Inventors DIGEST

SEPTEMBER 2016 Volume 32 Issue 9

BACK-TO-SCHOOL WEARABLES BACK-TO-COOL

Drawn To Wearable Tech

TECH ENTREPRENEUR-ARTIST SKETCHED A VISION

KNOW YOUR PATENT LAW
5 IMPERATIVES FOR ALL INVENTORS

BEYOND INVENTING
WHY IT'S IMPORTANT TO BE AN ENTREPRENEUR

CLASS INVENTION
THE BLACKBOARD, 200 YEARS LATER

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It's always an education

When it comes to inventing, the schooling never ends. What makes a good invention? Where do you find a good and trustworthy attorney to protect your interests? How much and what kinds of research and development will be needed, if any? How many prototypes? What are the best fundraising tools for this invention? How will it be mass produced? Marketed? Distributed? What are all of the important aspects of filing a provisional patent application? Who's going to help you draw one up—and for that matter, who's going to do the drawings? What are current laws and changes in those laws that will affect the chances of your invention being patented? Last but not least: How much money should you set aside for all of this?

Some find this ongoing education challenging and frustrating; others find it fascinating, especially if they have nothing at stake. I'm learning that many readers of *Inventors Digest* have never been associated with an invention and have no plans along those lines. They're simply intrigued by one or more of the many components of inventing, and the people who beat great odds to reach their goal.

You can't be involved with invention and be closed to learning. My latest education was the wearable technology cover package in this issue. The more I researched, the more interested I became. The sheer genius and innovative spirit that go into these devices is evident when reading about all of the high-tech utility they offer and seeing the intricate fashion creations that usually result.

While interviewing Reflx Labs cofounder Jose Torres, I got the novel perspective of someone who not only conceived important components of some of the early wearable tech devices, he put them on paper via sketches. Our discussions provided a window into the creative mind, as well as the vital connection between art and entrepreneurship. I'm grateful for the valuable schooling—and that there won't be a pop quiz or exam on any of it.

The America Invents Act celebrates its fifth anniversary this month. On Sept. 16, 2011, President Obama signed into law the legislation that the administration said was the most significant reform of the Patent Act since 1952.

Partially because the full law didn't take full effect until 18 months later—March 16, 2013—the jury's still out as to whether it has met its stated goals of "overhauling the patent system to stimulate economic growth." Its main impact was changing the system from first-to-invent to first-to-file, presumably designed to bring the United States in line with other countries and simplify the patent process for companies that file applications in multiple countries.

Many applauded the law, saying it would speed patent review and reduce the backlog of patent applications. Others complained that first-to-file gives big companies an advantage because of the resources required to be protected from a post-grant review. Paul Morinville of USInventor.org wrote last year that since the AIA created post-grant opposition procedures, inventors have lost the vast majority of patent cases.

Who is correct? Or, who is more correct? The more we educate ourselves about all that's involved, the greater the odds we can arrive at a better result for all of us. Just as with the inventing process.

—Reid

INGENUITY IS AMERICA'S MOST VALUABLE RESOURCE.

DON'T TREAT IT LIKE A CHEAP COMMODITY.

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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ON THE COVER
Jose Torres of Reflx Labs; photograph by Victor Jones

BRIGHT IDEAS

"The best way to predict the future is to invent it."

—ALAN KAY, AMERICAN COMPUTER SCIENTIST

MagKey

SMART KEY HOLDER

keymagnets.com

A simple concept with simple execution and a simply more comfortable result, MagKey ends the hassle and bulk of jingling keys while providing more space in your pocket or purse for other things.

There's no complicated hardware or aluminum housing. Just affix a super-thin and light magnet (less than 1 millimeter thick, weighing less than .13 grams per magnet) between each key to keep them together. It works for different size keys, too. Each set of MagKeys outfits four keys.

Key organizers aren't rare, but MagKey has a rare status in the product category: It raised more than $56,000 on Kickstarter, the most successful smart key organizer accessory ever to be crowdfunded on that site. Retail is $9.99-$13.99.

Dooli™

HIDING PET WASTE ODORS

doolipail.com

Dooli is a pet waste disposal and deodorizing pail system for dogs and cats. It's environmentally friendly, with a recyclable refill bag adapter that eliminates extra waste in landfills.

Aesthetically unobtrusive, the product has a patented technology that works the lever to double-seal the bag when the lid is closed, leaving all smells inside the device. Lab-tested, seven-layer waste bags help limit escaping odor. The Dooli uses a manually controlled dispenser for scented gel beads. When it's time to take out the bag, just tie a knot in the bag and dispose of it.

Dooli's bag adapter can be used for at least 50 bags. Only the bags from the waste pail system ultimately make it to the landfill. The number of refill bags is said to be twice the amount of competitors, at half the cost for the consumer.

The pail is sold with 15 seven-layer EVOH odor trapping bags, a scooper, a deodorizing dispenser and scented gel beads for added freshness. The future retail price is $40. Shipping is set for January.

Pictar

IPHONE CAMERA GRIP

mymiggo.com

Sensitivity and ease of use are two hallmarks of the Pictar. It's electronically calibrated to provide maximum sensitivity, just like a digital single-lens reflex camera (DSLR). The shutter button has a half-press mode that locks focus and exposure in order to easily track a moving object, and also has a full press for immediate shutter release.

One-hand shooting is easy, even with gloves. A rotating zoom ring below the shutter release button eliminates the need to touch the screen and pinch-and-zoom, making one-hand zooming easy. The ring can also be re-programmed to suit specific needs, such as the flash, white-balance, etc., in which case the user zooms by "pinching" the iPhone's screen. The exposure compensation wheel allows the user to quickly and easily control the brightness level before shooting.

The Pictar classic kit, which fits all iPhone models, will retail for $90 and begin shipping in November.

InPen

INSULIN PEN VIA SMARTPHONE

companion-medical.com

According to InPen's parent company Companion Medical, in late July the insulin device became the first and only FDA-cleared SmartPen that includes technology for calculating and recommending the best dosing for the patient; tracking the history and timing of doses; monitoring insulin temperature; displaying the last dose and insulin in reserve; and tracking and reporting to the health care provider.

The InPen uses standard Bluetooth wireless to connect to a smartphone app that handles all of the calculations, display of data, and management of reminders. It performs many functions of an insulin pump.

Dosage still has to be dialed in the old-fashioned, manual way once the app displays the recommendation—a safety precaution against a phone running out of power. The InPen app is cleared for Apple iOS, with an Android version planned for late this year. No price is available yet.

HangSmart

RE-POSITIONING HUNG ARTWORK

lervik.se/absolut-art

Once you've hung a piece of artwork, it's there to stay unless you want to drill more holes into your wall. The low-tech HangSmart provides flexibility and eliminates the need to decide on the perfect spot the first time you hang a picture.

A mounting device that was created by Swedish designer Alexander Lervik in conjunction with Absolut Art, HangSmart attaches to the wall with a pair of screws. Once art is hung from the device's clip it can be repositioned six inches up, down, left or right without having to take down the art.

HangSmart requires no leveling. No details have been revealed about how the mechanism works because the design is patent pending. It will be available early next year for an undisclosed price that its makers say will be affordable.

Workers renovating an Oklahoma City high school last year uncovered blackboards with intact art and lesson plans from 1917.

Class Invention

200 YEARS AFTER ITS DISCOVERY, THE MODERN BLACKBOARD HANGS ON

BY REID CREAGER

You may have missed the news last summer: While much of the media was trumpeting the latest iPad incarnation or app, construction workers renovating some classrooms at an Oklahoma City school found blackboards with intact art and lesson plans from 1917.

The discovery at Emerson High came while contractors were removing blackboards that had replaced the older boards for nearly 100 years. What they found behind the walls were amazingly preserved chalk snapshots of a dramatically simpler life: a calendar counting down the days to Thanksgiving; a carefully colored drawing of a little girl in a knee-length dress and stockings feeding a turkey; music and civics lessons; names of selected students; a vocabulary list; a mysterious multiplication wheel.

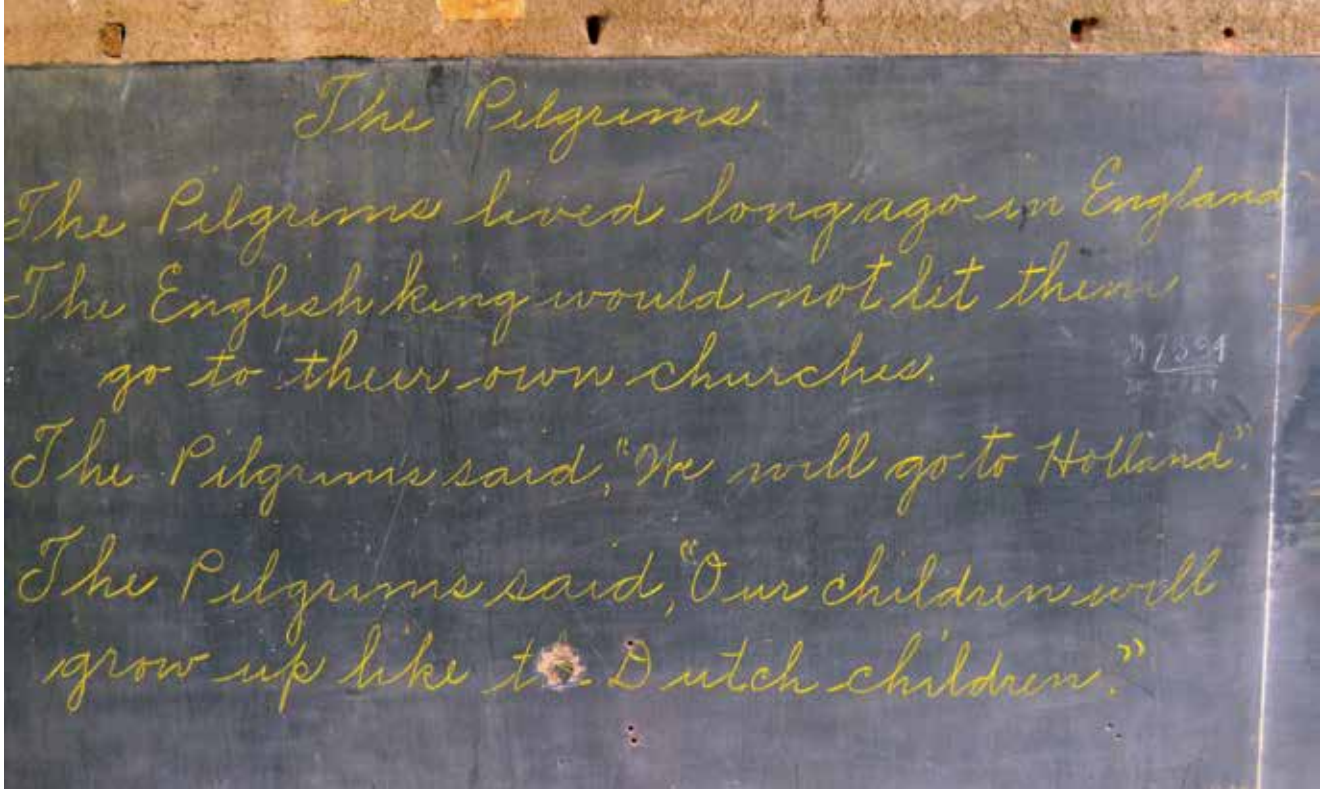
James Pillans would have been delighted, and proud. The Scottish scholar and educational reformer, generally credited with inventing the modern blackboard a century before that, could not have asked for more starkly powerful evidence of his innovation's consistent and widespread importance to this day.

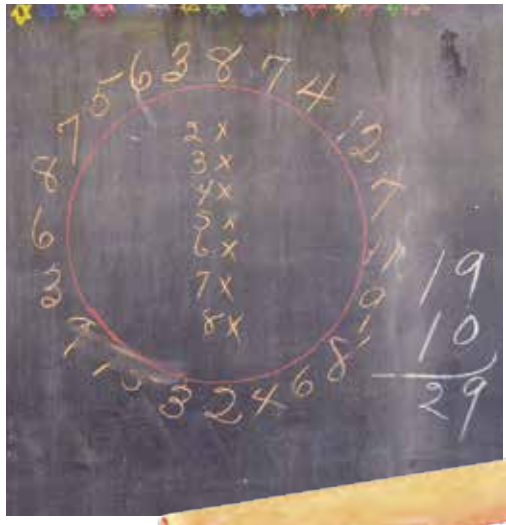
A stage on the front wall

There are precious few people in the United States who have not been in a room with some variation of a blackboard (or chalkboard) during the past 200 years. Metaphorically, the venerable blackboard is a stage on the front wall: a vast space with infinite creative and intellectual potential, an index of the mind's possibilities. This is where organized learning begins. A school blackboard has always been a place to drill, to draw, to dream.

Some don't perceive the blackboard in such a romantic context, associating it with work and punishment. Eraser duty doesn't always summon pleasant memories (save for the eraser fight that the teacher didn't see). Many of us recall that endless walk from our desk to the front of the room, painfully aware that our learning failures were about to be on display via some prehistoric form of widescreen HD. And writing "I will not pull Suzy's hair" 50 times, or some variation

PHOTOS BY JACOB MCCLELAND/KGOU





The stunning blackboard discovery in June 2015 revealed some Thanksgiving history and art, and a mysterious multiplication wheel.

in which the chalkboard was a disciplinary tool, is also hard to forget.

Positive or negative, the memories and associations are enduring—a permanent part of our history that was created by a teacher who wanted a bigger display on which to show larger maps.

Most sources fudge on the exact year of Pillans' invention, although the American Educational History website lists it as 1801. He connected a series of smaller slates into a single, bigger one in order to better display his maps. Pillans is also credited with inventing colored chalk in 1814.

It didn't take long for this blackboard to catch on as a teaching aid. In the United States, George Baron gave presentations using a blackboard while teaching math at West Point. Samuel Read Hall of Rumford, Maine, received a patent for a blackboard design in 1823 (some claim that makes him the inventor). Blackboard production began in New York, Maryland, Maine, Vermont and Virginia, and was soon commonplace by the middle of the 1800s.

Virtually all mid-19th-century blackboards were made of slate, a major upgrade from efforts that dated back some 5,000 years. Students in ancient Babylonia and Sumeria inscribed their lessons on clay tablets with a stylus fashioned from a blunt reed, a process called cuneiform writing. These could be used wet and erased, or baked to make a permanent document.

According to Concordia University, at the end of the 1700s students in America and Europe were still using individual slates made of actual slate, or pieces of wood coated with paint and grit and framed with wood. (Paper and ink were expensive.) With slate and wood, teachers couldn't present a problem or lesson to the class as a whole. They had to write the problem on each student's slate. Pillans' invention revolutionized the process.

Innovations in the 1900s updated and solidified the blackboard, as well as adding accessories. Family Tree magazine says that a six-step process had evolved by the 1960s that involved using porcelain enamel and a durable steel base.

"Once the steel was cut and prepared, a 'slip'—typically silica—was applied, much as in the making of porcelain. High temperatures in a furnace chamber then fused the slip with the steel. The resulting 'porcelained' surface was given a smooth, colored coating and again heated to more than 1,200 degrees to fuse this writing surface with the porcelain. Finally, the finished sheet was laminated onto a fiberboard, to which trim and accessories such as chalk trays were attached. The resulting classroom boards, which could be tinted any color, began to be called 'chalkboards' since they were no longer always black. Green, which showed old chalk lines less prominently, became a popular choice."

A staple evolves

Technology is gradually erasing the form of teaching board that generations of us came to know.

By the mid-1980s, the mess and occasional health issues caused by chalk dust had led to whiteboards made of plastic and written on with dry-erase markers. Today's classrooms increasingly use interactive display devices, with U.K.-based research company Futuresource reporting that such products are "front and center" in about 60 percent of U.S. classrooms. It says 73 percent of classrooms will have some kind of interactive display at the front of the room by 2019.

These days, The Great Slate often either goes unused or survives mostly in schools with limited resources, a vestige of a simpler America. Rená McBroom, a sixth-grade teacher in the Magnolia (Texas) Independent School District, says "I have two large blackboards in my classroom, but I don't like them. They're extremely messy due to the chalk. I have four whiteboards that are either Velcroed to the blackboards or screwed into the wall."

Cindy Kahl, a second-grade teacher at Spencer Road Elementary in Brighton, Mich., says her school uses dry-erase boards as well as Promethean boards—the latter a brand of interactive whiteboard that enables the projection of an image from a laptop or a computer, as well as interaction with the board through touch or specialized pens.

INVENTOR ARCHIVES: September

THREE CLASSIC, FUN SONGS WERE REGISTERED IN SEPTEMBER DURING THE 1800S AND 1900S.

September 10, 1891: "Ta-Ra-Ra-Boom-Der-E" (also known as "Ta-Ra-Ra-Boom-De-Ay") was registered by Henry J. Sayers, having been performed in Sayers' revue "Tuxedo" in Boston that year. The nonsense vaudeville and music hall song—which later became the theme music for "The Howdy Doody Show" on TV—was the subject of multiple lawsuits with often-sketchy details. Its author is unknown.

According to "Flashes of Merriment: A Century of Humorous Songs in America" by Lester S. Levy (1971), the boating song fizzled until London comedienne Lottie Collins popularized it. The song then became a huge hit on the American variety stage, with new verses and a new composer's name appearing on thousands of sheet-music copies.

Isaac Goldberg's book "Tin Pan Alley" (1930) reports a lawsuit over the song's publishing rights in England in the 1890s. A judge in a U.S. lawsuit over authorship in the 1930s determined that the words and tune were in the public domain. The June 3, 1944 edition of The Billboard reported a federal suit filed by Edward B. Marks Music Corp. and Margaret Doyle against Twentieth Century Fox, with Doyle claiming copyright infringement when the song appeared in the Fox movies "Heaven Can Wait" and "Sweet Rosie O'Grady." Fox said there was no valid copyright.

September 16, 1857: The words and music to "Jingle Bells" were registered by Oliver Ditson and Company under the title "The One Horse Open Sleigh."

The book "Boston Curiosities" by Ted Clarke (2008) provides this unsourced information: "'Jingle Bells' was written by Medford (Mass.) resident James Pierpont in 1850, inspired by the annual one-horse open-sleigh races on Salem and Pleasant Streets between Medford Square and Malden Square." Some accounts say Pierpont wrote the song between 1853 and 1857 while living in Savannah, Ga.

Pierpont's song wasn't an immediate hit. But by 1890, three years before his death, the song became a Christmastime blockbuster and was one of the 25 most recorded songs in the world for the next 60-plus years. It was also the first song in outer space, by Gemini 6 astronauts Tom Stafford and Wally Schirra on Dec. 16, 1965.

September 25, 1959: The song "Do-Re-Mi" from the "Sound of Music" by Rodgers and Hammerstein was registered.

Julie Andrews' character, Maria von Trapp, sang the song to the seven children in her care to teach them the notes of the major musical scale. In the stage version, she sings the song

shortly after introducing herself to the children. She sings it later in the story in the film version.

The real-life Maria, an Austrian singer whose memoir became the inspiration for the movie, was generally pleased with the family's portrayal but once told the Los Angeles Times: "They showed me as such a goody-goody. ... I was nothing of the kind!"

Madonna pays tribute to "Do-Re-Mi" in her 1992 song "Deeper and Deeper" when she repeats Andrews' lyrics: "When you know the notes to sing, you can sing most anything." — *Reid Creager*

She uses her dry-erase board for her morning message, inserting errors for the students to catch, as well as for math. "This allows me to do formative assessing as I teach," she says. "It allow me to see immediately which students get it and which students don't." Kahl and her students also love the Promethean board: "It can be used like a chalkboard—no chalk, of course—but it also is very interactive."

Yet it's uncertain whether the interactive whiteboard is here to stay. Future Market Insights, a U.K.-based research firm, says the global market is expected to drop at a compound annual rate of 17 percent through 2026. The report attributes the expected trend to the availability of advanced alternative technologies that include portable projectors, interactive flat-panel displays and other interactive screens—all with more features and little to no maintenance costs.

There will seemingly always be a place for Pillans' blackboard, even as technology roars forward. As Kahl notes: "Some students are kinesthetic learners (those who prefer a more hands-on, physical style), and the actual activity of writing on a chalkboard or dry-erase boards helps them."

The Oklahoma blackboards with the 1917 writings are now protected under acrylic, all surrounding light and temperature carefully monitored. Meanwhile, the next high-tech classroom teaching tool will inevitably come and go—falling considerably short of the slate blackboard's historic lifespan.

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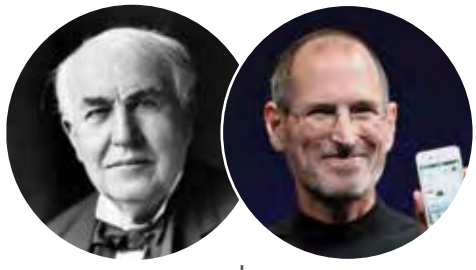
Whiteboards and interactive display devices are gradually phasing out the blackboard.

Inventors, Don't Fear the 'E' Word

AS U.S. STARTUPS DECLINE, ENTREPRENEURS HAVE NEVER BEEN MORE IMPORTANT **BY JACK LANDER**

Richard and Maurice McDonald were solely **inventors** when they created their self-serve, assembly-line hamburger business.



Thomas Edison and Steve Jobs were both excellent **inventors** and **entrepreneurs**.

Entrepreneur Ray Krok (right) franchised McDonald's across America after he saw the enormous potential in the way the McDonalds made hamburgers.

We're inventors. That's why we read *Inventors Digest*. But for some of us, a better option awaits as entrepreneurs or inventor/entrepreneurs.

The main difference between an inventor and an entrepreneur is this: We inventors typically stumble upon the need, want, problem, or annoyance that begs for a solution. And being creative people, we invent the solution. It's fun. It's psychologically rewarding. The entrepreneur is less enamored of the thrill of the solution. He or she also looks for needs, wants, problems, etc., but focuses on assessing the market. The entrepreneur answers the following questions before rushing to a solution:

- Is the seeming opportunity satisfied by any means at this time?
- Will a new solution have to change the habits of potential customers?
- Is there an effective distribution channel already in place?
- How much prior art exists in the form of patents or actual products?

If his or her answers are favorable, work on inventing may begin.

There are many more questions than these four, of course. But my point is mainly to emphasize that the entrepreneur is critically market oriented, not device oriented. And surprisingly, although a risk taker by nature, he or she is less inclined to gamble on an opportunity than the inventor. Well-considered risk is essential; spontaneous adventure is foolhardy. Reducing risk by thoroughly assessing the four key points, and others that apply, is foremost for the entrepreneur.

Trends and innovation

Business startups in the United States have been in serious decline for more than 25 years, a well-known trend. We rank 12th in launching new businesses. Denmark, Sweden, Finland, New Zealand, Israel, Hungary and Italy are all ahead of us.

Less acknowledged is that more businesses have died than have been started since 2008. The latest Census data tell us that in 2014 there were 400,000 business startups and 470,000 businesses that bit the dust.

Jim Clifton, the chairman and CEO of Gallup, said in early 2015: "Let's get one thing clear: This economy is never truly coming back unless we reverse the birth and death trends of American businesses." He added, "To get back on track, we need to quit pinning everything on innovation, and we need to start focusing on the almighty entrepreneurs and business builders. That means we have to find them."

Although I see his point, I don't entirely agree with his deemphasis on innovation. The very nature of entrepreneurship is innovation. The restaurant owner or gas station franchisee

generally is not considered an entrepreneur. "Shopkeeper" businesses are not essentially innovative because there is almost nothing new about making and serving pizza or pumping gas. And according to Peter Drucker, the father of modern business management, entrepreneurship must involve innovation, whether in the product or in the means by which it reaches the consumer.

As I see it, the inventor and entrepreneur are complementary. The inventor needs the marketing skills offered by the entrepreneur, and the entrepreneur needs the innovative product that fills the gap in the market that he or she has discovered.

Can you be good at both?

So, am I saying that we inventors should consider the market side of business rather than the product side? Am I suggesting that you give up inventing? Well, no, but if you have the right personal makeup, you might consider being both entrepreneur and inventor.

If you have the right personal makeup, you might consider being both entrepreneur and inventor.

You might think of these two types as the endpoints on a horizontal graph line. Thomas Edison and Steve Jobs would occupy the center of the line, both being excellent entrepreneurs and innovators. The McDonald brothers, Richard and Maurice, were inventors when they created their self-serve assembly-line hamburger business in 1952. They would be placed at the far right on the line. And Ray Krok, who saw the new method of producing and serving hamburgers, franchised McDonald's across America. Krok was an entrepreneur. He knew nothing about hamburger making, but he saw the enormous potential in the way the McDonalds made them, and how customers lined up to order and serve themselves. He would occupy the far left of the line.

In my August 2013 column, I wrote: "To the true inventor, creation is virtually effortless. His or her ideas seem to 'appear' without straining or agonizing. When the need, want, problem, or annoyance that inspires an invention is defined, the subconscious mind solves the problem—creates the solution—not uncommonly in dreams. Of course, conscious effort is involved in fleshing out the details, but much of even that process is a dreamlike alternation between conscious input, subconscious problem solving, and then, conscious output."

The disadvantage to this effortless method is that it usually overlooks the critical assessment of marketability. If you fit the mold of the true inventor, you may lack the qualities that characterize the successful entrepreneur. He or she is on time for appointments and finishes assignments on time or ahead of time. He considers profit as the measure of managing efficiently, not as the primary goal. His socks always match, and if you ask to borrow a pencil, he always has one in his pocket. In short, he's a can-do guy or gal, and he/she does. Inventors typically are much less regimented.

If you are far to the right, at the inventor's end, you might reconsider taking on the role of entrepreneur. It's not impossible to recast yourself in the entrepreneur's role. It's just darn hard, and often not worth the anxiety you would almost certainly suffer. It means giving up the temptation to work on your latest great idea because you need every minute you have to devote to your current venture. It means creating a schedule for each of the major steps in searching the market and surveying prospective customers, searching prior art, developing the invention, patenting if justified, making prototypes and improving the design, tooling up for a pilot run to test the market, deciding whether to go ahead, and rolling out or abandoning. All of that is challenging to the entrepreneur but daunting to the inventor.

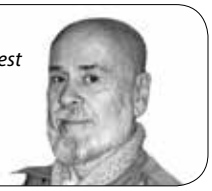
Know your skills—and limits

The ideal situation would be to work closely with entrepreneurs, inventing the products that fill the market opportunities they have uncovered. Inventor clubs should become inventor-entrepreneur clubs where entrepreneurs could define the market gap, and inventors go to work on solutions that they propose in confidence to the entrepreneur. The terms of any working relationship agreement should be clear and in writing, of course.

America's job market and economic standing depend on new businesses. The entrepreneur has the disposition for the often tedious details that market searching demands; the inventor has the creativity that it takes to envision and develop the product. It makes sense to get together and produce a better result than either entrepreneur or inventor could produce alone.

The need and the call for entrepreneurship is with us. Carefully consider taking advantage of it. But look down at your socks—and if they don't match, better stick with just inventing.

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.



Cherry-Pick Trade Shows

LOOK FOR THESE ANNUAL EVENTS THAT ARE INVENTOR SPECIFIC

BY JOHN G. RAU

IMAGE COPYRIGHT AND COURTESY OF LICENSING EXPO

The Licensing Expo in Las Vegas is a major annual event for inventors, featuring influential retailers, manufacturers, and marketing and advertising professionals.

Inventors who are eager to get exposure for their product idea have at least a couple thousand trade shows from which to choose each year. That doesn't mean they have a couple thousand good options.

Based on a review of trade show information by the Trade Show News Network at tsnn.com, more than 2,500 annual trade shows in the U.S. cover a broad range of product and service types. But very few are tailored specifically to inventors.

Attending the right trade show can be a turning point in the process of marketing an invention. The events provide an opportunity to find out which products are on the market in the area where the inventor is focused, and to make company contacts if possible. In particular, an inventor can expect to gain in three ways by going to a trade show:

- An opportunity to survey potential competing products and gather literature about them;
- An identification of which companies are manufacturing similar products (these could be your potential licensing candidates in the future);
- Making contact with booth personnel to ascertain which products might be of interest to their company and obtaining specific company contact information.

One of the few trade shows targeted to innovators is the 31-year-old Invention and New Product Exposition (INPEX), held around June in Pittsburgh—the largest invention trade show in the United States. The National Hardware Show, generally held in early May at the Las Vegas Convention Center, is focused on presenting new products in a number of product categories but has a designated area for inventors entitled "Inventors Spotlight," where an inventor can rent booth space and display a new product idea to potential investors, licensees and manufacturing companies.

Remember: If you don't have a patent or at least patent pending, don't display your product idea.

Licensing Expo

One under-the-radar show that should be of interest to inventors who are focused on licensing their product is the Licensing Expo. The event is sponsored by the New York-based International

Licensing Industry Merchandisers' Association (licensing.org), the leading trade organization for the global licensing industry. LIMA's stated mission is "to foster the growth and expansion of licensing around the world, raise the level of professionalism for licensing practitioners, and create greater awareness of the benefits of licensing to the business community at large." A $395 yearly subscription to the Inside Licensing publication gives you access to the latest licensing industry developments.

Licensing Expo is the meeting place for the global licensing industry, where key decision-making retailers, manufacturers, marketing and advertising professionals represent all consumer product categories. In June, more than 16,000 attendees and nearly 500 exhibitors were on hand at Licensing Expo 2016 in Las Vegas. LIMA provided a matchmaking service whereby exhibitors and attendees could search and connect with one another, an opportunity for inventors to seek potential licensees and licensing partners.

Very few of the reported 2,500-plus annual trade shows in the U.S. are tailored specifically to inventors.

One key exhibitor at Licensing Expo 2016 was Plain Language Media LLC. Based in New London, Conn., the organization publishes general licensing information that's of potential interest to inventors who have products ready for licensing as well as patent attorneys involved in intellectual property licensing. One such publication is the Licensing Letter Sourcebook 2016, an 800-plus-page document (print version cost is $469) that is the licensing business's most comprehensive directory of companies involved in licensing and contains a description of their products of interest.

Most inventors don't know where to start in terms of how to find a company that might have an interest in their new invention. This publication lists more than 7,300 licensing contacts with company descriptions and contact information, including email addresses and phone numbers. Plain Language Media also provides a monthly subscription publication called The Licensing Letter (TheLicensingLetter.com) for $508.95 per year that provides retail sales data of licensed merchandise by product category and distribution channel. This publication also provides royalty rate information.

You never know what you can find when you go to a trade show! That's why you go.

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.

Clean Comes Through in the Clutch

SNOOFYBEE HELPS KEEP BABIES' HANDS OUT OF DIAPERS

BY EDITH G. TOLCHIN

PHOTOS COURTESY OF AMY AND MIKE PERRY

The SnoofyBee came about after Amy and Mike Perry noticed their newborn was curious with his hands during diaper changes.

Ever see an invention and wish it was around when you were raising your kids? Amy and Mike Perry are co-inventors of SnoofyBee™—Clean Hands Changing Pad, for parents of curious babies. As the Perrys' website says, "We believe that cute little hands don't belong in dirty diapers!"

Edith G. Tolchin: What is a SnoofyBee, and how is it better than an old-fashioned diaper changing pad?

Amy Perry: The SnoofyBee is a portable diaper changing clutch that holds diaper supplies, folds out to be a changing pad, and has sides that turn up and connect to form a barrier you can hang toys from to keep your child happy and keep his or her hands out of the mess. There are many diaper clutches on the market that fold out into changing pads, but the barrier feature is something that hasn't ever been done in a portable way like this.

EGT: How did the name come about?

AP: We came up with the idea for the product a few years before our daughter, Sophie, was born. But we didn't have any experience starting a company or bringing a product to market, so we didn't do anything with it. After Sophie was born, we saw how interested she was in the world around her, and how determined she was to always try new things. So we finally decided to go ahead and make the product a reality, no matter what it would take. SnoofyBee is Sophie's nickname.

EGT: What led to this invention?

AP: My husband has worked in shipping for the past nine years, and I have been a full-time mom. We have four kids and

A portable diaper changing clutch that holds diaper supplies, the SnoofyBee folds out to be a changing pad.

another on the way. Our first daughter was easy with diapers because she naturally liked staying clean. But when our first son was born, after the age of about 6 months he always wanted to feel and see what we were doing during diaper changes. We searched for a product that could help make things a little easier for us and more pleasant for him but never found anything that worked well for a family constantly on the go. The idea for our product came from there.

EGT: Tell me about creating your first prototype.
AP: My husband sketched a few ideas of how the product might work and then bought fabric. He asked his mom for help with sewing. The first version didn't work well. So he sketched some other versions and kept trying them with the help of friends who could sew, until he found something that functioned the way we wanted. He then recruited me to step in to make the product look nice and design it to be comfortable and user-friendly. We made dozens of prototypes before we had something we were happy with. We then brought it to a manufacturer, where we made more improvements and changes in order to get it to work well for mass production.

"We made dozens of prototypes before we had something we were happy with. We then brought it to a manufacturer, where we made more improvements and changes."

—AMY PERRY

EGT: What happened with the patent process?
AP: For the patents, we started out by searching in Google Patents for anything similar, then familiarized ourselves with some of the prior art that might have some similarities. We then contacted a number of patent lawyers to get quotes and see what free information they could give us about the process. We also read as much as we could online about patents. There is a book by Stephen Key called "One Simple Idea" that really helped us understand the process of provisional patents. With a good fundamental understanding of patents, we eventually found a lawyer with whom we worked closely to write the first provisional patent. Our lawyer was then able to later file a utility patent application for us. We continue to find variations and new versions of the product to protect and now have multiple patents pending.

EGT: Have you done any crowdfunding?
AP: We launched the product on Kickstarter, knowing that we loved the product ourselves. But we didn't know how many other people were struggling with the same problem we had. We were very excited to see the reaction. The campaign ended up raising $120,000 in pre-orders.

EGT: How did you create your packaging?
AP: We looked at how other popular products in the same category did their packaging. We mimicked them for a general outline, and then we hired an expert in packaging to take our idea and turn it into something that looked great.

EGT: Did you do any market research? How about PR?
AP: Before launching on Kickstarter, we made a very small production run and teamed with another baby product company. We gave them product to sell on their website to see what reaction we would get. We also launched a video on Facebook showing the features of the changing pad and saw that there was a lot of interest. Kickstarter, however, was the big market test

Mike and Amy Perry's experiences with their children as babies led to the SnoofyBee.

for us. Also, leading up to the Kickstarter campaign and afterwards, we actively sought bloggers who were willing to review the product in exchange for free changing pads.

EGT: How has the Consumer Product Safety Improvement Act affected the way your product is being manufactured?
AP: As a new manufacturer and as parents ourselves, safety has been on our mind constantly. We are grateful for all of the guidelines and help that the CPSC provides for companies making baby products. It was overwhelming at first to try to understand all of the requirements, but we found a helpful and knowledgeable employee at the CPSC who was able to answer our questions quickly and in great detail. Because of this help and the help of the third-party testing facility we chose, we were able to make a product in which we are confident. It wasn't cheap to do all of the testing necessary, but we are glad that the guidelines are there.

EGT: Are you manufacturing in the USA, or overseas?
AP: We manufactured our first 100 units in the U.S. and were hoping to continue production in the U.S. However, our manufacturer wasn't able to produce the product at a price that would sell so we found multiple manufacturers overseas and eventually narrowed it down to one manufacturer.

EGT: How has product development gone?
AP: When we were first launching the Kickstarter campaign, we partnered with a friend who had been involved in bringing a number of products to market. Our plan was to have the product available to ship in October. He advised we add at least a month to the timeline. We worried that adding a month would make people less likely to support it but felt it was good advice nonetheless. We kept our own internal goal of October as the ship date but told our backers it would be November. It turned out there were issues in production that did delay things a month.

Because we planned ahead, we were able to ship in November without any of our backers feeling any delay at all. In short, things will always take longer than you think they will, especially in the beginning.

EGT: When did you realize you had a success?
AP: We felt pretty good about it halfway through the Kickstarter campaign. But we didn't feel certain about it until after our backers had the product for a few weeks and were able to let us know how much they loved the product. Once we began seeing repeat orders and excellent reviews, that was when we really knew we were on to something.

EGT: By which means are you selling the SnoofyBee?
AP: We are selling from our website and from Amazon. The next phase will be selling in boutiques first, and then we will branch out to larger chains as we build up the capital to fulfill larger orders.

EGT: What is your vision for the company?
AP: We envision our clean hands barrier to be a fairly standard feature on changing pads within the next couple of years. We are currently developing multiple iterations of the product and have multiple patents pending on the technology and on similar technologies. We are also exploring other applications for the concept.

EGT: Have you thought about licensing?
AP: Originally, that is what we intended to do. We contacted over 60 companies about licensing the product. They all turned us down, so we teamed with a partner who has experience in product development. We launched it on Kickstarter a few months later.

EGT: Do you have any advice for novice inventors?
AP: First, don't worry too much about people stealing your idea. Look into provisional patents and learn how to protect your idea without spending a lot of money up front; but after that, get comfortable with sharing your idea. That is the only way you will find out if it is something that is marketable. Second, partner with people who know what they are doing. There is a lot to launching a new product, and there are plenty of people who have experience and are able to bring a lot of value to the table if they like the idea. There is no need to do it all alone.

More information: info@snoofybee.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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BY REID CREAGER

DOUBLE EXPOSURE

TECH ENTREPRENEUR-ARTIST JOSE TORRES' SKETCHES TRACE WEARABLES' HISTORY

Jose Torres is leading a double life, and he wants you to know about it. In fact, to him it's as natural as the force of innovation. The co-founder of wearable tech startup Boogio, who uses the artist persona Tony Taj, began experimenting with combining technology and art almost five years ago. Torres has long had a passion for science, space exploration and technology, so expressing that via his art skills was organic.

Looking back on his first sketches beginning in early 2012, it becomes apparent that they are more than the renderings of a skilled artist. They represent a visual evolution of wearable tech.

Art begets invention

Torres has a Bachelor of Fine Arts degree in design from Cornish College of the Arts and has been heavily involved in the local art community for over a decade as a gallery owner and artist. So the artist persona is no secret to his personal and business connections, although "they may not know that Taj was a name I tagged with during a short stint with graffiti.

"I began using the name Tony Taj when I was selling my art online in the early days of e-commerce, because I needed to create a distinct identity for the new style I was developing at the time—a combination of abstract, pop and graffiti art."

His latest project is an art installation called "Prior Art," which includes drawing, painting, graffiti, 3-D digital printing, virtual reality and video. The project is a window into wearable tech's recent beginnings, as well as a glimpse of what's next. The new work is being featured in exhibitions and galleries, and is for sale.

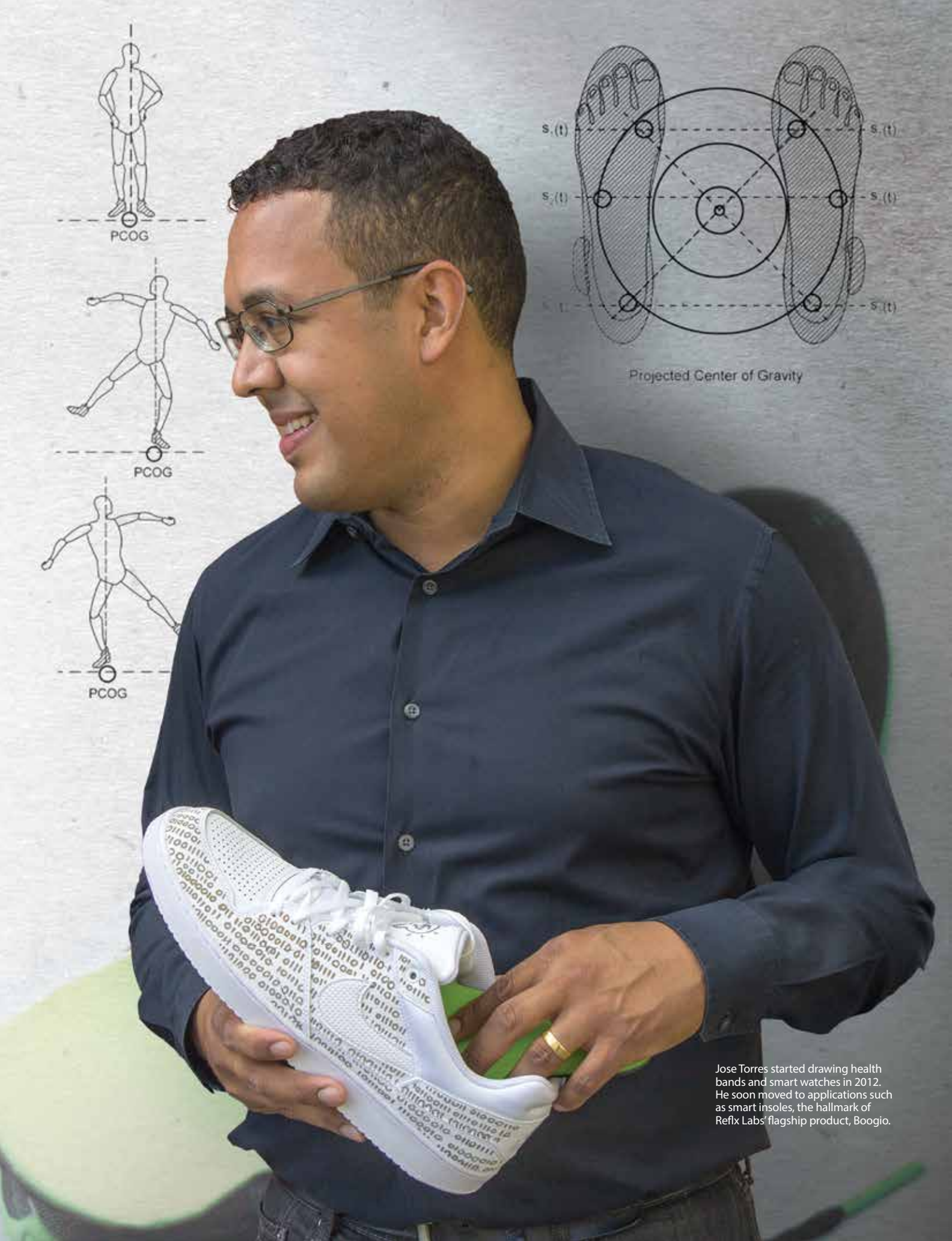
"It is a body of work that illustrates a very near future where sensors and computing technology are integrated to enhance people's everyday lives," Torres says. "I started drawing health bands and smart watches before they became the familiar wearables we see today but quickly pivoted to more novel applications like the smart insoles."

Smart insoles are the hallmark of Reflx Labs' flagship product, Boogio—a group of sensory stickers and embedded computers that make any shoe a smart shoe. Boogio can measure acceleration in any direction, pressure along the toe, arch, and heel of the feet; gravitational center; and core balance to better understand the effects of these forces on physical movement, all sent to a mobile device. The data are transmitted through Bluetooth to the smartphone and stored in the cloud.

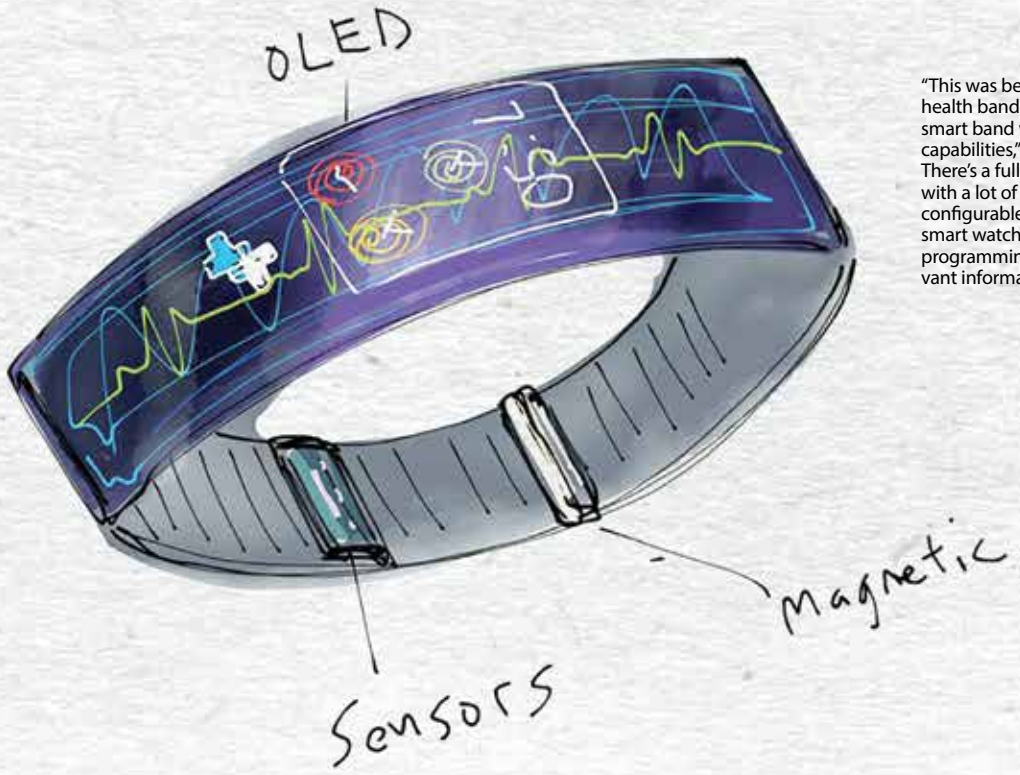
"I was brought in as an artist-in-residence to collaborate creatively with the engineers during the incubation of the Boogio technology," Torres says. Boogio's success led to Reflx Labs partnering with Intellectual Ventures' Invention Development Fund in 2014. Intellectual Ventures is a U.S. leader in the development and licensing of intellectual property. IDF is now a standalone company that continues to work with Reflx.

He says he started sketching wearable tech four years ago with no particular commercial goal in mind: "I use my art as a way to express ideas and observations I make on a variety of subject matter. For this work, the goal was to use sketches to illustrate how people could wear and use products that combined state of the art technology with form and function. The sketches were very clear

PHOTOS BY VICTOR JONES; ILLUSTRATIONS BY JOSE TORRES



Jose Torres started drawing health bands and smart watches in 2012. He soon moved to applications such as smart insoles, the hallmark of Reflx Labs' flagship product, Boogio.



"This was before the smart health bands you see now, a smart band with smart watch capabilities," Jose Torres says. There's a full-screen display with a lot of information that's configurable, just as with the smart watch. The OLED allows programming to display relevant information to the user.

"I was brought in as an artist-in-residence to collaborate creatively with the engineers during the incubation of the Boogio technology. I strongly believe there is a role for artists and designers in invention."

and convincing. Ultimately, the smart insoles drawings became the focus for commercialization efforts and the spinout of Boogio."

A strong tie to innovation

Patent attorneys have long emphasized to aspiring and veteran inventors the importance of skilled, detailed drawings in any provisional patent application. Torres says that "Over the past few years, some of my drawings were included as figures published in various patent applications—previous published content is known as "prior art" in patent language—which also is the inspiration and the name of my new series of paintings and drawings."

The strong art-invention connection wasn't lost on a Seattle research and development technology firm that approached him many years ago. Torres' sketches developed from there, after being discovered at his gallery; his contemporary and vibrant cityscapes dominate the tonytaj.com website.

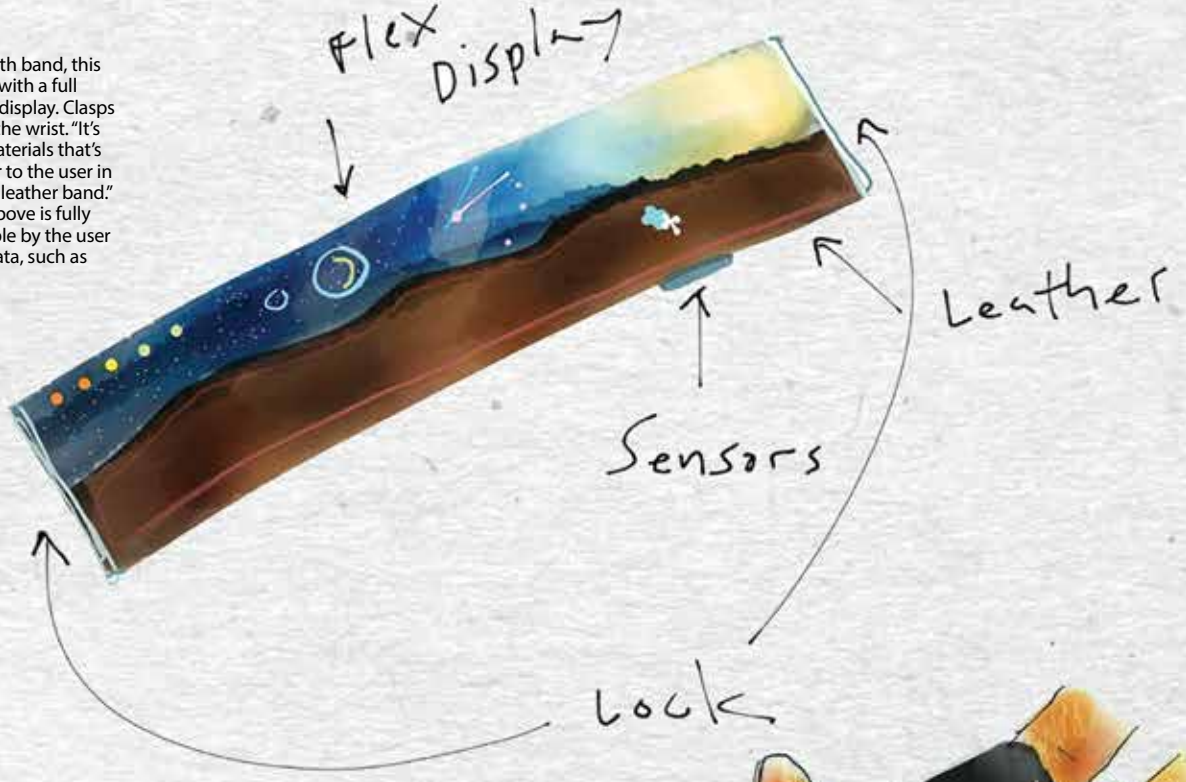
He has been working with creative ways to bring two-dimensional work to life since early this decade. "When I was experimenting with combining technology and art back in 2011, I embedded QR codes in my paintings to connect digital media with my art using a smartphone. (A QR code is a mobile phone-readable barcode that is usually used for storing URLs or other information for reading by a tech device.)

"The concept was featured in business and technology publications and garnered a lot of attention because it proved that technology could provide a deeper connection to experiencing art. For example, one code pointed to a sound clip that, when scanned, plays sounds of an active street corner for the viewer as they looked at the painting."

Before long, the scientific community was taking note. Torres' first wearable tech sketches were for a presentation to a group of scientists and aerospace engineers to illustrate various applications of sensor technology for "human instrumentation."

"The goal was to imagine how the group could migrate its core sensing capabilities in infrastructure and aerospace to function in a wearable device for people. The first concepts focused heavily on smart bands and watches that could detect health and activity of a user with various sensor packs. This proved to be the most obvious, and later that year a slew of wrist-based trackers launched and started what most people would consider the wearable technology movement. This prompted a reexamination to focus on other areas and application in search of more novel approaches."

His favorite wearable tech sketches were "the smart watch designs I did in 2012 on a digital tablet, with the non-conventional use of natural materials combined with full band display and wild colors."



Another health band, this one lays flat, with a full wraparound display. Clasps lock around the wrist. "It's a blend of materials that's more familiar to the user in the style of a leather band." The screen above is fully programmable by the user for various data, such as temperature.

Where we're heading

As a presence and spectator in the wearable tech movement, Torres eagerly anticipates what may be next.

"There is a major push to move wearable tech beyond pure fitness and health tracking to something a bit more experiential in entertainment and gaming. Mobile virtual reality and augmented reality head displays fall into that category, and we just saw that Pokémon Go will release a dedicated device for enhanced gameplay. This is why I think the smart shoe and smart insoles are an important component to wearable tech. They are the missing component to a complete wearable package."

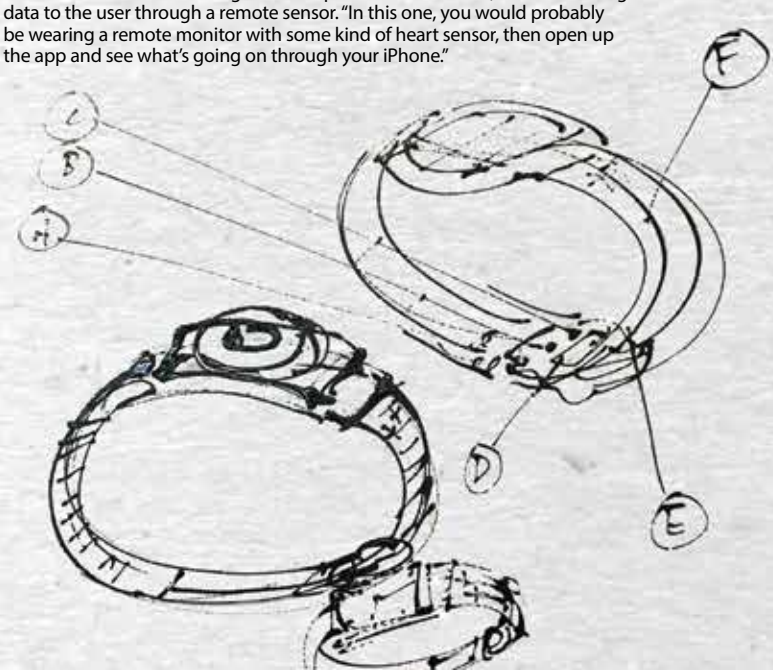
As more products are brought to market, refinements will bring better data capability. "This will lead people to begin connecting multiple wearable devices like smart watches, shoes and glasses to create Body Area Networks," Torres says.

"As data are collected and analyzed through these personal networked ecosystems, we will approach a point in which the data becomes actionable. We'll be able to use data to help predict if an injury will occur due to sports, aging or illness. We'll also see continued enhancement of sports performance with highly targeted training and coaching regimens."

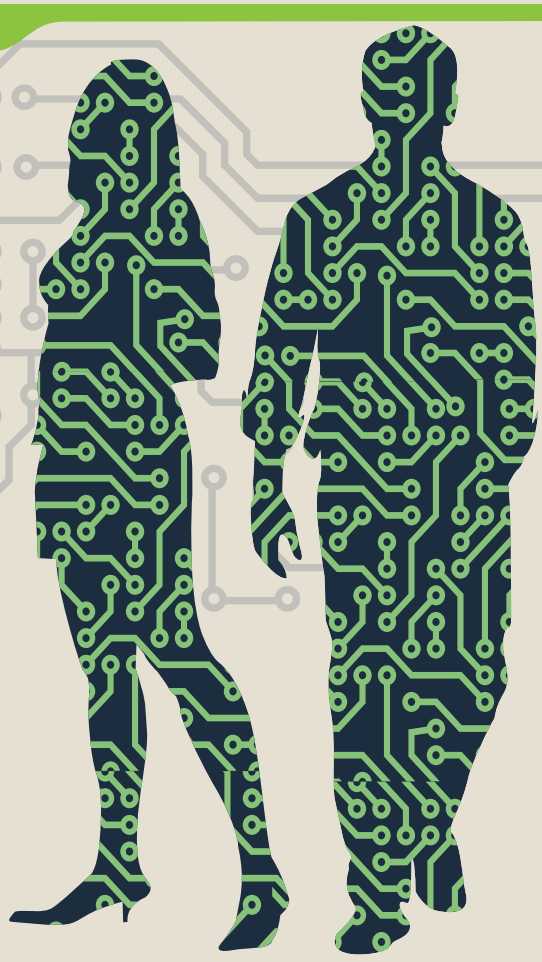
Torres adds that wearable tech will not simply be synonymous with a young demographic—as may be the association today—and will continue to have added impact across all age spans.

"We will see wearable data become the embodiment of a digital avatar and an evolution of the online profile," he says. "We'll capture a lifetime of data with advanced algorithms that could predict the early onset of diseases such as Alzheimer's or Parkinson's through gait analysis, or even when there is a high likelihood of falling due to poor balance." ◆

This shows the result of using the smartphone as a wearable, communicating data to the user through a remote sensor. "In this one, you would probably be wearing a remote monitor with some kind of heart sensor, then open up the app and see what's going on through your iPhone."



These sketches for a wrist-based wearable were another iteration of the smart watch concept. "The various letters pointing to the components are essentially sensors and the communications components involved."



A Lifestyle That's Wearing Well

Wearable tech is nothing new, and wearable tech is everything new. In the early 1500s, German locksmith Peter Henlein invented the small pocket watch that became a visible accessory/ adornment when Swiss watch manufacturer Patek Philippe made the first wristwatch in 1868. Even safety wearable tech goes back a ways: The medical alert pendant for seniors, synonymous with the trademarked "I've fallen and I can't get up," dates to the late 1980s.

Especially in the past year, rapidly escalating technological innovation fueled by the smartphone and Bluetooth has taken wearable tech to a seemingly limitless frontier of utility, health, safety and sizzle. Competition to show off the latest and coolest—especially among young students but certainly not limited to them—has resulted in an avalanche of technology worn on the body that does everything but slice and dice. These products have become a major presence on prime crowdfunding sites such as Kickstarter and Indiegogo. No wonder Forbes magazine says the wearable fitness industry will make $14 billion this year.

Because the number of wearables is endless (including earbuds, headphones, vibrating underwear called Fundawear), we stuck with the basics of jewelry and clothing for this list of selected highlights. Here's just a byte of what's shareable in wearables.

—Reid Creager

WATCHES

Smart watches anchor any discussion of wearable tech. Whether it's Apple, Fitbit, Samsung, Pebble, Tag Heuer or numerous other brands, options abound in terms of function, apps, price and always-improving aesthetics. Bulky, black plastic is passé; sleek and sophisticated is de rigueur.

The biggest problem may be keeping on top of the flavor of the month. CNET crowned the stainless-steel, sapphire crystal Apple Watch the most capable smart watch of 2016. Features include a heart-rate sensor, accelerometer and gyroscope.

Wareable and TopReviews.best dub the Samsung Gear S2 the best smart watch of the year. Its rotating bezel (a grooved ring holding the glass or plastic cover of a watch face) is the star of the show, with its ability to check your heartbeat, the weather, reply to texts, play a song and more. As with the Apple, you can also personalize the watch face.

Fitbit is a hot brand in wearables. Its Fitbit Smart Fitness Watches save all of your activities in a free Fitbit app. You can create tasks, set goals, control your all-day activities. The recently announced Pebble Time 2, scheduled for sale in November, gets kudos from Wareable for its larger screen that makes it more comparable to competitors; new features; heart rate monitoring; and software upgrades. As for Android Wear watches (the displays are always on), digitaltrends.com says the Huawei Watch is the best-looking device it's seen yet.

Though smart watches figure to be a part of the wearables landscape for years to come, indications are they're going through an adjustment period. The Washington Post reported that Pebble laid off about a quarter of its workforce earlier this year, with some companies—including Apple—reducing prices on their smart watches.

Industry experts say this is typical for new technology, that it will take time for innovators and companies across the wearable tech sector to come up with the most efficient formula while still checking off all boxes for form, function and convenience. Networking equipment company Cisco is confident this will happen, projecting 600 million wearable devices to have been sold by 2020—a six-fold increase over today.

HUAWEI WATCH
Fortune magazine says it may be the best Android wear watch yet.

APPLE WATCH
Became the best-selling wearable, with 4.2 million watches shipped in the second quarter of the 2015 fiscal year.

PEBBLE TIME 2
Scheduled for release soon, it has a color display that's 53 percent larger than its predecessor.

SAMSUNG GEAR S2
Wareable and TopReviews.best called it the best smart watch of the year.

SHIRTS/SHORTS

No less an authority than digitaltrends.com says that smart clothes—not smart watches—are the future of wearables. (We'll leave out smart underwear here because it doesn't have the outwardly visible aesthetics that are so important to many young people.)

Smart clothing, especially smart shirts that track health data, is somewhat new to the wearable tech party even though Hexoskin launched its first smart shirt in 2013. The updated Hexoskin Smart is loaded with sensors that monitor heart rate, breathing and movement; it's fitted with a Bluetooth Smart sensor so you can pair your favorite fitness apps and many third-party accessories. Data captured in real time go to the companion app, providing information on intensity and recovery, calories burned, fatigue level and sleep quality.

Ralph Lauren's PoloTech™ shirt also marries sleek style and function. The PoloTech™ has silver fibers woven into the fabric that read heart and breathing data, and other information that's streamed to your iPhone through a detachable, Bluetooth-enabled black box.

For runners, Lumo Run shorts and capris contain a sensor that monitors cadence, ground contact time, pelvic rotation and stride length. The gear provides real-time coaching and feedback via your headphones to improve running form.

LUMOLIFT
Bills itself as the world's first digital posture coach and activity tracker; made Time magazine's top 25 inventions of 2014.

HEXOSKIN
Designed to provide athletes and coaches accurate data recorded during exercise or sleep in order to improve performance.

POLOTECH™
Wearable tech comes to this established luxury lifestyle brand via embedded sensors that read vital signs such as breathing and heart rates, stress levels and calories burned.

BRACELETS/BANDS

Because so many smart bracelets are for girls and women, pretty is front and center. Gemio's peppy, colorful social wearable shouts "teen girls" louder than a Justin Bieber concert, especially with its ability to send coded light-pattern messages from device to device. The Bluetooth bangles can let teens know if their friends are nearby (once paired) before starting the light show. Gems are detachable for customization.

The Fitbit Alta™ ups the company's style game, with last year's sensors and activity trackers intact. Luxe models include pink leather, graphite leather and stainless steel. Alta™ tracks the usual steps, distance, calories burned and active time in minutes; no GPS or special features.

Aries, a smart bracelet from Ringly, is gold plated with an array of semi-precious stones. It pairs with your phone to send customized notifications via vibrations and light. It also tracks steps, monitors calorie output and sets targets. A little down the road, Wristify from Embr Labs tackles dramatic temperature fluctuations in women. The bracelet can cool or warm your wrist area in seconds through heat pumps and uses algorithms to keep the bursts flowing. Not yet in the crowdfunding stage.

Smart bands are gaining favor with the active. WHOOP, made for elite athletes, monitors heart rate, heart rate variability, skin temperature and more. Data can give players and coaches insights into performance, prevent injury and help recovery. WHOOP caused a stir this year when Matthew Dellavedova of the NBA champion Cleveland Cavaliers wore its band in a game (he was fined). LeBron James' trainer, Mike Mancias, is an adviser to the company.

GEMIO
A social wearable with flashing colors that respond to movement and music, Gemio pulled a five-star rating from thegadgetflow.com.

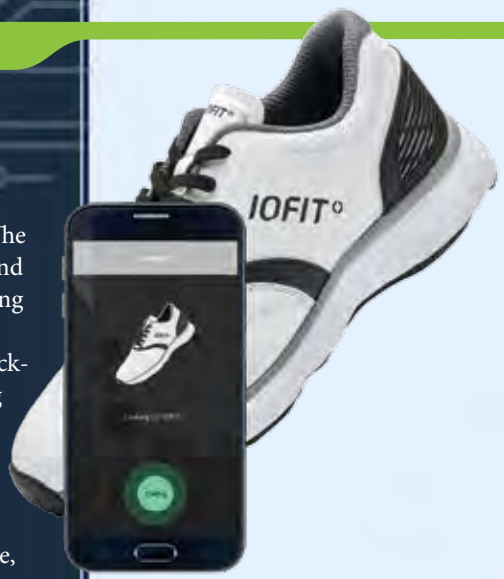
SHOES/SOCKS

The concept of smart shoes actually goes back a decade. The Nike+ shoe had pressure sensors that could detect ground contact and foot speed. Now smart shoes seem to be picking up speed again.

Like so many other wearables, some shoes focus on tracking fitness; others concentrate on performance, gaming and even keeping your feet warm (imagine that). Salted Venture's IOFIT shoes evaluate performance, with pressure sensors to help athletes improve results—along with software to analyze them. The UA SpeedForm Gemini 2 Record Equipped tracks many measurables—time, distance, pace, cadence, elevation gain, route map—and works two ways: connected to the MapMyRun phone app, or untethered.

Orpyx® takes in-shoe pressure sensors to another level with two devices. The SurroSense Rx® is a Class II medical device and provides insoles that work along a shoe pod to convey data to a smartwatch. It signals when there has been too much pressure for too long on the plantar surface of the foot; such data can help prevent diabetic foot ulcers or even amputation. The Orpyx LogR™ is a research-grade plantar pressure data collection tool used by top universities and exercise labs across North America.

Smart socks? Yep, if you don't mind getting a few funny looks. Sensoria® Fitness socks come with anklets that track activity via a mobile app while helping improve speed, pace, foot landing and cadence. A virtual trainer instructs on ways to improve your walking or running.



IOFIT
Billed as the first smart shoes to improve your golf swing, Iofit measures your balance and weight shift in real-time using thin pressure sensors embedded in the outsole. Doubled its $30,000 pledge goal on Kickstarter, with a Sept. 7 funding date.

ORPYX®
Data gathered by the SurroSense Rx® can help prevent diabetic foot ulcers or even amputation.

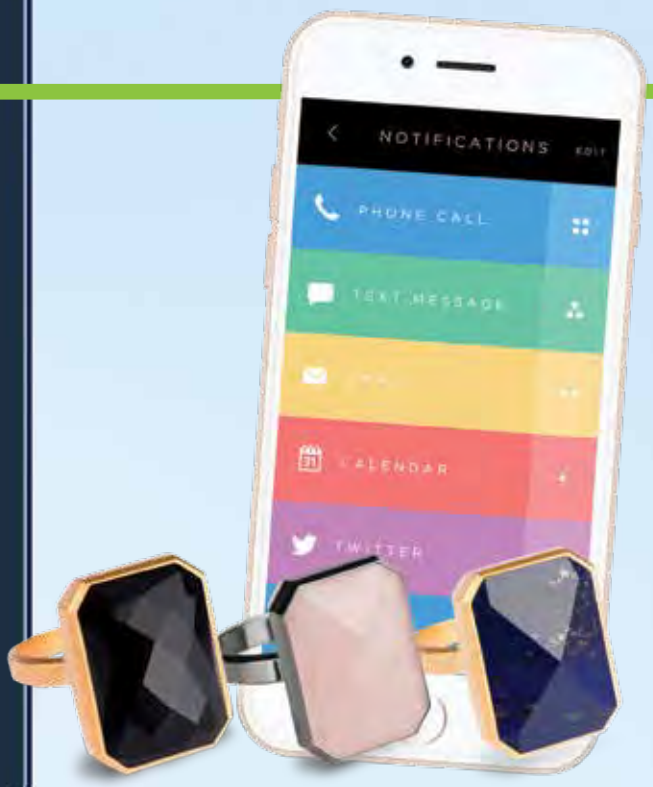
SENSORIA® FITNESS
An anklet device attached to a special running sock, the Sensoria® coaches users with real-time analysis of their foot-striking position and stride. Raised $100,000 in crowdfunding.

RINGS

This is an interesting category to watch in the field of wearable innovation. Smart rings have met with limited success in crowdfunding circles due to challenges that include bulkiness and battery life.

Among those endorsed on Wareable is the sleek and elegant NFC Ring®, which has nothing to do with football despite its name. The ring has two tag inlays: one that contains private information such as how to unlock doors and smartphones, which sits on the ring's inner part; and one that contains public information (email addresses, etc.) that sits on the top side of the finger. And it never needs charging.

Ringly looks like actual jewelry and not a gadget. It has no screen, only notifications from your smartphone that allow you to access email, texts, health reminders, social updates, etc. The BioRing (set for November launch; funding complete) could be a top ring choice for the health conscious; it's designed to measure steps, distance, sleep, heart rate and stress, along with tracking calories consumed.



RINGLY
One of the first wearables designed specifically for women, Ringly alerts users of phone calls, messages and more. The company recently developed smart bracelets.

SAFER™ SMART PENDANT
Designed in India to help keep women safe, the Leaf has an SOS button for emergency alerts and lets you share your location with loved ones while traveling.

SAFETY JEWELRY

The goal set by Indian smart jewelry startup Leaf Wearables is as ambitious as it is admirable: Make 1 million families safer around the world. Its SAFER™ Smart Pendant, launched last year on Indian crowdfunding platform Ketto, immediately drew a slew of pre-orders.

The elegant necklace—which hides the technology inside a costume jewelry-style body—connects to a smartphone over Bluetooth to send SOS alerts to loved ones about your whereabouts (wearabouts?). It also can send a text when you can't reliably connect to the internet. Safer, which lasts seven days between charges, is also proof that security doesn't have to be expensive: It costs $60 on a stainless steel necklace or less than $30 as a standalone device.

Safety wearables may become the hottest segment of wearable tech, if for no other reason than the protection aspect can entice deep-pocketed parents. According to Wareable, later this year Apple plans to add an SOS mode for the Apple Watch called the watchOS 3. Mangos and Nimb (the latter which has quadrupled its crowdfunding dollar target) are rings on which the face can turn into a button that sends emergency alerts as well as location data.

STRIKING A NEW CHORD

It's been said that the greatest guitarists become one with their instrument. Now any high-schooler or novice can do just that.

Wearing shoes with a built-in Wah guitar pedal won't turn anyone into a Jimi Hendrix or Eric Clapton. But it makes guitar playing more intuitive, and infinitely more cool.

With the Converse All-Wah by fashion and wearable tech brand CuteCircuit, all you have to do is move your foot as you would when using the typical Wah pedal. The sole of your forever retro-hip Chuck Taylor All-Star sneaker communicates wirelessly through Bluetooth to the Wah Box for the classic guitar effect. Use the All-Wah in a stage setup with an amp or connected to a Mac or iPhone.

The All-Wah was conceived three years ago during Converse's Chuck Hack sessions. Critical Mass presented the first prototype of a Chuck Taylor using a standard Wah pedal; this year, CuteCircuit has designed and extended the concept into a real interactive product. This past February and March, 13 guitarists were selected to use the sneakers on stage.

As much as Chuck Taylors are associated with vintage cool, CuteCircuit cofounders Francesca Rosella and Ryan Genz say the All-Wah is part of a dramatic future transformation in wearables.

"At CuteCircuit, we believe that in the future all the devices that we carry with us today, such as mobile phones, photo cameras and wrist watches, will disappear and any functionality will become embedded into our clothes," says CuteCircuit cofounder Francesca Rosella. "This is because our garments are the natural interface between the wearer and the environment that surrounds them. Our garments are a second skin that connects us to people and places in a more emotionally engaging manner."

CuteCircuit cofounder Ryan Genz says, "The future of fashion is as a surface for personal expression."

—Reid Creager

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Down and dirty, and LOVING IT

EDISON NATION SUMMER INTERNS ABSORB A WEALTH OF LASTING, HANDS-ON KNOWLEDGE

BY JEREMY LOSAW

Summer interns have to be ready for anything. But students who worked with the Edison Nation industrial design and engineering teams may not have pictured themselves in waders, shoveling at least 2,000 lbs. of wet dirt for a day.

Every year the interns are tasked with cleaning out the waterjet machine, which gradually fills with sand that has to be removed. The good news is that this is a small part of what they do, and they get invaluable hands-on training involving designing, prototyping and bringing products to life.

This is one of my favorite yet most challenging times of year in the shop. Although it can be frustrating at times to get students trained and up to speed with our tools and processes, it is fun to share knowledge and watch their skills grow. This year, we had five students.

"I really liked learning more about the product development process and seeing projects go through the different stages," said Will Vest, a student at UNC Charlotte.

Interested and motivated

It is a delight to have fresh and eager minds on staff. "What do you want me to do?" is probably the most frequent question I hear. More specific questions involve technique, how to perform a task, or maybe the use of 3D software.

Most of the time they are a great help and move the projects along at a rapid pace. One of our summer projects involved some difficult Arduino programming with sensors—Arduino is an open-source electronics prototyping platform based on easy-to-use hardware and software—and they did a great job getting together a great prototype.

This year's Edison Nation summer interns, from left: Harrison Sustar, Yi Zhu, Xinbei Hu, Nicole Medway, Will Vest.

Sometimes their efforts are less fruitful, and for some reason painting seems to be an Achilles' heel. I set up one of the interns with a paint gun and after one pull of the trigger, the paint was running off the part like Iguazu Falls. I spent some time on a Saturday afternoon sanding and repainting it to make sure it was ready for Monday meetings.

As far as actual prototyping, it is rewarding to help them learn the different tools and techniques in the shop. I always train the interns how to use the waterjet cutter, which we use to build parts for nearly all of our prototypes. It helps them see the power of computer-controlled tools. I also like to teach them how to do urethane molding. Molding in general is such a big part of prototyping and manufacturing, so having at least some exposure to that will be really valuable to future prototyping and design efforts.

"It was a great opportunity to learn CAD (computer-aided design) in a real-world environment and to learn more about coding and using microcontrollers," Vest said. "I also got face-to-face experience with clients, which I never had to do before."

"What do you want me to do?" is probably the most frequent question I hear. More specific questions involve technique, how to perform a task, or maybe the use of 3D software.

Lessons come full circle

My teaching role took me back to my days as an intern. Although my jobs weren't directly associated with my current work responsibilities, the more general lessons I learned have helped me in many aspects of life.

My summer internship in 2000 stands out. I was between my sophomore and junior years of mechanical engineering at Union College in Schenectady, N.Y., and needed some money before heading to England on a term abroad that fall. I was too cool to find myself an engineering internship, so I opted to stay at my parents' house and work on the maintenance team at the Chesterwood Museum, the former summer estate of renowned American sculptor Daniel Chester French in Stockbridge, Mass.

It was a fantastic gig. I installed modern art sculptures on the grounds, cleared paths through the woods, painted the piazza of the artist's studio, and got to rip around on a golf cart all day. Sure, I had to clean the bathrooms in the morning. But like the Edison Nation interns shoveling wet sand, this was a small price to pay.

I learned lessons ranging from simply staying busy—when in doubt, pick up a broom—to more sophisticated concepts such as opportunity cost and economic efficiency. It is my hope that these interns learn relevant skills in the art of product design and some equally valuable lessons in practicality.

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/.

Draw That Great Idea With PowerPoint

PROGRAM HAS HELPFUL TOOLS EARLY IN INVENTING PROCESS **BY GLEN ECKERT**

So you're driving home, sweeping out the closet, watering the lawn, or performing some other mundane daily task when it hits you—that great idea. OK, now what?

Being an inventor isn't easy. The process of creating something from nothing presents unique challenges every step of the way. Coming up with a great new concept is the first step and for some, the biggest hurdle. But once you have that idea, the work truly begins. How will it work? How should it look? How will you convey it to others?

If you're lucky enough to be artistic and have skills with a pad and pencil, great—get busy! But if you're like most of us and find that the amazing design you've just committed to paper vaguely resembles something you once drew in second grade, consider Microsoft PowerPoint.

You will be amazed by how many possibilities this toolbox of basic shapes can offer.

Start with a name

I know what you're thinking. Isn't PowerPoint that boring and agonizingly repetitive slide show thing they use for school lessons, in-service classes and business presentations? Yes. But in the hands of an inventor, PowerPoint also offers some great basic tools that can be invaluable in the creative process, especially in its early stages.

When you open your PowerPoint program, a new white page comes up. Point your arrow to the top toolbar and click the "Insert" tab that reveals a number of choices: text, picture, clip art, shapes, etc.

Inserting text in the form of the name of your product is often a great place to start and can be a powerful launching point. The CEO of a successful New York City design firm I have worked with always impressed upon me the importance and impact of a name on design. Names, as he so frequently pointed out, often encapsulate the product vision and can imply features, expectations, etc. Even the process of selecting the right name encourages your mind to take a hard look at what your idea is intended to be, do and offer. Each time you reopen your project to continue working, seeing the name will help maintain your intended direction and goal.

Next: The images

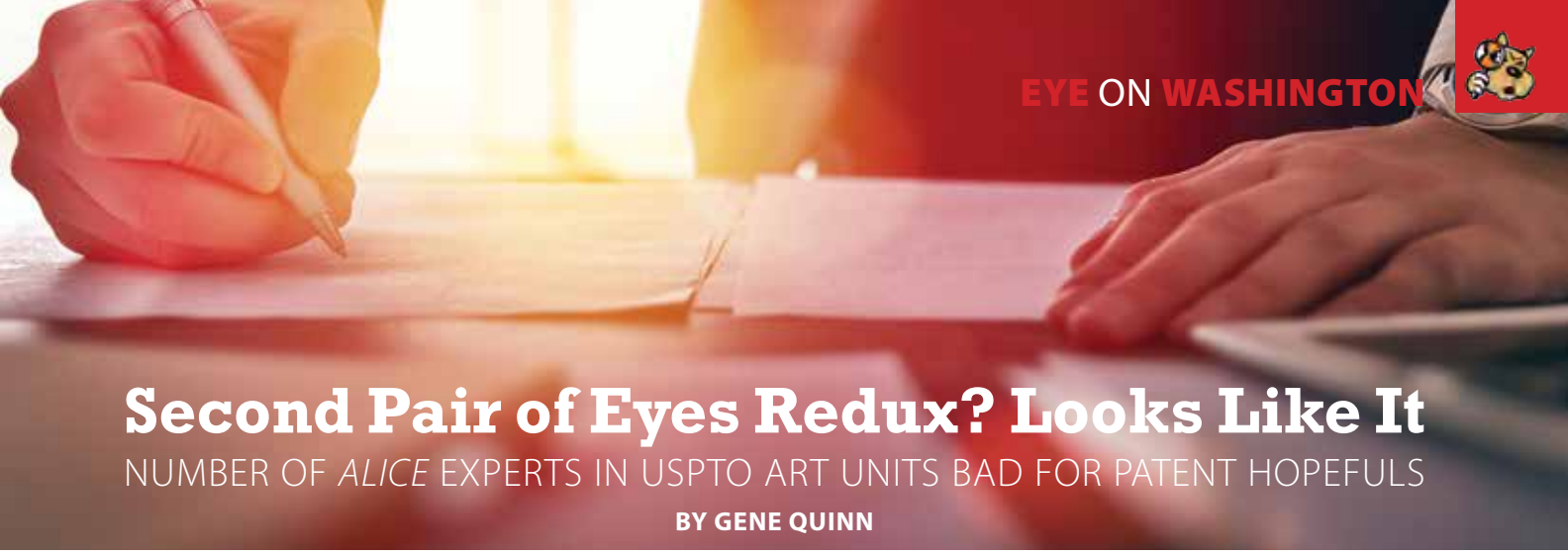
I like to jump to the next step in the creative process by inserting images that can help begin forming the reality of the product. Let's say your idea is for a new gadget that attaches to a car's dashboard. Start searching for images of dashboards on the web and find one that you think will apply. In doing this, you help yourself better visualize your concept, and by looking through many options you may also discover some potential problems or limitations of which you were unaware. When you find the image that works for you, copy or save and insert it. Inserting a few variations to review and decide on later is always a safe bet, too.

Now it's time to start on your product. If your idea is an improvement on something else and you can benefit from using that object as a "base" for your design, search for an image, insert it and go from there. But if you need to start from scratch, which is often the case, go back to the "Insert" tab on the toolbar and click the arrow under the "Shapes" tab. This reveals a nice selection of straight lines, curved lines, squares, circles, hexagons, trapezoids and many variations.

You will be amazed by how many possibilities this toolbox of basic shapes can offer. Example: A few years ago I needed an image of a side-by-side refrigerator shown from the front, with one door open and nothing inside. I searched everywhere but couldn't find one, so I went to my trusty PowerPoint. Using nothing but some squares, lines and shading, I threw together the image you see here.

Of course, as with anything new, it takes practice and experience to make the most of it. But once you have that, there are no limits to what you can do. PowerPoint is great for presentations but also provides a solid starting platform for any new idea. It gives you the ability to craft your product, and by visually building it yourself piece by piece, you gain a better overall understanding of it—which you should. After all, it's your "baby." ◆

Glen Eckert is cofounder of Inventor Angels (inventorangels.com), an organization that develops cost-effective idea realization for innovators.



Second Pair of Eyes Redux? Looks Like It

NUMBER OF *ALICE* EXPERTS IN USPTO ART UNITS BAD FOR PATENT HOPEFULS

BY GENE QUINN

It appears a system of review that wreaked enormous havoc on the patent system over a decade ago is back for an encore at the United States Patent and Trademark Office: the second pair of eyes.

Those who have been involved in patent prosecution going back 12-15 years will recall that after the initial rush of business method patents began, in about 2002, the patent office instituted what it referred to as "second pair of eyes" review. A patent could not be issued on anything that related to a computer-implemented invention unless it was approved by two separate patent examiners. It sounds like that is what is happening again.

Second pair of eyes review was one of the primary reasons patent pendency got out of control and the backlog of patent applications grew to well over 1 million unexamined patent applications. It is not an exaggeration to say that second pair of eyes review nearly broke the patent office and crippled the U.S. patent system.

Alice experts hold power

The return of second pair of eyes is linked to the Supreme Court's 2014 *Alice v. CLS Bank* decision curbing software patents. Says JiNan Glasgow, a former patent examiner who founded Neopatents, a firm specializing in intellectual property research and business intelligence services: "I have not yet run into an art unit (at the USPTO) that does not have someone designated as an *Alice* expert. They won't always tell you who it is."

An art unit is responsible for a cluster of related patent art, with each unit staffed by one supervisory patent examiner and a number of patent examiners who determine the validity of patent applications.

Glasgow says examiners have said that "even if they are ready to allow a case, nothing can be allowed without the approval of that *Alice* expert. Of course, if the examiner assigned to the case decides not to issue the claims, the *Alice* expert does not get involved." It is disheartening that second pair of eyes, or some *Alice* equivalent or hybrid, has returned.

No guarantees for claimants

In some cases, it can be helpful to invite the *Alice* expert into the conversation during prosecution—for example, in a telephone interview—if it does not appear that progress is being made with the examiner. This may streamline the process and determine whether there is any likelihood of success within that particular art unit.

The return of second pair of eyes to *Alice*-affected art units could explain why so many applicants seem to believe that the SAWS program (Sensitive Application Warning System) continues despite announcements from the USPTO that it has been discontinued. When a process is in place requiring multiple reviews before allowance, even if you are working with an examiner who is inclined to allow your patent claims there is no guarantee your claims will be allowed. The ultimate decision maker may not be the examiner, even if you are working with a primary examiner.

Instead, the final decision maker (officially or informally) is the *Alice* expert assigned to the art unit where you find your application assigned. This suggests it is very important for applicants and patent practitioners to attempt to secure the presence of the *Alice* expert during any interview, particularly when roadblocks have been encountered or you are in an art unit with a particularly low allowance rate.

It is not an exaggeration to say that second pair of eyes review nearly broke the patent office and crippled the U.S. patent system.

Of course, we know that the patent office continues to allow software patents—albeit in smaller number than it should. There seems to be no favoritism being played, with large multi-national corporations sometimes suffering the reopening of prosecution after a successful appeal or after filing an appeal brief, for example. For patent practitioners, the randomness of patent prosecution means that advanced strategies need to be employed and a one-size-fits-all approach to prosecution will not work.

Gene Quinn is a patent attorney, founder of IPWatchdog.com and a principal lecturer in the top patent bar review course in the nation. Strategic patent consulting, patent application drafting and patent prosecution are his specialties. Quinn also works with independent inventors and start-up businesses in the technology field.

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Patent Quality is a 2-way Street

USPTO NEEDS TO UP ITS GAME WITH EXAMINATIONS

BY GENE QUINN

The United States Patent and Trademark Office has a legitimate gripe with certain patent applicants and practitioners. It is a reality that some applicants and patent practitioners produce predictably low quality. The filing of applications that consist of extremely low-quality translations of foreign-filed patent applications is also a problem. I've never understood foreign applicants not paying U.S. practitioners to fix claims and put them into an acceptable U.S. format, which practically guarantees an unnecessarily prolonged prosecution of the patent application.

Unfortunately, the USPTO has lost credibility when it comes to calls for patent quality. As so many in the industry feared when the latest round of patent quality initiatives started, patent quality in the mind of the USPTO is a one-way street on which applicants and patent attorneys need to step up their game because they are the problem. What about quality examination? The patent office talks about that far less, even though low-quality examination is too common.

Awaiting appeals, with no hope

When the Patent Trial and Appeal Board completely reverses an examiner, finding no merit to any of the rejections he or she raised, ordinarily you would suspect that a patent would issue. However, that is not what you should expect in Technology Center 3600, the home of art units at the USPTO covering software and business methods. (Each patent application that the USPTO receives should be assigned to a specific art unit, which examines the patent's viability.)

Instead, you should not expect a patent to issue. You should expect the reopening of prosecution and a new search.

TC 3600's allowance rate since the historic *Alice Corp. vs. CLS Bank International* decision in 2014, which was a blow to software patent eligibility, is lower than the USPTO's overall average. It has been argued by some that I am making a mountain out of a molehill because those cases that have been recently reopened in TC 3600 after a complete reversal by the PTAB were in order to issue an *Alice* rejection. These appeals were filed before the Supreme Court decided *Alice*; thus it would seem reasonable to review the claims in light of the court's decision.

It may have been reasonable to reconsider the claims in light of *Alice* since then—but more than two years later, after the applicant has already been unreasonably forced to wait an excruciatingly long time since filing? If the examiner had done his or her job in these cases, these applications would have issued before the Supreme Court decided *Alice*. It is unbelievable that an examiner who was completely wrong about everything can continue to prevent the application from issuing. There will always be another case from the U.S. Court of Appeals for the Federal Circuit or Supreme Court that would allow the recalcitrant examiner to reopen prosecution. It will never end!

These cases sat on appeal for three-plus years. The PTAB ruling didn't matter

since in those cases in which the examiner was found to be completely wrong, *Alice* rejections were then issued. Never mind that the board has the authority to issue new grounds of rejection, which it didn't see fit to do in any of these cases. Never mind that the board has the authority to issue a remand for the examiner to specifically reconsider one or more claims, which also did not happen. A process that treats applicants—who are presumed to be entitled to a patent—in this way is hopelessly broken. It is unconscionable that the patent office would allow these applicants to sit waiting for the right to fix egregious errors for years.

A patent is a wasting asset! Extending the patent term is not a solution for software-related innovations. These types of innovations have a short half-life. Rarely will one of these innovations meaningfully enjoy a full, useful patent term. So adding patent term on the back end does not compensate the applicant for administrative sloth and intentional harassment by examiners who fundamentally and philosophically oppose the patent system.

Change the policy—now

The rule says that the director in the technology centers is the one who is authorized to reopen prosecution after an appeal. The delegation of authority comes from the Manual of Patient Examining Procedure, which is USPTO policy that can be changed and should be changed immediately. Reopening prosecution should happen only in the rarest cases and should only be authorized by the director, deputy director or commissioner for patents. Such a change would immediately put the patent office leaders back in charge, assuming that they disagree with this piecemeal it-takes-a-generation approach to prosecution.

Furthermore, if a case is reopened, it should be treated with special dispatch and moved to the front of all lines. Though many examiners hate hearing it, the law says that the applicant is entitled to a patent unless a valid rejection can be raised. That should mean a valid rejection raised in a reasonable period. This war of attrition waged by some patent examiners against applicants is indefensible.

Stakeholders who have an appeal pending that was filed before *Alice* and is in TC 3600 might as well file an expedited Track One (prioritized) Request for Continued Examination, get the *Alice* rejection, and then get back in line for appeal. It makes no sense to wait for a PTAB decision when the case is only going to be reopened if you prevail. The risk is just too great to let the board decide. If you lose the appeal, the examiner won't reopen prosecution because he or she thinks the board made a mistake. Prosecution is only reopened when you win.

Decisions not on the record

USPTO decisions are supposed to be based only on the written record, according to this rule: "The action of the Patent and Trademark Office will be based exclusively on the written record in the Office. No attention will be paid to any alleged oral promise, stipulation, or understanding in relation to which there is disagreement or doubt."

There will always be another case from the U.S. Court of Appeals for the Federal Circuit or Supreme Court that would allow the recalcitrant examiner to reopen prosecution. It will never end!

But the patent office is not basing decisions on the written record. There are unwritten biases of supervisory patent examiners, TC directors and quality assurance supervisors. When an examiner says he or she will not follow a federal circuit decision, or an SPE won't allow those types of patents to issue, that means decisions are being based on things not in the record. It also means USPTO guidelines are being ignored.

The spirit of the rule seems clearly intent on creating a complete record for posterity. But the prosecution file is anything but a complete record. Not everything is placed into the record by the patent office. The prosecution history is a carefully curated selection of documents and stories the applicant and public are allowed to see, not a true representation of what happened during the prosecution.

For example, for many years the patent office operated a secret regime called the Sensitive Application Warning System. If your application was caught up in SAWS, you were not told, and your application would be placed into administrative purgatory—needing multiple approvals by many different people. Though the office created SAWS for what it deemed "sensitive" applications, it morphed into including any application that covered a technology the patent office might want to use. That isn't how the system is supposed to work, and applicants caught in the SAWS trap didn't even know. How is that possible, given that the record is supposed to be open to the public?

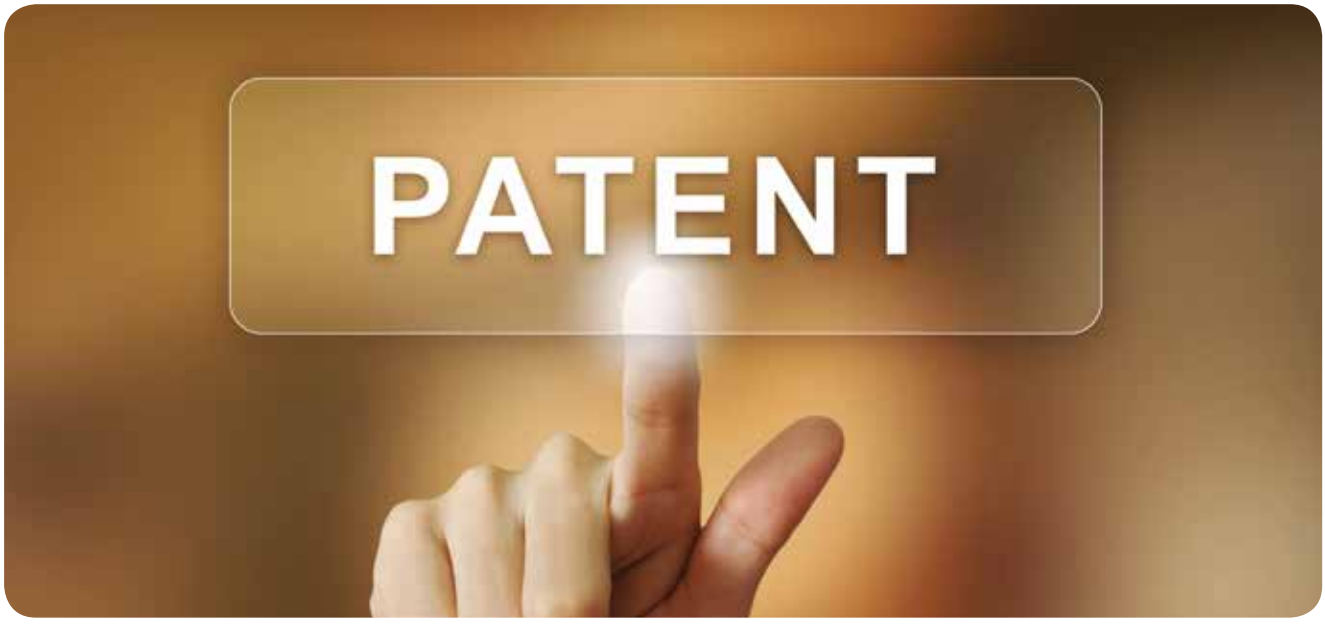
Now second pair of eyes review (see related story) has returned to the USPTO for patent applications affected by the Supreme Court's *Alice* decision. To my knowledge, the office has never publicly announced that each art unit has a so-called "*Alice* expert" who is responsible for reviewing any allowance before an application receives a notice of allowance. Of course, this means that the ultimate decision maker is not the examiner you are working with, and might not even be the SPE. Not surprisingly, reports are that the *Alice* expert is not consulted if the examiner wants to reject an application. So it seems that the office is only interested in second-guessing when an examiner wants to allow, not when an examiner wants to reject. This is all too familiar.

(Continued on page 44)

5 Things Inventors Must Know About Patents

AMONG OTHER THINGS, REMEMBER WE ARE NOW A FIRST-TO-FILE COUNTRY

BY GENE QUINN



On the road from idea to inventing success, many pitfalls stand in the way. One of the biggest pitfalls is incomplete knowledge.

Inventors should know a great number of things: the importance of doing a patent search; the need for confidentiality agreements; how to understand when an invention is obvious. Based on my experience, many inventors do not really understand these aspects of patent law. What follows is a list of five things that are critically important for inventors to understand.

1 Admissions: Be careful what you say.

Admissions are a big problem independent inventors face when they choose to represent themselves. Those representing themselves should be given patent-style Miranda warnings before they file a patent application or say anything during the prosecution of a pending patent application. Everything you say can and will be used against you!

For example, the patent office treats admissions by the applicant as prior art. This is true whether your application will be examined under pre-America Invents Act law (i.e., first to invent) or post-AIA since 2011 (first to file). By law, a statement by an applicant in a patent application or made during prosecution that identifies the work of another as "prior art" is an admission that can be relied upon for both anticipation and obviousness determinations, regardless of whether the admitted prior art would otherwise qualify as such.

2 First to file means file first!

I write this a lot, but it seems that a month does not pass without me having to explain to at least one inventor or startup business that U.S. law significantly changed in 2011 and now we are a first-to-file country.

Inventors and businesses wait to file patent applications for a variety of reasons, sometimes because they don't know the law. Sometimes it is because they lack the financial backing necessary. Regardless of the reason, waiting to file a patent application is not universally bad advice, but it comes with a lot of risk given the first-to-file importance with only an infinitesimally small grace period remaining. In general, file early and often—at least a provisional patent application. Today you cannot assume that you will be able to wait to file a patent application and everything will be all right.

For inventors and startup businesses there never seems to be enough hours in the day, never enough money to do everything without cutting corners or at least engaging in a certain amount of triaging. But given how the patent laws have changed, it is imperative that inventors and startups interpret the law to mean file first before you disclose anything, demonstrate your invention

publicly or offer it for sale. Of course, you do not need to rush to file a non-provisional patent application. A properly constructed provisional patent application can and will suffice.

3 Provisional patent applications can be your friend. Although many inventors are aware of provisionals, in my experience there is a significant misunderstanding. First, there is no such thing as a provisional patent. What you are doing is filing a provisional patent application.

Since June 8, 1995, the United States Patent and Trademark Office has offered inventors the option of filing a provisional application, which was designed to provide a lower-cost first patent filing and give U.S. applicants the ability to obtain an earlier filing date without the patent term starting to run. Patent term does not start to run until the filing of a non-provisional patent application.

A provisional application for patent is a U.S. national application that can be filed without a formal patent claim, oath or declaration. The focus is on describing the invention as completely as possible. Many formalistic requirements of a non-provisional patent application are unnecessary to satisfy. A provisional patent application provides the means to establish an early effective filing date in a later-filed, non-provisional patent application. It also allows the term "patent pending" to be applied in connection with the description of the invention.

When filing a provisional patent application, the focus is on describing the invention as completely as possible.

A provisional patent application has a pendency lasting 12 months from the date the application is filed. Therefore, an applicant who files a provisional patent application must file a corresponding non-provisional patent application during the 12-month pendency period of the provisional application in order to benefit from the earlier filing of the provisional application. In certain rare circumstances when a mistake or error has been made, this 12-month deadline can be extended by two months, but this extension is only available for unintentional delays in filing a non-provisional patent application. It's also rather expensive ($1,700 in government fees alone).

Provisional patent applications are typically best used when you continue to work on an invention. You file the most complete application in which you can describe the invention you currently have. Then you continue working and ultimately file a non-provisional patent application covering the original invention and any subsequent improvements or modifications. There is nothing wrong with using a provisional patent application, but critics are correct to point out that the vast majority of provisional applications are worthless. To be useful, the provisional patent application must completely describe the invention and all of its aspects.

4 You can't have enough patent drawings. U.S. patent law requires that every applicant for a patent must furnish at least one patent drawing (sometimes referred to as a patent illustration) of the invention, whenever at least one drawing will assist in the understanding of an invention. Given that virtually everything is susceptible to depiction in a drawing, drawings are practically always required.

Regardless of whether a drawing is required, the best and most economical way to expand any disclosure in a patent application is through the use of multiple, high-quality patent drawings. Whatever is shown in the drawings and would be understood by one of skill in the relevant art applicable to the invention is disclosed in the patent application. Furthermore, you should include at least one paragraph of text for each figure you include in the application.

Several years ago, I asked our patent illustrator to draw me a picture of a Big Mac sandwich and published an article using that example to show how you work with patent drawings. That one illustration could have resulted in eight to 10 paragraphs of text without much difficulty. When you use high-quality drawings and do what you are supposed to do—which is describe what is shown in text—you get double the benefit.

5 If you fear being specific, don't seek a patent. Numerous times, inventors have told me that they do not want their patent applications to be "too specific." It seems they have decided that what they need is a patent that is extremely broad, and they don't want a bunch of details getting in the way of narrowing their rights. If you are afraid to be specific in a patent application, you really shouldn't be seeking a patent. You should be keeping what you have invented to yourself as a trade secret to the greatest extent possible.

Years ago when I interviewed Hall of Fame inventor (and billionaire) Dr. Gary Michelson, we talked about overly broad claims. He rhetorically asked me: Why would I ever want an overly broad claim that is obviously invalid? Michelson, who sold his patent portfolio to Medtronic for $1.3 billion, said an invalid claim simply doesn't help. "I want the broadest valid claim," he explained.

The problem with defining your invention very broadly, or claiming your invention very broadly, is simple. The broader you define your invention, the more difficult (or impossible) it will be to obtain a patent. If you obtain a patent with a broad or ridiculously broad disclosure or claim, it will become relatively easy to challenge and defeat. This is because patent laws require that patent applicants specifically define and particularly identify their inventions. According to patent law, keeping descriptions broad and nebulous means that the claims will be indefinite and/or that your written description does not support the claims you are seeking, and/or that your invention is not enabled because you have not described with the required precision how to make and use the invention without undue experimentation.

BIG WIN for Life Sciences Innovators

FEDERAL CIRCUIT IN *CELLZDIRECT* CASE: FREEZING METHODS PATENT ELIGIBLE

BY GENE QUINN

The United States Court of Appeals for the Federal Circuit recently ruled that the cryopreservation methods in *Rapid Litigation Management LTD v. CellzDirect, Inc* are patent eligible. Cryopreservation is the preservation of cells and tissue by freezing.

The case arrived to the circuit on appeal from the U.S. District Court for the Northern District of Illinois. The patent owner appealed the decision of the district court, which concluded on summary judgment that claims of U.S. Patent No. 7,604,929 were ineligible because they were directed to a law of nature. The federal circuit, with Chief Judge Sharon Prost writing for the majority and joined by Judge Kimberly Ann Moore and Judge Kara Farnandez Stoll, vacated and remanded the case after ruling that the '929 patent claims are not directed to a patent-ineligible concept.

The '929 patent covers a process for preparing a frozen preparation of hepatocytes (liver cells) that can be thawed and reused. Storage techniques can affect their usefulness.

Ruling a turning point?

"This is very heartening since the Supreme Court denied cert in *Sequenom (v. Ariosa Diagnostics),*" said Bob Stoll, former commissioner for patents at the United States Patent and Trademark Office and current partner at Drinker Biddle in Washington, D.C. "It is great to see the CAFC apply the Supreme Court decisions more narrowly, as intended by that court, and provide some relief to innovators that will help them to attract funding to develop their inventions."

I couldn't agree more. This decision could mark a turning point and give real relief to innovators in the life sciences arena. Until now, the federal circuit has seemed reluctant to narrowly read the Supreme Court's recent precedent in *Mayo v. Prometheus* and *AMP v. Myriad Genetics*. It is difficult to know exactly why, but one strong possibility is that the circuit was looking to the Supreme Court to narrow the overly broad and unnecessarily expansive language used in *Mayo* and *Myriad*.

In fact, Judge Timothy B. Dyk, who has been on the wing of the federal circuit that is much more likely to find patent claims ineligible, shared concerns of the other judges writing in *Sequenom* that the Supreme Court's test in *Mayo* was too restrictive. Dyk concluded, however, that it was for the Supreme Court and not the federal circuit to set the record straight.

With the Supreme Court recently denying a writ seeking judicial review in *Sequenom*, perhaps at least some of the judges on the federal circuit believe it is time for them to start applying their own independent judgment and not blindly follow the extraordinarily overbroad language of the Supreme Court. That language has led to bizarre rulings on patent eligibility in the life sciences sector, where groundbreaking innovations have been ruled patent ineligible despite everyone agreeing the innovation was of extreme importance.

Hepatocytes background

Hepatocytes have a number of attributes useful for testing, diagnostic and treatment purposes. Before the invention of the '929 patent, scientists developed cryopreservation techniques to preserve hepatocytes for later use. These methods generally involved freezing hepatocytes at frigid temperatures. Then, when needed, scientists thawed them and recovered the viable cells using density gradient fractionation.

The inventors of the '929 patent discovered that some fraction of hepatocytes are capable of surviving multiple freeze-thaw cycles. As inventor Dr. Steven Hardy testified, "Initially we just proved that you could twice freeze the cells and still have viable

cells… [T]he unexpected outcome was that cells twice frozen behaved like cells that were once frozen."

Armed with this discovery, the inventors developed an improved process of preserving hepatocytes, claimed in the '929 patent. In general, the improved process comprises: (A) subjecting previously frozen and thawed cells to density gradient fractionation to separate viable cells from non-viable ones; (B) recovering the viable cells; and (C) refreezing the viable cells. The claims specify that the resulting hepatocyte preparation can be thawed and used immediately, exhibiting 70 percent viability after the second thaw.

Patent eligibility two-step

Step 1: The district court explained that the claims are directed to a "natural law," namely the cells' capability of surviving multiple freeze-thaw cycles and, therefore, not patent eligible. The federal circuit disagreed because the claims are not directed to the ability of hepatocytes to survive multiple freeze-thaw cycles. Rather, the claims of the '929 patent are directed to a new and useful laboratory technique for preserving hepatocytes. In other words, the inventors employed their natural discovery to create a new and improved way of preserving hepatocyte cells for later use.

The federal circuit explained that the proper analysis requires the first inquiry to be whether the claims are directed to a patent-ineligible concept. If the answer is no, the inquiry is over and the claim is patent eligible. In this case, the circuit found that the claims were not directed to a patent-ineligible concept and, therefore, the inquiry ended with a finding that the claims were patent eligible.

The federal circuit explained: "At step one… it is not enough to merely identify a patent-ineligible concept underlying the claim; we must determine whether that patent-ineligible concept is what the claim is 'directed to.' Here, the plain claim language shows that it is not. The '929 patent does not simply claim hepatocytes' ability to survive multiple freeze-thaw cycles. The '929 patent instead claims a 'method of producing a desired preparation of multi-cryopreserved hepatocytes.' … This new and improved technique, for producing a tangible and useful result, falls squarely outside those categories of inventions that are 'directed to' patent-ineligible concepts."

Step 2: Notwithstanding, the federal circuit said that even if it was to agree that the claims were directed to a patent-ineligible concept, the claims would still be patent eligible under the second step. That step asks whether, considered both individually and as an ordered combination, the additional elements transform the nature of the claim into a patent-eligible application. In order to be patent eligible under Step 2, more than well-understood, routine, conventional activity already engaged in by the scientific community is required in order to transform the claim into something significantly more than a patent upon the concept itself.

Prost explained that the claims covered an invention that provided a significant improvement for a variety of reasons, and because the discovery was used to achieve a new and useful preservation process. The federal circuit noted that although the individual steps of freezing and thawing were well known, the repeated steps of freezing and thawing were far from routine and conventional. In fact, the court pointed out that the prior art taught away from multiple freezing and thawing steps, which was believed to severely damage the hepatocyte cells and result in lower cell viability. Thus, because the prevailing wisdom was that hepatocyte cells could only be frozen and thawed once, there was nothing well understood, routine or conventional about multiple freezing and thawing cycles.

Important caveats

The federal circuit also made two important statements at the end that could be viewed as dicta, but that like many similar statements in recent patent eligibility cases are starting to paint a clearer picture of the way the court views patent eligibility challenges.

> **"It is great to see the CAFC apply the Supreme Court decisions more narrowly, as intended by that court, and provide some relief to innovators that will help them to attract funding to develop their inventions."**
>
> — BOB STOLL, FORMER COMMISSIONER FOR PATENTS AT THE USPTO

First, the court explained, "patent eligibility does not turn on ease of execution or obviousness of application. Those are questions that are examined under separate provisions of the Patent Act." Interestingly, the court cited *Mayo* for that proposition, which is really a stretch. *Mayo* purposefully conflates novelty and obviousness with patent eligibility and turns the patentability inquiry into a nearly one-inquiry test for software- and life science-related innovations. This statement by Chief Justice Prost seems to signal the federal circuit may be ready to apply the statute and allow the different sections of the Patent Act to do the work for which they were designed as required by the Supreme Court in *Diamond v. Diehr*, and ignore the purposeful conflation foisted upon the industry by the Supreme Court in *Mayo*.

Second, the federal circuit explained that pre-emption is no longer the test for determining patent eligibility, although pre-emption concerns are certainly a key concern of Section 101 (patent eligibility) jurisprudence. In this case the defendant has already been able to engineer around the patent, which would suggest that pre-emption concerns are simply not at play. The federal circuit used the fact that the defendant had already engineered around as further proof that the conclusion the claims are patent eligible is correct.

Why Doesn't Patent Appeal Board Have Final Say?

EXAMINERS' POWER, TC DIRECTOR'S ACTIONS ARE BAD SIGNS FOR APPLICANTS

BY GENE QUINN

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The e-commerce art units in Technology Center 3600 at the United States Patent and Trademark Office have extremely low allowance rates. One unit in particular, Art Unit 3689, has in 2016 allowed only 1.3 percent of applications (three patents issued; 232 patent applications abandoned). This is not the only art unit with curiously low allowance rates.

One of the three patents that Art Unit 3689 has issued occurred after the Patent Trial and Appeal Board reversed the examiner's rejections. This may make it seem that appealing is the best avenue to pursue when dealing with an unreasonable patent examiner, but the truth is the board decision is only final if the director of the technology center agrees that a patent should issue.

After a decision by the board, jurisdiction transfers back to the patent examiners to effectuate the board's decision. The rule governing that says: "After decision by the Board, jurisdiction over an application or patent under ex parte reexamination proceeding passes to the examiner, subject to appellant's right of appeal or other review, for such further action by appellant or by the examiner, as the condition of the application or patent under ex parte reexamination proceeding may require, to carry into effect the decision."

The problem: In Technology Center 3600, there seems to be a disturbing trend in which the board reverses patent examiners on every issue and yet no patent is issued. Instead, patent examiners conduct new searches—which Manual of Patent Examining Procedure 1214.04 tells them they are not supposed to do—and Greg Vidovich, who is technology center director for 3600, authorizes the reopening of prosecution. How is this possible?

What the code says

37 Code of Federal Regulations 1.198 says: "When a decision by the Patent Trial and Appeal Board on appeal has become final for judicial review, prosecution of the proceeding before the primary examiner will not be reopened or reconsidered by the primary examiner except under the provisions of (Section) 1.114 or 41.50 of this title without the written authority of the Director, and then only for the consideration of matters not already adjudicated, sufficient cause being shown."

The director seems to have delegated this responsibility to technology center directors.

37 CFR 1.198 is for the extraordinary situation in which there is something that has come to light at the last minute that raises significant questions about a claim or claims that were subject to a board decision. The purpose for Rule 1.198 is not to allow patent examiners and technology center directors to endlessly prevent the issuance of patents at all costs and under all circumstances. But in TC 3600, Rule 1.198 seems to be used for the purpose of harassing patent applicants that have successfully prevailed on appeal to the board.

In TC 3600, prosecution is being re-opened for the purpose of issuing rejections based on the Supreme Court's *Alice Corp. v. CLS Bank* International ruling that greatly limited software patent claims. With the help of readers, so far I've found 11 separate cases during the past 10 months in which prosecution was re-opened by TC 3600 Director Vidovich after the board issued a decision completely reversing the examiner on every rejection of every claim. In each case, the director authorized re-opening of prosecution simply to issue *Alice* rejections.

Of course, *Alice* was decided in June 2014, so this is not a new development. It is also not "a particular reference or reference" that indicates nonpatentability, as seems to be required by MPEP 1214.04 in order for re-opening to be appropriate in the first place.

It would seem that Director Vidovich is doing everything in his power to prevent the issuance of patents. This is extremely troublesome.

Ominous questions

Those familiar with the patent office are no doubt familiar with the concept of compact patent prosecution, which is intended to move along prosecution of applications in an efficient and streamlined manner with issues being addressed all at once by examiners. Examiners are also allowed to raise new grounds of rejection as late as an examiner's answer. In addition, the board is able to raise a new ground of rejection in its opinion as well.

The point is to streamline prosecution and make it unnecessary for endlessly looping back to decide issues in series when they could, and should, be decided in parallel. Efficiency be damned, what is happening now in a systemic and routine way: TC 3600 waits for a decision from the PTAB and then, never having had any intention of issuing a patent regardless of the PTAB decision, comes up with another reason to reject the claims. This fundamentally frustrates the purpose of an appellate system and makes fools of applicants who believed in fairness of the process.

It seems that TC Director Vidovich believed the board decisions in these cases needed to be ignored and these applications denied. But if the *Alice* problems are so serious and so significant that the extraordinary measure of re-opening prosecution and not effectuating the decision of the board is being made, why didn't the board notice the *Alice* problems and issue its own new ground of rejection?

The board has the right to remand cases to the examiner, so why didn't it remand the decision to the examiner for consideration of *Alice*? Does TC Director Vidovich think he knows *Alice* rejections better than the board? Does he think the board is unfamiliar with *Alice*? Does Vidovich have reason to believe the board is unaware of its power to remand to an examiner, or of its authority to enter a new ground of rejection? It seems clear that these patents are going to be denied at all costs whatever it takes, even if that requires ignoring a board decision and re-opening prosecution despite the lack of a new reference or references.

When the TC director re-opens prosecution, the applicant has to go back into prosecution or can move forward to appeal to the board. But what good is an appeal when the TC director has demonstrated that even if the appeal is successful, prosecution can be re-opened and more bogus rejections made? What good is going back into prosecution with the same unreasonable examiner who has just had each rejection of each claim reversed? There is no relief for applicants.

By re-opening cases, TC directors can effectively prevent patent applicants who have been victorious on appeal to the board from ever being given the opportunity to reach an Article III court, which has to be unconstitutional. That's right: All the USPTO has to do to prevent an Article III court from reviewing an examiner decision is make the decision so obviously awful that the board reverses and then re-opens prosecution. There is nothing to appeal from a board decision when you are completely victorious—and when you keep getting pulled back into prosecution over and over again eventually the applicant gives up, which is almost always what happens.

Board seems inferior to examiner

Review by an Article III court, which is supposed to be an applicant right, is effectively prevented by recalcitrant examiners working together with TC directors. I find it difficult to believe that judges of the Eastern District of Virginia would find such a systemic and coordinated deprivation of process and gerrymandering of the appellate process to be within the powers of an executive agency. Perhaps at some point some will file a mandamus and we will find out.

The rules of the system are set up to make examiners subordinate to the board, not the other way around. The board is supposed to have the final word, and examiners are supposed to effectuate the board's decisions, per code regulations. Yet, it seems that the board is inferior to the examiner and TC director.

When a patent owner sues for infringement, many district court judges become all too willing to dismiss the case without giving the patent a presumption of validity, and without construing the patent claims.

Only in the most extraordinary cases is prosecution supposed to be re-opened. It is not an extraordinary case when the board has the ability to notice whether the claims it was reviewing contained patent-eligible subject matter. It is not an extraordinary case when the board has full knowledge of the claim and the *Alice* decision and still chooses not to order a remand. If any group of people is acquainted with *Alice* it would be the board, which in these cases did not see fit to issue any patent eligibility rejections or remand to the examiner.

That being the case, TC Director Vidovich should bear a heavy burden when ordering the re-opening of cases. That he would have decided differently, or he would have issued a new ground of rejection, or he would have remanded to the examiner had he been the sole decision maker cannot be the standard. Such a standard would give him dictatorial power that isn't enjoyed by any judicial official on any level. It also nullifies the work of the three administrative patent judges who issued the decision.

(Continued on page 44)

Patent Quality is a 2-way Street

(cont. from page 37)

The patent office loses all credibility when secret decisions related to applications are made by those not even mentioned anywhere in the record. It is bad enough that examiners openly admit to practitioners that they will not follow the office guidelines or federal circuit cases, but when decisions are made in secret the system has become bankrupt.

If the office wants multiple rounds of review by multiple examiners or "experts" before an application receives an allowance, fine. I don't think anything at the office should be done in secret, but if it's going to do that it should have the guts to let everyone know. Having a complete record means that the office needs to record what is being done and by who, period. No secrets. No more decisions made behind closed doors by unknown actors following their own personal ideology.

Given that the office does not seem interested in ensuring a complete written record, it is essential that applicants do whatever possible to force the issue. If you are in an *Alice*-impacted art unit, you need to find out the name of the *Alice* expert and have that individual present at any and all interviews. If you are not provided the name of the *Alice* expert or said expert does not participate in an interview at your request, you must place a notation on the file to keep the record clear and reflective of what is actually happening, and that there are secret actors that you are not allowed to contact.

The patent office loses all credibility when secret decisions related to applications are made by those not even mentioned anywhere in the record.

Reassign patent examiners

It may be virtually impossible to fire a federal government employee such as a patent examiner, even when that examiner is submitting fraudulent time sheets. Once upon a time, the patent office dealt with recalcitrant patent examiners who would not get with the program by employing an internal exile. I've heard many old-timers tell stories of people being sent to Classifications, which was the patent office equivalent of Siberia. Some would quit; some would go and never get out of Classifications; some would go and then return, understanding the importance of getting on board.

So far as I know, there is no such similar internal exile anymore. Instead, recalcitrant patent examiners are simply left on the front lines to harass applicants as if this is just some big game. But this is no game for inventors and companies seeking patent rights. Stakeholders deserve better than an examiner so confident in his or her defiance who brags about not issuing patents for years, or declaring with arrogance that he or she will not follow the federal circuit ruling in *DDR Holdings v. Hotels.com* because the decision is an aberration.

If a patent examiner has not issued a patent in years—and there are more than a few in this category—he or she shouldn't be examining patent applications. If you cannot fire examiners who refuse to issue patents, at least put them in positions where they do no damage to applicants.

Practitioners need to file interview summaries that contain these shocking admissions from patent examiners. An examiner's utter disregard for the law and the disdain for the patent system *must* be placed on the record. That is the only way anything is ever going to change.

Why Doesn't Patent Appeal Board Have Final Say?

(cont. from page 43)

It seems clear that Art Unit 3689 has no intention of issuing patents. It also seems clear that even a reversal on all grounds by the board will not stand in the way of denying patents at all costs. Thus, the board is completely impotent. Those running TC 3600 don't like software patents, and they don't like business method patents. They seem to be of the opinion that neither are patent eligible despite the fact that Congress, the U.S. Court of Appeals for the Federal Circuit and the Supreme Court have all said that both software and business methods are, in fact patent eligible.

For a long time I've suggested that if you get stuck in an art unit where the allowance rate is abysmally low, you just need to get through the first round of prosecution and appeal the case to get to the point where legal arguments, logic and fairness have a chance of prevailing. Unfortunately, the sad truth is the board has no authority over patent examiners because the board is subordinate to TC directors. A board decision reversing an examiner is merely advisory, at best. The ultimate decision-making authority at the patent office on whether to issue patents resides in the TC Center director.

Getting to appeal and prevailing should mean a patent issues. Instead, it means yet another pair of eyes—those of the TC director—need to be satisfied first. This makes the entire appeal process one huge waste of time and money.

The appeals process is a charade, at least when appealing unreasonable rejections of examiners in TC 3600. Why bother appealing to the board in the first place? In TC 3600, appeals should really be taken directly to the TC director, who apparently has the final say anyway. Sure, there is the illusion of an independent body (i.e., the board) that will resolve errors made by examiners, but if you are victorious the TC director just pulls you back into prosecution to deal with that examiner who was jerking you around for years in the first place. You can't ever escape. So why not recognize the reality of the situation and appeal to the TC director?

Re-opening these cases was an abuse of power, plain and simple. Will the patent office do anything about what is going on in Technology Center 3600? Time will tell, but it is becoming increasingly impossible to believe that senior management of the office is not well aware of the fundamental unfairness faced by applicants in TC 3600. It is also becoming increasingly difficult to believe senior management does not at least tacitly authorize the behavior.

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Whether your concern is how to get started, what to do next, sources for services, or whom to trust, I will guide you. I have helped thousands of inventors with my written advice, including more than nineteen years as a columnist for *Inventors Digest* magazine. And now I will work directly with you by phone, e-mail, or regular mail. No big up-front fees. My signed confidentiality agreement is a standard part of our working relationship. For details, see my web page:

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Best wishes, Jack Lander

"I think in general, people are pleased that some kind of reform has gone through. There are those who feel it isn't enough, that there were other things that were critical that should have been done. But I think in general there is a favorable view, as reflected by the fact that our government seems to have relative agreement about it."

—TERRI GILLIS, PARTNER IN THE MAYER BROWN INTELLECTUAL PROPERTY PRACTICE, ON THE AMERICA INVENTS ACT BEING SIGNED INTO LAW ON SEPT. 16, 2011.

They wrote

In 2010, the British Broadcasting Corp. asked young students to post their responses to the question, **"What inventions would make school life easier?"** These select responses from 9- to 14-year-olds in England, Scotland, Ireland and Wales affirm that kids everywhere usually have similar priorities.

"I think it would be AWESOME if there was an anti-bullying badge that everyone had to wear, and if it picked up any signs of bullying, it would report it to the head."

"An invisible calculator!"

"We could all have these machines that helped you with the questions and the answers. I would call it the Great Machine."

"I wouldn't want any 'high-tech gadgets,' I prefer things the way they are. I learn fine with my pen and paper."

"It's GOT to be a homework machine!"

What IS that?

Taking a power nap at your desk can be tempting and even beneficial—except that your head is hard and the desk is, too. The Original Authentic Ostrich Pillow, by Studio Banana Things, basically turns your head into a pillow. It's also handy for travelers. "Do not smoke while using this product," Amazon.com says. Duh.

Wunderkinds

As 14-year-old **Sarah Buckel** finished her last year at Central Catholic Middle School in Du Bois, Pa., and was taking down her locker decorations, she wondered whether there was an alternative to scraping adhesive and tape residue off the inside of her locker. She had an idea.

She also had a father who was chief operating officer at MagnaCard, which makes magnetic business products. She asked him to make magnetic wallpaper for her. The invention stuck. Soon the decorations were patented and sold at Target, Rite Aid and Staples, making $1 million in sales the first year. Her dad bought MagnaCard, where she's now a graphic designer at age 24.

300%

The increase in total utility patent applications (all origins) in the past 20 full years, according to the U.S. Patent and Trademark Office. There were 195,187 such applications in 1996 and 589,410 in 2015. The number of applications has increased every year during the past two decades with the exception of 2009 (215 fewer than in 2008). Applications have increased by more than 99,000 in the past five full years.

WHAT DO YOU KNOW?

1 **Which invention came first—the nylon bristle toothbrush, or the electric garage opener?**

2 **Which invention is not introduced in the 1964 James Bond movie "Goldfinger"?**

- **A)** Sandringham hat weapon
- **B)** Autogyro plane
- **C)** Lasers
- **D)** Homing beacon

3 **True or false: The modern pencil was invented by a scientist serving in Napoleon's army.**

4 **When Liquid Paper (invented by Bette Nesmith, mother of the Monkees' Michael Nesmith) was sold to Gillette Corp. in 1979, was the price $4.75 million or $47.5 million?**

5 **Who is the only president to ever have a patent?**

- **A)** Abraham Lincoln
- **B)** Franklin D. Roosevelt
- **C)** Millard Fillmore
- **D)** John Adams

ANSWERS

1. The garage opener was invented in 1926, the nylon bristle toothbrush in 1938; 2. B (the autogyro was featured in 1967's "You Only Live Twice"); 3. True (by Nicolas-Jacques-Conte in 1795); 4. $47.5 million. IBM rejected her offer to sell Liquid Paper a couple of decades earlier.; 5. A (Patent 6,469 was a flotation system for lifting riverboats stuck on sandbars.)

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