Cover Story

The Magic of Innovation

By Stefan Thomke and Jason Randal

Why do certain product and service experiences seem to have that undeniable "wow" factor, while others disappoint customers? Perhaps there's no better place to turn to than the world of magic. Below, Stefan Thomke and Jason Randal consider that leading magicians are constantly under pressure to come up with new "effects" that wow audiences. They have to innovate frequently and rely on a systematic way of doing so.

The late science-fiction writer Arthur C. Clarke once famously said, "Any sufficiently advanced technology is indistinguishable from magic."[1] Clarke, a prescient futurist, was right. New products like the iPhone can indeed seem like magic, and companies have long been trying to unlock the secrets of that wondrous quality. Why do certain product and service experiences seem to have that undeniable "wow" factor, making them all but destined for success, while other items – even those that might boast superior technology and a glut of features – somehow lack that pizzazz, relegating them to languish on store shelves? The difference has less to do with catchy advertising, and everything to do with the innovation process itself.

For a better understanding of that, perhaps there's no better place to turn to than the world of magic. Consider that the leading professional magicians are constantly under pressure to come up with new "effects" (often under very tight budgets) that will result in a magical, or transformational, customer experience. As such, professional magicians can't just be innovative on a whim; they must have a *systematic* way of doing so. In essence, they must do what managers have to do in their organisations every day – derive creative solutions to difficult problems. But how exactly can they (and their organisations) become more innovative and deliver magical product and service experiences that consistently *exceed* customer expectations?

Our intent is to reveal a process of creation that is common to both the "tricks" that awe a spellbound audience, such as the "disappearance" of the Statue of Liberty (an early illusion introduced by David Copperfield which may have involved "moving" the audience rather than the statue) *and* the products that give customers unforgettable experiences. Indeed, all attempts to create something new, whether an experience or a product, share a process of creative work that should begin with a deep understanding of *what* needs to be solved, followed by *how* to solve it, *how* to hide the solution, and *how* to sell the experience. We don't pretend to have all the answers to those difficult questions, but we can provide some novel and practical insights that we have taught to more than one thousand executives.[2]

What's the *Real* Innovation Problem?

Some professional magicians spend considerable time deciding where they should be applying their skills when creating new "effects." They are constantly asking themselves, "What's the real problem that I'm trying to solve? How do I even think about this particular problem?" Magicians essentially source innovation in two ways: from the top down and bottom up. Top down begins with a fresh idea or question: "Wouldn't it be amazing if… we could saw a tiger in half, make Dave Letterman's coffee cup move across his desk all by itself, or pour any cocktail named from an empty glass?" Bottom up begins with an existing routine, method, or gimmick that is drawn upon, utilised, or improved. If a sleight-of-hand "deck switch" is necessary for a card routine, *and* it can't be accomplished using existing cover, the magician must invent an alternate "no switch" method, provide adequate cover that seems reasonable, or utilise some clever misdirection.

The best innovators in business always allow for sufficient time for defining an innovation problem before proceeding with any project. When Walt Disney was planning Disneyland in the late 1940s, for instance, he didn't rush into solving the specific problems of just another amusement park – how many rides to have, what was the minimum number of

parking spaces, what kinds of food to offer in the concession stands, and so on. Instead, he concentrated on solving a much larger, general problem "top down": how can Disney provide visitors with a magical customer experience?

Unfortunately, problem definition is often the most underrated part of the innovation process, and many companies give it short shrift. Managers and engineers can't wait to do the "real work" of developing solutions. They don't realise that defining a problem is perhaps the most important part of the innovation process. Savvier companies have learned to spend the proper attention to problem definition way upstream in the innovation process. They carefully observe customers, learn from lead users, and tap into other sources of information that help them frame the problem correctly. Moreover, from the start they are also very aware that part of the "magic" of a successful product occurs when it goes beyond just meeting needs or when it solves problems in unexpected ways to enhance the total customer experience.

Consider Apple [3].The consumer electronics leader is known for many things – innovative products, stylish designs, and savvy marketing, among them – but perhaps the company's greatest strength is its ability to get to the heart of a problem. As CEO Steve Jobs once explained, "When you start looking at a problem and it seems really simple…, you don't really understand the complexity of the problem. And your solutions are way too oversimplified. Then you get into the problem, and you see it's really complicated. And you come up with all these convoluted solutions… That's where most people stop." But not Apple. The company keeps on plugging away. "The really great person will keep on going and find…the key, underlying principle of the problem and come up with a beautiful elegant solution that works," explains Jobs[4].

Doing, Hiding, and Selling

Innovative magicians have learned to break a project down into three fundamental components: how to do it, how to hide it, and how to sell it. In business, most managers associate just the first item – how to do it – with product development. But, as we shall see, the other two tasks can also make or break the success of any innovation.

How to Do It

Innovative magicians are skilled at using two top-down and bottom-up methods of innovating and switch between them whenever a project is stuck. Similarly, the company IDEO, for example, has amassed a "Tech Box" of hundreds of unrelated parts – everything from special fabrics to oddball toys to electrical gizmos – that designers will rummage through for bottom-up inspiration. Each item is documented and logged into a knowledge management system so that information about the collection can be made available over the company's intranet.[5] When IDEO designers are having trouble solving a difficult problem, for instance, they'll often look through the "Tech Box" in hopes that one of the items will trigger an idea that will ultimately lead to a solution. Indeed, perhaps one of the most magical moments of the innovation process is when the top-down (big picture) and bottom-up (procedural) approaches meet to produce a Eureka breakthrough.

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The solution to a problem can sometimes come from the most unlikely sources, and it's often the intersection of different fields that results in major innovations.[6] That's why companies like IDEO assemble teams in which anthropologists, designers, engineers, and other specialists work side by side. Each of those individuals might look at the same problem in very different ways because of the lens of their experience, education, training, and so on. And so it is that leading magicians train themselves in multiple disciplines (and draw upon these during the creation and execution of their acts). Even magic that appears simple combines applied psychology and findings from neuroscience, principles of mechanics, and often specialised knowledge such as scuba, locksmithing, or pyrotechnics.[7] Innovative magicians, by necessity, must often build their own props or devices, possess a variety of fabrication and repair skills, and become adept with materials, methods, and tools.

How to Hide It (and How to Decide What to Show)

There are said to be two types of magicians. The first is a "magician's magician," who develops, performs, and markets tricks that employ novel methods, are technically difficult, and are designed primarily to impress fellow magicians. The second is an "audience's magician" who performs tricks that may or may not be technically difficult, but nonetheless have a huge impact on the general observer. The second type of magician tends to have wider appeal because nobody (besides another magician) necessarily cares or appreciates how difficult a trick is. People mainly just want to be "wowed" and entertained. Great magicians will strike the delicate and changing balance between the seen and unseen, which can become an innovation in itself – sometimes as a result of failures or challenges

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from an audience. For example, Houdini, who conceived the famous straight jacket escape, hid his method by performing behind a small curtain while the orchestra played. Houdini's brother Theo (who billed himself as Hardeen), when accused of using a hidden assistant to escape from his straight jacket, responded by working in full view of the audience. The response was so strong that the effect has largely been performed that way ever since.[8]

The temptation to "show everything" often crops up among engineers, for instance, who want to display everything they've come up with: the technically brilliant solutions that so amaze their engineering peers. But sometimes the best solution for *presentation* is not necessarily making visible the complex underpinnings that go into a product design or service delivery. From the customer's point of view, often times the best solution for their purposes is relatively simple. And that's one of the things that Bang & Olufsen does well. The Danish manufacturer of exclusive electronics products understands that consumers don't necessarily want to fiddle with the equaliser, balance, and other controls in order to find the optimum combination of settings to watch a movie or listen to music. As such, its high-end speaker system, for example, automatically makes the necessary adjustments to reproduce a recording with as much fidelity to the original as possible so that all that's left for users to enjoy themselves is to select just one thing: the volume. The lesson here is that products that have true magic to them are those that hide *exactly* what should remain concealed – nothing more, and nothing less.

How to Sell It

Many magicians, while skilled at the art and craft of illusion, aren't necessarily successful performers. At a young age, they might have been fascinated and highly motivated to learn the various techniques and secrets of the magic profession, but were never particularly interested in learning how to sell what they do. Here, we're not talking about the actual selling of a product that a sales force does. What we're referring to is the selling of the customer experience. Top professional magicians recognise that they are, above all, entertainers, and their goal is to connect with the emotions of the audience. Teller, of the famous duo Penn & Teller, performs an exquisite illusion called "Shadows," in which he, using real scissors, apparently cuts only *the shadow* of a flower standing in a vase. As he moves the scissors, the petals of the real flower fall. It's a trick that is almost poetic in its simplicity and so perfectly performed that it often brings tears to the eyes of many in the audience.

In other words, savvy innovators know that they have to sell the *entire* customer experience. They know that an automobile will appear to be well built (and customers might experience it that way) if its doors close with a solid "thunk" sound. They recognise that an electronic book is not just about the readability of its display and the charge life of its battery but also about how closely it can mimic the experience of page turning. And they'll pay attention to even seemingly mundane things, like a product's packaging. High-end vodka distillers like Grey Goose, Chopin, and Belvedere, for example, have learned to enhance the customer's experience by packaging their products in tall, slender, sleekly designed bottles with long necks that evoke an air of sophistication and elegance. At the same time, the experience has to feel "real"– not just a trick. Magicians usually ask, "Since I can't really do it, how can I appear to do it? What is the least evidence the audience will expect me to produce? How much evidence is too much?" The Statue of Liberty vanish, for example, was proven by powerful lights searching the area where the statue should have been.

Innovation Tricks

Figuring out how to do something, how to hide it, and how to sell it are much easier said than done. Even the best professional magicians will often struggle for months (or years) experimenting as they pursue one dead end after another before arriving at a solution that works. But the important thing is that they don't passively wait for some sort of divine inspiration or Eureka moment. Instead, they actively think, experiment, and constantly iterate. The following tips and practices can help considerably in that process.

Intend to Innovate

Many people have a romantic notion of innovation. They think it arrives serendipitously – Sir Isaac Newton sitting under a tree when an apple falls. Although serendipity often does play a role, the truth is that innovations simply don't come out of nowhere. You have to *intend* to innovate. That is, you can't just desire to solve a problem; you have to intend to solve it by going beyond any obvious, cookie-cutter approaches. And you have to practice to get good at that. But exactly how are people supposed to accomplish that, especially when they have little practice in doing so? Consider that most employees go to work in the morning knowing perfectly well what they have to do in their daily jobs, and that knowledge makes them feel comfortable. But now if the organisation suddenly adds "innovator" to everyone's job descriptions, employees are likely to become anxious because they're no longer sure exactly what's expected of them. So to encourage people to leave their comfort zones, companies have to be sure to amply reward the desired behavior, sometimes even when it results in the failure of a project. Remember that, at its very essence, innovation is all about successes *and* failures – experimenting with different approaches to find the one that's most effective.

Prototype, Test, and Revise

Magic is strongly linked with the concept of practice and successful magicians are those who have learned the value of that old saying, "practice makes perfect." From an early age, they recognise the need to rehearse regularly. They'll repeatedly perform a sleight-of-hand maneuver for countless hours in front of a mirror until they're satisfied that they've

worked out all the kinks. And while they're practicing, they'll also experiment with different ways of doing something in order to find the optimal technique. This process reveals what is visible to an audience from different angles and what will need "hiding" during a performance. As much as creativity underlies the invention of new tricks, it is the discipline of experimentation that drives this innovation process[9]. Specifically, when developing a new trick, the best professional magicians will always build prototypes, which they'll test, revise accordingly, test again, further revise, and so on. The secret to that iterative process is to experiment both frequently and early in a project. Likewise, businesses that excel in innovation tend to run myriad tests as far upstream as possible in order to avoid expending considerable resources pursuing a potential solution that will ultimately lead nowhere.

Prime for Progress

The left hemisphere of our brains (popularly known as the sequential, logical side) perceives and processes the world in terms of its parts and their descriptions. In contrast, the right hemisphere (known as the emotional, holistic side) sees the world in terms of shapes, images, feelings, and impressions. The problem is when the left part is allowed to dominate the right part, it can be detrimental for innovation. To avoid that, we can engage in specific activities that purposely "prime" the right brain before attempting to solve anything that is particularly difficult. Techniques range from copying an upside down drawing, or writing with the non-dominant hand, to assembling a puzzle minus the "internal talking" or without directions. With both hemispheres contributing, the brain has its best chance to be more creative.

There are two very important roles in innovation: creator (to brainstorm new ideas) and critic (to decide which of those ideas are worth pursuing).

In addition, one should always allow for difficult problems to "marinate" before trying to solve them. In the development of new magic, progress doesn't always come in an upward linear fashion. It arrives more like a step function: for long periods of time you won't appear to be making any progress but then, seemingly out of nowhere, you'll make a leap forward. You might, for instance, have an "aha" moment after struggling with a problem for months. This process is very difficult to predict and stands in contrast to traditional engineering, which might have some uncertainty but is much more predictable: you'll typically have some ups and downs but you'll tend to make steady progress. Even in emergencies, pilots are trained to "wind their watch" so they don't rush into solving the wrong problem. The gain in effectiveness from contemplating a situation usually outweighs the loss of a few moments of action.

Practice the Art of Toggling

There are two very important roles in innovation: creator (to brainstorm new ideas) and critic (to decide which of those ideas are worth pursuing). The problem is that most people are in the habit of critical thinking – when they hear a new idea, they immediately think of its flaws, inconsistencies, and problems. But this can then squelch the creative process before it even has the chance to get fully started. To avoid that, the trick is to toggle between creator and critic. Otherwise, if you try to perform both roles at the same time, the critic will usually silence the creator. In addition, innovators also need to toggle between the top-down and bottom-up approaches to innovation. In a typical project, people know what they want to accomplish and they know the specifics of their profession (the tools, techniques, and so on), but they're frequently unsure how to use the latter to arrive at the former. So they need to toggle between the two and allow sufficient time for that process to converge. They should also toggle between the "big picture" perspective (what problem am I *really* trying to solve?) and the procedural view (how to do, hide, and sell it), particularly when they're stuck on a project because that process will force them to re-examine and check all their basic assumptions.

The Question Is the Answer

It's amusing to consider that the starting point for innovation is often similar to the starting point for comedy- "dissatisfaction". As such, innovators shouldn't necessarily ask what new product will get customers to open their wallets. Instead, they can ask what customers don't like about a current product. By identifying such "pain points," they can then start to figure out how best to improve something and design a solution that customers will eagerly adopt. Moreover, it's not only crucial to ask the right initial question, it's also important to follow that up with the proper exploratory

queries. We call that the power of "else": What else? When else? Where else? What else? Why else? How else? Who else? One of the secrets to innovation is to ask the right questions. Great magicians always ask themselves: "What else can I add to an existing trick to make it an exceptional audience experience?" For example, "The Trick That Fooled Einstein" is a well-established mathematical effect usually performed with a bowl of coins. Ignoring the coins, the magician might ask, "Utilising the same principle, can I perform a better effect with, say, postcards, marbles, or cookies?" In our opinion, the one difference that separates great innovators from others is the ability to ask much better questions.

Stay in the Room

According to Woody Allen, "80% of success is showing up." We'd go a little further than that and say, "In order to succeed you have to do more than just show up. You have to stay in the room long enough." Persistence is the key to success in virtually all aspects of life, and that's especially true in innovation. Take, for example, the early manufacturers of MP3 players. They helped develop impressive technology but they didn't take it far enough. They exited the room much too soon or stopped trying to ask the next round of innovation questions, leaving Apple to reap the benefits from recognising that the crucial thing wasn't just the device itself but the magical way in which the entire music industry could be transformed with the electronic delivery of digital content. And thus was born the wildly successful iTunes platform.

Many people assume that persistence is an inborn trait, more nature than nurture. But the truth is that persistence can be practiced and learned. The trick is to increase your attention span by constantly pushing yourself past your comfort zone until failure. Some of Houdini's feats combined with, say, bridge jumping or negotiating a river in winter, required not only advanced escape skills, but the real ability to withstand extreme levels of physical and mental discomfort. Such levels that can only be reached through persistent practice, which in Houdini's case included agonising periods of breath holding, muscle contractions, and sitting in bathtubs filled with ice.

Bringing Magic to Innovation

Being a world-class professional magician requires much more than just dexterous hands and an entertaining personality; it also necessitates a variety of skills for innovating. In fact, much of the job of a top professional magician is creative problem solving – something that managers in business must do on a daily basis. Yet although magic books might teach aspiring magicians the techniques of their craft – how, for example, to palm a card or coin – they don't provide very much guidance in how to be more innovative. Similarly, business school courses might teach students the fundamentals of finance, marketing, strategy, and so on, but they have traditionally given the topic of innovation short shrift. Fortunately, the principles of innovation are universal; we have seen that managers can learn much from the field of magic. And perhaps that, in a nutshell, is one of the most fundamental lessons of innovation: Sometimes you need to search way outside the normal sources of knowledge to discover true magic – an unexpected but invaluable new approach to framing, understanding, and solving a problem that previously seemed hopelessly intractable.

About the Authors

Stefan Thomke, an authority on the management of innovation, is the William Barclay Harding Professor of Business Administration at Harvard Business School. He is a widely published author and has taught and chaired numerous MBA and executive courses on innovation management, R&D strategy, product & service development, and operations, both at HBS and in individual company programs around the world.

Jason Randal's magic and mentalism has proven to be a favorite among his core clientele of senior level executives. With over a hundred television appearances, he has been a regular on David Letterman, Ellen DeGeneres, and Craig Ferguson shows. On stage, Randal has opened for comedians Jerry Seinfeld, Don Rickles, and Dennis Miller, and has performed before twelve heads of state. Among his many talents, he is a master flight instructor and spent ten years as a Hollywood stuntman. Thomke and Randal have been working together for five years.

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2. For a much more detailed description of the concepts discussed in this article, see Stefan Thomke and Jason Randal, "Innovation Magic." Harvard Business School Note 612-099.
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