



Anil Sethi

From Science to Startup

The Inside Track of Technology Entrepreneurship



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Acknowledgements

This book began as a note to my children, Aakash and Aanya, to tell them about my trials and tribulations in starting my company. This was, perhaps, to tell them why I wasn't able to spend more time with them. It was supposed to be only a few pages long and my way of documenting the challenges I faced each step of the way. The idea was to create a reference for me, as well as a note for my children should they decide to be entrepreneurs. Along the way, both Aakash and Aanya proved to be a delightfully distractive influence. Many an evening did I spend telling them bedtime stories that always began with "Once upon a time, in a land far, far away", when I should have been working on my book. Without this constructive distraction, this book would have been finished in half the time. Every minute of the delay has been well worth it. To that extent, more than anything, it is a labour of love.

As I commenced working on this book, I recalled the words of my late father Dr. Dev Pal Sethi, who often told me that if you *do*, you can make a difference, but if you're able to communicate effectively, you inspire others to find their own spark, where each is able to make a difference. My mother also deserves an honourable mention, simply for believing in me during my darkest hours.

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1

Prologue

It was the conclusion of my MBA. I was still pretty clueless about what I wanted to do professionally. The one thing I was certain of was that I wanted to do my own thing.

Some of us just hold on to our dreams for longer than others. In fact, as soon as I started working with a big corporate after my MBA, I began saving, knowing fully well that I would be doing my own thing and that it was probably not going to pay - for a while at least. This implied that I would have to live off my savings for a number of years...

Finally, after six long years post-MBA and stints with startups and established corporate giants, I did start my own company, Flisom. Entrepreneurship came with strings attached. Be careful what you wish for, for it does come true if you hold on to it and keep working towards it. The road to being an entrepreneur included, among other things, working for two cups of coffee per day for much longer than expected.

This book is about the things I wish I had known when I began my journey. This book is really a guide for what not to do and what to be careful about, because they *will* come and bite you (no, the most important thing is *not* the business plan or financial projections). It provides you with insights into the real world of entrepreneurship, which will be of interest to you if you're finishing your MBA and want to be an entrepreneur, but have no idea what to do. This book is also relevant for technology people and scientists who want to commercialise their innovations, because it helps them recognise their box and how to think outside it.

So why is all this relevant for you? How about over 200 failures? Team challenges related to managing a group of people who were predominantly

scientists or PhDs at a minimum and consequently live in an alternate universe, where the laws of profitability or go-to-market do not apply. Also, a bunch of awards, both on the European and global level. And living to tell the tale.

What a journey it has been. As Winston Churchill once said, "If you're going through hell, keep going". On few other journeys would I have expected to bump into the heads of state of Israel and Palestine along the way, get approached by the minister of defence of Iraq, or not be able to respond to Michael Dell's interest, because I was occupied elsewhere.

This is my story. The book will help you create yours.

2

Are You Meant to Be an Entrepreneur?

This was in the autumn of 2004. I was with a big company in Switzerland. Post-MBA, I had slightly lost track of exactly where my existence was making an impact in the big scheme of things within the company, other than to adding a touch of cultural diversity in a European environment. Responsibility for autonomous areas and pseudo-entrepreneurship within the corporate environment had whetted my appetite for the real thing. The work was pretty okay as work goes, but it seemed like work. Plus, "the spark" had been ignited!

Clearly, I wanted to do something of my own. Towards this end, a process of evaluating startup ideas with the clear view of scalability and global impact began. I seemed to always be involved in this process—consciously and otherwise. So, once while dining with a friend, a professor who had been doing research on very efficient flexible solar cells for almost three decades at the Federal Institute of Technology of Zurich, or ETH, another thought process appeared. Incidentally, ETH happens to be the university that got Einstein as a professor just over 120 years ago, making me conclude that the well of knowledge runs pretty deep here.

This professor friend mentioned that he was considering commercialising his technology. He also happened to elaborate upon his rather brief meeting with an investor, who had thrown his documents in the dustbin before thanking him for his time. Now the Prof. was a respectable scientist and not given to frivolous behaviour. In fact, he had held the world record for the highest efficiency for several years. Efficiency, in this regard, means the percentage of light that is converted into electricity. On inquiring what exactly it was that he had given to the investor, he said he had taken the PhD thesis of one of his students.

Realisation dawned immediately! This authority in the field of technical education was far, far away from reality! Instead of making a business plan and a slick presentation to the investor in the language the investor understood, he had buried the investor under a PhD thesis. Instead of telling the investor where the technology could make money, the professor had told the investor what areas could be interesting for PhD research.

Here was one professor who was in desperate need of some help, I thought. And instead of pointing him to a good doctor, yours truly decided to help him to develop the business plan. As I began to study the market, the excitement of being able to bring an amazing technology to the market began to mount rather quickly. However, the task ahead seemed challenging, with no terms of certainty; so I continued to try and find really good reasons why I should get involved with this. At this time, there was apparently one reason—the spark that wanted to flame up into something different, something big!

But that wasn't reason enough to let go of a good thing—a job with a neat monthly salary at the end of each month. Still, never say no to opportunity—and going by that, I delved a little further. There was no team as the professor wanted to continue working in the laboratory. Risking his salary for something with world-impacting potential was a distant and far-removed concept he was unwilling to bet on. Eventually, after many sessions of speaking to him, cajoling him, he was convinced enough to get his students to consider joining the team. He had been made to realise that investors were not likely to give money to a business driver who was doing this on weekends and a professor who planned to continue working full time in the university.

This was in late 2004. There seemed to be no business rationale for me to get involved with this technology. The day after Christmas, I heard news about a wave that had lashed out and, in its wake, had resulted in 200 people losing their lives. Within one hour the estimate had been increased to over 2000. The next day it seemed that over 50,000 people had lost their lives. This was now being reported as the tsunami in Banda Ache in Indonesia.

In the coming days, the news only got worse. Over 250,000 people had perished. Many of these people were children and elderly people. Most of them perished not because of the wave itself, but because of lack of access to clean water and medicine in the first 3 days after the tsunami. International organisations like the UN tried to get medicine and potable water to those in need. The problem however was that all communication had been wiped out.

If only the professor's flexible solar solution had been available, a roll weighing 2.5 kg would have generated enough electricity to purify water for 1000 people per day. It could perhaps have saved many lives. This really was the point when I decided that I was going to drive the commercialisation

of the flexible solar cell technology. For someone who had spent his career in consulting for clients to look for reasonable solutions, this was the most illogical of reasons for a life-changing decision. But it was no different from most entrepreneurs who start off simply because they believe. The would-be entrepreneurs who wait till all the risks are mitigated often become insurance agents. As Yoda said to Luke Skywalker, "Do. Or do not. There is no try."

And thus we founded Flisom in 2005.

The next 3½ years were spent talking to investors and trying to get the funding. With a small amount of initial funding from an angel investor, in all my wisdom, I somehow ended up hiring engineers and building a prototype machine rather than paying myself any salary. It was at about this time that the appreciation of the value of coffee crept in, since for the next few years, I worked for two cups per day.

In early 2009, a much larger amount of funding was on its way. With this, the semiautomated pilot facility took shape. This would then commercialise the record-breaking solar modules. A semiautomated pilot means that the machines don't really work unless there's a PhD trying to figure it out. In that way, these machines were like a Harley Davidson bike, which are only for people who like to spend a major part of their weekends lying on the floor with a dirty oily cloth trying to make the thing work properly. By now, the technology team had improved on their own world record consistently for the highest efficiency for over 10 years. In the meantime, our competitors had raised between \$500 million to over a billion dollars per company. To put it in perspective, we had raised, at this point, less than 2 % of the funding of our biggest competitors, in an area of technology where we were recognised for holding the world record for the highest efficiency.

By 2012, the possibility of manufacturing these flexible solar modules had been demonstrated, but had not quite actually been done. This potential itself enabled us to raise a significantly larger round of several tens of millions of dollars to create an automated pilot, which would also demonstrate that making the large-scale flexible solar cells was going to be possible without actually doing it. For that, a lot more money was needed. This is where the value of what's possible or as I call it, "the art of the possible" began to develop. More about this later.

Back to the spark. It didn't arise suddenly out of nowhere. Right from the time of completing my undergraduation, I always wanted to do something on my own. There were hints of this along the way. I started my work life with a consulting company. One day, still within the stated probation period, I requested for a meeting with the managing partner, who was roughly the equivalent of God. On inquiring about how my work was coming along and

the areas of interest that were developing, I told him that I was mostly driven by new client acquisition. Once the managing partner realised the seriousness of this statement, he patiently explained that this was his prerogative. My role was to do the grunt work of tax compliance and financial advisory. Subsequently, I heard that my suggestion was the subject of much hilarity among the partners.

Like many of us, I simply didn't know how to get started. There was also the fear of not having any expertise and not knowing what it really took to be successful as an entrepreneur.

2.1 The MBA

Other than the experience of walking in a straight line after more drinks than could strictly be considered necessary at any point of time, the value of the MBA was not immediately obvious.

Interactions with global business leaders including Bill Gates, Laxmi Mittal and Michael Dell led me to believe that they were regular people, extraordinary and driven, but nevertheless, human. That's when I realised that *what you need is a vision; expertise can be hired.*

In retrospect, my greatest learning from my MBA was that I lost the fear of dreaming big. You do yourself a disservice if you do less than what you're capable of—both to yourself and for those who come after you. Remember, today's all you've got, and right now is the cumulation of all your yesterdays and the springboard into all your tomorrows. And finally, the only sustainable difference you make is the one that can live beyond your lifetime. I realised that the MBA taught entrepreneurship but couldn't make an entrepreneur out of you, unless you had the spark. Most of my classmates simply wanted to have a successful career with fixed holidays and a steady path to executive management.

I recall a time close to the conclusion of my MBA where we got together for drinks. We each tried to answer the question of what we expected to achieve in 10 years. All the answers included lots of money, very senior positions in banking, consulting or industry, large houses and fancy cars. Mine was simply to be doing my own thing. Or as the Chinese saying goes, "May you live in interesting times". It's meant as a curse, but for me, it became a motto to look up to - and follow at some point in time! (Fig. 2.1).

The world is full of managers who know far more than you about any given administrative task. All they require is the comfort of having boundaries within which they can do their jobs. Managing these managers is also an important challenge to entrepreneurs.

POST MBA VISION - 10 YEARS HENCE



Fig. 2.1 Different perspectives, different futures

If you're reading this book, you are most likely to slip into the assumption that everyone you meet will be driven towards the vision of the company and willing to do whatever it takes to make it happen. This is rather the exception than the rule. Apple always had a counterculture and one of the key attributes they looked for was passion. There are not many companies that can sustain this excitement, although every once in a while, a Google might come along.

Ivy league MBA programmes attract a lot of bright people. This results in a phenomenal level of exposure due to the cross-cultural pollination of ideas. The other thing that the MBA provides is the polish, where you develop the capability of being taken seriously simply by virtue of the jargon that you can spew per square minute. This seems to be by far the greatest benefit of MBA, other than the stamp and the alumni network, since no one I know actually did his MBA for the education.

There is a problem with the MBA that was pinpointed by one of our professors. He said that after the intense exposure through the MBA, real life was going to be boring. He said, look around. The people around you are all on the highest rung of risk takers. Who else in their sane mind would consider leaving a relatively stable job in their home country and travel to

another unfamiliar geography to pursue management education? And that, too, with no clear prospects of a job and yet feel comfortable about changing not only careers but also lines of work from industry to consulting to banking to startup to geography by the time they complete the MBA.

My professor couldn't have been more right. In experience terms, the simulated challenges provided by 2 years of an MBA is equal to 15–20 years of the challenges in real life. This is due to the sheer IQ, drive and geographical diversity of the MBA peer group.

Corporate life after MBA is frequently a shock in its slow and staid pace. Corporate life as a fresh graduate tends to be several corridors from the seat of power. Contrary to expectations, you are not immediately welcomed into the top echelons of Goldman and McKinsey to aid them in their global strategy. The normal corporate does not have alpha males with a high-risk approach to life. On the contrary, many companies discourage entrepreneurship since strategy is done at the top and the rest of the organisation is supposed to deliver solutions absolutely in line with that strategy.

2.2 Life After MBA

My own example post-MBA illustrates this. My large company had its head office in the USA. Being based in Europe, I was part of the delivery mechanism. Trying to forge business development and strategy within conservative Europe virtually ensured that I rubbed a lot of local managers the wrong way by trying to find synergies between their fiefdoms. It was only my headstrong manager who covered me, in part, due to his other leadership role, which I found out about accidently when the phone call to him got re-routed. It turned out that he was a senior person in the US military reserve and had been asked to go on a stint to Afghanistan. This was in 2002.

As MBA students, we were already off the charts so far as risk was concerned, since—as mentioned before—we had all left our stable jobs and frequently our countries for the MBA, with no clue about where we would end up afterwards. Again, as previously stated—the 2 years of exposure through graduate school crams business experience equal to about 20 years in senior management. This was not so much through the classrooms during school hours as it was during the breaks during cocktails hosted by all manner of banks, consulting companies and corporate houses. Whether we were sober enough to absorb much of it is, of course, a topic ripe for academic research.

Since you're expected to intellectually challenge each other at the MBA school and arrive at breakthrough solutions, two things happen when you get back to the workforce:

- 1. There simply aren't enough challenges going around.
- 2. Your peers don't like you that much if you look at their stable work critically and challenge the status quo. You could ease in and slow down to align with others. Or not.

That's when you might ask the critical question: if not now, then when? There could be several reasons for not starting your own company immediately. The more prosaic one is money. Since you may have stretched your funding to the limit and, in fact, have taken loans to do that MBA, you probably do not have funds to sustain yourself for a long period of time. One of the downsides with starting your company is that you can't start paying yourself unless you have the money. You can compensate for this funding challenge in two ways. One is to have a partner or spouse who is in a stable job. The second is to do the startup on the side while you bide time with a corporate job. Since a concerted search for an opportunity can take a period of months to a couple of years, having a full-time job to pay the bills is not a bad option.

Frequently, when people have a spark, they do not quite recognise it for what it is and try to join a new company or a new function. This can be a mistake, since you have to learn about the new role leaving you with less time to work on your original idea. Keeping status quo at your old role would of course limit your growth, but then, you already know the ropes, so you can consider working on your idea in parallel.

A frequently heard piece of advice is that working in a big company is good experience before starting your own. Now if you get to a senior position in a big company, you probably will get enough experience in dealing with your subordinates and dealing with uncertainty. However, this can be overrated, simply because you can't sit on a spark for years at a stretch in the hope of getting to a senior position in your corporate where you might get the relevant experience. And the value of working in a corporate can simply be overrated, since you could end up managing within an organisational setup, whereas in a startup, you have to make all the rules and create your set-up framework as you go along.

That you have to work diligently in order to have a successful idea is another often-heard notion. Frank¹ proved this wrong! Sometimes you simply had to observe. He was doing his graduation at St. Gallen University in Switzerland and

¹ Name changed to protect identity of individual (s)/entity

naturally had a messy room. Being too lazy to clean it himself, he and a friend organised to get cleaning ladies to tidy up and sort out their rooms. They paid them on a per hour basis. With a pub just down the road from the campus, they realised that they could probably do something more useful with their money than giving it to the cleaning women. They decided to organise to get the rooms of the other students cleaned as well, albeit at a slight premium. In the bargain, their own rooms got cleaned for free. Once they realised that they could also make a bit of money by doing this, they continued to expand this service. Once, when Frank spilled some powder on his laptop, he realised that most of it simply went into the keyboard. After cleaning the keyboard, he tested it for germs and was alarmed to find that the bacteria on the keyboard are as numerous as the number of bacteria in a WC. This was because Frank, like many of us, used to snack while working on his laptop and often had crumbs from his food dropping on his keyboard, creating conditions ripe for life to evolve.

He tested the keyboards of a few friends' laptops. On getting a similar result on the virulence of the bacteria, he went about developing a simple testing system for checking bacteria as well as a simple way to clean them from keyboards. When he had this, he went to the local bank and showed them how dirty their keyboards were. Tapping on the bank's concern that an unhealthy working environment might open it to liability if employees fell ill, he was quickly able to generate business of cleaning keyboards on a weekly basis, which he obviously outsourced. By the time he graduated from St. Gallen 2 years later, this was a nicely thriving business. He sold it to his partner and pocketed a tidy sum in the process.

Many people feel that their resume would show a nasty gap if they did not get a job immediately after they finished their education or if there is too much time between two jobs. This is when the silver strings of security become a chain that restraints you from achieving your vision. In reality, very seldom would employers look askance at entrepreneurial experience.

Takeaway Never ignore your own problems to which a simple solution does not exist. If you would pay for a solution, so would other people.

2.3 Time for Ideas

There is a time when ideas flow. This is as much the case for new business ideas as it is for poetry. Anyone who has ever written poetry will agree that there is a time in life like first love, perhaps in school, when writing poems seems

a snap. I remember a time when I once wrote three poems on a particularly eventful day. Now, I can't seem to pen an ode to save my life.

We always take creativity for granted when we have it. We only begin to appreciate this creativity when it stops flowing. This is also called writers' block.

This creativity in young people is not only seen in wordsmiths but also in science. Albert Einstein was 26 when he wrote three papers that upended the world of science (including $E = MC^2$) and formed the basis for his future work.

There will be naysayers along the way. Strangely, these are more often than not your well-wishers, simply because they want to protect you from your own naivety. After all, if no one has ever come up with your idea or no one has approached the market the way you expect to, what makes you assume that you'll succeed.

For one, you are not too cautious when you are younger. Another reason is that you don't know enough or care too much about the status quo. A simple example illustrates this.

Show a new flat-screen TV to young children and tell them you're considering buying this because this is the latest technology. As an adult, your reasoning may be that this will give you better quality images than what you may currently have. A child, on the other hand, may ask any of these questions: What does latest technology mean? Will you get different information than what you're now getting? How long will the latest TV be latest? If a better TV comes up, will you throw this and get the new latest TV?

When you think of the difference between the responses, the child's response reflects a more long-term impact, whereas an *adult* mind seems more biased.

Takeaway Never let anyone tell you that you're too young to come up with great idea. The best response when someone doubts you is "Watch me".

2.4 The Clock Is Ticking

However good your business plan, it does take a certain amount of time to reach maturity. In many cases, clients look for stability in a business. They will not give you business till they are sure that you'll be around after a few months. With few exceptions, going from a back-of-the-envelope plan to initial revenue will take a period of over 2 years. This is a good reason for getting into a startup early since you won't have to give up a senior executive role to take a leap of faith.

People frequently say that an idea that you may have is not likely to work. This can be for a variety of reasons, ranging from "you don't have enough experience" to "if it was so good, someone else would have already done it before". Instead of merely looking at their arguments, it would also be useful to look at what *they* are doing. You may find that they have not done anything remotely entrepreneurial in their lives.

A distinction has to be made between the entrepreneurs and others who engage in subsistence ventures due to the lack of job opportunities. More than anything, the difference is vision and persistence. Entrepreneurs frequently seek to grow more and scale up and have an overarching vision that they work towards.

The reality is that you never know if it's going to work unless you try it. Consider the half-life of companies on the Fortune 500 list. A half century ago, this was 75 years. This has slowly reduced to 15 years today and shows no sign of abating. This implies that if the company itself has such a short survival rate, the likelihood of lifetime employment has effectively ceased to exist.

Even within the same company, job roles and responsibilities change every 2–3 years, meaning that you are looking for a new job inside or outside the company. This implies that any job has a half-life of about 2 years. From the risk point of view, the downside of a job is that you risk losing it every 3 years. The upside of a job is that you get a perceived sense of stability; and if you do really well, you get a bonus of a percentage of your salary. And then you start all over again in the same box. Sorry to disappoint you, but for the majority, these are the facts.

Compare it with doing your own thing. The downside is that it will fail. But it gives you a view that no job ever can. There's a good reason most companies have a requirement for an entrepreneurial mindset on senior level roles. The upside is of course that it may succeed. In case money drives you, it will interest you to know that the majority of billionaires are entrepreneurs. The only remaining ones are African dictators and Warren Buffet.

The adage "if it itches, itch it" has never been more apt.

Takeaway If you only connect the dots with the number on them, you'll never build a new picture.

2.5 Get Started!

Caterpillars, like startups, require a certain amount of time in the cocoon before they can emerge as butterflies. Experience shows that the average startups required between 2 and 3 years before they are able to commercialise their