

In Depth

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—Special correspondent in Bellevue (Washington State)

Nathan Myhrvold has returned from a weekend of shopping. His desk is crowned by a cardboard box filled with blue azurites and green malachites. From a holiday trip to a gem and fossil show in Tucson, Arizona, he also brought back a piece of geode with sparkling crystals more than a meter high, which he installed in front of the glass window of his office in Bellevue, a suburb of Seattle.

Another of his finds was a brown copper nugget, which is placed on a at least original low table: a nuclear reactor core. “After one year, we realized that we never checked if it was hot. Fortunately, it was not!” he says, laughing.

Nathan Myhrvold’s reactions are as unusual as the man himself. His bursts of laughter would awaken the dead. His voice soars to high registers with each burst of enthusiasm—and these are frequent because the number of passions he holds boggles the mind. Far from the minimalist ideal embraced by the boxes of Silicon Valley, the five floors of the Intellectual Ventures, the company he founded 15 years ago, can be considered a veritable cabinet of curiosities.

In the reception area, about 30 typewriters and 20 calculating machines are on display. Next to the front door, a giant plastic dinosaur head, recovered from the set of a Jurassic Park film, welcomes visitors.

Behind his office door, a wooden daguerreotype sits on the carpet, purple flashes swirl in a plasma lamp, and several dinosaur bones are exhibited as trophies—Myhrvold has repeatedly gone to Montana and Wyoming in search of the remains of these animals.

One might consider this 50-something a nostalgic collector of a bygone era. That would be a mistake. Connecting all his passions, a singular thread animates him: the notion of progress. A convinced techno-optimist, this polymath is confident that history progresses in the right direction.

After skipping four grades, he entered university at the age of 14 and began his studies in physics, mathematics and economics, all culminating with a post-doctorate research job at the University of Cambridge, under the direction of Stephen Hawking, the famous British cosmologist.

Poised for a brilliant academic career, he chose instead to join the entrepreneurial world after an investor offered to back a software project on which he had worked at the university. In 1986, his software attracted the attention of Microsoft, which bought his company for \$1.5 million. Myhrvold then left Berkeley to join the software giant in the suburbs of Seattle.

He soon became Bill Gates’ right-hand man. “I don’t know anyone I would say is smarter than Nathan”, confided the CEO of Microsoft, in a 1997 [profile of Myhrvold in The New Yorker](#). Within the company, he convinced Gates to set up a research division and assumed the role of futurist leader, writing numerous memos on the future of banking, publishing and film making.

One of those visionary memos evokes “a truly personal computer that can be taken with you all the time [...] a sort of personal and autobiographical diary”—more than 10 years before the emergence of smartphones.

Helping the World’s Small Inventors

But after 14 years in the company, Nathan Myhrvold began to feel limited. “I didn’t achieve greatness because I don’t like to focus to the extent the big players in tech do. Most adults stop doing what they were passionate about when they were children. I can’t do that,” he explains. Two years before leaving Microsoft, he was sneaking out once a week to Rover’s, one of Seattle’s most famous restaurants, to don an apron and work in the kitchen—following a passion born at the age of nine. He even took a sabbatical to train at La Varenne, a renowned cooking school in the suburbs of Paris.

After this experience, he finally left Microsoft to devote himself to his new mission: rethinking the “inventions market.” Together with Edward Jung,



In Bellevue, the founder of Intellectual Ventures, Nathan Myhrvold, wants to stimulate and support the process of invention. Photo: Camerson Karsten for “Les Echos”

Inside the Invention Factory of the Polymath Nathan Myhrvold

REPORT // This confidant of Bill Gates wants to reinvent how inventions are born. He created a huge patent library and a “start-up factory” that has produced prototypes of nuclear reactors, antennas and radars, but also 900 new bread recipes...

a colleague from Microsoft, and Peter Detkin, one of Intel’s vice presidents, he launched Intellectual Ventures in an old warehouse. The company’s activity is as difficult to define as it is diverse: it is simultaneously a huge patent library, a “start-up factory,” the means through which Bill and Melinda Gates fulfill some of their ambitions, and one of the largest kitchen labs in the world.

These different divisions all share one objective in common: to transform the process by which inventions are born. Myhrvold is convinced that the phenomenon of start-ups and the venture capital model, as they have operated over the last thirty years, do not allow all disruptive ideas to blossom.

“With the exception of pharmaceutical and biotech companies, which put lots of money into R&D, the great majority of companies concentrate on incremental improvements and restrict their horizons to two or three years, due to pressure exerted by their shareholders,” he believes. He takes a dim view of some technology companies. “In Silicon Valley, companies produce a large part of their ideas by copying from one another,” he sighs.

As for public research, “it is more centered on fundamental than applied research, depends on governments’ priorities, and neglects a huge range of inventions done outside of academia.” With Intellectual Ventures, Myhrvold aims to help those who are like him: independent inventors around the world who wake up in the middle of the night to note an idea and tinker in their garages, but don’t find a place for themselves in the corporate or academic worlds.

“Inventors are always dipping in and out of different projects. That is not really a prized trait in our world, which values specialization. As a result, their lives are often quite sad: they end up ruined or never seeing their ideas come to fruition during their lifetimes,” he laments.

A “Pure Play in Inventions”

His idea: create a “pure play in inventions,” by building a network of talented inventors to whom companies can turn when in need of new ideas, says Eben Frankenberg, former chief operating

officer of Intellectual Ventures. “Companies outsource their ads to agencies; why not do the same for inventions?” Myhrvold asks.

Step one: enhance the value of existing inventions by compiling a gigantic library of patents. Since its creation in 2003, the company has acquired 70,000 inventions, representing the “17th largest portfolio in the world,” boasts Patrick Ennis, the company’s technology director. “We are not Samsung or IBM, but we do not have their size either: they employ hundreds of thousands of people; we are only 500,” he points out.

Even if Myhrvold likes to focus on helping solitary inventors, most acquisitions have actually been made from large companies, bankrupt start-ups, and universities. Patents are then resold in bundled offers to companies. But these customers have also resorted to Intellectual Ventures’ portfolio to counter-attack when they have been sued by other companies for infringement of patents.

For Myhrvold, this service does not deviate from the mission he has set himself: “Nest [a thermostats start-up acquired by Google] used our services because they were attacked by giants who did not want innovations in their territory,” he says. But Intellectual Ventures also uses the acquired patents to sue companies by claiming paternity of an invention, an activity similar to that of “patent trolls.”

“Whenever I filed a patent, I had this cloud over my head: would Intellectual Ventures find a similar patent in its portfolio and sue me? Their practices do not support the inventors, but terrify and ruin them,” retorts a contractor who has around twenty patents to his credit and works for one of the largest companies in Silicon Valley.

This situation is further complicated by the fact that several companies in the sector, such as Intel, Google, Microsoft and Apple, are among its investors. Intellectual Ventures operates as a fund for investors who aren’t in a hurry: according to data from February 2016 gathered by *Forbes*, the returns up to that time would have been negative: -37 cents for every dollar invested.

According to Thomas Ewing, a lawyer specialized in intellectual property at Avancept, the fund is expected to generate \$18 billion as turnover in order to bring investors a return corresponding to their expectations. But the company is still far behind: its turnover stagnated at \$3 billion in 2015.

Myhrvold assures that “our investors are very happy and know that they must be patient.” He prefers to focus on other activities of the company: launching start-ups from patents that have been bought or ideas that were conceived during invention sessions that bring together interdisciplinary teams.

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Intellectual Ventures has numerous patents particularly in the field of metamaterials, a new field of physics that allows the manipulation of electromagnetic, seismic or hydrodynamic waves by engineered elements embedded in the materials’ structure. The company has launched four start-ups based on these inventions.

Among them, Kymeta, located a few kilometers from its birthplace, designs a new type of antenna: flat and thin, it can be installed on “everything that moves and cannot support a dish: cars, boats, planes...” , explains Nathan Kundtz, the company’s CEO.

In a garage a little further down the

road, its vice-president walks among four models of Toyota that have been dismantled in order to install under their roofs antennas resembling miniature alcoves. “This technology allows me to watch eight episodes of ‘House of Cards’ in my car,” exults Tom Freeman, adding: “It can really enhance automakers’ ability to update software for autonomous cars.”

In another gray and anonymous building beside the road, Echodyne, one of the other “spin-outs,” manufactures radars to help drones avoid collisions with aircrafts. At its laboratory, Intellectual Ventures hosts TerraPower, a start-up that is developing a nuclear reactor that can use waste byproducts of enriched uranium as fuel.

A look at the fundraising of these companies always raises the same name: Bill Gates. He plays a central role in Intellectual Ventures, launching numerous invention sessions, financing many of the spin-outs but also the “Global Good” division dedicated to inventing solutions for developing countries.

Its researchers developed a container that can keep vaccines cold for several weeks, a fact which was exploited to limit the spread of Ebola. They are now devoted to the fight against malaria, “shooting” female mosquitoes with lasers after detecting their sex by the movement of their shadows.

One floor above this group is another team devoted to a very different mission: to create the best bread recipes in the world. However, the tools—centrifuge, rotary evaporator, liquid nitrogen—don’t stray too far from science. “Bread is a very technological product,” points Myhrvold out. Having published five volumes on Modernist cuisine, he is now preparing to release a new work on bread this year.

A team of six people carried out 1,600 experiments over a four-year period, ranging from the distribution of bubbles in the baguette to the replacement of butter with chicken fat in the brioche, going through the preparation of Vollkornbrot, pumpnickel and even pizzas. Always with the same credo that constitutes the Myhrvold method: giving voice to his wildest ideas. ■