

Inventors

JANUARY 2016 Volume 32 Issue 1

DIGEST

Joy Ride

Merry Lynn Morris' Wheelchair Offers Freedom of Movement and Expression

Downhill Challenge

DAVE DODGE
ENGINEERS
THE ULTIMATE
SKI BOOTS

Tender Tanks

THANKS TO AMAZON,
CAROL LARGENT'S
INVENTOR JOURNEY
IS TAKING OFF

Branding

HOW TO
NAME YOUR
INVENTION



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Problem Solved



Innovation is frequently the result of solving a problem—a problem that, more often than not, affects the inventor. Sometimes the invention alleviates minor frustrations, other times the invention has far-reaching impact.

Inventor Merry Lynn Morris is an exception to the “all about me” rule. She has designed a wheelchair with worldwide implications. When Morris was 12 years old, her father was in a tragic automobile accident and, as a result, spent most of the rest of his life in a wheelchair. Morris’ care-giving experience over the next two decades, as well as her work as a dancer, choreographer and teacher of individuals with disabilities, inspired her to design an omnidirectional, hands-free wheelchair that gives users an almost limitless range of movement and opportunity for expression. The body, in essence, acts much like a human joystick, enabling users to move about easily, even dance.

“I think the main focus of the problem-solving or innovating process has been to broadly and simultaneously consider human mobility from a creative, artistic, social and relational perspective,” Morris says. “This recognizes the importance of the human movement experience as a critical, formative force in shaping the identity and quality of an individual’s like.” Don’t miss Morris’ inspiring story.

Carol Largent came up with the idea for Tender Tanks to solve a problem after learning about the consequences of breast cancer surgery. The mother of two had a double mastectomy, which, for a time, left her unable to raise her arms over her head. She developed a tank top that features straps that attach with Velcro. Wearers undo the straps and step into the top, which makes it easy to dress. Tender Tanks were recently selected to be sold on the Amazon Exclusives website, and Largent is looking forward to new possibilities in 2016.

Dave Dodge and his partner, Bill Doble, manufacture some of the most innovative ski boots in the country. Dodge is a mechanical engineer and avid skier, who worked for Burton Snowboards for many years. Doble is a former marketing executive, who also skis. The two set out to develop a ski boot that was lightweight, durable and comfortable. The answer came in the shape of a carbon fiber boot that has helped professional skiers take seconds off their times and novices have more fun on the slopes.

What do Coca-Cola, Kentucky Fried Chicken and Kodak have in common? Secret recipes? Rising stock prices? They’re some of the most recognized brands in the world.

Naming your invention is the first, and most important step, in branding. Names can make or break a product in the marketplace.

I once heard billionaire Sarah Blakely, founder of Spanx, say that at one time she read that the founder of Kodak thought the “k” sound was so strong, he used it at the beginning and end of his brand name, and then created a functioning word based on the foundation. Blakely, who also had a short-lived career as a standup comedienne, knew that the “k” sound also ensured audience laughter. The word “Spanks” came to Blakely as she was sitting in traffic. Knowing that she could get a trademark more easily with a constructed name, she replaced the “ks” with “x,” and trademarked the word on the USPTO website for \$350.

If you’re in a quandary about how and what to name your invention, don’t miss John Rau’s article, “Building a Brand.” Not everyone can come up with a “k”-sounding name, but there are great alternatives. A fruit perhaps? Apple is taken.

Happy New Year,

Cama

INGENUITY IS AMERICA'S MOST VALUABLE RESOURCE.

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America has been on the cutting edge of innovation for over 200 years because of a strong patent system. If Congress passes harmful patent legislation, it will devalue the system that has helped turn America's best thinking into our nation's #1 export. That will mean fewer new ideas brought to market, fewer jobs and a weaker economy. We can't maintain our global competitive edge by undercutting our greatest asset.

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INVENTOR**

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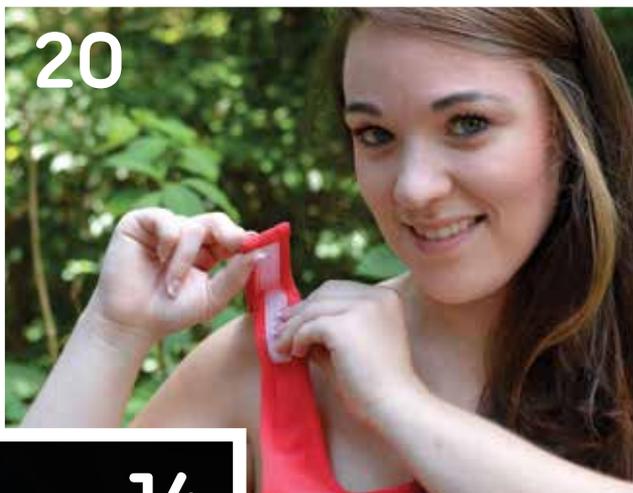
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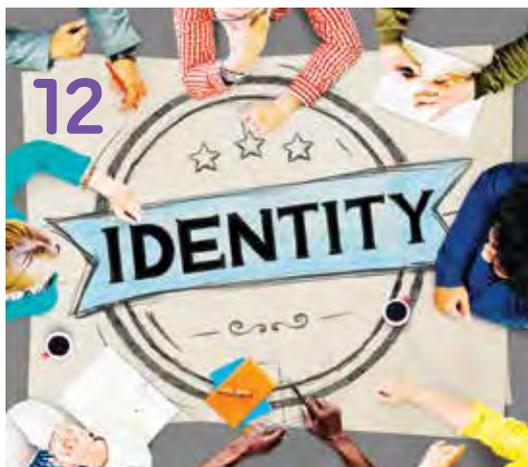
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photograph by
Jim Lennon

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Bright

Ideas

Compiled by Taryn Walls



Catalyst Case for Apple Watch 42mm

PROTECTS WITH STYLE AND FUNCTION

catalystlifestyle.com

Did the Apple enthusiast in your life receive the coveted Apple Watch for Christmas? If so, she can keep the expensive, wearable tech safe with the Catalyst Case.

The award-winning Catalyst Case enhances the Apple Watch's sleek design with an ultra-slim profile and snug fit. The case's exposed face, premium silicone wrist strap and true sound acoustic membranes ensure all watch features—such as the touchscreen, heart-rate sensors, charging dock, microphone and speaker—remain fully functional.

The case's protective features include material designed for outdoor and seawater use, drop protection designed to meet MIL-SPEC 810G and an IP-68 waterproof rating. Every unit is tested at 165 feet submersion, and the water rating means the case is suitable for showering, snorkeling and rain contact. However, users should avoid exposing the case to pressurized or high-velocity water.

The Catalyst Case is available for \$59.99 and comes in Stealth Black, Rescue Ranger and Green Pop.

“An inventor is simply a fellow who doesn't take his education too seriously. You see, from the time a person is 6 years old until he graduates from college, he has to take three or four examinations a year. If he flunks once, he is out. But an inventor is almost always failing. He tries and fails maybe a thousand times. If he succeeds once, then he's in. These two things are diametrically opposite. We often say that the biggest job we have is to teach a newly hired employee how to fail intelligently. We have to train him to experiment over and over, and to keep on trying and failing until he learns what will work.”

— CHARLES F. KETTERING, FOUNDER OF DELCO



Grush

MAKING ORAL HYGIENE FUN

grushgamer.com

Parents often find it hard to motivate their children to have good dental hygiene, and kids can easily ignore or forget the dentist’s warnings. Grush, an interactive toothbrush/gaming device, seeks to encourage brushing by making it a competitive and entertaining activity.

Grush has three components. The Grush Brush doubles as a toothbrush and “motion-sensing gaming wand.” Grush Games, which are controlled by the Grush Brush, run on Apple iOS and Android devices. Finally, the Grush Cloud stores scores and other information so parents can evaluate their children’s cleanliness and technique. Parents can even send the data to their child’s dentist.

Games include Monster Chase, in which kids brush away baddies hiding in teeth; Toothy Orchestra, which transforms the Grush Brush into a conductor’s wand; and Brush-a-Pet, in which children help raise Gavin Giraffe and friends. The games ensure that each mouth quadrant is brushed for 30 seconds at the appropriate angles. Games are also geared for different age groups and genders.

The brush works with games via its nine degrees of freedom digital motion processing sensor, which detects all brushing movements, and a wireless transmitter. The technology and games are designed to be used by children as young as 3.

The standard Grush Brush package includes the brush, a replacement head, a comic-style instruction book, a cell phone mount, two games, three AAA batteries, the parental dashboard app and lifetime access to the stored data. It is available for pre-order for \$59.99 and will ship in early 2016. Grush was chosen from 500 companies nationwide as the first-place winner at the 2014 TEEC Cup/North America Chinese Startup and Talent Summit.



Mars Levitation Bluetooth Speaker

ELEVATE YOUR MUSIC EXPERIENCE

indiegogo.com/projects/mars-by-crazybaby/x/12753699#

Mars is a wireless speaker by Japanese company Crazybaby that combines exceptional sound quality with futuristic design and advanced technology. The speaker comes in two parts: a sound projector and subwoofer charging station. The levitating 360° sound projector reduces sound wave absorption into surfaces by levitating above the subwoofer charging station.

The Mars Craft™ sound projector, which is powered by aptX®, has automated wireless charging, eight hours of continuous playback and a magnetic floating design. Using Gravitron® Levitation Technology, the projector automatically rises when fully charged and lands when depleted. It is waterproof up to three feet, made of aircraft-grade aluminum and contains a high-sensitivity microphone with Bluetooth 4.0 for phone calls. The Mars Base™ subwoofer has a long-lasting battery and two USB ports for device charging. You can also use Bluetooth or the Mars app to control the device remotely, or to pair two speakers together for surround sound. Mars is available on Amazon for \$299.

YOUR PATENT CAN BE DESIGNED AROUND
Check to see how yours holds up.



QUANTUM INVENTING
by Stephen Malak

* Book available online, only at
quantuminventing.com

Meater™

YOUR OWN FIVE-STAR KITCHEN

meater.com

Meater is the only wire-free meat thermometer that guarantees perfectly cooked meat every time. Using a smartphone app, Meater tracks the internal, target and ambient temperatures of any meat you are cooking. Simply turn the Meater probe on, stick it in the meat and select your target temperature. The thermometer will then communicate its reading to the Meater app, which will notify you when the meat's target temperature is reached. This smart thermometer eliminates the need for wired thermometers or inaccurate analog measurements, and it keeps you from having to continually open your oven or grill to take temperature readings.

Meater temperature sensors can provide +/- 1°F (+/- 0.5°C) of accuracy, and can even predict when your food is done. Features of the Meater include stainless steel construction, a water-resistant design, Meater Dual Sensor System, an internal temperature sensor range of 212°F (100°C), an ambient temperature sensor range of 527°F (275°C), a Bluetooth LE connection and a rechargeable battery that lasts 48 hours or more.

Meater thermometers can be purchased individually or in a Meater Block, which includes four thermometers and built-in WiFi connectivity. Meater is perfect for techy chefs—or forgetful chefs—and is currently available for pre-order on Indiegogo. Prices begin at \$59. The estimated delivery date is March 2016—just in time for spring barbeques.



Czur Scanner

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techanger.net

The Czur Scanner is an advanced scanner that simplifies the digital conversion of unbound and bound materials—including entire books. It is ideal for those who are involved in archiving or

information collecting, as well as anyone interested in digitizing paperwork and hard-copy books.

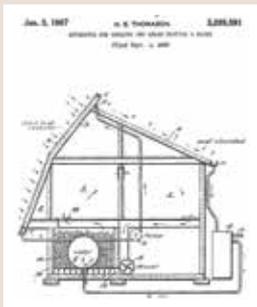
With a scanning speed 20 times faster than the average scanner, this smart scanner's creative algorithms and 16 million pixels ensure the conversion process is both fast and clean. The Czur cloud allows users to instantly store JPG, PDF or TIFF files without additional software or devices. Additionally, Czur's functionality includes video presenter capability. It can connect to screens via HDMI and present with 1080p.

The Czur Scanner includes a 32-bit MIPS CPU, which can scan a page in less than one second. And it has an installed two-setting LED light that can also be used as a desk lamp. Additional features include an OCR function that can recognize up to 34 languages, and a built-in screen that simultaneously displays the materials being scanned. Furthermore, the scanner's algorithms flatten curves in the pages of books, erase fingerprints, purify backgrounds and correct distortions.

The Czur Scanner is available on Indiegogo and is expected to begin shipping February 2016. Prices begin at \$299.

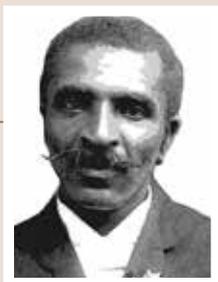
January 3, 1967

U.S. Patent No. 3,295,591 was granted to **Harry Thomason** for an apparatus for solar cooling and heating a house. Thomason discovered that water could be heated and cooled with coils through a series of electronic switches powered by the sun.



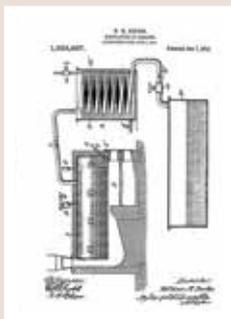
January 6, 1925

Agronomist **George Washington Carver** was granted U.S. Patent No. 1,522,176 for cosmetics made from peanuts. As the director of agriculture at the Tuskegee Institute, Carver devised a method of crop rotation that improved depleted soils. By alternating cotton crops with soil-enhancing, protein-rich crops, such as, sweet potatoes and peanuts, nitrogen was restored to the soil. Crops flourished, but there was a surplus of peanuts, which led Carver to develop over 300 alternate uses for the peanut.



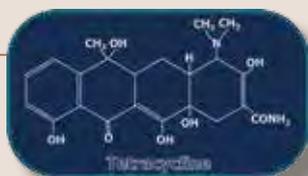
January 7, 1913

U.S. Patent No. 1,049,667 was granted to **William Burton** for the manufacturing of gasoline. His process of thermal cracking doubled the amount of gasoline that could be extracted from crude oil.



January 11, 1955

U.S. Patent No. 2,699,054 was granted to **Lloyd Conover** for the antibiotic tetracycline. Within three years, tetracycline became the most prescribed broad-spectrum antibiotic in the United States. Tetracycline was important in reducing the number of deaths from cholera, and is used to treat a number of bacterial infections.



January 20, 1857

William Kelly was granted U.S. Patent No. 16,444 for an improvement in blast furnaces, which produced the first inexpensive steel and fueled the U.S. Industrial Revolution. Kelly's improvement allowed air to be injected into molten pig iron, thus causing the iron to boil violently. This greatly reduced the carbon in the iron and the amount of fuel required to make steel.



Be Realistic

HOW TO ESTIMATE THE MARKET FOR YOUR INVENTION

BY GENE QUINN



Inventors say it all the time: “Everyone is going to need this invention.” Less grandiose, but certainly no less confident proclamations go something like this: “There are nearly 320 million people in the United States. If only half of them buy my invention, that is 160 million sales.”

Inventors are understandably excited. If you spend enough time working on an invention, it becomes “your baby.” It is easy to lose objectivity. But at the intersection of pride and greed, many an inventor becomes unrealistic, which is the kiss of death if you are trying to do business with reputable people. There is nothing wrong with dreaming, but there is an extremely important cautionary tale about the tremendous harm that can be done to opportunity when inventors exaggerate the market size for their inventions.

Let's start with the obvious. No product or service is ever going to be purchased by everyone. Less than 36 percent of people in America watch the Super Bowl, about half the people in the United States do not file or are not counted on a federal income tax filing, 79 percent of Americans know that the Earth revolves around the sun, and only 76 percent of Americans know that our nation achieved its independence from England. These statistics indicate that 100 percent is simply not achievable.



HEMERA TECHNOLOGIES/ABLESTOCK.COM/THINKSTOCK

Knowledge Is Your Friend

If you are serious about determining the size of the market, you should research publicly available information and dig through the data to see what realistic and plausible assertions you can make. You can hire experts to provide a market analysis, but going through the effort of trying to realistically figure things out yourself is a very important step, and the only cost you will incur is the time you invest. In exchange, you will gain critical insights into all aspects of the market you are seeking to enter. If you are going to succeed in business, this knowledge must be your friend.

Consider the Census Bureau as a source of free information. Let's take, for example, a baby product aimed at children learning to walk. You could quite quickly learn from the 2010 Census that there were 20.2 million children under the age of 5 in the United States at the time of the Census, which was an increase of 5.3 percent over the 2000 Census data. But many children under 5 already know how to walk, while others in the under-5 category are too young to learn to walk. That would suggest that your potential market is some fraction of those 20.2 million children, certainly not all of them.

Since we are trying to come up with a plausible estimation based on factual information with reasonable assumptions, let's

say that the invention would be appropriate for use with children who are between 9 and 16 months old. If we were to assume an evenly distributed population, that would suggest 13.3 percent of those 20.2 million children are the target market, which corresponds to approximately 2.7 million children.

But will the parents of all 2.7 million children purchase your invention? No. It is important to remember that 100 percent adoption of the target market is unobtainable. So there will be a much smaller subset of potential purchasers. For example, according to the United States Department of Agriculture, in 2013 only 80.5 percent of households with children under 18 were food secure. Now we are starting to compare apples to oranges because we don't know for certain that we are dealing with an even distribution with respect to households with children under 5, which is where we obtained our base data. Nevertheless, it would seem unrealistic to expect all households with children to purchase a particular invention, when nearly 20 percent of U.S. households with children have difficulty finding enough money to buy food.

Realistic Market Penetration

Notice also that we haven't started to consider how many multiple-child households are in the United States, whether the invention is one that could be resold or passed on once used, or the price point of the invention, which could weed out a great many potential purchasers. For this reason, at least initially, it is considered difficult to achieve even 5 percent penetration within the realistic potential market.

So let's be generous and say that your invention is both revolutionary and appropriately priced to be accessible to a large percentage of the potential market. Even if you achieve 5 percent market penetration in the first year, you are looking at 135,000 sales, which is probably far fewer than you would have thought prior to going through this endeavor.

While you may be disheartened by an appropriately estimated market, don't despair. Taking the time to realistically examine the size of the market is useful for at least two reasons: First, the market size may wind up being so small that pursuing the invention doesn't make sense, which frees you up to work on your next invention.

Second, if you spend the time to realistically determine the market size, you will be viewed differently from the inventor who can't be bothered with such research and assumes that everyone will want to purchase the invention. Whether seeking a licensing agreement or looking for investors or partners, those who engage inventing in a business-responsible manner will ultimately have a greater chance of succeeding.

Investors or those who control distribution channels prefer to do business with people who act professionally. They don't appreciate exaggeration because it indicates that someone is unrealistic and may be difficult to work with.

Be reasonable, professional and realistically estimate the potential market size. In the end it will be a winning strategy. 🍀

Building a Brand

HOW TO NAME YOUR INVENTION

BY JOHN G. RAU



One of the most important aspects of a marketing plan is choosing a name for your invention, followed by an engaging logo and slogans to advertise your product. Although these steps usually fall at the end of the invention process, they are vital to the invention's commercial success. In essence, it's time to "brand" your invention.

Don't confuse the brand name with the title of the invention. The title is required on the patent application, but this is not usually the name of the invention. For example, the title might be "device that connects A to B and performs C," whereas the name might be "Super Connector." The objective of branding is to create a unique name and image for a product in the consumer's mind. A distinctive, memorable and positive name can go a long way to promote your new invention.

In the 2010 article "Devising the Best Name for Your Invention," which was published on ThomasNet News, Beth Goldbaum offered the following advice for naming an invention:

- **An evocative and compelling name is the first step toward creating a brand around a product,** especially if it establishes positive connections in customers' minds whenever they hear it.
- **Be creative, but get to the point.** An effective name will accurately describe what your product does and should be

catchy, clear and succinct. You also want to leave an impression with your audience without causing confusion about what your product does.

- **Consider the overall feeling that the name evokes when it's repeated.** If the words are descriptive, use words that elicit a positive image or response.
- **Know and consult with your audience.** One of the best ways to get efficient name feedback is to know your intended audience and ask them what they think.

Accurate Mental Image

In the article "10 Tips for Naming Your Company, Product or Service," the Name Inspector says you should start with a clear understanding of what your new invention does and how it benefits people. Often, what makes a name good is the fact that it gives people a mental image that helps them understand how something works or what benefits it provides. This means that, when you're coming up with names, it's best to start with a visual image and then think of the language that goes with it.

Peter Lloyd wrote in "Naming Your Invention" that you should focus on a "name of distinction," because the first purpose of a name is to distinguish your invention from similar products or services, especially those that most likely pose the threat of confusion. You want to establish your product or service as different and relevant to your potential customers. In any case, whatever choice you make, you should love the name. Lloyd points out that Bill Gates must have really loved the name of his company because "micro" and "soft" have more than one connotation. Who

knows what Bill Gates was thinking when he named his company, but the word “Microsoft” has resonated with consumers to the tune of billions of dollars in sales.

Protecting a Name

Once you have chosen a name, you have effectively branded your invention. The next step is to decide whether or not you should protect your brand name. A trademark typically protects brand names and logos used on goods and services, whereas copyrights are used to protect slogans. A trademark or servicemark includes any word, name, symbol, device or combination of these that are used to identify and

“The future belongs to those who are building brands now, for they will be sought after.”

— BERNARD KELVIN CLIVE

distinguish the goods and services of one seller or provider from those of others, and to indicate the source of the goods and services.

To avoid infringement, you should search the United States Patent and Trademark Office database to determine whether anyone is claiming trademark rights in wording or design that is similar and used on related goods or services through a federal registration. Before making a decision, consult the USPTO website, <http://www.uspto.gov>. The website lets users search by name and subcategory, and lists whether a particular name is already taken. This is accomplished by using the Trademark Electronic Search System (<http://tess2.uspto.gov>). Although federal registration of a mark is not mandatory, it has several advantages, including notice to the public of your claim of ownership of the mark, legal presumption of ownership nationwide, and exclusive right to use the mark on or in connection with the goods and services listed in your federal registration. It is important that you select or create a trademark that is both federally registerable and legally

protectable. It is prudent to consult with an attorney to avoid potential legal problems when trademarking a brand name or logo.

Understand Your Market

Beth Goldbaum points out that you should avoid unintentionally insulting the public by your choice of name and/or slogans. This is especially true for inventions planned for the international marketplace. You have to be careful here because problematic translation, cultural beliefs, pronunciation or spelling in various countries can negatively impact sales.

In his article “Marketing Blunders & Global Culture,” Thomas Metcalf of Demand Media suggests means to minimize the chance of making global blunders. He says to plan ahead. “Select the countries where you intend to do business and learn all you can about them. Find a native speaker who can help you with translations and guide you through cultural innuendo. You must familiarize yourself with language, graphics, color and symbolism. As you learn about the culture, examine the attitudes about aging, gender roles and tradition. Explore the economic conditions—not just the current state of affairs, but also how the countries have reacted to economic turmoil in the past. Make sure your name and brands are acceptable overseas. What is acceptable in one country may be insulting in another, and there may be regional differences within countries. With best efforts on your part, you should be able to shrink the barriers and enjoy good business relations.”

In summary, the noted lifestyle entrepreneur, personal branding coach and author Bernard Kelvin Clive puts things in perspective for aspiring inventors: “The future belongs to those who are building brands now, for they will be sought after.”

John G. Rau, president/CEO of Ultra-Research Inc., has more than 25 years experience conducting market research for ideas, inventions and other forms of intellectual property. He can be reached at (714) 281-0150 or ultraresch@cs.com.



LOST IN TRANSLATION INTERNATIONAL MARKETING BLUNDERS



KFC’s slogan “Finger lickin’ good” was translated in Chinese to mean “Eat your fingers off.”

Electrolux

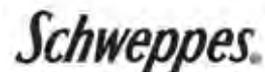
Scandinavian vacuum manufacturer Electrolux used the following in an American campaign: “Nothing sucks like an Electrolux.”



“Come alive! You’re in the Pepsi Generation” translated into Chinese is “Pepsi brings your ancestors back from the grave.”



Coors translated its catchy slogan “Turn it Loose” into Spanish. It read as “Suffer from diarrhea.”



When Schwepps expanded into the Italian market, “Tonic Water” was translated into “water from the toilet.”



Frank Perdue’s chicken slogan, “It takes a strong man to make a tender chicken,” was translated into Spanish as “It takes an aroused man to make a chicken affectionate.”

Downhill Challenge

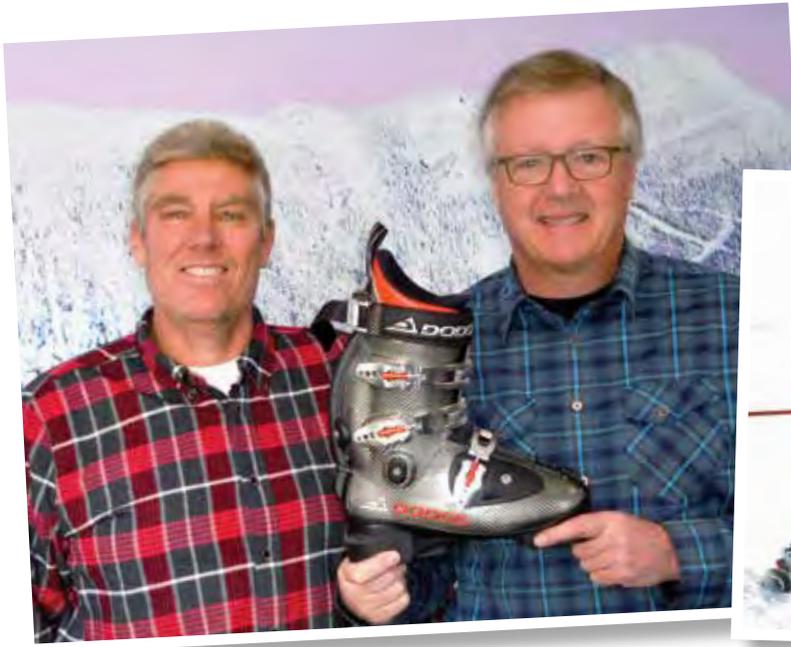
DAVE DODGE ENGINEERS
THE ULTIMATE SKI BOOTS

BY JEREMY LOSAW

Skiing is a high-performance sport, but for many years, ski boot design did not keep pace with the technological advances in skis or clothing. Since the release of the first plastic ski boot in 1959, ski boots basically remained the same heavy, bulky design for years.

Then Dave Dodge, a lifelong skier and engineer, came up with the idea of making ski boots with a carbon fiber shell. After years of designing prototypes and refining the manufacturing process, Dodge and his partner, Bill Doble, have made Dodge Ski Boots one of the most innovative ski boot companies in the industry.





Vermont entrepreneurs Bill Doble (left) and David Dodge decided to “do something fun” in 2008, when they started their company, Dodge Ski Boots.



Former World Cup racer Warner Nickerson wore Dodge Ski Boots when he won the Men’s Giant Slalom at Coronet Peak, Queenstown, New Zealand, during the 2011 Winter Games.

Dodge Ski Boots are stiff, lightweight, durable and suitable for all types of ski conditions. The shell is made from a composite of carbon fiber, Kevlar and fiberglass, which is light, stiff and impact resistant. The boots have a patented heel-track design to make it easier to get in and out of, and a neoprene toe box for increased comfort. The composite blend makes the boots less temperature dependent than plastic boots, so they have a consistent flex that doesn’t change with ambient conditions.

Bumpy Start

Dodge Ski Boots was born at the intersection of skiing and engineering. Dodge is an engineer who spent the bulk of his career working at Burton Snowboards. After many years, he quit his full-time job and began consulting for several snow-sports companies. When the economy went sour in 2008, development budgets tightened, and Dodge lost many of his customers.

While he lost significant income, Dodge gained time. He used that extra time and the money from various patent royalties to work on his idea for a carbon fiber ski boot. He knew others had tried the same idea and had failed, but he felt he had the special skills to design a boot superior to anything else on the market. “I started thinking,” says Dodge, *I can do this. I have the experience to solve this problem and make a composite ski boot.* Armed with dogged determination, Dodge set up in his garage to make prototypes.

One of Dodge’s biggest challenges in bringing a viable composite boot to the marketplace were the long cycle times required to produce carbon-fiber parts. Most carbon-fiber composite involves layers of woven carbon-fiber fabric that are held in an epoxy resin. Epoxy is messy, hard to work with and requires heat and pressure to cure, which necessitates an expensive pressure

oven called an autoclave. However, Dodge found a supplier of composite material in Germany that made composites in a thermoplastic laminate. The laminates flow when they are heated and cool quickly into a molded shape for faster cycle times.

This allowed Dodge to create simple molds that he could test in his garage. His first mold was made from high-density foam and held together with C-clamps. However, Dodge found that C-clamps could not hold the pressure to force the laminate to take the shape of the mold. He bought a 50-ton hydraulic shop press to get the 200psi of pressure needed, and the product began to take shape. “We heated the part in my kitchen oven on a big plate of steel so it would not cool off and ran it out to the garage,” says Dodge. “We made a few pairs of boots that way.”

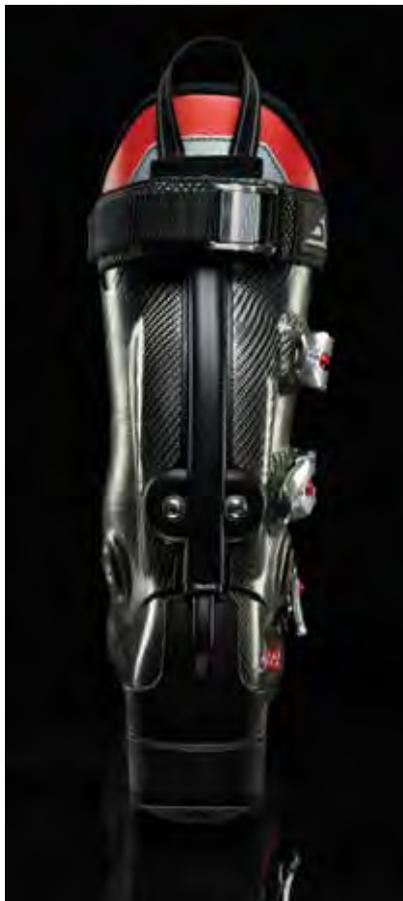
Short Run

The next big technical challenge was trimming the boots. When the composite structure is released from the mold, there is a ring of flashing around the part that must be trimmed. A variety of holes also need to be cut in the boot to accept the buckles and mounting hardware to complete the assembly. This is tricky to do accurately with a boot’s unusual shape.

Dodge trimmed and cut the first prototypes with a band saw and a router, which was a time-consuming process. After exploring a variety of different multi-axis cutting technologies, he found a local group that had a laser cutter used for work in the gun industry. They did a test on several samples, and the laser cut the material quickly and smoothly. He then needed a way to control the laser head to make the cuts. A five-axis robotic arm seemed like a great solution, but the small and affordable ones

Dodge Ski Boots are made of a lightweight carbon fiber that increases durability and flexibility, and is impervious to temperature.

Dave Dodge, a mechanical engineer and skier, designed the high-performance boots for speed and comfort.



were not powerful enough to carry the head. He designed and built a system in which the laser head remains stationary, and the lightweight boot parts are carried on the robot during the cutting process. The system cut the boots very quickly.

The carbon parts then needed to be married to the rest of the boot assembly to make a complete ski boot. The injection-molded parts for the heel and binding interface were sourced in China. The liners were produced in Vermont, and the hardware was sourced from the Italian town of Montebelluna, where most of the world's ski boots are made. All the parts were assembled in Dodge's partner's garage for a short 25-unit production run in early 2010.

Carving a Niche

The boots were initially marketed to racers and were successful from the start. One of the sponsored racers improved his world ranking from 60th to 30th in a matter of a few races. After several years of focusing on racers' needs, Dodge and Doble realized that sales were sluggish because racers acquired most of their gear through sponsorships. The company shifted its design and marketing focus to the high-end skiing enthusiast market, which had a much bigger customer pool. As a result, Dodge Ski Boots saw a marked uptick in sales.

After several years of retail sales, Dodge and Doble found their boots gathering dust on shelves that were stocked with better-known brands. "We pulled out of retail outlets last season,"

Dodge says. "We were growing pretty fast, but we weren't happy with the fitting that was being done. Other manufacturers have so much leverage over the retailers. People forget about us, even though they love the boot." Today, every boot is custom-fit and sold directly to customers through an online Remote Fitting System™. The boots cost \$1,295 per pair.

Almost seven years after the first prototypes, Dodge Boots continues to grow. In 2015, the company finally moved out of Doble's garage and into its own facility. Dodge hopes to sell 300 pairs of custom boots this year, with the ultimate goal of selling 5,000 pairs a year and finding a buyer for the company. "If I was 30 years old, I'd want to grow it into the next Nordica, but I'm 60," Dodge relates. "I'd like to sell the company in six or seven years."

In the meantime, Dodge and Doble are gearing up to launch a new boot design that will have more features and convert to use for back-country skiing environments. From humble beginnings, the two have built a company that has skiers tearing up the slopes with confidence and in comfort. 🏔️

Jeremy Losaw is a freelance writer and engineering manager for Enventys. He was the 1994 Searles Middle School Geography Bee Champion. He blogs at blog.edisonnation.com/category/prototyping/.





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Take a Stand

WHEN YOU REALLY
NEED TO GO... BY EDITH G. TOLCHIN



Dr. Jacob Delarosa and Juan Leon invented The Pee Pocket to allow women to stand, rather than sit, in unsanitary restrooms.

Every woman, at one time or another, has experienced unsanitary or unsavory public restrooms. Until now, there have been few ways to avoid or alleviate the problem. The answer lies in The Pee Pocket™, a disposable, single-use urinary device that is used while a woman is taking the same stance in the restroom men have taken since the beginning of time: standing. Although developed for use in poor restroom conditions, The Pee Pocket has grown in popularity for road trips, outdoor activities such as camping, hiking or cycling, and public events at which the only alternative to portable toilets is “holding it.”

Invented by two physicians, Jacob Delarosa, M.D., a practicing heart surgeon and chief of cardiac and endovascular surgery at Portneuf Medical Center in Pocatello, Idaho, and his partner, Juan Leon, M.D., a cardiac anesthesiologist, The Pee Pocket has also gained recognition for medical use. Post-surgical patients, especially hip and knee replacement patients, the elderly and pregnant women who have trouble bending or squatting have regained a level of independence thanks to The Pee Pocket.

Editor’s Note: The following interview with Dr. Delarosa has been edited for clarity.

Edith G. Tolchin: According to your website, “The Pee Pocket was developed by a team of doctors who were fed up with dirty and unsanitary public bathrooms for their families.” When did you and your team first come up with the idea for the product?

Jacob Delarosa: My family and I were taking a trip out of the country, and my wife asked me to take my 5-year-old daughter to the restroom at the airport before departing. The toilet seat was not only dirty, it was broken. I called my wife, who said to lift her up and hold her over the toilet.

During our travels, in the airplane, as well as abroad, the toilets were often dirty, and some restrooms had no toilet seats. I had to continue to hold my child above the toilet so she could urinate. My mother was with us, and she has bad knees, so hovering (over the toilet) was a challenge for her.

When I returned to Idaho, I discussed the situation with my partner, whose wife passed away several years ago. He has had to raise his daughter and son alone, and he said, “I have the same issues with my daughter when we travel.” We put our heads together and came up with The Pee Pocket.

EGT: Describe The Pee Pocket. What is it made out of and how does it work?

JD: The Pee Pocket is a single-use, biodegradable disposable urinary device. It has a patented trifold design that is made of hydrophobic paper. The Pee Pocket unfolds into a funnel shape that is placed at the perineum and when the user urinates, it directs the flow into the toilet or designated receptacle.

PHOTOS COURTESY OF JACOB DELAROSA, M.D.

EGT: How did you create your first prototype, and who were your first testers?

JD: The first prototype was created from computer paper. Our first tester was my wife, Rosabeth. I recorded her using this and posted it on YouTube. Immediately, we had several thousand views. At that moment, we knew it would be a hit. From that first prototype, there have been several improvements and variations, especially in preventing backslash.

EGT: Did you require FDA approval for manufacturing this product?

JD: We were familiar with regulatory and FDA standards, so we looked into having the product registered. Because there is no internal use, we did not need any regulatory approvals.

EGT: Is this product licensed or are you manufacturing on your own? If so, where is the product made?

JD: Currently, we are manufacturing the product in the United States and China.

EGT: Have you encountered any obstacles along the way of product development?

JD: The first issues we encountered were knockoffs and counterfeit products. Even though the product is patented, it is still very difficult to control what is being produced and sold outside of the United States.

EGT: When did you launch the business?

JD: We launched the business in July 2014 at the gynecology and urology annual meeting in Las Vegas.

EGT: How is the product sold?

JD: The product is sold through retail and e-commerce. We are on Amazon and in Ace Hardware and Shaver Pharmacy stores. We are currently working with Walmart for product placement.

EGT: Do you have any pearls of wisdom for *Inventors Digest* readers, many of whom are novice inventors?

JD: I think, first and foremost, if you are planning to have your product in the retail sector, you need to be aware that your company has to be graded. What I mean is, just as when you go to buy a house, you have to have a decent credit score. Big retail box stores require a type of credit report/score in order to work with them. Large companies work with Dun & Bradstreet. It is essential that new companies are aware of this grading system. 📞

For information, visit www.thepeepocket.com.

Edie Tolchin has contributed to *Inventors Digest* since 2000. She is the author of *Secrets of Successful Inventing* and owner of EGT Global Trading, which for more than 25 years has helped inventors with product safety issues, sourcing and China manufacturing. Contact Edie at egt@egtglobaltrading.com.



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Tender Tanks

THANKS TO AMAZON, CAROL LARGENT'S INVENTOR JOURNEY IS TAKING OFF

BY JEREMY LOSAW

Breast cancer and the repercussions from the disease have affected countless lives. In 2015, approximately 230,000 women in the United States were diagnosed with breast cancer, and 40,000 women succumbed to the disease. Although awareness campaigns have raised millions of dollars to fund research to find a cure, there is an immediate need to help those undergoing breast cancer treatment and surgery with their daily struggles.

Carol Largent is a breast-cancer survivor who understands what is like to live with and battle through the disease. She developed Tender Tanks to make her fight more comfortable and dignified.

Tender Tanks is an adjustable tank top that is designed to give greater daily independence to women recovering from breast cancer surgeries. Patients recuperating from

a mastectomy cannot raise their arms over their heads, so it is difficult to get dressed. Tender Tanks, which are made from a stretchy Lycra blend, feature adjustable shoulder straps that fasten with Velcro. The straps can come apart, which allows the wearer to step into the shirt and pull it into place.

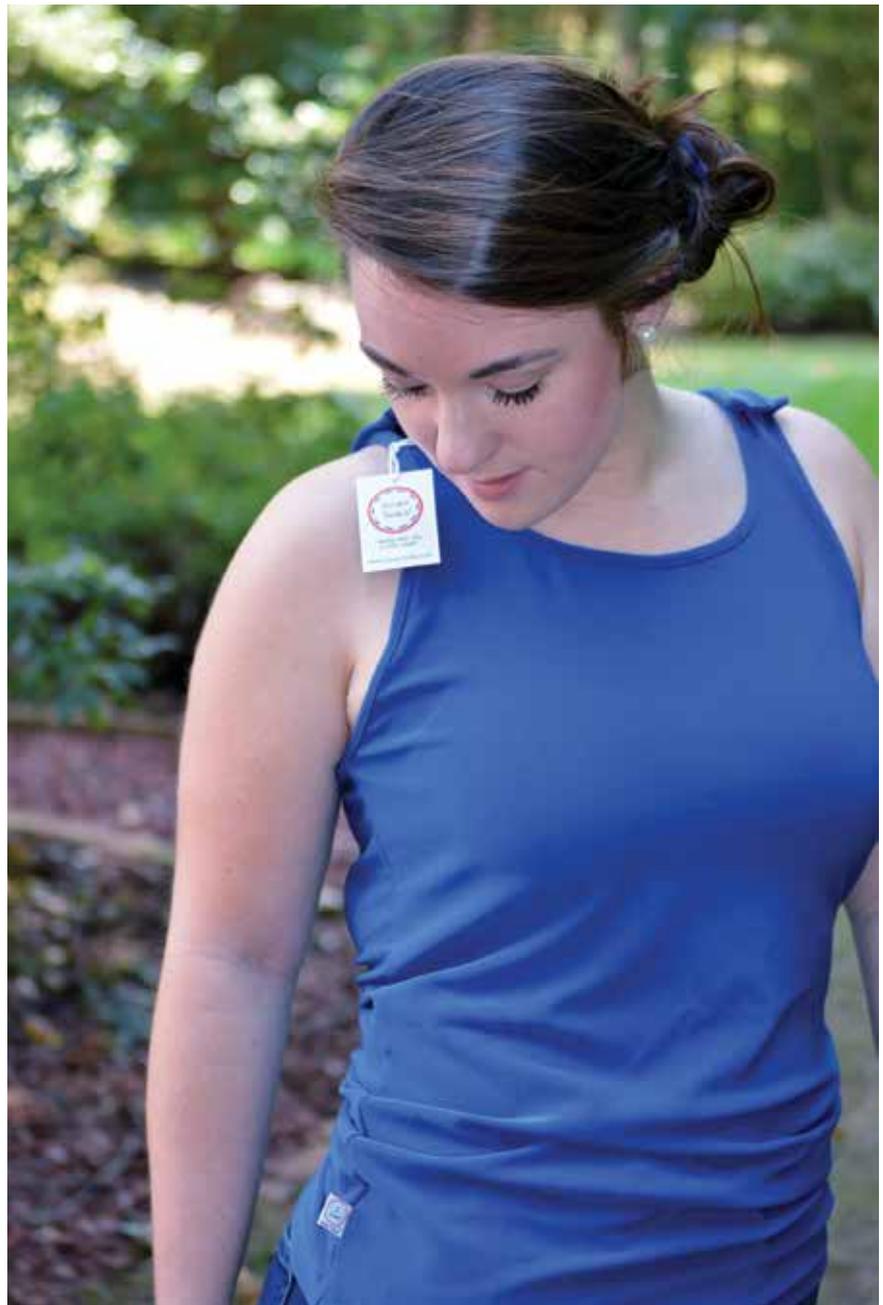
The straps can be adjusted to provide a comfortable level of support, depending on the stage of treatment. Tender Tanks also allow easy access to the breast area during doctor visits, and the oversized armholes provide room for a post-surgery drainage tube to exit the shirt without being disturbed. The stretchy fabric adjusts to a woman's changing shape. To further impact women going through the breast-cancer journey, the inspirational message "Find your inner strength, stay positive and repeat 'I Can!'" is sewn into each tank.



Breast cancer survivor Carol Largent developed Tender Tanks to give greater comfort and independence to women recovering from breast cancer surgery.

Tender Tanks feature an adjustable Velcro strap that promotes ease of dressing.

Tender Tanks come with the message: "Find your inner strength, stay positive and repeat 'I Can!'"



Realistic Expectations

Largent came up with the idea for Tender Tanks in 2011 while preparing for her own surgery. Between her breast cancer diagnosis and mastectomy, the mother of two watched videos and read about the procedure to know what to expect. During her educational process, Largent discovered it would be difficult to raise her arms after the surgery and that she would likely need help from friends and family during the recovery process.

Her husband, Dave, would be by her side, but most of Largent's family lived

hundreds of miles away from her home in Georgia. She came up with the idea for Tender Tanks while discussing the surgery with her sister. "I need to be able to take care of myself," Largent told her. "I don't want to be a burden on someone else. I have got to find something to wear."

Her search for the proper garments proved fruitless, so Largent began coming up with ideas to modify one of her own shirts to make it easy to get dressed. She soon realized a tank top would be perfect; she could simply cut the thin straps and add a hook and eye.

All Sewn Up

The prototyping began with a trip to Old Navy. Largent bought several extra-large tanks because they had armholes big enough to accommodate drainage tubes. At home, Largent got out her sewing machine, cut the straps and added Velcro, a better option than a hook and eye, to the straps. Then she cut and re-sewed the sides of the tanks to make them fit more naturally. She finished the tops just before undergoing a mastectomy.

"When I got through the surgery and went home, I had nothing to wear except

my prototypes,” she says. “The hospital sends you home with a medieval-looking corset—something I can’t even describe.” Fortunately, the prototypes worked as expected.

Largent wore them around the house and to every follow-up appointment. She was able to skip the paper gowns because, when it was time for the doctors to perform an examination, all she had to do was release the straps. A second-grade teacher at the time, Largent also wore them to work during the one-year breast reconstruction process. Once Largent’s treatment was complete, she began giving the tanks to other women, who gave the product glowing reviews.

Largent then consulted a lawyer about getting the technology patented. Unfortunately, it is difficult to get intellectual-property protection on clothing unless breakthrough technology is involved. Despite the setback, she wanted to get Tender Tanks into the market for the benefit of others.

Perfect Fit

Largent found a local seamstress to help produce six professional prototypes in various sizes. The prototypes were sent to a company in New York to be graded. This allowed Tender Tanks to be given a standard size despite the slightly skewed proportions of the armholes. The prototypes were then disassembled, and the patterns were digitized so they could be cut for larger quantity runs. Largent’s seamstress then agreed to make a small production run of 210. It took almost six months to get the first batch, and the unit cost was too expensive to sell them at Largent’s desired price point, so she gave the tanks away to get feedback on the design.

The production cost was a big issue, and Largent struggled to find another manufacturer. Then her husband found a lead that would help bring Tender Tanks to market. Dave worked in the carpet industry and happened to run into someone



“I need to be able to take care of myself. I don’t want to be a burden on someone else. I have got to find something to wear.”

— CAROL LARGENT

who was getting bathing suits made in Bogota, Colombia. Largent contacted the South American company and determined it had the ability to produce the tanks. The company not only sewed garments, it also manufactured fabric. Representatives sent Largent material samples of different blends, and she chose one with a four-way stretch. The company then made samples and shipped them to Largent. The tanks were high quality and needed only minimal changes to finalize the production specifications.

First Production Run

Largent was ready to make the production run, but it was a nerve-racking process for a first-time product developer. To initiate production, she had to wire 50 percent of the production cost to the factory. These are normal terms, but she had never been to the facility and was worried about wiring the funds. “I’m thinking,” she says

Please God let it [money] go to some place that actually exists, because I am sitting on a whim and a prayer never having met the man. Fortunately, the money made it to the factory, and the production started without delay. A few weeks later, the product was shipped. After four years of work, Largent finally had a palette of Tender Tanks in her garage ready to sell.

While it was a long road to get Tender Tanks produced, the journey is just beginning. In September 2015, Largent took Tender Tanks to the Amazon Inventions tour in Atlanta and was chosen to sell on the Amazon Exclusives website. The tanks retail for \$50.

“So far I have sold three tanks, but I am quickly realizing that the missing piece is that the public has to be educated about what my product is for,” says Largent. “So, at the first of the year I will be pounding the pavement going to hospitals, breast surgeons, plastic surgeons and orthopedic clinics to show my product in person. I have received emails from many people describing different purposes for my tanks. It turns out, not only are they great for breast cancer patients, they are also useful to those who can’t lift their arms, like shoulder-surgery patients, patients with pacemakers, nursing mothers and elderly individuals with arthritis.”

In the meantime, Largent has produced prototypes for two more tanks. One has pockets to hold the drainage bulbs that patients require after surgery. The pockets snap to keep tubing close to the body. The other one is for males, who also can get breast cancer, or may need the tank after shoulder surgery.

Largent has now beaten not only breast cancer but also endometrial cancer caused by the drugs used to treat her original disease. She hopes Tender Tanks “will empower, comfort and help breast cancer patients around the world. When I was first diagnosed, I thought to myself, *God willing I get through this, I want to make a difference,*” she says. “This is my difference.”



Sleeping with the Enemy

THE ADVANTAGES OF BEING NO. 2

BY JACK LANDER

Hertz has been No. 1 in automobile-rental income since the company's inception in 1918. However, the company almost lost that ranking after Robert Townsend took over as CEO of No. 2 Avis Rent-a-Car in 1962. Avis gained a huge market share after its advertising agency came up with the expression "We're number two. We try harder."

Townsend embraced the catchy slogan and helped take Avis to a position of prominence in the automobile rental industry. For the first time in more than a decade, Avis became profitable and gave its main rival—Hertz—a challenge for the top spot. Townsend, later, wrote one of my favorite business books—*Up the Organization: How to Stop the Corporation from Stifling People and Strangling Profits*. His timeless business philosophy helped shape my own, and I highly recommend the book to all inventors and entrepreneurs. Although Avis never quite caught up with Hertz, Townsend showed us that the No. 2 position has advantages.

Bill Gates came up with a tablet computer 10 years before Steve Jobs, but Jobs' market entry was better timed, and his engineering was superior. Although the iPad's publicity might make us think it is the best-selling tablet, Android tablets are solidly in the No. 1 sales position.

Inventors and entrepreneurs dream of being No. 1 in the marketplace—not merely the first to enter it with a novel product but also first in sales volume. It's a nice dream, but it usually isn't the best strategy for success.

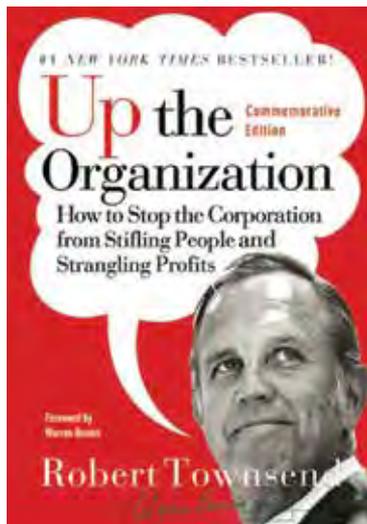
Degrees of Novelty

First, depending on its degree of novelty, a product may not have a readymade retail market. If you enter the pest-control market with a new mousetrap, you may be able to grab at least a token share of that market because people are well aware that mouse-traps exist. You are releasing your product into a flowing stream that carries it along with the others. That doesn't guarantee sales, but it does provide exposure. On the other hand, if you enter the market with a truly novel product, there is only a weak current, or none at all, and you must convince people that the product offers a benefit they don't presently enjoy. Then you must entice them to buy it.

I know a man who invented a convenient sunglasses pouch that mounted on a car's sun visor. He aimed to be first to have his novel product on the shelves of a national retailer. He arranged for a market trial through the local branch of a prominent national drug store chain, where he was allowed a check-out counter display spot. At the end of two months, the store had sold the grand total of one pouch.

Shoppers checking out may buy a pack of gum, but they usually aren't in a frame of mind to browse and investigate products they are not familiar with. So, even with Joe's novel design, his patent application on file and being No. 1 in market entry, the sunglasses pouch venture, at that point, was a flop. This is a typical case of the inventor trying to enter the big time of brick-and-mortar retail marketing without first proving product sales at an appropriate entry level.

Don't be fooled by the exceptions to the rule. Yesterday, as I was standing in the checkout line at my local supermarket, I came face-to-face with a four-propeller drone priced at \$59.95. *What? A drone offered as an expensive impulse item*, I thought to myself. It contradicted the rule that only well-known and frequently bought items succeed as checkout line impulse purchases. But publicity has created an immense population of waiting drone buyers—adults as well as kids—who aren't fussy about where they buy one.



The initial market for the sunglasses pouch should have been a catalog, which would feature a photo and a 50-to-100 word product explanation. Catalogs and their websites depend on novelty. With few exceptions, catalogs can't survive selling items that are already on the shelves of stores or on Amazon.com. People read catalogs to discover what's new.

Friendly Competition

The moral of these two stories is this: Competition may not be the enemy and can often be a friend. Novelty is the essence of inventing, but whether you plan to license or produce and sell, you must also consider that the product the invention evolves into should have an identifiable market. You should not be obsessed with extreme novelty. The market does not need to be as traditional as the mousetrap market, but you should find some evidence of the sales of a complementary or even a competing product. For example, rodent poisons are not identical to traps; they are complementary, but they serve the same market.

Let's face it, the marketing of truly novel products is not the inventor's art; it is the entrepreneur's art. Typically, inventors don't have the knowhow to establish a new market, and those who are truly creative generally lack the drive to make it happen. Inventors would rather concentrate on what they do



KARLIS KAMBRANS/CC BY 2.0/FLIC.KR.COM

Although the iPad's publicity might make us think it is the best-selling tablet, Android tablets are solidly in the No. 1 sales position.



Microsoft

best—inventing—rather than tackle a challenge that seems foreign and necessitates a high level of dedication.

Another aspect of being No. 2 is the well-considered intent to take a minor market position with respect to an established product. I recently invented a can opener that opens cans that have a pull ring. These cans are difficult to lift and pull, and hurt your finger. Surprisingly, the can opener has been around 20 years longer than the mousetrap, which has more than 4,400 patents, but I counted only 37 can opener patents, none of which addressed the pull-ring can. Eureka!

I set about designing my invention and made a prototype. Then, I did a final product search and found a simple opener specific to the pull-ring cans. I had done an initial search prior to designing and had found nothing. So, practicing what I preach, I accepted being No. 2. I bought the competing Jokari opener, tested it and grudgingly had to admit it was easier to use than my design. And, at \$5.30, it was about half of what I figured mine would have to cost.

The Jokari can opener illustrates a minor position within the well-established can-opener market. The company cast its novel product on a stream that's been flowing for 160 years.

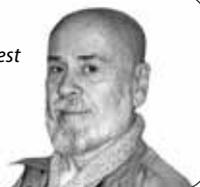
Be Vigilant About Change

The Jokari can opener also illustrates the need to be vigilant about change. Why hadn't the need for such an opener occurred to me when the pull-ring cans first showed up in stores? My mind was on other interests. I was not consciously scanning for change. The inventor's mantra should be: What's new and what can I invent that will make it better? Good timing is essential.

I'm a bit disappointed that I can't be first in the market with my can opener, but I may be No. 2. After analyzing my first prototype and the Jokari, I know how to improve my invention. I may have a chance to license my patent to a certain kitchenware manufacturer that thrives on Roll-Royce versions of kitchen tools. The sales most likely will be lower than those of the Jokari, once it is in supermarkets, but I'll be content with a precarious No. 2 position.

It takes 10 years of dedicated effort to be good at anything that takes practice, whether playing the violin, pitching horseshoes or inventing for fun and profit. So, for future inventions, consider the advantages of being No. 2—of sleeping with the enemy—at least for the first 10 years. ☛

Jack Lander, a near legend in the inventing community, has been writing for *Inventors Digest* for 19 years. His latest book is *Marketing Your Invention—A Complete Guide to Licensing, Producing and Selling Your Invention*. You can reach him at jack@inventor-mentor.com.



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Canadian breakdancer Luca "Lazylegz" Patuelli teaches breakdancing as a disabled person to non-disabled people at the University of South Florida during *A New Definition of Dance* in October 2015.



Renowned Chinese classical dancer Liu Yan, of the Beijing Dance Academy, performs in the omnidirectional hands-free wheelchair with Merry Lynn Morris and Cynthia Hardegree. Yan was chosen to perform a solo during the 2008 Beijing Olympics, but suffered a fall that resulted in a spinal-cord injury two weeks before the games.

Joy Ride

New Wheelchair Offers Freedom of Movement and Expression

BY RENÉE C. QUINN AND MERRY LYNN MORRIS



PHOTO BY TOM KRAMER; FAR LEFT PHOTO BY MERRY LYNN MORRIS

Many people have a friend, family member or loved one who has limited movement due to a physical disability. Some are born with disabilities, while others are struck by a debilitating disease, wounded during military service or are victims of tragic accidents. Being disabled, however, does not mean being dysfunctional. Modern technology has enabled those with even the most crippling of diseases to give joy to others while savoring life.

Merry Lynn Morris' life was affected by a tragic accident. One day, her father, Bill, left the family home to run a quick errand and was in a head-on collision that left him using a wheelchair for 21 years. Morris' experience with the family's resulting struggle motivated her to create an omnidirectional, hands-free wheelchair that gives those constrained to

wheelchairs the freedom and independence to move about in ways that most manual and powered wheel chairs do not allow. The first patent on the chair, U.S. Patent No. 7,748,490, involved seat tilting. It was issued on July 6, 2010 and assigned to the University of South Florida, where Morris is a faculty member of the School of Dance and Theater at the University of South Florida.

Although the wheelchair was prompted by her father's experience, Morris was inspired to begin work on the chair in 2000 after she saw a performance by Dancing Wheels, a professional dance company that includes dancers in wheelchairs. That's when she and her mother began disassembling her father's wheelchairs and wondering if clamps, sticks and pulls might make the chair move—maybe even dance.

Dancer Frank Hull tests the wheelchair in front of a group of University of South Florida dance majors as part of a dance and disability event Morris directed in October 2015.



In Her Words

In 2005, Morris approached the USF College of Engineering about designing a wheelchair that was propelled by the user's body. After experimenting with Segways at the university, a firm in California built an entirely new prototype chair that incorporated all of Morris' design ideas. Morris engaged in an intense collaboration with the company to bring the chair to fruition. Her work with dancers with and without disabilities helped shape the chair's technological and aesthetic design. Pensacola developer Neil Edmonston has been working with Morris on the programming of the chair since it arrived at the university.

I met Morris in 2014 at the USPTO Smithsonian Innovation Festival, where Morris and her chair were featured. Following, Morris explains why she created the wheelchair, the process she and her collaborators have gone through in the research and development of the chair, and why the wheelchair is so important.

The idea for the rolling dance/mobility chair emerged from two distinct motivations. One was my experience as a caregiver to my father for 21 years. The automobile accident he was involved in left him with permanent brain damage, a seizure disorder and significant issues of paralysis. For our family, it meant completely restructuring our lives. My mom, who is my hero and perpetual inspiration, cared for him with an unwavering sense of commitment and hope. She always looked for creative ways to improve the situation for our family, working toward embracing the new reality and moving forward.

She is a visual artist, and her artistic inclinations and ability to think outside of the box helped heal our family and get us through many challenges. She inspired my creativity with regard to re-conceptualizing the design of wheelchairs. Seeing her perspective as spouse and primary caregiver provided me with an important perspective on addressing disability issues as a whole interactive, human and social condition. Disability affects everyone. We are all only temporarily "abled." Many times, in design, the focus becomes solely on the disabled person's needs as an independent, autonomous being, not taking into account the surrounding family, caregivers, friends and community who interact and want to connect with that person's life.

The second motivation came from my work as a choreographer and teacher of individuals with disabilities. In working with many people in wheelchairs, I began to conceive of



Merry Lynn Morris frequently works with chairs and other props in her choreography.



PHOTOS BY JIM LENNON

design ideas for the chair that might be more conducive for the dance experience and enable additional interactive movement and expressive possibilities. In dance, we are generally concerned with movement precision and quality/texture—the “how” of the movement, not just the goal of the movement, such as transporting a body in space from one destination to the next. When considering the wheelchair from a dance design perspective, a host of other priorities came to the forefront in terms of facilitating movement quality/texture. In particular, I noticed that the control system for most traditional chairs—hand-to-wheel propulsion or hand-to-joystick propulsion—generally restricted other options for hand/arm use in space. There were other missing movement dynamics that I wanted to create in the chair to enable a three-dimensional experience of space. Adding height control, omnidirectionality and seat rotation, as well as a mobile control system created new three-dimensional movement dynamics.

I continue to look for ways to enhance the motion dynamics of the device and create intuitive, organic means of controlling them with the human body. The chair’s development, in some ways, is not unlike other types of technological extensions, such as pointe shoes, tap shoes and aerial silks, used in dance to enhance movement experience. The experimentation process has consistently involved multiple perspectives, and a variety of individuals with and without disabilities have tested the existing prototype chair to provide input and feedback.

Science and Art Merge

One of my concerns in developing the device has been with the ways in which the wheelchair facilitates an individual’s long-term health. As a dance/movement practitioner with a kinesiology and movement science background, I constantly look at human movement experience with both art and science lenses. I worked for two years at an assisted living facility developing movement programming for the residents. The chairs they utilized (often traditional manual chairs) did not assist in their circulation by stimulating or enabling movement, or supporting healthy postural positions. Instead, the individuals were usually hunched over. Their heads dropped down, and they sagged into their chairs. In the development of the rolling dance/mobility chair, I have sought to embrace health (posture/alignment/circulation/conditioning effects) and artistry (movement quality/dynamics, expressive relational interaction) with those of a social and functional nature.

Consider that in many care-giving situations, the spouse, friend and/or caregiver stands behind the individual, pushing the chair. Power chair controls are also at the back of the chair. This makes human communication virtually impossible. It also distorts the relationship psychophysically. Try talking or relating to someone who is behind you much of the time. It does not work very well.

One goal of the dance/mobility chair was to try to facilitate human relational interactions, such as walking side-by-side

“The experimentation process in this project is incredibly important. You can theorize in your head all of these kinds of ideas and concepts and things, but then the actuality of being in the chair, is a totally different piece of it.”

—MERRY LYNN MORRIS

holding hands and talking/interacting in a seamless manner. The mobile (smart-phone) control, which can be worn on the body (making the individual hands-free) or held easily in one hand by the caregiver or individual, helps restore relationships.

Height Matters

Another point of emphasis is the importance of height control in wheelchairs. The implementation of height control raises the disabled individual to a higher level of stature—literally. Being in a seated position means being looked “down upon” by most standing individuals (and having elbows thrust in your face, etc.). Height change became of paramount importance in the design of this wheelchair for restoring eye contact between individuals, as well as helping basic tasks, such as reaching. Additionally, it enables the natural greeting exchange of hugging to happen more easily. When a person is lowered in space in a seated position, hugging the individual usually becomes a more awkward and less fulfilling experience for both individuals. There are many power chairs with height control; however, the critical importance of a feature such as this from a psychosocial perspective has yet to be fully embraced as an absolute design necessity.

I think the main focus of the problem-solving or innovating process has been to broadly and simultaneously consider human mobility from a creative, artistic, social and relational perspective. This recognizes the importance of the human movement experience as a critical formative force in shaping the identity and quality of an individual's life.



Liu Yan performs in *Concealing/Revealing*.

Path of Experimentation

I first began the project by ordering Segways and looking for ways in which seats could possibly be mounted to them. At the time (2005/2006), Segway technology was one of the closest existing technologies I found that could enable individuals to be “hands-free” by simply leaning their bodies to direct the motion of the device. Innovation and experimentation processes are rarely, if ever, linear in nature. My path of experimentation has involved multiple collaborators. Many rough-draft prototypes emerged before realizing the more complete design in the current prototype chair.

Of course, the innovation process, like the choreographic process, is never really done. Once something has been created,

there is a natural instinct to reflect upon its potential improvement and consider other embellishments and possibilities. In this manner, the chair, as a product, will never be finished; it will continue to evolve and be shaped by those who utilize it in different ways.

An original rough-draft prototype came to fruition in 2007. It involved placing a sensory apparatus underneath the seat, and when the seat tilted, the chair moved. Therefore, when a person's weight shifted forward in the seat, the seat would tilt, and the chair would move forward. The person essentially acted as a joystick in the seat. This early prototype did not incorporate other goals for the design, but it did create a first step toward making the individual potentially hands-free in the chair. Initially, I worked with students and faculty in the College of Engineering to build this early chair prototype.



Morris performs in her piece *Blood Matrix*, which utilized sweeping fabric, as well as Segways and the prototype wheelchair.

PHOTOS BY TOM KRAMER

Progress and Patents

Due to my development of the chair project within the University, the Office of Patents and Licensing at USF was a very helpful resource. I worked closely with representatives from the office as the chair technology developed. I came to understand issues of intellectual property protection and the function of patents from them. An initial patent filing occurred soon after the first prototype was developed, and forthcoming patents have been filed in a similar fashion. I (with my collaborators) now have two design patents: (U.S. Patent Nos. D642,962 and D719,071) and two utility patents (U.S. Patent Nos. 7,748,490 and 9,027,678). The most recent ones are more relevant to the current existing prototype.

During 2012, significant progress was made on the chair project. I worked with companies in California and Florida to develop the chair with my design goals and specifications. This collaboration resulted in the current chair prototype, which was featured at the Smithsonian's Innovation Festival. This chair embodies the hands-free/mobile wireless control with omnidirectional wheels and many other features to expand movement potential. It is the first prototype to embody the majority of design goals. I was able to arrive at this point with the chair with the help of USF internal grants, an external award (Thatcher Hoffman Smith Award) and a few small donations.

Successful Journey

Although Bill Morris died decades after his accident, he did get to see his daughter's invention take shape. A series of dance performances at USF featured an early prototype of the rolling dance chair.

Today, Morris continues to refine the chair to increase its ease of transportability, fluid responsiveness, smooth transport and customizability. She and her collaborators are experimenting with different motor drives and lighter-weight materials. They are refining programmatic options, adding independent wheel suspension and addressing user-interface differences. The chair is still in developmental stages, but Morris hopes to move toward commercialization in the near future. She is working with wheelchair industry partners Quantum Mobility and National Seating and Mobility to develop the chair into a robust, consumer-ready device. 🐕

Donations to fund the project can be made at: <http://usf.edu/ua/FUND?fund=230025> or www.gofundme.com/tma2tunj.

Renée C. Quinn is the CEO and director of marketing and public relations for IPWatchdog.com. She is also a public speaker, educator and consultant.

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ROBOTS, 3D PRINTING AND



The Charlotte Hackerspace participated in an electronics workshop.

Children watch as robots take over the hockey arena.



I used to be addicted to the magazine section of Barnes and Noble. I loved the way the racks were angled just enough that I was not quite sure how to walk through them. I enjoyed blurring my eyes as the spectrum shifted from the whites, pinks and yellows of *Cosmo* and *Marie Claire* to the greens of *High Times* and *Fine Gardening* and the blues, blacks and reds of *Motor Trend* and *Wired*. I loved picking up a fresh issue—the one just behind the one on top—holding it under my nose and flipping the pages with my thumb to release the perfume of the ink-infused pages. Far from the children’s section and just a few feet from the souls tiptoeing through the self-help titles, it was both a safe haven and a bounty of images and ideas that tickled my senses.

After fingering my way through the pages of the racing and automotive sections, I found myself drawn to a magazine called *Make*. An enigma on the newsstand, it was thick with small pages and had few ads. At the time, it came out quarterly and was super expensive, but I bought *Make* because it was filled with all kinds of great hacks and experiments that could be done in your garage, kitchen or living room. While I didn’t necessarily do any of the activities myself, I had just as much fun seeing the crazy things other people were up to.

Fast forward to the present, and the little niche publication is now the dominant voice of the maker movement. The magazine is published bi-monthly, has regular-sized pages and is the flagship of Maker Media, which includes the Maker Shed store and events called Maker Faires. Maker Faires, self-titled “The Greatest Show and Tell on Earth,” play out like science fairs on steroids.

The first one was held in 2006; the two largest are in San Francisco and New York. Today, Mini Maker Faires are hosted in cities all over the world. I have been trying to fabricate a reason to attend the New York Maker Faire for years, but when the first Maker Faire came to Charlotte, N.C., where I live, I jumped at the chance to go.

Maker Faire Charlotte was held at Discovery Place, a children’s science museum in the heart of the city. The exhibits were spread over three floors of the museum, and the Faire featured a variety of events and speakers throughout the day. The atmosphere was electric, as the museum was open concurrently with the Maker Faire, and teeming with people.

Exhibitors were also set up outdoors in front of the museum. Despite the rain, it was an inspiring event with plenty of great makers showing off their work. Following are some of my favorite exhibits from the October 2015 Charlotte Maker Faire.

ECO FASHION

MEET ME
AT THE
(MAKER) FAIRE

BY JEREMY LOSAW



It would be hard to distinguish this 3D-printed Shelby Cobra by Oak Ridge National Laboratory from one that rolled off the assembly line.



Paint brushes are the perfect trim for an Eco-Fab Trash Couture dress.

3D-Printed Vehicles

There were two notable 3D-printed vehicles on display. The most eye-catching was a Shelby Cobra, exhibited by Oak Ridge National Laboratory. It was made by industry pros and was a sight to behold. Anyone that has tried to sand and paint his own 3D prints would appreciate the finish on the Cobra.

Fittingly for Charlotte, home of the U.S. National Whitewater Center, the world's first water-ready 3D-printed kayak was exhibited. Jim Smith, an employee of 3D Systems, built the kayak with a large format printer he also made. The kayak had 28 parts that were bolted together.

Competitive Robots

Competitive robots are a hot trend in the maker space, and they were out in full force. The most interesting were carbon-fiber drones made by the Charlotte FPV (first person view) Racing League, which races custom drones in a field on the outskirts of the city.

There were also two live robot competition areas. One featured small versions of the fighting robots seen on television. The other was a robot hockey arena, where two teams of kids were battling to get a puck into the other team's net.

Maker/Hacker Spaces

Maker spaces are popping up in cities all over the world, and the local chapters were out in force at the Charlotte Maker Faire.

The Forge from Greensboro, N.C., TinkerIt from Mooresville, N.C., and Hackerspace Charlotte all showed off their hacked creations. Hackerspace Charlotte also hosted a workshop at the event to teach kids how to solder and build circuits.

Bio-Making

Many exhibits showed how to “make” life. Representatives from the event host, Discovery Place, demonstrated how to grow baby tree frogs, including raising flies for them to eat. Employees also showed how they raise baby jellyfish for the aquarium. A local farmer presented workshops on how honey is made.

Fashion

Fashion designers even got into the spirit of the Maker Faire. Students from The Art Institute of Charlotte created a line of clothing from discarded goods. Their EcoFab Trash Couture took center stage during a fashion show that featured models wearing clothing made from old paint brushes and other found trash. The students demonstrated the sustainability of haute couture—and proved that in the fashion world, if you wait long enough, everything old becomes new again.

While disclosure issues may deter you from exhibiting your next great idea at a local Maker Faire, the events are well worth the trip. The Faires are the perfect place to network, get tips on how and where to build your next prototype and even find out what recyclable materials you can look forward to wearing next season. ☛



How the United States Is Killing Innovation

AND WHY IT MATTERS TO ENTREPRENEURS

BY PAUL MORINVILLE

Over the last 10 years, the U.S. government has dealt serious damage to American innovation by altering how our patent system has worked for more than two hundred years, shifting it in favor of large corporations at the expense of small inventors. Inventors today cannot reasonably defend patents, and most patents are no longer capable of attracting capital to build the next generation of American innovation.

The plain words of the U.S. Constitution constructed a patent solely as an exclusive right, a property right. Like any other property right, patents were used as collateral to attract investment, thus capitalizing new companies to commercialize new innovations. The genius of the Founding Fathers quickly became clear. Within a few years, American innovation surpassed that of every other country. For the next two hundred years, patents fueled the greatest innovation engine known to man and drove the strongest economy on Earth. The right of the average American to own what he invented, and therefore the tools to compete with entrenched corporations on an even playing field, became a key pillar of the American Dream and a major theme in the American story.

Exclusive Rights

The courts, Congress and the Obama Administration, have changed all that. In 2006, the Supreme Court case *eBay v. MercExchange* effectively eliminated a patent's exclusive right, changing a patent into something other than a property right. A property right that is not an exclusive right is not a property right and cannot attract investment. After all, if anyone can infringe, why risk money?

Today, it is impossibly difficult for an inventor to stop a big corporation from infringing on his patent. Instead, courts force inventors to grant a license to infringers at prices set by the court, with no real connection to the free market. Not surprisingly, the value of patented property has fallen significantly, and many patents have been made worthless.

Property rights must be durable. If a property right can easily be taken away, no one will risk investing in it. Patents are presumed valid in black letter law. Until 2011, the only way to invalidate a patent was through an Article III court, which was very difficult, and this difficulty kept squatters from infringing on patent rights.

New procedures created by the America Invents Act of 2011 allow infringers to challenge a patent in the United States Patent and Trademark Office—an administrative court—not an Article III court, using completely different standards and shifting the financial burden to the inventor. These administrative proceedings, which have been called fundamentally unfair to patent owners, now invalidate the vast majority of patents they review.

The Supreme Court decision *Alice v. CLS Bank* in 2014 all but eliminated patent protection across many fields of innovation, including software-related inventions that make up over half of all patents issued. In many areas of innovation, especially software, the risk that any given patent will be invalidated is as high as 80 percent.

Large Corporations Favored

There have been other damaging changes in the last 10 years. The financial penalty against an infringer who is caught infringing has all but been eliminated. It can take 10 years for the USPTO to issue a patent. What is considered obvious to patent, and therefore not patentable, has become a subjective test that is invalidating a large number of patents. Many other long-settled legal constructs of patent law have been altered. Virtually all of the changes have tilted the patent system in favor of large infringing corporations and against inventors.

Not surprisingly, most contingency-fee attorneys and investors have left the patent business altogether. It takes millions of dollars to defend a patent, so without the help of contingency-fee attorneys and investors, the vast majority of patents cannot be defended at all. This has proven fatal to most inventors.

While the changes have proven devastating to inventors who license their patents for others to commercialize, they are equally devastating to inventors who attempt to commercialize their own inventions, often known as seed-stage companies.

Funding Is Critical

Small, early stage investors, called “angel investors” or “angels,” provide seed funding to build companies to a point they can attract larger investments from venture capitalists and banks, thus bridging the gap from idea to fundable company. Venture capitalists and banks usually require a product, a management team and/or customers to manage. For an investor, whether angel or venture capitalist, it is all about managing risk. The more tangible the company, the more likely investors will be interested. Without strong patent rights, even the best early stage company can look unacceptably risky, which means it becomes difficult to attract

angels, which in turn, makes it even more difficult to attract venture capital. When early investors steer clear, a funding gap is created between seed-stage companies, which are seen as too high of a risk, and early stage companies, with products, customers and a team with manageable risk. Essentially, changes to patent laws have cut the critical early stage funding, which is the lifeblood of any new technology venture.

Because seed-stage companies only have a patent to leverage as collateral, strong patent rights are critically important to attract seed funding. First, a patent’s exclusive right helps keep competition at bay long enough for the seed-stage company to get a toe-hold in the market. Unfortunately, *eBay* effectively eliminated the exclusive right, making it impossibly difficult to stop a big corporation from saturating the market with infringing products and killing the seed-stage company.

Seed investors also view a patent as a floor to losses, thus limiting downside risk. If the invested company goes out of business, the investor can take control of the patent to return at least part of the investment by defending it in court or selling it to someone else that does. Regrettably, neither is a good option anymore.

Most patents cannot be sold, and the best only bring a small fraction of their value in the market. If an investor chooses to defend the patent in court, the only way to prove the patent is actually a valid property right is to spend seven or more years and millions of dollars, with a very high likelihood that the patent will be invalidated. Even if the patent survives, there is no way to know what the court will award as damages in a forced license because the free market is not considered. With no contin-

gency attorneys and no other investors, the seed investor will have to foot the bill in its entirety.

Our government has dealt fatal damage to inventors who license their inventions, and seed-stage companies that attempt to commercialize new technology. It is no wonder that, for the first time in U.S. history, more companies are going out of business than are starting up. We are killing the very engine that made America the greatest economic power ever known. We should all be very concerned. ☹

It is no wonder that, for the first time in U.S. history, more companies are going out of business than are starting up. We are killing the very engine that made America the greatest economic power ever known.

Paul Morinville is managing director of US Inventor, Inc., an inventor organization working in Washington, D.C., and around the United States to advocate for strong patent protection for inventors and startups. An independent inventor with dozens of patents and pending patent applications in enterprise software, he is also CEO of OrgStructure, LLC, an early stage enterprise middleware provider in northwest Indiana.



Software Patent Eligibility

WHERE IS THE INDUSTRY HEADED?

BY GENE QUINN



SCANRAIL/ISTOCK.COM/THINKSTOCK

Former United States Solicitor General and current Georgetown University School of Law Professor Paul Clement wrote in a brief filed on behalf of IBM to the Supreme Court in 2014, “There should be no serious question that computer-implemented inventions such as software constitute patent-eligible subject matter under § 101.” Ultimately, the IBM brief argued that the abstract idea doctrine is unworkable. Nearly 18 months after the Supreme Court’s landmark decision in *Alice v. CLS Bank*, we are no closer to having a working understanding about when and under what circumstances software is patent eligible.

One might think that everything that can be said about *Alice* has already been said, but that is not the case. Patent attorneys and innovators are struggling to understand what needs to be done to obtain and defend patent claims. Complicating this matter is the unfortunate truth that there is simply no way to reconcile the Supreme Court’s patent-eligibility cases into a cohesive test that can reliably and predictably deal with the array of innovations that incorporate software.

The Supreme Court did not say that software is patent ineligible, and software patents are referred to in a variety of locations in the Patent Act. In fact, when Congress passed the America Invents Act, a prohibition on the patenting of tax strategies was included. Also included was a specific caveat that stated that the tax-strategy exclusion did not pertain to computer programs employing a tax strategy, which seems rather conclusive proof that Congress understood software to be patent eligible and wanted to specifically keep software, at least tax-related software, patentable.

Unfortunately, real mischief has taken place since the *Alice* decision by the Supreme Court. The Federal Circuit, numerous district courts, the Patent Trial and Appeal Board, and patent examiners at the United States Patent and Trademark Office have used *Alice* to reject software-patent claims as being patent ineligible. The *Alice* decision has infused a great deal of uncertainty into the law of patent eligibility.

The level of uncertainty can best be exemplified by the fact that the Federal Circuit issued what appear to be diametrically opposed opinions in *Ultramercial* and *DDR Holdings*. Particularly disconcerting is the unexplained change of view by Judge Alan Lourie.

Channeling *Alice v. CLS Bank*

Ultramercial has the dubious distinction of having been decided several times by the Federal Circuit. In the most recent Federal Circuit ruling, *Ultramercial III*, Judge Lourie starts the majority opinion by recognizing the yo-yo procedural history saying, “This appeal has returned to the court following an up and down journey to and from the Supreme Court.”

In a concurring 2013 opinion in *Ultramercial II*, Judge Lourie wrote that the claim limitations in question “represent significantly more than the underlying abstract idea of using advertising as an exchange or currency and, as a consequence, do not preempt the use of that idea in all fields.” In 2014, after the case was remanded from the Supreme Court to the Federal Circuit again, in *Ultramercial III* Judge Lourie concluded that the “steps comprise the abstract concept of offering media content in exchange for viewing an advertisement...and use of the Internet

Judges exalt the hardware as if the machine were somehow responsible for its functionality. Perhaps they should remove the software from their computers, smart phones or automobiles and see what is left: nothing more than a very expensive paperweight.

does not transform an otherwise abstract idea into patent-eligible subject matter. ...”

Obviously, Judge Lourie did a 180-degree turn. Based on the same facts, the same claims represented significantly more than an abstract idea in 2013 but in 2014 somehow recited nothing more than an abstract idea. Nothing factual or technologically substantive changed. What changed is the issuance of the Supreme Court’s decision in *Alice v. CLS Bank*. It seems that Judge Lourie is now channeling the Supreme Court as he considers patent claims to computer-implemented inventions. If he is going to make diametrically opposed decisions in the same case, on the same facts, relating to the same claims, he owes litigants and the industry an explanation. Without an explanation it makes the entire process seem nothing more than arbitrary and capricious.

Ultramercial is but one example of a patent lost. Numerous patents have been lost with claims invalidated as patent ineligible in the wake of *Alice*. This has negatively affected patent valuation, rendering many patents worth far less, if not completely worthless, which has led some commentators to lament the toxicity of the patent asset. Companies invest in research and development with the expectation of future revenue, and the entire life cycle of innovation is at risk.

General or Specific Purpose?

As odd as all the machinations over software patents have been, perhaps the most bizarre is how the courts continue to try to distinguish between a general-purpose computer and a specific-purpose machine. Thanks to the Supreme Court, this difference is not central to the patent-eligibility determination.

To those familiar with software, a distinction between a general-purpose computer and a specific-purpose machine is at best a distinction without a difference. The real value in software is that it operates across platforms, yet interoperability and compatibility seem to make the resulting software less likely to be patent eligible because it works on any type of machine (i.e., a general-purpose computer versus a specific-purpose machine). Judges exalt the hardware as if the machine were somehow responsible for its functionality. Perhaps they should remove the software from their computers, smart phones or automobiles and see what is left: nothing more than a very expensive paperweight.



Judge Alan Lourie

The industry is nervous and more frequently discusses the possibility of legislative reforms to address patent eligibility, which many believe is necessary. Numerous industry groups have formed patent-eligibility working groups with the intent of drafting possible statutory language for a future reform of Section 101, but everyone is cautious. If an attempt to reform patent eligibility legislatively were to go awry, that could easily put the industry in an even more precarious position. These efforts will likely remain in committee within industry organizations and in private discussions pending on what the Supreme Court does next. Most expect the Court to take another software case at some point, perhaps sooner than later. Although not a software case, there is also some hope that *Ariosa v. Sequenom* will potentially be a vehicle for greater certainty on patent-eligibility. Tom Goldstein, founder of the widely popular SCOTUS Blog, is representing the patent owner at the Federal Circuit.

Implementing Software

The fundamental problem created by Supreme Court-related patent software jurisprudence is that on a very basic level everything can be characterized as an idea. This truism, however, does

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Defend Trade Secrets Act

READY FOR MARKUP IN SENATE JUDICIARY COMMITTEE

BY GENE QUINN

December 2, 2015, the Senate Judiciary Committee held a hearing on the Defend Trade Secrets Act, which is authored by U.S. Sens. Chris Coons, D-Del., and Orrin Hatch, R-Utah. This is an important issue for Congress because trade secret theft puts American jobs at risk and threatens incentives for continued investment in research and development in the United States. Currently, civil trade secret laws can and do vary state to state, and while the differences may not be substantial, it is odd that in a global economy the United States has left trade secret law to the states to regulate individually. It is long since time for Congress to act.

One of the largest problems is the reality that trade secrets are extremely fragile. The current fragmented jurisdictional structure governing trade secret disputes can at times make it difficult to provide trade secret owners with the necessary immediate remedies required to stop a trade secret from being lost forever. The lack of a streamlined process that crosses state borders is of particular concern given the reality that once a trade secret is no longer a secret, the right is lost forever. In a world in which even the

smallest of businesses can conduct business internationally, the lack of a unified set of trade secret laws applicable to the entire United States is mind-boggling.

DuPont Weighs In

At the hearing, testimony from representatives from a variety of industries, including Delaware-based DuPont, explained the need for a federal private right of action to give companies the ability to protect their trade secrets in federal court.

“As an innovator, DuPont depends on intellectual property protection—including trade secrets,” said Karen Cochran, associate general counsel and chief IP counsel DuPont, in testimony to the committee. “Realizing the full potential of our innovation often includes knowledge building that can span decades. This work generates a range of intellectual property, from patents to trade secrets. DuPont recently defended the trade secrets for one of our well-known products, Kevlar®. This experience brought about our realization of the importance of S. 1890 and updating trade secret protection and remedies.”

In a world in which even the smallest of businesses can conduct business internationally, the lack of a unified set of trade secret laws applicable to the entire United States is mind-boggling.

The Defend Trade Secrets Act is currently backed by at least nine members of the Senate Judiciary Committee, including Sens. Dick Durbin, D-Ill., Jeff Flake, R-Ariz., Thom Tillis, R-N.C., Richard Blumenthal, D-Conn., Amy Klobuchar, D-Minn., David Perdue, R-Ga., and Jeff Sessions, R-Ala.

Industry Support

The bill is also supported by a broad industry coalition that includes Adobe, AdvaMed, the Alliance of Automobile Manufacturers, the Association of Global Automakers, the Biotechnology Industry Org., Boeing, Boston Scientific, BSA | The Software Alliance, Caterpillar Inc., Corning Inc., Eli Lilly & Company, General Electric, Honda, IBM, Illinois Tool Works Inc., Intel, the Intellectual Property Owners Assoc., the International Fragrance Assoc. North America, Johnson & Johnson, Medtronic, Micron, the National Alliance for Jobs and Innovation, the National Association of Manufacturers, Nike, Pfizer, Philips, Procter & Gamble Co., SAS, Siemens Corp., the Software & Information Industry Assoc., the U.S. Chamber of Commerce and United Technologies Corp.

In a Dec. 2, 2015 letter sent to Sens. Hatch, Coons and Flake, the aforementioned industry coalition wrote:

“Trade secrets are an essential form of intellectual property. Trade secrets include information as broad-ranging as

manufacturing processes, product development, industrial techniques, formulas, and customer lists. The protection of this form of intellectual property is critical to driving the innovation and creativity at the heart of the American economy. Companies in America, however, are increasingly the targets of sophisticated efforts to steal proprietary information, harming our global competitiveness.

Existing state trade secret laws are inadequate to address the interstate and international nature of trade secret theft today. Federal law protects trade secrets through the Economic Espionage Act of 1996, which provides criminal sanctions for trade secret misappropriation. While the EEA is a critical tool for law enforcement to protect the clear theft of our intellectual property, U.S. trade secret owners also need access to a federal civil remedy and the full spectrum of legal options available to owners of other forms of intellectual property, such as patents, trademarks, and copyrights.

The Defend Trade Secrets Act will create a federal remedy that will provide a consistent, harmonized legal framework and help avoid the commercial injury and loss of employment that can occur when trade secrets are stolen. We are proud to support it.”

With such widespread, bipartisan committee support and backing of key industry groups, the bill seems poised to be voted out of the Judiciary Committee and considered on the Senate floor. 📌

Software Patent Eligibility

(cont. from page 37)

not mean that software is itself an abstract idea. Software instructs a machine to operate in a specific way to accomplish a specific task. Implementing workable software is anything but trivial, but that nuance is often lost on those without technical training who seem to think anyone can create software. This misperception was perpetuated by the attorney representing the patent owner at the Supreme Court in *Alice*, who, when asked by Justice Kennedy, agreed that the software could have been created by a college student over a weekend. That, of course, was simply not true.

I believe it is only a matter of time before we have greater clarity on software patent eligibility, and that clarity will result in software being more readily patent eligible. In the meantime, clients need to make decisions. The law of software patentability has changed every two to three years over the last 30 years. A patent application filed today will almost certainly not receive a First Office Action on the Merits for two to three years, which means the law will evolve at least once before new patent

The law of software patentability has changed every two to three years over the last 30 years.

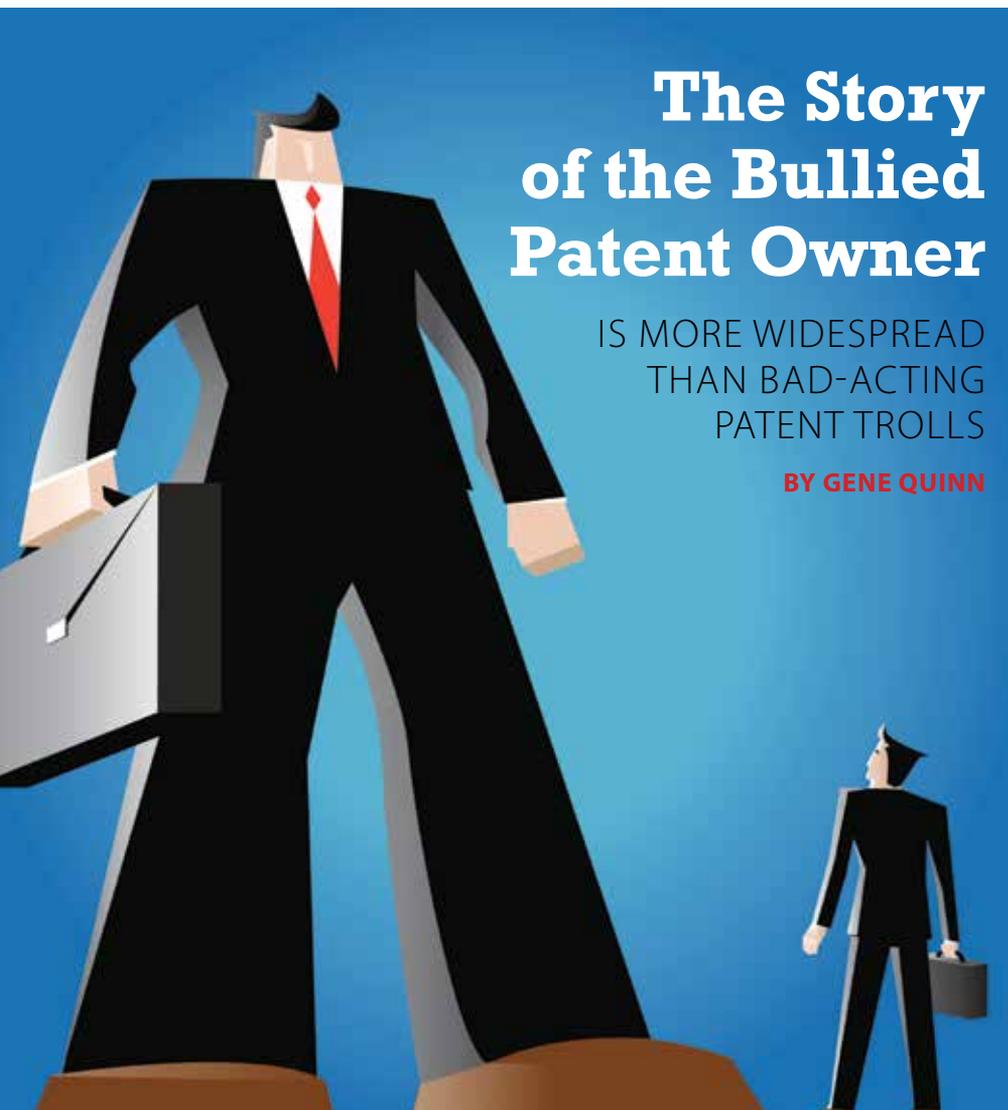
applications filed today are examined.

Of course, filing patent applications must be done with an eye toward the future. At the moment, most patent attorneys are recommending longer, more detailed disclosures that painstakingly describe the technology in ways that make the overall system seem more tangible, and thus likely more familiar to judges. Perhaps there will come a day when judges will be fa-

miliar enough with technology that they will be able to honestly identify the software as the innovative contribution separate and apart from the machine. 📌

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The Story of the Bullied Patent Owner

IS MORE WIDESPREAD THAN BAD-ACTING PATENT TROLLS

BY GENE QUINN

in what usually becomes a protracted legal battle. In short, innovators get bullied and no one seems to care.

Recently, one innovator said “enough is enough” and is standing up to a larger corporation that signed an NDA and then had the audacity to take the technical information provided and use it in its own later-filed patent application on the same innovation. On October 23, 2015, Separation Design Group IP Holdings, LLC, a wholly owned subsidiary of Separation Design Group, filed a patent infringement lawsuit against Inogen, Inc. (NASDAQ: INGN), alleging that claims of U.S. Patent No. 8,894,751 are being infringed.

No Ordinary Infringement Suit

This is not an ordinary patent infringement lawsuit. In addition to alleging patent infringement, the complaint, which was filed in the Central District of California, also alleges trade secret misappropriation and breach of contract. This case clearly demonstrates the type of abuse faced by innovators at the hands of large corporate infringers.

First, let's dispense with what will undoubtedly be a frivolous and wholly inaccurate assertion by those who won't want to believe that large corporations are actually capable of engaging in abusive behavior. Separation Design Group IP Holdings is not a patent troll. Frankly, it isn't accurate to characterize the group as a non-practicing entity. The patent owner is a corporation that was created to hold the intellectual property of Separation Design Group, which is an independent research and product development firm located in Waynesburg, Penn. Separation Design operates a 57,000-square-foot facility that houses its office and laboratories for research, development, analytics, prototyping, testing, fabrication, assembly and production. Separation Design Group won an

We frequently hear about large corporations being held up and left completely helpless due to bullying at the hands of smaller companies or individuals who own patents. Although this narrative makes little sense, that fairytale has dominated the public debate on patent reform for years.

Those in the industry are aware that there is a handful of bad actors on the patent-owner side, but it is equally well known that there is real and substantial abuse and bullying perpetrated by large companies against smaller companies and patent owners. The story of the bullied patent owner, which is far more widespread than any bad-acting patent troll, is never told. The lack of reporting unfortunately lends credence to the myth that large companies operate like saints and patent

owners operate like sinners. The truth, of course, lies somewhere in between.

Technology Thieves

One of the more egregious types of abuse suffered by small companies and individuals is the outright stealing of technology. In many circumstances, smaller companies and individuals view a potential partnership or licensing opportunity with a larger entity as a blessing, when in fact it is frequently a curse. Even if an individual is protected with a non-disclosure agreement, what prevents the larger, better-funded corporation from simply taking what is offered for inspection? If the individual sues, he will have to prove that the company stole his concepts and that it wasn't already working on the same technology. The company is bigger and has the resources to prevail

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SBIR Small Business Award for “the critical role they play in research and development for the government and for their success in driving innovation and creating new jobs.”

Inogen is a medical technology company that develops and manufactures portable oxygen concentrators for patients suffering from chronic respiratory conditions. Therefore, an innovator with a tangible business is suing a much larger corporation that appears to have stolen the innovation in question despite having signed a non-disclosure agreement.

The patent in question has a priority filing date that goes back to two provisional patent application filings, one on October 5, 2009 (Serial No. 61/248,712) and another on November 24, 2009 (Serial No. 61/264,069). The patent issued on November 25, 2014 and covers lightweight, portable oxygen concentrators that operate using an ultra-rapid absorption cycle based on advanced molecular sieve materials.

Mutual NDA

In August 2010, Separation Design Group approached Inogen regarding its related portable oxygen concentrator technology. On September 21, 2010, Separation Design Group and Inogen entered into a mutual non-disclosure agreement to explore a possible business opportunity with information and technical data relating to the patent applications that eventually resulted in the ‘751 patent being specifically identified as confidential. On September 30, 2010, representatives of Inogen met with those from Separation Design Group to allow Inogen to review confidential information relating to Separation Design Group’s portable oxygen concentrator technology.

Ultimately, no deal was struck between the two companies. Nevertheless, beginning in January 2011, less than three months after Inogen’s review of Separation Design Group’s confidential information,

Inogen started development of a portable oxygen concentrator that remarkably resembled the one shown to them by Separation Design Group.

Inogen Files Patent

On April 22, 2011, Inogen filed U.S. Patent Application No. 13/066,716, which was published as U.S. Patent Application Publication No. 2012/0266883 on October 25, 2012. Several of the inventors named on

The lack of reporting unfortunately lends credence to the myth that large companies operate like saints and patent owners operate like sinners.

the Inogen patent application met with Separation Design Group’s representatives during the September 30th meeting. Particularly worrisome is that the Inogen patent application incorporates numerous features of portable oxygen concentrator technology that were part of the confidential information disclosed to Inogen under the mutual NDA.

For example, the ‘751 patent describes a user replaceable sieve module as a key feature, which eliminates the need for the manufacturer or medical supply company from having to replace the module. This replaceable feature is touted in an S-1 filing by Inogen made with the Securities and Exchange Commission on November 27, 2013. In that S-1 filing, Inogen also implied that its G3 Oxygen Concentrator is the only portable

oxygen solution that accomplishes long-term oxygen therapy for patients without supplemental use of a stationary concentrator or a replacement portable oxygen concentrator. Certain qualifiers are used, but by the time this S-1 was filed, Inogen was already in possession of the Separation Design Group invention and confidential information describing the use of a replaceable module.

In the S-1, Inogen also lays claim to developing the replaceable filtration cartridges taught in the ‘751 patent and disclosed under the mutual NDA with Separation Design Group. Thus, it seems clear that Inogen will claim that it independently developed this technology without using any of Separation Design Group’s confidential information. It will be interesting to see how the evidence shakes out, but at this point it certainly looks bad for Inogen. Why would you send inventors who are independently working on a similar device to review what is supposed to be confidential information? It looks like the company leveraged what it learned for its own patent application.

Time will tell what ultimately happens, but this is a story that has a familiar ring. Large Company takes a look at what Small Company is working on, refuses to do a deal and then miraculously starts to infringe. In this, as in many cases, there was a confidentiality agreement, but what good is such an agreement without the means to enforce it? Even worse, it appears as if in this case, the larger company had the audacity to file a patent application of its own after being granted access to what was supposed to be confidential information.

Unfortunately, Congress and the courts seem singularly focused on protecting helpless large multinational corporations who, as the story goes, are getting bullied by patent owners. That isn’t the reality I see. ☹



Patent Reform

WHAT'S DRIVING THE PATENT LEGISLATIVE AGENDA?

BY GENE QUINN

Patent Law and Policy was the subject of a November 2015 event sponsored by *IAM* magazine in Washington, D.C. The first panel discussion was on patent reform. It examined what has driven the legislative agenda over the past decade, what has been fixed, what remains to be done and how patent reform could affect patent owners' abilities to secure maximum monetary value for their rights.

The panel did not seem to hold high hopes that any patent reform would be enacted during the 114th Congress. In fact, at one point Aaron Cooper, former chief counsel for IP and antitrust on the Senate Judiciary Committee, explained how difficult it is to get any legislation through both the House and Senate, and signed by President Obama. There was unanimity among the panelists that patent reform is not going away, even if it does not get enacted during the 114th Congress. The shared sentiment is that if patent reform does not get enacted soon, it will be dead this Congressional term, but it will be back once again in January 2017 at the start of the 115th Congress.

"The question is getting that balance," explained Laurie Self, vice president of Government Affairs for Qualcomm. "Our concern is that the Innovation Act...went too far in creating barriers to reasonable enforcement that would make it very difficult, very expensive, for any patent owner to enforce their rights. ... So what we would prefer to see in terms of patent legislative reform is a narrower, more targeted approach to the problems that have been defined, like the demand letter issue."

Also on the panel was Phil Johnson, senior vice president for IP Policy and Strategy for Johnson & Johnson and president of the Intellectual Property Owners Association. Johnson, who has been an increasingly vocal critic of IPR and how it has been implemented by the United States Patent and Trademark Office, was asked by moderator Andrew Baluch if he could support patent reform that did not include *inter partes* review.

"For pharma and bio, my understanding is that they oppose the bill because they feel that there are not sufficient additional provisions in order to prevent some abuses...nor to ensure there will be a level playing field in IPRs," Johnson explained. "In particular, they're upset about the hedge-fund use of IPRs." Johnson went on to single out the short-selling strategy employed by Kyle Bass and others as a particular concern to pharma and bio.



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He noted that 70 percent of IPR claims are found invalid after institution, and some claims are found invalid in another 15 percent of cases. "It becomes the IP equivalent of a hanging judge. ..." he said.

Returning to the hedge fund short-selling strategy, Johnson remarked, "The reason it works is because of a widespread perception that pretty much regardless of the quality of your patent, you're going in front of a tribunal, where the cards are stacked against you, and for pharma and bio, which are highly patent-dependent industries, a 72 to 87 percent invalidity rate does not work for their business models."

IPRs Related to Bio/Pharma Patents

There is some irony associated with the bio/pharma industry being upset about *inter partes* review and seeking a legislative carve out that would insulate their patents from post-grant challenges. One of the primary architects of the America Invents Act was Bob Armitage, the former general counsel for Eli Lilly. After the AIA passed, Armitage spoke at virtually every gathering of patent-industry professionals. At the time, post-grant challenges were not viewed as a concern for bio/pharma, but it is now clear that they pose a very real danger, with up to 20 percent of IPRs filed being related to bio/pharma patents.

Baluch asked Johnson if the industry didn't see that IPRs would be used to challenge their patents. Johnson replied, "I think, with hindsight, we might say they made the mistake of relying on the Patent Office to promulgate regulations for fair proceedings for both patent owners and challengers. And they expected, for example, that the same claim instruction standards would be used in IPRs as are used in the courts. They expected that when the law said that a patent owner could file a reply in the institution phase it wouldn't be told, 'Oh, no. You can't include new evidence for that reply.' They expected that other burdensome presumptions, including things like consideration of objective indicia of nonobvious, would be treated the way it is in the courts, and so on. In the end, they expected that the outcome in IPRs would be approximately the same as in the courts. What we have seen is that that absolutely is not the case and, therefore, it's not necessarily that the law was wrong; it's that I don't think pharma and bio decisions have been promulgated properly."

Eastern District of Texas a Concern

As the conversation turned to patent litigation, Johnson cut to the heart of the matter. “When I hear people say, ‘We don’t trust some of the district courts’...they generally mean the Eastern District of Texas, because unless we mandate what they’re going to do, they’re not going to follow this. So we have to have a statute. We can’t leave it to their discretion.”

Johnson was direct in his criticism, but not unique. There is great frustration in the industry with the Eastern District of Texas. I find it particularly troublesome that discussed reforms will apply to all 94 federal district courts in potentially draconian ways, when the real problem is one particular federal district court located in a remote part of Texas. It seems that the current approach to patent litigation reform is to punish all patent owners because the Eastern District of Texas allows certain patent owners to get away with activities that would not be tolerated in the great majority of the other 93 federal district courts. I’m also concerned by the changes, many of which seemed directly aimed at the Eastern District, because as Johnson alluded, the Eastern District seems to do what it wants and will predictably find ways to circumvent the spirit, if not the letter, of any patent litigation reforms that eventually become enacted.

The real problem as Johnson sees it is one of judge shopping, as he calls it. “Right now the Eastern District has different rules than pretty much anywhere else, and as I understand it under the standing Order...all patent cases that are filed in Marshall are assigned to Judge Gilstrap,” he said. “So essentially what plaintiffs are being told is if you file in Marshall, you’ll get Judge Gilstrap, who has an overwhelming number of patent cases compared to any other judge in the country. ... He may have as many as 15 to 20 percent of all patent cases filed. I think we could agree...that in our judicial system two things have always been evident. First of all, a plaintiff may have the right to choose where the case is brought, if not who the judge is who hears the case. Number two...no single judge should have a disproportionate percentage of patent cases. You should have those cases spread around so you have the development of different ideas, which can add to the law...as we do everywhere else.”

Patent Strength Questioned

One of the other interesting aspects of this panel was that Gail Levine, vice president of IP and Public Policy for Verizon, said that it was her opinion that all of the changes to the patent system over the last several years have undeniably led to a patent right that is far stronger than it once was. I was struck both by how ridiculous the comment was and by how no one on the panel pushed back. Reasonable minds may disagree on whether patent reform has been good or bad, and whether the Supreme Court has pursued the proper path with respect to patent eligibility, but there can be no reasonable disagreement on the issue of patent strength. Patents are simply not as strong as they were five years ago. Anyone who says otherwise is either unfamiliar with the

issues or is intentionally misrepresenting reality in order to forward a particular agenda.

At the end of the segment, I was able to follow up on Levine’s comment: “Not to beat up on you, Gail, but you said that you thought that the changes made over the last number of years are strengthening the patent, which is undeniably not the case, both between the Supreme Court and the Federal Circuit and the legislation. ... I think people on both sides fundamentally disagree with the definition of innovation. So I would like to ask you what your definition of innovation is, because it seems to me that people on the other side, who are trying to get more reform and more change, define innovation as a new product that goes into the market. They fundamentally and totally ignore all of the real work, and think it is an illegitimate business model to invest and engage in research and development, which would then make people like the Wright brothers, Thomas Edison and so many others patent trolls and illegitimate. I don’t think that true, but I would be interested to know how you specifically define innovation.”

Levine responded, “That’s a good question, and it’s not my definition of innovation, it’s something through the Federal Trade Commission’s advocacy on this issue. ... The Federal Trade Commission has always been very careful to say that the point of the patent system is to promote innovation, not exclusively by stimulating innova-

tion that leads to the prospect of patent rights, but also in the innovation that happens after that patent is granted. ... So when I talk about innovation, I’m talking about the Federal Trade Commission’s definition of it.”

It is clear that innovation is NOT about products in the hands of consumers. Innovation is about advance.

Invention or Innovation?

To many on the anti-patent side of the equation, innovation does not occur until a product is put in the hands of a consumer. In fact, a distinction is sometimes made between an invention and an innovation. Several years ago, Suzanne Michel, senior patent counsel for Google, explained, “Until a product is put

in the hands of consumer, it is still an invention, not an innovation.”

What does that mean? It is a not-so-subtle attempt to say that the underlying invention isn’t important; what is important is the product or service in the hands of the consumer. Never mind that the product or service could never have been achieved without the underlying invention. Frankly, this invention verses innovation distinction is a way for the infringer lobby to justify ignoring (i.e., stealing) patent rights as they take the research and development of others to make money for themselves.

To answer my own question, Merriam-Webster defines innovation in this way: “1: the introduction of something new; 2: a new idea, method, or device: novelty.” It is clear that innovation is NOT about products in the hands of consumers. Innovation is about advance. The patent system was set up to foster that advance and recognize research and development as an important endeavor. Whether the extremely costly business of engaging in research and development will remain a viable business has a lot to do with whether anti-patent reforms are enacted and the Supreme Court continues to be the “no patent for you” court. ☛

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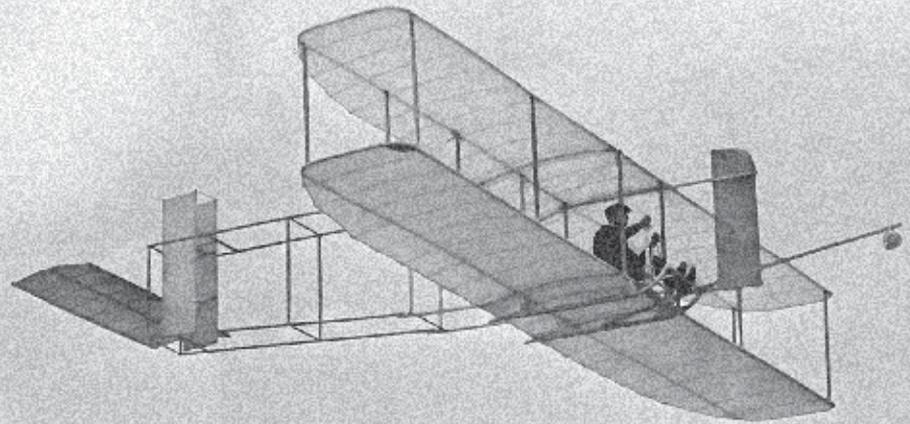
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