

FOURTH SA INNOVATION SUMMIT 2011

INNOVATION DEMYSTIFIED

Mister Chairman and fellow delegates, if you look around this room everything you see was once an idea in a human mind somewhere. If it was not for ideas, we would all be standing in virgin African bush with no clothes on. Maybe that wouldn't be such a bad idea!

The power of ideas is evident well beyond the confines of this room. Some of the top counters on the New York Stock Exchange are companies that sell ideas, as opposed to physical products. In the year 2000 the market capitalization of Microsoft Corporation was US\$600billion. That was more than the total capitalization of all Third World stock exchanges put together. This year the market capitalization of Google, a ten year old dot com company, has been US\$145billion representing more than seventy times the national budget of Zimbabwe. So if we had just one success story on that scale, taxes from it could solve our national budget deficits and more.

If it wasn't for ideas, there would be no innovation. Ideas are the lifeblood of innovation.

INNOVATION

Let us start at the beginning with a definition. Innovation can be defined as creation of something novel to either solve a specific problem or to satisfy human curiosity. The invention of the laser was an example of the latter. It was born out of investigations to understand the structure of the atom better. When the laser was first invented, there was no use for it. However it was hailed as a solution looking for a problem! The rest is history.

Invention is a subset of innovation with a requirement of substantial originality.

Innovation is not the preserve of a select few. All of us are innovators. The difference is that only some of us make the effort to follow their innovations through. Here is a mini case study to illustrate how a simple problem solving exercise could be developed into business.

THE KOTOMATIC CASE STUDY

In the year 2000, I moved into my current house. On the property I found two huge avocado trees. This is one of them. However in the first year I hardly ever harvested any intact avocados. This is what happened to them when they struck the ground.

So I devised this implement out of a piece of wire and a supermarket carrier bag. I had to hook the avocado with this hook and pull. With luck it would fall into the supermarket bag which I would then

lower slowly. It proved a daunting practical challenge just to get the avocado into this tiny hook six metres up.

So I had to go back to the drawing board. On the Mark two all I had to do was get the avocado into that circle. Pulling would catch the fruit in that lane there. This design worked a lot better than the first but it was hard to fit a net with a circular cross section. So the next idea was to migrate the restriction lane into the middle of the ring.

This is what it looked like. It delivered improved performance but this time the metal strips were bruising the fruit. The metal strips were replaced with round bars that were more friendly to the fruit.

By now the implement was a marvel, at least functionally. All that remained was to reduce its cost and weight. This was achieved by utilizing 6mm round bars in place of 8mm ones. Five years later what started as a household problem solving exercise had spawned a marketable implement. This is what it looks like fully assembled.

I have a sample here that I will pass round.

The concept of fruit harvesting hooks is not new. All I did was develop a novel design as a variation on an existing theme. So the Kotomatic is not substantially novel enough to warrant a patent. However I managed to register the design. Incidentally a registered design is considerably cheaper than a patent. Furthermore it does not require regular renewals.

Patenting may be relatively more onerous but it does have its place, especially in the context of inventions. Let us now consider invention using the Gwatamatic as a case study.

INVENTION LIFE HISTORY

In common with other processes, invention has a life history that begins with inspiration and ends with obsolescence.

Inspiration is the only stage of the invention life cycle that does not require deliberate effort. It only takes a relaxed mind. It can come while shaving, while driving or any other time while mental resources are not fully stretched.

By definition an idea starts off without distinct form. So it can be lost very easily unless it is given robust form in time. Every original idea that comes with inspiration has a half life so to speak. Some have half lives of only a few seconds. Others a few minutes, or hours or days and so on. Whatever the half life, ideas need to be fixed or else they will be lost eventually. Fixing an idea can be as simple as writing it down. How many times have you had a flash of inspiration just before you go sleep and wished you had written it down when you struggled to remember it the following morning? Telling someone or constructing a model are also viable idea fixing techniques.

Everything man-made can be improved. After a hundred years in the business, even Mercedes Benz are still coming up with improved car models every year. On the Gwatamatic, I try to enlist the help of refinement experts such as these as regularly as possible. Refinement should only stop with obsolescence.

Definition refers to non-ambiguous specifications such as the engineering drawings at the back of your black and white pack of handouts. This simplifies drafting of patent specifications for example.

Packaging refers to any carrier of the core invention. For example, computer hardware is the carrier of computer software. Even though the Gwatamatic rig is this substantial physical mass, it is but packaging for the intellectual property I sell. I like to think that I sell ideas. You can read more about my business model at http://www.wipo.int/sme/en/case_studies/algorithm.html

Amplification typically refers to commercial mass production of the innovation as shown here for the Kotomatic. During the life of a product, it can loop back from amplification to refinement, definition, packaging and amplification over and over again until the death of the product with obsolescence.

Successful commercialization is the Holy Grail of many inventions. Needless to say it can be elusive. Here are some of the constraints that I encountered on the road to the Gwatamatic business.

CONSTRAINTS TO COMMERCIALIZATION

There is no such thing as a single secret to success. Rather there is a virtuous circle of factors that need to be addressed simultaneously. It is analogous to human physiology where there is no such thing as a single secret to good health. All systems have to be firing correctly together.

Notice that finance is right at the bottom of the list. That is deliberate. Contrary to popular belief, finance is hardly ever the most formidable constraint confronting an entrepreneur.

Quality of the idea and disclosure management are probably the top two challenges. If the quality of the idea is high enough, chances of solving the other constraints improve. Imagine yourself stumbling upon a formula for a simple effective AIDS cure. Do you think you would struggle to raise finance if you had such a high quality idea?

So if raising finance proves impossible, try introspection and resist the temptation to blame the bank managers.

A venture capitalist once told me that she would rather invest in a mediocre idea with a high caliber team than a brilliant idea with a lousy team. The value of a good team is vividly illustrated at country level. Switzerland and Japan have next to no natural resources but brilliant teams. In contrast many Third World countries have enormous natural resources but lousy teams.

Reckless disclosure could ruin the value of an invention. This is where intellectual property law comes in. Counter-intuitive as it may be (publishing a secret in order to protect it), it is one of the cornerstones of

industrialization. Without sound intellectual property law, the alternative would be secrecy. Absolute secrecy precludes team effort in the development of an invention. That in turn would stunt even a good invention.

Furthermore, if an invention is kept absolutely secret, proof of priority may turn out to be impossible in any future disputes.

This leaves deployment of intellectual property law the best bet. Attorneys helped the Gwatamatic project in a number of respects:

1. Search to confirm originality
2. Drafting rigorous specifications
3. Lodging applications for patents
4. Managing patent renewals as agents

Here are samples of Gwatamatic letters patent. ARIPO Patent No. AP884 ; South African Patent Number 98/9224.

Having said that, not every invention warrants patenting. Establishing and maintaining a patent is costly. It is wise to patent only if the estimated cash inflows from the invention exceed the total cost of patenting. This is the reason why I did not patent the gochamatic.

Another reason for refraining from protecting intellectual property is social responsibility. The public domain is the foundation on which intellectual property of all sorts is built. If Sir Isaac Newton had ring fenced all his laws, mankind would be poorer for it. Someone has to populate the public domain. So releasing inventions into the public domain is a noble cause. I did this with the tsotsomatic.

Intellectual property law is by far the most important instrument for security of innovations. I have deployed patents, registered designs and trademarks so far. However they are not 100% foolproof. The cost of litigation can be an inhibitive barrier. Also patents in particular have a finite lifespan. So other security measures are sometimes called for. Secrecy, with all its drawbacks, can sometimes be indicated. Coca Cola in particular have used it to great effect with their recipe. The Coca Cola patent will have expired around the year 1904. So secrecy has been their main security tool since then. Head start (as in a race) also provides a measure of security. People are more likely to offer their loyalty to established brands. So trademarks could enhance the effectiveness of head start.

The need for psychological fortitude was a surprise constraint for me on the Gwatamatic project. So many people put in some effort to discourage me!

Finance may not be the most formidable constraint but it is still a significant constraint. Clarity of exposition, quality and security of business idea all converge to attract finance. For me on the Gwatamatic, clarity of exposition entailed building a functional full scale prototype.

CONCLUSION

We are all innovators. Inspiration comes to all of us naturally. To grow inspiration into actual innovation takes deliberate effort.

William Gwata 31 August 2011

To be read in conjunction with the relevant PowerPoint slides.

For occasional updates on my other inventions please visit: <http://gwataboy.blogspot.com>