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From M&M's to Tea Bags: Lessons from Low-Tech Innovators

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Introduction

One of the principles creative innovators apply successfully is this one: Break the rules. This does not mean “break the law” --- it means, examine the core assumptions everyone accepts as true and binding, and then, smash one or more of them to pieces, in order to create value.

This is an operational subset of the principle “think outside the box” – where the “box” is simply the set of rules, mostly unwritten and assumed as implicit, that everybody follows. Why does everybody follow these rules? Because, well – that’s how things are done.

Innovators say, let’s do things differently – to create massive value for a large number of people. Let’s break the rules – intelligently.

A very common assumption, related to technology, is that startup entrepreneurship is necessarily, inviolably, built on high technology. Entrepreneurs mainly come from backgrounds of engineering and science, so it is natural that they should seek to use all the tools in which they have invested time and resources to acquire them.

However – innovation does not necessary require high technology. Sometimes, a clever idea and low technology will suffice.

This study recounts 12 stories of low-tech and medium-tech innovations and urges startup entrepreneurs to include low-tech in their creative endeavors. Most of the stories are about every-day items that millions enjoy daily. In the stories that follow, we recount how the innovations occurred and what entrepreneurs can learn from them.

Nearly all the 12 innovations described below are based on a wonderful book by Paola Antonelli, curator of architecture and design, Museum of Modern Art, in New York City^[3]. Design thinking has become an essential framework for successful startup entrepreneurs and Antonelli’s book tells the story of 100 low-tech innovations, from a design perspective. I highly recommend it.

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1. Technology Comes Last; Design Comes First

For several decades, I taught innovation and entrepreneurship to engineers, at Technion and at MIT. My initial message to them was not one they loved to hear: In launching a startup, technology comes last, not first.

Why put technology last when it features prominently in the revered industry, high-tech entrepreneurship?

Science fiction writer Arthur Clarke once wrote that advanced technology is indistinguishable from magic. Many engineers and scientists, enamored with the technology they know and love, begin their startups by inventing such magic. And despite their truly incredible magic, they fail. Because their magic is neither needed nor wanted – and they failed to validate that a real market existed, from the outset.

So the rule is: Technology comes last, as an enabler, and validating a true unmet need comes first.

For example – a Technion second-year student presented his innovation to my entrepreneurship class last year – a smart phone application that warns those who suffer from *gran mal* epilepsy of an impending seizure. The student identified the need – and only then, applied his computer science knowledge to meet it, with a smartphone application, and designed it with the clients' needs and wants in the forefront. This is the essence of good design.

But why should design thinking come first? A typical framework for design thinking involves five stages: defining and if necessary, redefining the problem, need finding and benchmarking, ideating, building, testing. Often, insufficient effort is devoted to defining the problem. Redefining it, from various perspectives (especially, of course, the perspective of the prospective user) is crucially important.

I have found that often, engineers and engineering students do not have empathic skills that can put entrepreneurs solidly in the shoes of those whose needs they seek to satisfy. This is a skill that can be honed with practice.

2. M&M's: An Innovation That Has a Long White Beard



On September 10, 2021, an unusual birthday will be celebrated. It will be the 80th birthday of a confection known as M&M's. The product has been largely unchanged for eight decades and is known and loved worldwide. How was it invented, and what can we learn from the process? The product is produced by Mars Inc., a company wholly owned by the Mars family, with annual revenues of \$35 b.

Mars Inc. was founded by Frank Mars, as the Mars Candy Factory, in 1911. His son Forrest Mars went to Spain in the 1930's to fight in the Spanish Civil War, on the side of the anti-fascists. There, he observed soldiers eating British-made Smarties – chocolate pellets with a colored hard shell of candy (hardened sugar syrup) on the outside. This kept the sweets from melting in the soldiers' hands, in the hot Spanish sun. Mars found a way to improve the process and got a patent for it on March 3, 1941. He was assisted by his associate Bruce Murrie – the second “M” in M&M's. Mars' M&M's were packaged in a cardboard tube, and were highly popular with American soldiers in World War II, because they travelled well in any climate, however hot or cold. After the war ended, M&M's became widely available to the public, and the cardboard tube packaging was changed to the plastic pouch, used to this day.

M&M's mantra dates back to 1954: “melts in your mouth, not in your hand”. It captures perfectly the products' value proposition.

The Innovation Principle: Forrest Mars did not invent M&M's. In fact, a British version (“Smarties”) existed well before M&M's. It still does. What he did was observe a product that met a real need, and greatly improved it. His marketing strategy made M&M's popular with many of the eight million American soldiers drafted in World War II, and they brought home their love of the product to civilian life. Mars Inc. has, with modest changes, kept this product popular and profitable for nearly eight decades.

>>> Innovators

Observe a work-around (an improvised solution people find for a problem or need), improve it, and scale it up – and nurture it for the long haul/.

3. Bar Code: An Overheard Conversation



In 1948, the president of a local Philadelphia food chain, Food Fair, approached a Dean at Drexel Institute of Technology and asked him if he could develop a system that automatically read product information during checkout. The Food Fair CEO had a real need -- a supermarket can have as many as 15,000 products on its shelves. Checkout employees need to remember prices, discount campaigns, especially when price stickers fall off. An automatic system would make the checkout process more accurate, faster and more efficient. As it does today.

A graduate student named Bernard Silver overheard the conversation. Silver recounted the conversation to his friend, Norman Woodland. The two started working on the problem. Their first attempt was to create patterns of ink that glowed under ultraviolet light. They found this was unstable and unworkable. Their next attempt – the first real bar code – was a series of concentric circles, with alternating dark and white lines.

Woodland left Drexel, moved in with his father in Florida and continued working on the system. His inspiration came from Morse Code (dot-dot-dash) and he made a bar code prototype using sand from the beach. “I just extended the dots and dashes downwards and made narrow lines and wide lines out of them,” he explained later. To read the bar codes, he adapted technology from movie soundtracks, that used a 500-watt bulb to shine through paper onto a photomultiplier tube. He used a circle, since it could be read from any direction. Woodland and Silver filed for a patent called “Classifying apparatus and method” on October 20, 1949 – nearly 71 years ago.

The Woodland-Silver patent was offered to, and rejected by, IBM, bought by Philco in 1962, then sold to RCA later.

The barcode technology was not put into wide use until the 1970's, when the National Association of Food Chains initiated a meeting on automated checkout systems. RCA attended it and started a project to develop a barcode system. In 1974 the first scanner using the UPC – universal product code, that assigned

a bar code for every supermarket product – was installed at Marsh's supermarket in Troy Ohio. The first product scanned with the system was a ten-pack of Wrigley's Juicy Fruit chewing gum.

The innovation principle: Adopt and adapt. Silver and Woodland made clever use of existing technologies, from widely diverse sources. They began with a real problem – basically, an RFP, request for proposal, from an innovative CEO. Silver knew enough, to enlist a friend, who had strong technical skills. They used Morse code and movie sound systems to find a solution.

>>> Innovators

Where possible, use existing proven technologies to innovate a solution – and reject solutions that are unstable, costly and unfeasible (like the ultraviolet scanner). Recall that Edison knew how platinum was the technologically-ideal filament for the light bulb -- but was utterly impractical in terms of cost and production. In the end he used carbonized thread..

4. (Improved) Tea Bags: Define the Problem with Care



The double-chambered tea bag was invented, like the bar code, 71 years ago, and is still in wide use. A tea bag is a small porous sealed bag or packet containing tea leaves. The first tea bag patent dates from 1903. The first machine for producing tea bags was invented in 1929 by Adolf Rambold for a German company, Teekanne.

Rambold, an incessant inventor, identified a real need of tea drinkers, that they themselves did not elucidate or identify: How to get better tea from a single tea bag and a given quantity of tea leaves in the bag. The basic idea: To produce equal or greater value, at lower cost.

When you see it, the solution is completely obvious. Tea, in our tea cups, results from hot water interacting with the surface of the tea leaves. The key word here is “surface”. If you could somehow increase the surface area of the interaction between the tea leaves and the hot water, you could get stronger, better tea from the same quantity of tea leaves (usually, 1.5 to 2 grams per tea bag).

Solution? Make the tea bag ‘double chambered’. Put the tea in two separate chambers, fold the chambers one over the other, and presto – you have doubled the surface area between water and tea leaves. This was Rambold’s idea, patented at the end of 1949. Since then, 90% of tea bags in the US, and 100% in Europe, are double-chambered.

Incidentally: Nestle has essentially done the same for coffee. Each Nespresso pod contains 5 mgs. of coffee. I pay Nestle about 80 cents per pod. Per pound, that works out to \$7.20, rather high. The Nespresso machine, like the double chambered tea bag, uses technology to generate fairly strong coffee from a relatively small quantity of ground coffee. And it leaves Nestle with a good profit margin, and me, the consumer, with good coffee.

The Innovation Principle: Identify a way to create real value for consumers, by meeting a need they themselves may not be aware of. Take an existing product and find creative ways to improve it.

>>> Innovators

How you define a problem can sometimes lead you directly to the solution. For the tea bag: Rambold asked, how can I increase the surface area between the tea leaves and the hot water, without increasing the dimensions of the tea bag? The design of the double chamber popped out soon after. Virtually every widely-used product can be improved, at times marginally and often substantially, with similar creative thinking.

5. Post-It Notes: Rescued from the Junkpile



There should be a law – banning repetitive boring accounts of how Post-Its were invented. Here, we take a different perspective. Post-It notes are a story of failure and repurposing. I know of several successful startups, similarly built by rummaging through the junkyards of large high-tech companies, rescuing ‘failed’ projects whose sponsors did not see the true value or purpose inherent in them.

Post-It notes have a trip of acrylate adhesive, developed by 3M research scientist Dr. Spencer Silver. Silver’s breakthrough was to create an adhesive based on tiny spheres that retain their shape, and thus do not tear the paper they are on when it is unstuck.

But – who needs glue that doesn’t really stick? 3M new-product development manager Art Fry had a need for removable ‘stickies’ to mark places in the choir music sheets he used, because non-stick slips of paper tended to fall out. Fry rescued a rather comical product – glue that doesn’t really stick hard – and got 3M to produce it, in part by himself making a machine to produce prototype Post-It Notes. The introductory campaign that followed was exquisite – how do you show people they need something, that doesn’t yet exist and is entirely unique, unlike anything they have seen? You send massive quantities to secretaries of Fortune 500 CEO’s, who have Post-It Notes on their desks, that draw the CEO’s attention...and the rest is history. Product developers at 3M made sure that the phone calls from CEO’s, asking how they could get Post-It Notes, were directed to Marketing. They quickly became disciples of the product.

The Innovation Principle: Glue that doesn’t stick; or Sony’s tape recorder that doesn’t record, only plays (Walkman); there is a very long history of products that initially brought mockery and ridicule. Innovators find unique ways to use products that others have dumped into the waste basket.

>>> Innovators

Rescue rejected ideas and make them into value-creating products. Repurposing a product or service is as creative as inventing them from scratch – especially when they have initially been dumped. Also – if you yourself personally need something, as Art Fry needed a stickie that stuck just enough, but not too much – probably, lots and lots of other people need it too. You are your own most productive market research – and it is free.

6. Frisbee: Create Demand, Don't Just Satisfy It



The story of the Frisbee combines several key elements: but is mainly about clever marketing, while small improvements to an existing product make a huge difference. It is about how to create demand by inventing an entirely new sport.

Today's Frisbee has a double origin. First, in the 1870's, with a baker, Walter Russell Frisbie (sic), who owned the Frisbie Baking Co., in Bridgeport, CO. The company made home-made pies, sold throughout Connecticut, including in New Haven, CO., to Yale Univ. students. The name "Frisbie" was embossed on the bottom of the pie pans. Yale students discovered that empty pie pans could be tossed through the air and caught.

Second: Fast forward -- in 1948, a building inspector and flying saucer enthusiast named Walter Morrison, along with a partner, Warren Fanciscioni, developed a saucer-like plastic disc named Flying Saucer, leveraging the fascination at the time among the public with UFO's, after the 1947 Roswell alien 'sightings'. Morrison sold his idea in 1955 to a toy company called Wham-O, founded by Arthur "Spud" Melin and Rich Knerr, marketing geniuses who later popularized the Hula Hoop, Super Ball and Water Wiggle.

Knerr was travelling through Ivy League colleges promoting Wham-O's products, when students told him how they had been "frisbie-ing" for years with pie plates. Knerr purposely mis-spelled it and trademarked the name Frisbee.™ Wham-O's VP for marketing, Ed Headrick, reworked the mold for the Frisbee by increasing the rim thickness and increasing the disc's mass, so it could be controlled more accurately.

Wham-O promoted the Frisbee as a new sport, now known as Extreme Frisbee. Variations include Freestyle, Guts, Double Disc Court and even Disc Golf. And in 1964, the first 'professional model' was sold.

It is recounted that when Hedrick died, he was cremated and his ashes were molded into Hedrick Memorial Frisbees, given to family and close friends, and sold to benefit the museum in his name.

The Innovation Principle: Good entrepreneurs meet demand, by satisfying wants that are unmet. GREAT entrepreneurs *create* demand for a new, unique product, by clever marketing that shapes and initiates usage, in ways that people enjoy.

>>> Innovators

Flying saucers and pie plates. Social trends, like fascination with aliens, were the initial trigger for Frisbees. Pie plates gave it its name – and a marketing genius saw how a Frisbee could become an entirely new sport, tailored for college students in particular. By re-imagining a product, from a toy to a new sport, innovators have sold over 300 million Frisbees since its inception over 56 years ago. And its sales continue to be strong.

7. The Paper Clip: Still Room for Improvement



Consider the paper clip. It is ubiquitous, yet we hardly think about it, even though it creates great value. Once people used to tear corners to hold documents together. (I still do, when desperate and no clips are around). Then, a Norwegian patent clerk, Johann Vaaler, got a German patent for a triangular paper clip (still in use today) in 1899.

The British firm Gem Manufacturing designed and patented today's double-oval steel elastic wire paper clip in 1907.

So the lowly paper clip is still in wide use, everywhere, despite being over 120 years old.

Is this the end of the story? Probably not. Antonelli ([3], p. 192] notes that “there are eight qualities that every paper clip should strive for and that none has yet attained in unison”. They include: it should not tangle with other paper clips, should hold thick papers, it should itself be thin, and cheap, should be easily used, should not catch, mutilate or tear thin paper....

Almost a decade ago Acco Corp. tried to sell Americans a “snazzier clip” costing more than 16 times as much as the standard version. Stainless steel clamps called Klix came in shiny hues of red, purple, green, blue and “classic silver.” Klix make a snapping sound when closed. Klix have had limited success. Nonetheless, 11 billion paper clips are made and sold in the US alone annually.

The Innovation Principle: There are a great many humble designs that we use every day, without their entering into our conscious minds. Paper clips are only one of them. The basic design has been unchanged for a century, showing how successful it is, in meeting real needs.

>>> Innovators

Every single everyday product or service, like the paper clip, has proved its value in design, often for many decades. Such products become almost invisible to us. But all of them are candidates for innovation, as creative people search for innovations “in dark corners”, where others ignore. There must be ways to improve even the paper clip, used by millions for a century – simply because few of us bother to think about how to improve it.

8. Oxo “Good Grip” Utensils



Oxo “Good Grip”

Sam Farber’s wife Betsey developed arthritis. She had always loved cooking, but now, cooking became a painful chore. Farber decided to do something about it. He spoke to design consultants and hired a New York based company to design a new line of kitchen utensils, for persons like Betsey but also for ordinary cooks. The goal was to vastly improve existing kitchen utensils, like peelers, which had been unchanged for decades.

A whole new design philosophy emerged. Handles were made of thermoplastic elastomer, a synthetic rubber easy to mold in a variety of shapes. The handles had gill-like incisions, that made for a strong grip. They used ergonomic principles, were color coded, and for instance, a brush that once required sharp torsion of the wrist was redesigned to fit squarely in the center of the palm.

The Oxo utensils are indeed humble masterpieces; I use the peeler every day, while the old-style conventional peeler sits deservedly forlorn in the drawer. Sam Farber chose the name OXO, because it is an ‘ambigram’ – looks the same from every direction. There are today some 1,000 Oxo brand products.

The Innovation Principle: Oxo repeats two previous principles: You are your own best market research; and, take a simple existing product and use design principles to vastly improve it.

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I believe that there is massive underinvestment in design. Many innovative products are wonderful, create great value – and look simply terrible. There is no reason for this; there are legions of talented creative designers. You can take an existing product, and with redesign, make the old-style designs utterly obsolete, as Oxo has done.

9. Duracell Battery: It's All About the Pink Bunny



Benjamin Franklin coined the term 'battery' in 1748, to describe an array of glass plates he invented. But it was prolific inventor Samuel Ruben, a scientist, who innovated the Duracell battery, in response to a specific RFP 'request for proposal'.

Earlier, Ruben devised a mercury battery, during World War II, that took less space, gave more power, and was more durable than existing batteries. And in the 1950's Ruben introduced the alkaline manganese battery. However, it was Eastman Kodak that provided the trigger for the iconic Duracell AA battery. Kodak needed a small powerful battery for the built-in flash camera it created. The standard zinc carbon battery was insufficient. Ruben designed small powerful alkaline manganese batteries for Kodak, and his business partner Philip Mallory, a manufacturer, produced them.

The Duracell brand was created in 1964. Not only the product itself was highly creative; the manner in which it was advertised and marketed was highly creative, too. The "Duracell bunny" was first created in 1973 and is as durable as the product it pitches.

The Duracell Bunny is a pink rabbit powered by Duracell batteries. Ads usually feature the pink bunnies competing in some way; for example, a drumming competition or a race. The original ad depicted a few pink toy bunnies drumming. By the end of the ad, only one bunny was still drumming – the one powered by a Duracell alkaline battery.

The Innovation principle: Innovation, it is often assumed, focuses on the product or service. But this is far too limiting. Innovation should be applied in every aspect of the business – production, human resource management, marketing, advertising – everything.

>>> Innovators

The Duracell battery has been a successful product and brand for almost 50 years. But its success stems not only from the product, but also from the clever marketing and advertising – an original concept, the pink bunny, which has endured to this day and still runs in frequent ads. The pink bunny, that never ever stops, captures the essential value proposition of the battery, in a memorable, humorous and pleasant manner.

10. Lego: 400 Billion Bricks



Back in 1932, Danish carpenter Ole Kirk Christiansen started a small carpentry business in a small village and mostly made wooden toys. In 1934, he came up with the name Lego – from the Danish, *leg godt*, meaning ‘play well’, and from the Latin, *lego*, which means “I learn”. In 1949 Christiansen first developed wooden Automatic Building Bricks, renamed Lego bricks in 1954. The current plastic bricks were first made in 1958, and first sold in the US in 1962.

Lego has been innovative, creating for instance programmable Lego robots (Mindstorm), and inspiring a theme park, Legoland, a movie, and even a management workshop based on Lego. But its core product remains the Lego bricks.

The company has produced an estimated 400 billion Lego elements or 62 bricks for every person on the planet. The bricks produced today can still interlock with those produced in 1958. I can attest that this is true – the same Lego bricks which I played with, with our children, now serve for our grandchildren.

LEGO bricks have a strong developmental psychology foundation. Psychologists have shown that play is the 'work' of children, it is how all children learn about the world. Lego bricks are serious play, as they foster creativity and motor skills. And they are timeless and ageless – I have been known to play with Lego bricks, even when there are no children or grandchildren within a hundred miles. Lego is a strong example of how a strong product and strong brand can generate revenue and profit for decades, with very little if any alteration of the core product.

The Innovation Principle: Lego, in its present form, has been serving both children and adults for over five decades. The original conception, originating before WWII, was to create a tool to stimulate children's imaginations. There are many knock-offs, but Lego prevails and endures. A strong innovative product, whose identity and quality are single-mindedly preserved and fostered, can endure almost forever.

>>> Innovators

There is technology underlying Lego. Each Lego piece must fit firmly into other Lego pieces, yet it must be easy to disassemble the pieces. Lego is made from a unique plastic, known as ABS, acrylonitrile butadiene styrene, suited for Lego bricks, easy to color, and capable of tolerances as small as 10 microns (one millionth of a meter, or less than one-eighth of the thickness of a human hair). Those who use and love Lego, of course, are not familiar with ABS or with the hair-thin tolerances; great technology should be generally invisible and transparent to us.

11. Waffle Cones: Use What Is At Hand



In speaking with visitors to Israel, about Israel, Startup Nation, and its 'secret sauce', I am often asked: What is the recipe for world-changing innovation. I usually respond that I do not know, but – since that is not a satisfactory response – I speculate about several ingredients.

One of those ingredients is desperation. Israel was born in 1948, with a population of only 600,000, with few weapons, and under assault by its neighbors. The situation was desperate. It demanded ingenuity and creativity for survival, and led, for instance, to improvised mortars made out of water pipes. This type of creativity, driven by desperation, has remained part of Israel's cultural DNA to this day.

The story of waffle cones is rather similar. It begins with the 1904 St. Louis World's Fair, which included, among many other stands, some 50 ice cream stands and a large number of waffle shops.

Like everyone else, Charles Menches sold his ice cream in dishes. There were no ice cream cones yet. But one morning, at the Fair, he ran out of dishes! And there was still a full half-day of business ahead of him. So, Menches was desperate. He had to find a solution, or lose a lot of money.

Nearby was a stand where Syrian pastry maker Ernest Hamwi was selling a Mideast treat known as zalabia – a crisp, waferlike confection sprinkled with sugar. Menches bought a bunch of zalabia's, rolled them up into a cone, scooped his ice cream on top – and the ice cream cone was born.

But wait! Menches was reinventing the wheel. Earlier, in 1903, a Wall Street pushcart vendor named Italo Marchioni, an Italian immigrant, sold homemade lemon ices in glass dishes. He was troubled by losses, when the glass dishes were broken or lost. How, he asked, can I serve my ices without the glass dishes? Desperation...and an idea. He baked edible waffle cups with a flat bottom, as we use today, and used them to serve his ices. He patented his invention in 1903, probably assisted by his Wall St. clients. But his primacy was forgotten for a great many years.

The Innovation Principle: Desperation drives creativity. If you need something, really REALLY need it, your brain will work hard on the problem, even when you sleep. And in desperation, if you look around you, you may find a work-around. This is what happened to Menches. So try to use what is at hand. It will great serious mental flexibility, to see, as Menches did, that a waffle can, if properly folded, hold ice cream.

>>> Innovators

Menches popularized waffle cones. But he did not invent them.
Marchioni did. Marchioni held the patent. That did not make

Marchioni rich and famous. He was forgotten for years. Some way patents are useful, because investors like startups that have “intellectual property”. This may be true. But at the same time, recall that patents are mainly a tool to enable litigation – if your idea is stolen. If you lack the fortune of money it takes to litigate, patents won’t help much; and besides, to get a patent, you have to reveal everything about your idea. So sometimes, it is best not to patent, to keep your secrets close to your vest.

12. SpinPop, SpinBrush: One Good Idea Deserves Another



As a retired Technion professor, with silver hair and lots of stories, I get to meet and greet many visitors. One day, five years ago, I had lunch with one of the most interesting ones – an American entrepreneur named John Osher. He arrived in Israel in an unconventional manner – on a huge yacht, on which he travelled the world.

Osher grew up in Ohio; he took seven years to finish college. He worked as a plumber, carpenter and cabdriver. He was an entrepreneur from age five, he told me. He started and sold a vintage clothing store, and an earring outlet, while still in college. Harvard Business School Professor William Sahlman, who wrote a lengthy case about Osher, says, “he’s a street-smart guy and he has this observational power. He hated having to manage employees, so he built a big company with very few employees.” ^[1]

Dr. John’s was Osher’s 3rd major venture built from the ground up and ending in a lucrative exit. He produced the uniquely American (and ‘insanely popular’) SpinPop battery-powered lollipop, which later led to SpinBrush. SpinPop is a

lollipop that spins in your mouth (using a tiny battery-powered motor), enhancing the flavour, and creating a new market category of “interactive candy”. In developing the product, Osher focused laser-like on cost, setting cost targets and determining that if they were not met, the product would not be produced.

I teach, “don’t fall in love too soon with your product”, I told Osher. Osher answered: NEVER! (Never fall in love with your product.). Easy to say, hard to do.

After SpinPop’s success, Osher simply walked up and down the aisles of Wal-Mart, and looked for product ideas that could build on the cheap-battery technology of SpinPop. He came up with 100 of them. Then he narrowed them down, to an inexpensive electric toothbrush, to become SpinBrush. Here was his plan: Produce an electric toothbrush that would have battery life of at least 3 months, and cost only \$1.49 to manufacture! Sell it retail at \$5.00.

I told him that what he did fits two of our models, in our book *Cracking the Creativity Code*: Ruttenberg & Maital ^[4].

First, zoom in, zoom out. Zoom in on “SpinPop” and what you learned from it; Zoom out to find ideas that can leverage it. Then Zoom in again, to implement the idea.

Second, Price Cost Value. Start with high value (electric toothbrushes that create value, because people are willing to pay \$50 for a Braun, e.g.). Make it at very very low cost. Then charge a reasonable price, to share the value between profit margin (for the company, price minus cost) and client margin (for the buyer, value minus price). (You get, say, a \$50 electric toothbrush for \$5 – that’s value!).

Osher is very modest, quiet-spoken, and very very wealthy – he sold SpinBrush to Procter & Gamble for nearly half a billion dollars. He achieved this with soaring head in the clouds imagination and hard-nosed hard-headed feet-on-the-ground pragmatism.

Anyone can do this. All you need is imagination, experience, objectivity, pragmatism, leadership, drive, energy, hard work, and persistence.

The Innovation Principle: Head in the clouds, for creativity, and out-of-the-box thinking; and feet on the ground, for practical hard-nosed business savvy. Osher combined the two. Many people tend to be strong in one or the other. Know yourself – and if you lack one of the two key elements, find a business partner who complements your strengths.

>>> Innovators

The SpinPop, SpinBrush story is not entirely low-tech, but rather medium-tech. It is crucially about creating high value, at rock-bottom costs, and single-mindedly focusing on key cost targets, make or break. Osher asked, what can I create that others have already, but sell it at one-tenth the cost, while still making a profit? This too is a story of using what is at hand – not what others have at hand, but what you yourself have at your disposal. How can I use a very low cost small battery, in ways other than to spin a lollipop?

13. Summary & Conclusions

We have presented a dozen stories about mostly low-tech ‘humble’ innovations, mostly about everyday products like tea bags, paper clips, Lego and M&M’s, and drawn a number of how-to-do observations from these stories.

The overarching principle that emerges is, I believe, the following: We use many thousands of everyday products and services – what we eat, read, use, listen to, exercise with, and so on. Every single product or service was designed – some better, some worse. Good design involves shaping a product or service to meet the unique needs of the users, taking carefully into account their wants and needs and preferences.

Many humble masterpieces – long-lived everyday products and services, some that have existed for a century or more – have undergone improvements. All, perhaps, have room for even more improvements.

Startup entrepreneurship need not focus solely on high technology. There is a lot of room for low-tech innovation; low-tech may not be a true Blue Ocean, but it is far less red, perhaps, than high-tech.

I hope these stories will help inform and inspire potential entrepreneurs to broaden the canvas on which they hope to paint.

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