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### *Culture*

The Most Inventive Towns in America

**The tinkerers who helped build America haven't disappeared -- they're right next door. Our search for small-town patent hubs found surprising innovations from coast to coast.**

By REED ALBERGOTTI  
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This year, Russell May won a patent for a gadget that could help warn pilots about impending engine failure. Krishnan Ramu designed a more energy-efficient motor. Mark Froggatt came up with a device that helps companies pack more data into fiber-optic cables. These inventors share one thing in common: They live within 10 miles of one another in Blacksburg, Va. It's "a little bit like a miniature Silicon Valley but without the traffic," says Mr. Froggatt.

Since Ben Franklin, the lone inventor has been an American icon. Even with today's complex technologies and giant corporations that spend billions on research, small-time inventors remain a potent force -- consistently accounting for about 15% of all U.S. patents in recent years, by some estimates.

### SMALL-TIME INVENTORS

<sup>1</sup> • [The Wall Street Journal's Reed Albergotti talks about](#)<sup>2</sup> America's small-time inventors. They're out there, hidden behind the headlines, and they're busy, he says. [Listen to a podcast](#)<sup>3</sup>.

- Eureka! See a [chart of 10 new inventions](#)<sup>4</sup> from our survey of innovative towns.



Harry Campbell

- See a [roundup of towns](#) with a surprising number of new patents.

What is changing: their ZIP Codes. Combing through the more than 475,000 U.S. patents granted in the past four years reveals a new map of the places where individual inventors are busy dreaming and tinkering. This shifting geography of innovation says a lot about how the American economy is changing -- and

underscores its resilience.

In the Detroit suburb of Bloomfield Hills, for example, executives who have moved on from the auto industry are helping fuel a 27% rise in patents since 2002, including one for a better golf club for sand traps. Inventors in Fargo, N.D., where the economy has been shifting from agriculture to technology, have filed patents to track sick cattle and help emergency-room doctors diagnose brain injuries. And in booming Las Vegas, many retired or transplanted workers are betting on the next big casino game.

One upside of these innovations is that new patents often lead to the creation of new companies, which in turn mean more jobs. As inventors in a given geographical area network, that feeds still more innovation. Adam B. Jaffe, the dean of arts and sciences at Brandeis University, studied patents to find out how often inventions in the same metropolitan area cite one another. The answer: up to 25% in some cases. "In the day of the Internet and all the rapid forms of communication, geography does still matter," says Mr. Jaffe.

Nowhere is the impact of the shifting economy on invention more apparent than in Bloomfield Hills, Mich. Auto-industry veteran David Harrelson retired from his job at BBDO advertising firm in 2001. For 21 years he had worked on campaigns for Dodge car and trucks. Now, he's been working for a private venture capital firm and inventing tools for one of his favorite pastimes: golf. He recently received a patent on a sand wedge for golfers that has a ridged surface to cut through the sand, and cost him \$10,000 to design and patent. "I'm one of those guys that never stops," says the Detroit native, who has three other patents pending. "The automotive industry stinks but the brains are still here."

Paul Ryznar was a vice president of operations at Detroit Diesel when he had his "eureka" moment. The 45-year-old from Northville, 23 miles from Bloomfield Hills, says he was searching for a way to keep assembly-line workers from making the same error over and over again while producing Diesel engines, and thought a visual aid might do the trick. "I just kind of kept it to myself," he says.

One year later, he left the company and created a prototype of the device that uses

colored lasers to spell out each step of the manufacturing process. Now, he says he's in talks with General Motors about a possible sale of the product. "I always wanted to start my own company," he says.

Some of the cities seeing growth in patents awarded to individual inventors or small companies show how concerted efforts to foster entrepreneurship and innovation can get traction. Tucson, Ariz., for example, which has seen the number of patents issued increase 18% to 372 in 2005 from 316 in 2000, has grown into one of the nation's leading centers for optics research. Part of this stems from the area's role in astronomy; the Kitt Peak observatory, founded in 1958, is based here. In more recent years, the University of Arizona has stepped up moves to foster technology transfer and encourage start-ups. The school approved 13 spinoff companies in 2005, up from four in 2002.

Bruce Wright, associate vice president of economic development for the university, says changes started happening about seven years ago when the State Board of Regents allowed private-sector companies to own patents on research funded at state universities. Before that, the university retained all rights to intellectual property, regardless of who funded it. Now, says Mr. Wright, there's more outside funding for research and more partnerships with private sector companies.

Among the Tucson inventors: Richard Pustelniak, who received a patent on what he says is a safer and more reliable method for detecting the presence of people or objects between closing elevator doors, and Samuel Roberts, who holds a patent for a bicycle-lighting system that makes them more visible to cars.

For our survey of the most inventive towns in America, we looked first at the number of utility patents granted to inventors in about 12,000 cities, using data compiled by research firm iPiQ, a consulting concern that analyzes intellectual property for companies. The idea was to look beyond big high-tech centers like Santa Clara, Calif., where Intel is based, and find places that are hubs for inventions by individuals or small businesses. As a proxy for this, iPiQ recommended using its historical database of U.S. patents to filter out companies that had previously been awarded substantial numbers of patents (see "Behind the Numbers").

Patents, of course, are only one way of measuring innovation -- and, lately, a controversial one. Amid some high-profile cases that raise questions about whether patent examinations are stringent enough, the U.S. Patent and Trademark Office is busy reviewing the way they judge applications. The issue gained intense publicity recently, when executives and workers across America faced the possibility of their BlackBerries being shut off. NTP, a company that had been awarded a patent for wireless email, had sued BlackBerry maker Research in Motion. The Patent Office is still reexamining NTP patents to check their validity.

## BEHIND THE NUMBERS

To find out where individual inventors are clustering these days, we worked with

iPiQ, a consulting firm that analyzes intellectual property for companies. Starting with data on utility patents from 12,000 cities, we isolated towns where a large percentage of patents went to individuals or small companies that received 45 or fewer patents in the last five years. At iPiQ's recommendation, this served as a proxy to exclude places that are high-tech centers (like Santa Clara, Calif., home to Intel, or Boston) or that have been continuously pumping out patents.

With intellectual property so valuable, an entire industry of middlemen who make their living buying and selling inventions in much the same way that others trade stocks or bonds has cropped up. Then there's the rise of so-called patent trolls, who snap up patents and profit by charging licensing fees for their use.

Paul Ryan is CEO of Acacia Technologies Group, a company that seeks licensing fees on behalf of patent holders in exchange for a percentage of revenue. He sees his company as an ally of small inventors who don't have the resources to chase down companies that should be paying licensing fees. "The little guys are very scared," says Mr. Ryan, whose company splits licensing revenue with the patent holder. Last year, Acacia brought in about \$20 million in revenue, and recently reported revenue of \$14.3 million in the second quarter of this year.

While patent-application fees have gone up about 15% to 20% in the last two years, the market for selling patents has been expanding, with companies like Acacia and Intellectual Ventures offering to license patent holders' innovations. Culturewise, intellectual property is regaining some of its cool, too. Two new inventing-focused television shows launched this year: "Eureka" on the Sci Fi Channel, about a town of super geniuses, and "American Inventor," a reality show that promises to "uncover the hottest new product and make one struggling inventor's dream come true."

For all the lore about the patent prowess of the IBMs and Intels of the world, lone individuals are responsible for some of the greatest inventions of recent years, including implantable pacemakers and the computer mouse. Of the 85 living people in the National Inventors Hall of Fame in Akron, Ohio, 25 weren't linked with a bigger company at the time of their inventions. To be inducted into the Hall of Fame, inventors must be nominated, then selected by a national committee of scientific and technical societies.



It generally takes a little over two years to get a patent approved or rejected. Inventors usually pay an attorney to search

h the patent-office files for "prior art," to make sure their idea hasn't already been claimed. If the coast is clear, inventors can submit an application to the Patent Office. The whole process typically runs inventors around \$10,000. But for \$105, inventors can temporarily protect their idea -- for up to a year -- by sending in a basic description and drawing of the product.

The bulk of patents are still concentrated in a small number of areas. The city of San Jose, Calif., for example, produced 3,911 patents last year, nearly as many as the entire state of Massachusetts, which had 4,267. The state of California accounts for about 15% of the patents issued in the U.S. Texas and New York together make up about 8%.

On the other end of the spectrum is St. Charles, Mo., a suburb of St. Louis, saw 25 patents issued to individual inventors or small companies last year, a 43% increase over 2002. The town is home to a number of engineers, many of whom are former employees of aerospace company McDonnell Douglas and were let go during a wave of layoffs in the early 1990s or following McDonnell's 1997 merger with Boeing. Some have decided to start their own high-tech businesses locally, and the county has opened two "incubators" designed to nurture small businesses and entrepreneurs.

St. Charles local Wayne Oetting, whose wife, Martha Joy, has multiple sclerosis, hired an engineer to help him design and patent a wheelchair with a built-in commode. Mr. Oetting says he's spent between \$20,000 and \$40,000 in attorney and engineer fees, and is now looking for partners to help find a manufacturer for the product. "The No. 1 goal was to get freedom for my wife," he says of the Freedom 700, which lets Ms. Oetting travel more easily, without having to get in and out of her wheelchair to go to the bathroom.

For inventor David Levin, a resident of Sarasota, Fla., the goal was to frighten away birds without hurting them. When he first parked his boat at a downtown marina about six years ago, he was dismayed to return the next day and find it covered in bird excrement. The plastic snakes, owls and balloons other boaters had set on their vessels to scare off the birds didn't work, but he noticed that a car hitting a metal grate did the trick. So he took apart his son's Halloween toy and used the guts to create a noisy, vibrating device. It worked. He tinkered with the design for several years before realizing that it wasn't the noise but the vibration that disturbed the birds. He won a patent this year, and is shopping around his prototype but so far hasn't found any companies willing to manufacture the product. And he has one other problem: His son, now 17, is demanding royalties. "He certainly hasn't forgiven me for destroying his Halloween toy and believes he's entitled to a cut of the product," says Mr. Levin.

-- Jessie Knadler contributed to this article.

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## Up & Comers

We pored through patent data for 12,000 American cities, with the help of IPIQ, looking for places where a high percentage of patents were given to individuals or small businesses. Our search turned up some surprising hubs of innovation. Below, a sampling.

TOWN	# PATENTS 2005 <sup>1</sup>	COMMENT
Las Vegas	132	Casinos' interest in new games has spurred many inventors hoping to create the next big game.
Indianapolis	86	Local pharmaceutical companies like Eli Lilly have helped create smaller spin-off firms in the area.
Gaithersburg, Md.	59	A stop on the famed I-270 technology corridor, this town is home to the National Institute of Standards and Technology.
Sandy, Utah	59	In just over a decade, the city has built two million square feet of Class-A office space, which now averages 6% vacancy.
Fairfax, Va.	47	George Mason University holds competitions among its graduate students for the best new business ideas.
Winchester, Mass.	47	A number of MIT professors have moved here, lured by the 25-minute commute to campus and the weekend social scene.
Corona, Calif.	45	Once a bedroom community for Orange County, Corona is now home to companies like Watson Pharmaceuticals.
Grand Rapids, Mich.	43	The Van Andel Research Institute, a biomedical research center, employs hundreds of local scientists.
Bloomfield Hills, Mich.	42	Retired auto engineers and executives who left the business or were laid off are helping keep the patent numbers here climbing.
Evanston, Ill.	38	Researchers at Northwestern University have filed a number of patents in the fields of medicine and technology in recent years.
Palm Harbor, Fla.	33	With a strong magnet school, the town is near Sensor Systems, which developed camera equipment for the Mars Rover.
Annapolis, Md.	31	Annapolis is home to a slew of telecom engineers, but with that industry shrinking, some are starting their own projects.
Oklahoma City	31	The Oklahoma Medical Research Foundation, which has seen a spike in federal grants, has spawned many spin-off companies.
Mercer Island, Wash.	30	The island in the middle of Lake Washington is a hotbed for patent holders who work at surrounding companies like Microsoft.
Orefield, Pa.	30	The Allentown suburb is close to Lehigh University and to research and development facilities for software maker Agere Systems.
Bend, Ore.	29	Bend was the sixth fastest-growing metropolitan area in the country from 2000-2003, according to the U.S. Census.
Tigard, Ore.	29	Lower rents and lower taxes have drawn professionals from nearby Portland and Beaverton, home of Nike.
Walnut, Calif.	27	With a large population of Asian immigrants, Walnut is home to ViewSonic, a Taiwanese-American-founded tech company.
Leawood, Kan.	25	A suburb of Kansas City, Leawood's average household income is \$100,000, compared to the statewide average of \$40,000.
St. Charles, Mo.	25	A number of skilled engineers have been laid off by the nearby Boeing Company; some have started their own businesses.

<sup>1</sup> The number of utility patents granted to individuals or businesses who received 45 or fewer patents in the last five years

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