

ALGORITHM AS AUTOPILOT

Q&A with Ben Van Vliet
IIT Stuart School of Business

Photo: Bonnie Robinson



At approximately 2:45 p.m. on May 6, 2010, the Dow Jones Industrial Average plummeted 998.50 points, but within minutes, righted itself back to pre-crash levels. For that short period of time, the market dropped between 7–10 percent, accounting for nearly \$1 trillion in lost value. Among the possible culprits of the so-called “Flash Crash” was high-frequency, or algorithmic, trading (HFT)—computerized trading that attempts to take advantage of short-term opportunities, anywhere from a few microseconds to a couple of minutes.

Stuart Finance Lecturer Ben Van Vliet (M.S. FMT '99), who teaches a capstone course in which students build automated trading systems, is an automated trading expert who is regularly contacted by Forbes, Bloomberg, and other media outlets for his insights on automated trading as well as his thoughts on the future of markets and technology.

What was the big deal about the May 6 drop?

The Flash Crash should be recognized not for the crash but rather for the speed with which the market rebounded. As far as we can tell, one or more large institutions came into the market attempting to sell hundreds of billions of dollars in assets. Given the already jittery market, people panicked and ran for the hills. I believe automated systems looked at the situation more rationally and saw it for what it was: the single greatest buying opportunity of the last decade and a good way to make money.

What advantage does a cool and rational machine offer the market?

People have long understood that human emotions are part of the problem of trading. It's our humanness that prevents us from thinking clearly and making rational decisions; we get scared or greedy. The revolution that's happening in markets today is not just a revolution in technology. It's a revolution in society, in that we've come to the point where more and more trading is being driven not by humans, who are bound by fear and greed, but rather by a much more rational scientific process.

Articles in the popular press depict algorithms that run automated systems as creatures that hunt, stalk, and prowl. Are HFT algorithms today's “Andromeda Strain”?

An algorithm, by definition, is just a set of steps. In financial markets, when certain opportunities arise or states exist, a computer algorithm can execute a set of steps to capture an opportunity. Of course, the algorithm can be programmed to modify its own parameters, but it doesn't have the ability to morph itself beyond what a person can program it to do. A term that is sometimes used to describe these algorithms is autopilot. The analogy is a good one. An autopilot can fly the plane; in fact, the only thing the pilot has to do is to tell the plane to take off. In flying an airplane—just like in trading—I'd say that more often than not, human error is the cause of the crash. Software bugs in the autopilot rarely cause crashes.

What is the future of automated trading?

Most of the research I've done and the books I've written revolve around the development of automated trading quality-engineering standards. I believe the next evolution in the financial industry is financial engineering. IIT is uniquely positioned to lead the industry toward strategic competitiveness by building automated systems that don't crash and have wide benefits to both society and the markets.

—Marcia Faye

Ben Van Vliet (M.S. FMT '99)