put an end to the adventure, and the other a full gallows, including steps. Necessarily, the probabilities are such that the first will reach his quota of iterations faster than the second. But does this mean that we should deprive ourselves of her testimony? Of course, talking about projects that did not succeed is less glamorous, but intellectual rigor requires being exhaustive.

Moreover, as Peter Thiel says so well¹⁹, every great innovation happens only once. Copying references and ideas known to all becomes problematic. It is therefore not the gestures and even less the resultant that should be taken as a model, but the dynamics, possibly corrected by

cultural factors. To contrast and highlight these dynamics, there is nothing better than to compare these projects deformed by the light of notoriety with more modest successes that have escaped the spotlight.

To width we must add depth. The innovation process can be perceived with all the more clarity if one succeeds in going back to the origins. Sounds obvious. The concern in this exercise is that there are few observers and even fewer observations at the preliminary stages of a project. By the time it gains momentum and becomes known, the origins are already far away and perception is biased by time and memory. Instead, we are saturated with the usual icons.

To understand the genesis of innovation, the added value of commenting on the strategic choices of a social networking behemoth is minimal. What we need to explore are the first critical moments, those where the foundations are laid, those on which value and growth will be built. What counts in the current state of our incomplete knowledge are these first interactions with the environment, where the rubber hits the road, where concept meets reality.

Toulouse offers all the facets of innovation, including the depth that I have been observing, collecting and meticulously documenting since 2007. During an event organized by ONERA that year, Liliana Doganova, an innovation researcher at Mines higher education, asked me how I commercialized innovation. I had never given it much thought even though I had already been doing it for ten years. The hot-cold game came to mind, where we would move the cursor of the offer according to the customers' indications. But instead, I stuck to describing a kind of funnel-shaped iteration spiral, joining Amiel Kornel²⁰ and many others in this synthetic image. From then on, I set about describing and structuring my experience in an intelligible way, focusing in particular on the nodal point of innovation, namely how to persuade the customer to take a risk and buy the unknown.

To present the unknown, you need time and details. A post would not suffice, we do not feed on crumbs. A news feed necessarily falls into a politically correct stream, whether it be repeat news or fake news. No, it simply will not do, as the Cat says. To correct the consensus narrative, you need an experience that unfolds and grows from details. To engage the onlooker into such a curious journey, you need a user experience.

It is for these reasons that I unfold my experience in the form of a contemporary epic. Moreover, to illustrate and enhance the contrast between technology and human beings, I call upon Joan of Arc and her

comrade in arms, Maitre Jehan. This may come as a surprise, but the parallel lends itself perfectly to the exercise. Joan broke new ground among prophetesses. She was innovative. She did what no other²¹ prophetess would venture to do, she took up arms to fight among men and she played out her prophecy. She had no military training, she could not read, but she inspired.

In parallel to her exploits, the culverin was making its first steps. If Jeanne eclipsed all the protagonists of Orleans with her courage, the feats of arms of Master Jehan with his culverin command our attention. His quick and precise shots still echo in the wake of the Pucelle.

Like a novel, innovation begins with a setting, characters and suspense. The goal is not to bore the reader with certainties, but to attract him with plausibility, to make him dream with suggestions and gradually to lead him to the impossible. Contrary to the precepts in vogue, we must resist the reader's injunctions, because if we ask him to propose an ending, what is the point? On the contrary, like a book, a startup must surprise.

But before making the reader dream, we need her commitment. She has to get involved and offer some of her time; she has to turn a page and then two and then more. Once acquired, once the entrepreneur is hooked, once the reader is enthralled, we reinforce her in her belief. Finally, infatuated with the characters and detecting in the final denouement her own destiny, we accelerate the rhythm until a breathless conclusion. All of this has benefits but needs time to be built, like a startup.

Building a novel has another advantage, that of coherence even in the midst of intricacy. It is the combinations that often make the greatest innovations. Television without transmission is useless; a phone without touch technology is still a Nokia²². What I propose is an integrated approach, similar to Apple. Instead of sticking together concepts that have no head or tail and do not talk to each other, I put forward here a complete and coherent approach. It takes more time to structure. It is easier for those who are young. It is less easy for those who already have a background and well established references: the latter are not going to put down their dearly acquired background. They have been carrying these totems of knowledge for twenty years and will not easily relinquish them.

Moreover, this path allows us to apply the Pillbox approach. Everyone knows the techniques related to innovation, everyone individually knows

all the tricks of the trade. The challenge though is timing: knowing what to do at the right time, when to take which pill and how much. Unfolding the experience through this epic allows us to position the right actions at the right time, with relevance.

This tale can be read in a few days. But as it follows the path of a startup, it could be read over five years, the average or even minimum time for a disruptive project to mature.

Finally, the parallel between Jeanne and Jehan allows us to ask the question of the evolution of technological innovation and to position it within a human perspective. If technological innovation remains necessary, its limits²³ push us into our entrenchments, those which impose us the effort of innovating from the interior, in our behaviors, rather than from the outside surfing the facility of technology.

Financial ambition is necessary and even praiseworthy. No one should be ashamed to ask for a reward for a given value and startups seeking to think big or to become a unicorn should be encouraged. But innovation is not limited to fablabs²⁴, incubators and other thundering co-working chapels focused on monetization. There are entire sectors of our society that would benefit from the startup spirit, and others that, like Mr Jourdain, innovate without knowing it. The restaurant industry innovates, education innovates, even the Toulouse brick industry innovates²⁵! Innovation is everyone's business and it must be done together.

The abstruse verbiage of artificial intelligence will only speak to a few, but Jeanne will speak to all. Thus, in this tale, we will oscillate between physics and poetry as a mirror of technology and human beings.

The back and forth between Jeanne and the artillery, between the human and the technology, is not insignificant. This exchange, with all its characteristics and variants, is the main thread of this tale. Without two points that seek each other out and intertwine to the point of overlapping without merging, there is no movement, no Oscillation²⁶. Without Oscillation there is no existence. This is what constitutes the life of elementary particles, what makes competition live, what makes democracy. The Oscillation takes place between states, between opinions, between value propositions, within couples. We could even say ²⁷ that Oscillation, in the form of a technological and cultural race between the English and the French, structured the competitive dynamic and therefore the innovation between the two nations over the centuries.

Oscillation underlies an essential difference between a startup and an established company. It is fully expressed in the back and forth between the Vision and the Steps that lead to it. The startup lives through a quest to resolve the dissonance. The established entity ceases to live in consciousness when the dissonance is no longer there: it can no longer recognize otherness and is carried along by the inertia²⁸ that explains and justifies everything. In other words, a startup seeks to become what it does not want to be. Jeanne, in her own way, succeeded in propagating her immanence through time. Only bodily was she to be consumed.

The field forces in which the Oscillation takes place change with time. The resolution of the dissonance in the form of convergence implies a protean Oscillation. It evolves and goes through several phases. To create this halo, Jeanne went through several stages. It is not enough to go back and forth "scientifically" as Eric Ries suggests²⁹. The Great Convergence begins with an Architecture, it integrates and it grows. If the synthesis proves to be indispensable, it can only collapse without calling sooner or later on the detail, like that which a book can offer.

This essay is therefore built around the Great Convergence, the one that seeks to unite Vision and Step, i.e. idea and action. In innovation, these two components are far apart, like the ends of a V. Our Mission is to make them converge through Oscillation. This communication allows the two distant points to move forward together. As the chapters progress, these two points come closer together.

The goal is for them to merge. Some will see the progression as a pyramid, with a fluid progression. Others will see uneven progression, as with a ziggurat. The main thing is convergence.

Paradoxically though, the objective is that they do not meet completely. Whoever succeeds in uniting idea and action is condemned to collapse because nothing allows for renewal. Inertia saves appearances, but only for a while. Oscillation must therefore be maintained, so that the life of the project continues, which implies that the idea and the action must always keep a minimum distance.

These last two statements are not a contradiction. It is a Superposition. This notion stands out as a thread in this narrative, because it is fundamental in the innovation process. Innovation is not linear, it is ambivalent. It is therefore necessary to adapt our intellectual approach to its specificity, and not the opposite.

But before initiating the Great Convergence, let's set the scene. The introduction will set a framework. The one proposed is not the only one,

there are others, but at least we will be in phase on the starting point. This is important because the subject is vast and the idea everyone has of innovation varies greatly from one individual to another. It would be best if we started with a clear understanding of the perspective chosen in this narrative, even if we may disagree.

Then, to get to the heart of the matter, I will call upon Jeanne and her contemporary Master Jehan to illustrate and highlight what is innovation. The details of their adventure will begin in the first chapter. From there, I will alternate continuously between contemporary times, with examples from companies and individuals I have worked with, interviewed or rubbed shoulders with, and the times of Jeanne and Jehan, with their particularities and surprises, just as I will go back and forth between the technical and the human dimension.

If the book contains technical references, it also deals in depth with the psychological, even metaphysical components of innovation, hence an approach that can be likened to poetry rather than management. This is necessary because innovation is not just Post-its and computer code, it is a way of looking at the world. This approach, more allegorical, comes as a complement to a structured methodology which underlies the unfolding of this essay. In effect, the nine chapters correspond to NASA's TRL grid and the Market Readiness Level or MRL approach it has inspired.

For those who need a more pragmatic or less ethereal breath of fresh air, they can refer to the numerous references in the notes and to the bibliography to find more tangible elements.

Criticism is more than welcome, that is the whole point of this work, to stimulate reactions and to clear new neural fields together. I would like to note, however, that some criticisms will only be fully relevant if the work is read to its end. Indeed, as in an adventure, the body and the ending are inseparable.

End of the Extract - Preface
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