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How a High-Frequency Trader Guarded Its Algorithms

Startup SXP's Founders Stand Accused of Stealing Trading Code From Quantlab

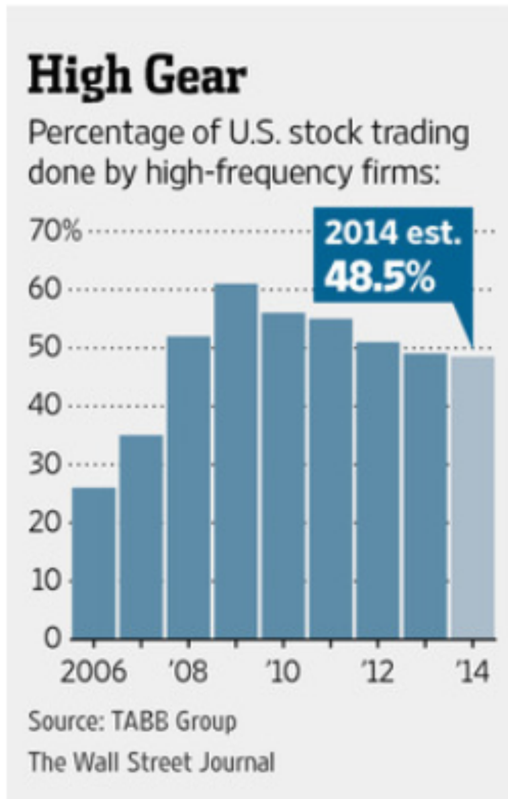
By Bradley Hope

HOUSTON—The meeting that started the trouble took place at a monastery in Florence, Ariz.

Under a gazebo's shade, a Ukrainian physicist who aspires to be a monk met with a Milwaukee lawyer seven years ago and began planning a firm whose profits from rapid-fire stock trades would go mostly to charity. They and another founder eventually named it SXP Analytics LLC after St. Xenia, an 18th century Russian who gave the poor her possessions.

Today, SXP's founders stand accused of stealing someone else's prized possessions: the algorithms of a powerful Houston high-frequency-trading company.

Eleven months after the gazebo meeting, more than 70 Federal Bureau of Investigation agents raided SXP offices and employees' homes in seven states, seizing computers, servers and flash drives. The search target was computer code belonging to the Houston firm, Quantlab Financial LLC.



SXP's journey from St. Anthony's Greek Orthodox Monastery to a Texas federal courthouse provides a look into an unusual corner of the secretive high-frequency-trading industry and the brilliant, often eccentric, people who populate it. This account is based on thousands of pages of court filings, FBI files

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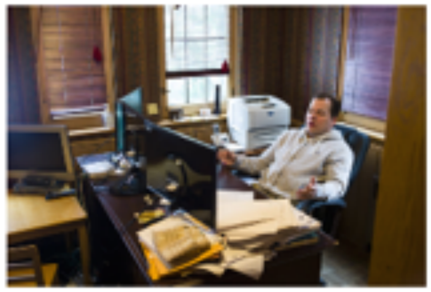
and interviews with people familiar with both sides of the dispute.

High-frequency traders use powerful computers to zip in and out of markets, earning tiny profits on hundreds of thousands of transactions a day. Such trading is about half of U.S. stock-market volume, estimates TABB Group, a financial consultancy.

Among these companies' most-guarded assets are algorithms for computerized trading, and they often hire Ph.D. researchers to create code that can give even the slimmest edge over rivals.

Such code is at the heart of the SXP story. Quantlab alleges that two Ukrainian Ph.D. researchers it fired in 2007 took algorithms and other code to use at SXP. A federal criminal prosecutor declined to pursue a case. But Quantlab is pressing a federal civil suit against SXP's founders, calling the code "the lifeblood of Quantlab."

The founders in court documents said they didn't steal or use



Quantlab intellectual property. Quantlab's general counsel, Tim McInturf, says the defendants "engaged in a massive, surreptitious and systematic theft of the company's intellectual property."

Quantlab's suit, which lawyers expect to go to trial by 2015, is among other such disputes. Goldman Sachs Group in 2009 accused a trader of copying high-frequency code before leaving for another company. The trader, who was convicted in federal court, got the verdict overturned on appeal but faces related state charges, which he denies.

Such disputes come at a time

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when regulators are scrutinizing high-frequency trading as part of a wider review of markets' fairness and stability. The Federal Bureau of Investigation is probing whether such traders are engaging in insider trading by exploiting information unavailable to other investors.

Quantlab, a leading industry proponent, led the creation of a trade group in January that aims to highlight how such trading brings efficiency and liquidity to markets.

The complexity of high-frequency trading and its billions in potential profits are among the factors that can draw unusual casts of characters like those in the Quantlab-SXP dispute.

Quantlab today is a major player in high-frequency trading, accounting for 1.9% to 3% of daily U.S. stock-market volume, estimates ModernNetworks IR, a research concern. Yet it keeps a low profile: Its headquarters are one floor in a redbrick building in Houston's low-rise Montrose neighborhood, known more for mansions and museums than high finance. Its name is in small text on a board by the elevators, sandwiched between a life coach and a law firm.

Quantlab was a hedge fund when founded in 1998 by Wilbur "Ed" Bosarge, Jr., now 75 years old, an oil-company executive and Rice University mathematics professor who often sports a beret, and Bruce

Eames, 59, a businessman from Wisconsin.

Seeking a new strategy, Quantlab in 2001 hired Andriy Kuharsky, a mathematician, now 44. A Ukrainian who also holds a Canadian passport, he earned his Ph.D. at the University of Utah studying blood coagulation; he hadn't worked in finance before.

Two months later, Quantlab hired Vitaliy Godlevsky, the Ukrainian physicist who would eventually plan his own company under the monastery gazebo. Now 44, he was previously at the University of Minnesota, Yale University and Rutgers University. His Ph.D. dissertation was titled, "First principles simulations of liquid semiconductors: Electronic, structural and dynamic properties." Like Mr. Kuharsky, a childhood friend, he was a finance newcomer.

High-frequency concerns often don't require finance backgrounds of researchers, hiring them for their ability to make complicated mathematical calculations using large data pools.

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Joining Quantlab near the high-speed-trading boom's beginning, the two men were part of a team writing algorithms that based short-term-price predictions on analyses of vast quantities of data, including details of all bids and offers on stocks at any given millisecond. Using "signals" in the data largely hidden from slower-moving value investors, their code grabbed tiny profits on many of sometimes millions of trades a day.

While most high-frequency algorithms use similar strategies, companies guard code details closely. Judges and lawyers in Quantlab cases have called its code the "philosopher's stone" and its "secret sauce."

The research team tinkered with the algorithms over the next years, tailoring code in new ways to help Quantlab expand into new asset classes and markets such as Europe and Asia.

Quantlab presented a sometimes-colorful milieu. Its

founders once turned to a consultant on issues from office layout to personnel decisions, according to Quantlab emails from the FBI investigation. Her recommendations often related to "energy" surrounding people and spaces, and Quantlab appeared to follow them in some cases, the emails suggest.

The consultant "was not a psychic or spiritual adviser to Quantlab" as the defendants alleged, says Quantlab's Mr. McInturf. She "was initially hired as a consultant on organizational development issues," he says, adding that Quantlab ended its

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affiliation with her more than seven years ago.

"It would not be appropriate for the FBI to comment due to the pending civil litigation," an FBI spokeswoman said of the agency's investigation.

Mr. Godlevsky, who emigrated from Ukraine in 1993, is a devotee of the Orthodox Church who has long wanted to become a monk. Sporting a long beard, he often spent time with other Ukrainians at Quantlab, celebrating holidays together.

The algorithms he and Mr. Kuharsky helped write led to huge profits, the two said in court documents. Starting with trading capital of about $1.5 million, Quantlab brought in revenue in the hundreds of millions between 2001 and 2007, they said. Quantlab declines to disclose financial details.

Court documents and public records suggest Quantlab's founders became wealthy. In 2008, Mr. Bosarge's family office bought a 72-acre Bahamian island and commissioned construction of a 55-meter yacht. Babydoll Museum Inc., a nonprofit controlled by his wife, Marie, has spent millions on Marilyn Monroe paraphernalia, according to its filings. Mr. Eames is an art patron in Houston.

Quantlab declines to comment on its founders' wealth.

Messrs. Godlevsky and Kuharsky came to feel they weren't getting their share of profits. Their salaries were in the high-five figures and their bonuses in the hundreds of thousands of dollars some years, according to court documents, and they felt underpaid. Around 2006, they began asking their bosses about the compensation plan and challenging some other operational matters.

Quantlab fired both in March 2007 for insubordination and disrupting others' work, says Quantlab's Mr. McInturf. The two denied insubordination and disruption, saying in court documents that they didn't know for sure why they were fired.

The next month, Mr. Godlevsky made a semiannual visit to St. Anthony's. A priest introduced him to Emmanuel Mamalakis, 38, a former Milwaukee securities litigator and frequent visitor to the monastery's meditative grounds. A Greek American, he had earned millions from a class-action suit and sought a new project.

Under the gazebo, Mr. Godlevsky talked of starting a high-frequency concern and giving away much of its profits. Mr. Mamalakis says he liked the idea and suggested he could run the business while Mr. Godlevsky oversaw trading strategies and programmers.

At about that time, Quantlab began to suspect the two men it fired of planning to start a company

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and use Quantlab algorithms. In June 2007, it sued them in Harris County, Texas, civil court seeking to prevent their using the code.

Messrs. Godlevsky, Kuharsky and Mamalakis in court documents said they didn't steal or use Quantlab's intellectual property.

The two fired men sent Quantlab a letter asking for $25 million each, arguing they were entitled to that much of the company's equity, court documents show. Quantlab called the request extortion.

In July 2007, Messrs. Godlevsky, Mamalakis and Kuharsky founded SXP with main offices in Houston. They hired computer scientists and mathematicians, planning to base algorithms on new indicators and to trade in markets such as Brazil to find an edge.

A falling-out at SXP added to Quantlab's concerns. Mr. Kuharsky, disgruntled with some of SXP's religious tones, quit in January 2008 and emailed Quantlab's Mr. Eames under a pseudonym to say SXP was using Quantlab's code, according to court documents. Mr. Kuharsky later recanted his assertions, saying they were an attempt to get Quantlab to end its dispute with him.

Quantlab complained in February 2008 to the FBI, which in March raided SXP offices and employees' homes. When agents interviewed Mr. Kuharsky in SXP's Houston parking lot, he said Quantlab code was on his computer from when he worked at home but denied stealing it or using it for trading. "Kuharsky repeatedly stated that he could not understand why Quantlab made a complaint to the FBI as Quantlab had not suffered any damages," the FBI report reads.

FBI agents tapped Mr. Kuharsky's and Mr. Godlevsky's phones and Quantlab hired private investigators to sort through their trash, according to FBI files. "The case started ruining our lives," Mr. Kuharsky says. "Everywhere we went, we were paranoid and

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wondering if we were being followed."

Quantlab's Mr. McInturf declines to discuss the private investigators but says that, given its allegations, "one would expect Quantlab's legal counsel to take appropriate action to protect key company assets."

The Harris County court dismissed Quantlab's suits without prejudice after the FBI probe began. In 2009, Quantlab sued Messrs. Godlevsky, Kuharsky and Mamalakis in the U.S. district court of the Southern District of Texas, alleging copyright infringement, trade-secret misappropriation and other civil claims.

Mr. Godlevsky and Mr. Mamalakis continued to build their company while their researchers designed algorithms. SXP started with trading capital of $1 million and had $44 million in revenue over 3½ years, according to court documents.

In August 2011, the office of the U.S. Attorney for the Southern District of Texas said it wouldn't prosecute, giving no information about why it wouldn't bring a criminal case. Its summary of FBI findings said that Quantlab code was on Mr. Kuharsky's and Mr. Godlevsky's computers, and that there was evidence Mr. Kuharsky downloaded code from Quantlab servers after his firing.

Mr. Kuharsky told the FBI that a Quantlab employee seeking help with a coding problem had logged on using Mr. Kuharsky's home computer. He and Mr. Godlevsky in court documents said there was Quantlab code on their computers that came from work done at home while still employed.

SXP closed in 2012 after Mr. Godlevsky alleged that Mr. Mamalakis misdirected funds. In January, the receiver that controls SXP alleged in a civil suit in the Milwaukee County Circuit Court in Wisconsin that Mr. Mamalakis fraudulently diverted funds, including to charities he was associated with.

Mr. Mamalakis denies the fraud allegations. He says SXP donated several million dollars to "churches, battered women's shelters and drug rehab clinics," among other nonprofits.

Quantlab's federal suit seeks to bar the men from using Quantlab code and requests unspecified damages. Mr. Godlevsky and Mr. Kuharsky alleged in court documents that Quantlab is trying to drive them out of high-frequency trading. Quantlab in court filings denied the allegation.

Mr. Godlevsky lives outside Milwaukee, trying to make ends meet by writing code while raising chickens and bees and tending an orchard, he said in an October hearing. "I contributed to make

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Quantlab billionaires from nothing," he said, "and personally I am bankrupt."

He and Mr. Kuharsky in 2012 started another company, which Mr. Kuharsky says is about to close down.

Mr. Kuharsky says he can't find work because employers worry Quantlab will subpoena them. "I spend my days working on code, but I don't know if it'll ever be used."

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