



The More Things Change

By Peter Scholtz

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Back in 1982, I swiveled the Quotron towards me that I shared with Arnie Ursaner. We were both institutional equity salesmen in the main trading room of Smith Barney on the 44th floor of 1345 Sixth Avenue. The Quotron was a computer terminal that could monitor about 16 stocks and it gave you a bid and ask quote with the size, e.g., \$20 bid and \$20 ¼ ask, 6x8. That meant 600 shares were bid at \$20 and 800 shares were offered at \$20 ¼. Everything was traded in eighths. I filled out a buy ticket to buy the 800 shares offered at \$20 ¼. Ten minutes later, I got a report that I bought the shares. There were other offers above \$20 ¼ and other bids below \$20, but for NYSE listed securities, this best bid and ask was all you saw. The specialist on the New York exchange was the only one who had access to the full market picture, and he used this to his advantage, using his own money to tactically put in better bids and offers in small amounts. The rationale for his privilege was that he narrowed the spread “creating liquidity”, although he also obfuscated the whole picture. If there were 20,000 bid at \$20, the specialist might put in a bid at \$20 1/8, for say 200 shares. He could use the large unseen 20,000 bid as a backstop. Buy what he can at an eighth and offer it at \$20 3/8. Buy a little at a time and sell it a quarter point higher. If supply came in he could quickly step aside or scare the market back up by exposing the large bid right below him. He was in control and from my desk all I could see was 6x8.

At the Over-The-Counter desk twenty feet away from me, all bids and offers from the market makers were displayed. You punched in the quote and a listing of bids and asks would appear. It remained static, however, until you re-entered the quote request. A Smith Barney trader would call the market maker listed on the terminal to hit their bid and the other firm would say “re-submit”, implying that the quotes on the screen were not current. The market maker on the machine had yanked his bid while talking to you, claiming that it was done before the call. Unless the Smith Barney trader kept resubmitting right before and during the call, there was no way to prove what the trader had done. They were supposed to be good for 1000 shares at their price, but they just blew you off. The game was rigged in favor of the OTC traders. They MAY have changed their bid the second after you hit enter on your screen right before you called. Either way, you could prove nothing.

That same year, I once put in an option trade to buy seven options in a very thinly traded longer term issue and within ten minutes (it took that long), I saw seven options trade at my limit, the only trade of the day. Twenty minutes later, no report. I went on to do other things, comfortable that I bought my options since I seemed to be the only one interested. Hours later, still no report so I requested a status. Our desk made a phone call to our floor trader at the Philadelphia Exchange and twenty minutes later I got the report. It was “nothing done”, i.e., that was not my trade. What a

coincidence, and exactly seven options to boot, and the option was up half a point since the trade occurred. A friend of mine, who had worked on the floor, explained that the floor trader had bought my options for me hours ago when I saw the trade, but pocketed the order. If the option was up, he owned them. If it was down, I owned them and the slow report was to give the option time to move. He could just claim that he happened to buy the same option for himself just before he got my order. The next time I saw my option order print on my Quotron and I got no timely report, I immediately cancelled the order. Now the floor trader had nothing to work with and had to make an immediate decision. Did he own them or did I? This was the only way to prevent the trader from playing this game.

The market has evolved a lot since then, starting with the elimination of the NYSE's monopoly on trading their stocks. Electronic market makers have popped up, all competing with the New York and each other, creating a fragmentation of the market place into dozens of mini-markets, all accessible electronically. These markets are owned by trading and brokerage firms, each competing for the business. In addition, the market is more transparent as I now see the bid/ask of each market in depth like the specialist. So besides seeing how many shares are at the best bid and ask, I see the outside bids and asks, the entire picture. The NYSE is today about as busy as your local junior high school on a Sunday. People are there, but what's going on? Where are these other electronic markets located? They are mostly in the meadowlands of New Jersey, large data-centers with heavy security. They are linked together with fiber optic networks and the pattern is as complex as New Jersey's interstate highway system. When you send an order to buy the 800 shares seen at the current offer, it typically is several market makers combined equaling 800 shares so your order bounces around cleaning out the offer at one market and then moves on to the next until the order is satisfied at your limit. In theory, it sounds nice.

Today, I often trade small amounts of stock directly on Bloomberg where the order might be too small for an institutional trader. I would look on my Bloomberg and see four market makers offering a total of 700 shares of stock at \$30.30. Other markets would have a slightly higher offer, say \$30.32. I have 2000 shares to buy. My thought is to start by entering 700 shares to buy all that's offered at the \$30.30 limit, and then see if any new offers return to that price. So I enter the trade. Surprise. I bought 200 shares at \$30.30, 300 other shares traded at my price and now it is offered at 30.32. Two hundred of the 700 shares offered disappeared and 300 shares traded at my price ahead of me? How is that possible?

Welcome to the new world of High Frequency Trading (HFT). What happened to my order is a cold lesson in today's markets. My order was sent out to sweep all stock at \$30.30 and reaches the closest market maker first. Yes, literally the one physically closest to the computer that sent out the order. This is typically the BATS market because the fiber cable goes through the Lincoln Tunnel and that is where the BATS computer is, closest to the Lincoln Tunnel. Once my order took the 200 shares offered at BATS, the trade was reported back into the system. High Frequency Traders, with their ultra-high-speed connection to BATS gets the report of my purchase before the rest of my order reaches the other markets. Some HFT's pay big money for the privilege of co-locating one of their computers in the same data center as the market maker. Since I aggressively took the shares at the offer price, they front run me to the next market and buy the shares offered before my order gets

there. They may see that my order was 700 shares to buy and I only got 200. They are only nanoseconds ahead of me. The HFT's are on auto pilot. Their reaction is predetermined by algorithms. It occurs in tiny fractions of seconds. If I now change my order to take stock at \$30.32, up two cents, the HFT's will be offering the stock they just bought ahead of me up two cents or front run me some more. I have changed my order up two cents figuring I may get all offered, not realizing that as long as I aggressively take the offer, they will continue to front run me, driving the price of the stock up. They keyed off the fact that I was aggressively "taking" the offers.

This behavior has frustrated many institutional firms trying to buy things at current offer prices, so a new kind of market was created, the dark pool. The dark pool is another brokerage firm owned market that displays nothing. No one sees any bids and asks in the dark pool so you literally poke around in the dark hoping someone puts in a matching trade. By watching the "lit" market on your machine, you can guess what price to use in your dark pool order. Large block orders can reside in the dark pool, matching up with any orders that wander into that pool at their limit. Like the lit market, you can sweep the dark pool markets, testing each one for stock. I currently use dark pools a lot, but I noticed something strange one day with my dark pool order. My order was getting clipped as small trades were occurring at a fraction of a cent above my limit. Smelled like HFT's. I had given the order to a large bank and as I was buying nothing at my price, I called and told him to lower my bid in the dark. "Lower your bid," he asked? "You're not buying any at this price." He did what I told him and much to my surprise, the bid and ask in the lit market dropped by the amount that I lowered my bid in the dark. Apparently, there was selling pressure and the HFT's were using me as the backstop like the specialists did on the New York years ago. What was worse is they were buying stock one tenth of a penny above my bid and offering it higher, so if they needed to dump it quickly to me, their risk was one tenth of a penny. By lowering my bid, the backstop went away and so did the HFT's until the market rested on top of my bid.....again. I lowered it again and it came in again. But I was in a dark pool, how can they see me? It turns out that firms that run dark pools often sell to HFT's the right to see what is in their pool. They get a flashlight in the dark pool! The HFT's pay quite a yearly fee for the privilege of exploiting the broker's client. The dark pool is not always dark.

Nowadays, I tell my traders to only put a couple hundred shares at a time in the dark. One young trader asked me what the problem was, "no one can see your order in the dark." The new thing is brokerage firms are telling clients that they don't show their dark orders to anyone. The implication is that you no longer need to sweep the dark pools, and you can give them a fat order for their dark pool. Recently, Barclay's was fined a large sum for claiming to not open their dark pools to HFT's, but they did so anyway and were found out. Lots of money. I don't trust any of the dark pools.

In response a few years ago, Brad Katsuyama, an employee of the Royal Bank of Canada, wanted to create a level playing field for institutional clients, thus capturing market share due to his honesty. He would not sell information to HFT's. In addition, he designed a system to prevent exploitation by the HFT's. The first thing he did was to measure the time delays (latency) from their computer to the various market places, after having built their own fiber network. Once they understood how long each order took to hit the various markets, they designed an algorithm that would delay the pieces of their order so that they could hit all the markets simultaneously, preventing HFT's from

stealing stock. It was called THOR and it was very successful. The biggest problem THOR had was that the times to market would sometimes vary slightly. Still, this was a big improvement over the current system. By 2013, Brad and a co-worker, Ronan Ryan, started a new independent market for institutions called the Investors Exchange or IEX. The idea was to thwart the HFT's by locating the market far away, like Nebraska, to delay the report of the trade. They coiled fiber along the way to make it even slower. In addition, they would not allow any firm to co-locate a computer on the premises. This would enable orders to be completed before the computers could exploit the partial fill. Brad and Ronan then went on a marketing spree on Wall Street. Excitement built at large hedge funds, tired of being picked off by the algorithms. Large firms started directing their brokers to send their orders solely to the IEX, instead of sweeping all the markets. They also asked permission to have IEX report the result directly to them, rather than their brokerage firm who entered the trade. This way, they could verify that the order actually went there. The brokers refused. The brokers said it was proprietary information that would hurt other clients. In actuality, this only threatens the large fees earned by brokerage firms selling advantages to HFT's. Brad and Ronan could see all trades on their system and quickly discovered that the firms would say they sent the order to IEX, but in fact it went elsewhere. They could not report what they saw because the information is the property of the broker and it "might reveal brokerage secrets." Reporting this information raises the specter of lawsuits. They had their own records and attempted to scare brokers into proper behavior by divulging that they were monitoring all trades, even though they would never reveal the information.

I sigh as I watch online brokerage ads on TV hawking their new low commission rates. The online brokers are some of the worst offenders and at least one large firm sells all their customer orders to Citadel, the large asset manager, who then resells the info to HFT's. A thousand share order might cost less than 1 cent a share in commissions, but what was the execution price? It is a horror story. Online brokers are good if you are tiny. No one can exploit 100 shares, but as your order is larger, beware. The bottom line is that it is estimated at the peak a few years ago that High Frequency Trading generated \$20 billion a year in trading profits. Who paid for that? The brokerage firms ignore this problem since they are making large fees from selling dark pool info and co-location services to these firms. A firm can pay as much as way \$10 million for the privilege of co-location alone. This is big business.

Yes, the game is rigged. It has always been rigged. The key is to understand the game and circumvent the problem. The most obvious way to avoid HFT's is to have your block trader find another buyer/seller, thus crossing a large block of stock all at once. No algorithms, no latency, just an old school phone call among large owners. Other than finding this "natural" buyer, it pays to understand how the order flows and works through the system. Putting in small pieces of the order without taking the offer or hitting bids, but trading in between is ideal in more thinly traded stocks. Too many institutions are exploited by their aggressive behavior in the market. It is what the HFT's key off of. The times change, but there is always a new way to have your pocket picked.