

# The Problem Solver

Washington's resident polymath-inventor

Nathan Myhrvold takes on big problems

By Mike Ullmann

**N**athan Myhrvold lives in Medina in a waterfront home with a life-size Tyrannosaurus rex skeleton in the living room. He has a Ph.D. in theoretical and mathematical physics and worked with Stephen Hawking on cosmology research and made a gazillion dollars, in part at Microsoft, where he founded the software giant's research arm. He digs for dinosaurs, funds the search for extraterrestrial life, writes for *National Geographic Traveler*, is one hell of an apprentice French chef and oh, by the way, a brilliant wildlife photographer. Now 49 years old, he is generally considered one of the world's greater applied geniuses and thinks he and his brain-trust company, Intellectual Ventures, can perhaps solve the energy crisis and, in a true emergency, save us from inundation by rising global temperatures. In 2001, *USA Today* called him "Mr. Wizard," adding: "Myhrvold has an answer for everything." He does not, however, have one for the traffic fiasco that is State Route 520. "I'm less than certain that the world has an answer for that."

In a cavernous warehouse in Bellevue, Myhrvold is behind a closed door marked "Danger – Beam Accessible." He is explaining what a femtosecond laser is good for – it has something to do with ultra-fast precision zapping of objects

to determine exactly what they're made of and what he might make of them. A photographer is leaning on the business end of one at the time, which does not cause Myhrvold undue alarm, except to calmly note that replacing it would cost \$400,000. In person he is mild and graying, wearing a dress shirt under a pullover sweater and rimless glasses over very bright eyes. In a piece for the *New Yorker* magazine earlier this year, author Malcolm Gladwell famously described Myhrvold as a "bearded, fair-haired Viking, not so much the tall, ferocious kind who raped and pillaged as the impish, roly-poly kind." That's not precisely true, though. He's more of an overgrown leprechaun, not the Lucky Charms kind, but the original faerie kind, mischievous, with a crock of gold. In another respect, though, Gladwell was dead on: "Myhrvold has the kind of laugh that scatters pigeons."

The Intellectual Ventures lab is in an industrial park down a bumpy side street. It has an unmarked entrance and an unlocked door. Inside, a casually dressed but focused staff is working, mostly on computers, among a scattering of spectrometers, a skeleton or two, and a model of the human brain. Whiteboards with mysterious scrawls abound. Around the corner is an entire wall given over to Myhrvold's food lab – he

**Nathan Myhrvold, the former chief technology officer at Microsoft, has turned his intention to buying and commercializing patents through his company, Intellectual Ventures.**

is known for his interest in *sous vide* cooking, which can produce fabulous salmon by heating the fish gently inside a vacuum bag for a full day. Somewhat less technically, he has finished both first and second in world championship barbecue cookoffs. A cookbook he's writing for the rest of us is slated to hit bookstores in time for next year's holiday season.

Myhrvold became internationally known during his time as Microsoft's chief technology officer and hasn't slowed down as founder and CEO of Intellectual Ventures. He's been the subject of hundreds of videos and articles, not counting the ones he writes himself. Googling him returns something in excess of 68,000 hits, ranging from considerable controversy over whether he and his company are "patent trolls" – filing for patents on thousands of ideas, then making others pay to develop and use them, even if those other companies came up with the idea by themselves – to his commissioning London's Science Museum to build for his house a replica of the Babbage Difference Engine, the original computer from 1849. (It weighs around five tons and will presumably

# Inside The Knowledge Factory

Based in Bellevue, Nathan Myhrvold's Intellectual Ventures has a staff of more than 350, including computer scientists, technical analysts, physicists and mathematicians. The company also employs patent attorneys and intellectual property experts. This year it opened a new lab to develop and test in-house inventions, and by year's end plans to open offices in Japan, Singapore, India, China and South Korea.

Myhrvold founded the company in 2000. Its principals include Edward Jung, former chief software architect at Microsoft; Greg Gorder, a former partner at the Perkins Coie law firm; and Peter Detkin, former vice president at Intel Corp. The company began actively inventing and investing in 2003. It is privately held. Current investors, aside from Bill Gates, include a mix of Fortune 500 companies.

Until recently, much of the publicity surrounding the company, including an article last May in the *New Yorker*, centered on its in-house brainstorming sessions, and Intellectual Ventures describes itself as an "invention capital" company focused on seeking and funding new inventions. Among tech companies in particular, though, there has been considerable concern about the piece of the company's business model that focuses on the wholesale buying of patents. That part of Intellectual Ventures is one of intense secrecy, involving nondisclosure agreements and shell companies with names to disguise their true ownership, such as – according to a 2006 piece in *Intellectual Asset Management* magazine – Midnight Blue Remote Access, Rose Blush Software and Steinbeck Cannery.

Is Intellectual Ventures a "patent troll" – a company that buys up thousands of patents not in order to build things, but simply to force others to pay to use them? In that respect Myhrvold has been called "the most feared man in Silicon Valley." Those worries

burst into the mainstream with a front-page story in September in the *Wall Street Journal* titled: "Tech Guru Riles the Industry By Seeking Huge Patent Fees." By that time Intellectual Ventures ranked among the world's largest patent holders and, the *Journal* story states, was accordingly able to levy stratospheric patent license fees well into the hundreds of millions of dollars. Myhrvold confirms that his company now holds 20,000-plus patents or patent applications, but he will not speak about specific license fees. "I will say that folks in toto have paid us more than a billion dollars," he says. The ultimate fear is that Myhrvold could shut down a business or an industry, such as nearly happened two years ago when Blackberry's parent company paid more than \$600 million (not to Myhrvold) to settle a patent dispute.

Myhrvold strongly denies the patent troll charge and points out that his company has never filed a lawsuit. But a lobby group representing technology companies and others says he will. In a statement, the Coalition for Patent Fairness argues that because lawsuits are Intellectual Ventures' ultimate way to enforce its patent rights, "it is obvious what they intend to do." Not true, replies Myhrvold (who calls the coalition "the infringer's lobby"). "What we intend to do is to license patents through negotiations. The only time we would ever file a lawsuit is if negotiations break down," he says. "So far we've never even threatened a lawsuit, because people see value in what we do. I hope to keep on doing that." He also argues that Intellectual Ventures, and companies like it, actually make it easier for small investors to profit by selling their patents, and says his company has paid individual inventors about \$300 million, including \$20 million in Washington state alone. "It's hard to get the attention of a major corporation. By working with us, small inventors get to use our clout, frankly," Myhrvold says. "I'm not saying every inventor should sell to me, but it does make sense for some of them."

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end up somewhere near the dinosaur.)

Like Myhrvold's dinosaur-hunting expeditions in Montana's badlands, or his moonlighting as assistant chef at Seattle's prestigious Rover's restaurant (he's studied at a Parisian cooking school for professional chefs), a lot of what his company does is beyond unconventional. Intellectual Ventures, with backing from Bill Gates, has for years been looking into building a better nuclear reactor, a safer one that could perhaps run on spent fuel rods from existing reactors, thus dealing with one of nuclear energy's biggest drawbacks – disposing of radioactive waste. "You have to be a certain kind of nuts to spend a lot of time and money on something like a new nuclear reactor when there hasn't been one of the old type built [in this country] in 25 years. And we are that kind of nuts," Myhrvold says.

With the oil price shocks of recent months, though, even conventional reactors are getting better press. France, which gets over three-quarters of its power from nuclear energy, is building its first new reactor in a decade and has announced plans for another. On the presidential campaign trail in the United States, Sen. John McCain called for 45 reactors to be built here by 2030, in part because they produce far fewer carbon emissions than conventional power plants. "When we invented a radical new kind of nuclear reactor, we decided to take it forward," Myhrvold says. "As much as we love it, it's a very daunting project. It could be a decade before somebody gets any electricity from it."

The Intellectual Ventures reactor, conceivably the size of a large corporate boardroom and capable of powering several cities, could run without refueling for up to 60 years and be vastly cheaper and much safer than existing

**Myhrvold is known principally for his research work at Microsoft. But his interests are far ranging: After leaving the company, he spent a year digging for dinosaur bones in Montana, and has also studied at a school for professional French chefs.**

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reactors. It wouldn't have to be in a city – how about burying it in the North Cascades? The Pacific Northwest today runs largely on hydroelectric power produced by dams, and periodically there are calls for new ones to meet an exponentially growing demand for electricity. “What do you do about truly unique, truly beautiful parts of the world?” Myhrvold wonders. “I would hate to see another dam in the North Cascades. The global picture is better served by putting a nuclear plant there.”

Global temperatures are another item on the Intellectual Ventures to-do list. This summer, sea ice in the Arctic Ocean was again approaching its lowest level in three decades, which climate scientists have said represented a climatic “tipping point,” dramatically illustrated at summer's end when a chunk of ice shelf nearly the size of Manhattan broke away from Ellesmere Island in Canada's far north. Myhrvold says most of the ballyhooed plans to address global warming have no hope of success. “I suspect that changing emissions by 20 percent is not going to substantially improve the environment. If you look at the necessary changes you'd need to make to really do it, you can't do it. Most of the plans for cutting emissions are completely inadequate. I'll use the word dishonest. Even if you say, 'Let's cut them in half by 2020,' cutting by half isn't gonna do shit.”

What happens if cities start drowning because global warming creates the much-debated “flip” in climate, and it happens fast – this year or next – instead of in some future decade? Myhrvold describes that as plausible, though not probable. “But suppose it did happen. What could you do? We're looking at a set of schemes to try to cool the weather down. In as little as a year,” Myhrvold says. The word for that is geo-engineering, which Myhrvold allows is hugely controversial because of the law of unintended consequences, among other things. Still, he notes that when Mount Pinatubo erupted in the Philippines in 1991, the enormous cloud of ash and gases “dropped the world's temperature by 1 percent for a period of about 18 months. Could you do something like that? And could you do it cheaply and quickly? We're doing research in that area as part of what

the planet's defense system will be. Think of it as the equivalent of a planetary defibrillator.”

But there are some things that defeat even a polymath. Closer to home, Myhrvold is frustrated by the Seattle metro area's traffic gridlock. “It's not really a civil engineering issue. The real question is one of civic planning. Do we have the courage to try a different solution? The big thing for people on the eastside [of Lake Washington] is replacing the 520 bridge. What's the smartest way to do it so you don't wind up in exactly the same place a few years later? I confess I have not studied this.”

Myhrvold does have a suggestion, though: “A huge amount of the problem is throughput. Who's controlling the cars? If we imagine getting to the other side of this energy bump, we're looking at fully automated vehicles” that operate far more efficiently than ones driven by humans. “Twenty-five years from now we ought to have a lot of self-driving cars, and that ought to be improving traffic. And we had better be on more sustainable energy – fossil fuel is going to be increasingly expensive and increasingly bad for the environment. Twenty-five years from now Seattle ought to be full of plug-in electric vehicles.”

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