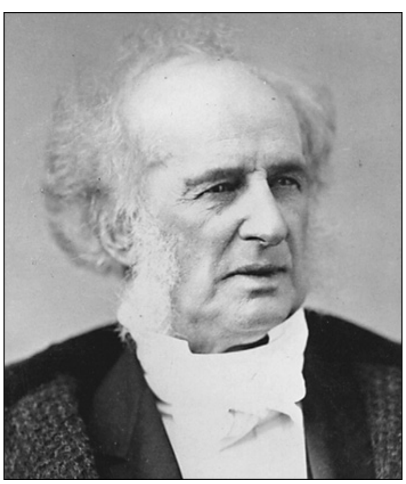
The Adaptive Genius of Rigged Markets

Same as it ever was, same as it ever was, same as it ever was, same as it ever was
– Talking Heads, "Once in a Lifetime"

You may be a business man or some high degree thief
They may call you Doctor or they may call you Chief
But you're gonna have to serve somebody, yes
You're gonna have to serve somebody
– Bob Dylan, "Gotta Serve Somebody"



Horace Clark, Vanderbilt's son-in-law, was always a favorite with the stately old gentleman. Having decided to wed the young lady, he called upon his future father-in-law, and, without preliminary, began – "Commodore, I wish your daughter in marriage."

"You mean, you want my money," growled Vanderbilt from his chair.

"You and your daughter be damned," flamed out the young lawyer, as he clenched his hat in his hand and turned to leave the room.

"Hold on, young man," said Vanderbilt, straightening himself on his feet. "Hold on. I rather like you. I only said you should not have my money. You can *have* my daughter."

– James Medbery, "Men and Mysteries of Wall Street" (1870)

David Byrne, of Talking Heads fame, is something of a personal hero of mine for the way he handles the business of his music. Byrne is famously protective of the copyrights associated with his work, in the sense of controlling the uses of the music for long-term goals rather than a short-term pay-off, and it's a non-myopic approach to intellectual property I've tried to adopt with my own work. **I also appreciate Byrne's ability to put on a show.** His music stands on its own, for sure, but Byrne was into multimedia before it was a word, and part of his genius has been an ability to reinvent consistently the *experience* of his music. I know it sounds crazy to anyone under the age of 30 that a Big White Suit could be both revolutionary and really cool as performance art, but there you go. More to the point, Byrne knew when to move on from the Big White Suit. He knew how to *adapt* to a world that was still hungry to hear what he had to say, but not if it were presented in the same way ad nauseam.

If you don't adapt, you die. Or worse … for an artist, anyway … you become uncool and passé. Your performance art becomes performance shtick. And yes, I'm looking at you, Elvis Costello. **There's an *adaptive genius* to the David Byrne's and the David Bowie's of the world, quite separate from their *musical genius*, and that's what I want to examine in this note.**

Adaptive genius is not limited to the popularly beloved and the socially respected. It's not only, in zoo-keeping terms, the "charismatic vertebrates" like elephants and giraffes who demonstrate this quality, but also decidedly non-charismatic invertebrates like the hookworm. I've written before about why I believe that parasites are beautiful creatures from an evolutionary perspective, which is another way of saying that they possess adaptive genius. It's [the same sort of beauty I see in parasitic market participants] who generate real alpha by feeding off a consistent informational edge they identify from either non-economic or differently-economic market participants. As I wrote in "Parasite Rex", a giant pension fund isn't engaged in commodity markets because it has an opinion on the contango curve of oil futures; it's trying to find a diversifying asset class for a massive portfolio that needs inflation protection. If you're an experienced trader in that market and you see signs of the giant pension fund lumbering through the brush … well, you're in the wrong business if you can't skin a few dimes here. This is what good traders DO, and the really good ones have devised effective processes so that it's not just a one-off trade but an expression of a robust strategy.

Parasites, whether they exist in nature or in markets, are almost always models of efficiency and adaptive genius. I may dislike them. I may well be the host from which they suck out resources. I may want to squash them without mercy. But I can't help but respect their evolutionary prowess and ability to carve out an informational advantage. **And if I get the chance, I'd like to invest money with them.** They're not the only source of alpha in this world (you can also create an informational advantage by perceiving the world differently and more correctly than most), but they are, I believe the most consistent and powerful source of alpha out there.

Or at least they provide the most consistent and powerful source of alpha within the limitation of being a market participant, of being a buyer or a seller of a security in order to express an opinion on whether that security will go up or down in price in the future. **Of course, if you could hijack the entire infrastructure of the market, if you could somehow develop an omniscient view of market communications and intentions under the guise of market-making or liquidity provision … then you'd be talking about some *serious* alpha.**

Oh wait … that's *exactly* what happened with Getco and Virtu and their High Frequency Trading (HFT) brethren.

I don't want to belabor the details of how this market infrastructure hijacking works. You're better off reading Michael Lewis's book or, better yet, check out Sal Arnuk and Joe Saluzzi's Themis Trading website and read *their* book, "Broken Markets". But I will share my experience of how this hijacking plays out in the professional investment world. My bona fides: co-managed a large long/short equity fund where we experienced all this on a daily basis, wrote extensively about HFT and market structure in client letters, and was part of a loose group of like-minded buy-side managers exploring these issues for the past 5 years. I was an HFT critic way before it was cool to be an HFT critic, and here's our core complaint: **in an HFT-dominated market infrastructure, you can always get your order filled but you will never get a better price than your limit.**

What does this mean? Imagine that you're an equity PM and you want to buy $5 million worth of XYZ stock today. You have a positive fundamental view on the company, the stock's been weak of late, and for whatever reason you've decided that today is a good time to pull the trigger and add to your existing position here. Average daily volume in the stock is, say, $500 million, so your order is going to be about 1% of that – not inconsequential for how the stock trades, but highly unlikely to have a big market impact. All the same, though, you tell your trading desk that you want to put a limit on the order, say 1% above wherever the price settles after the market opens. So now it's 10:05 am, XYZ stock is trading at $50.00, and your trader hits the button to buy 100,000 shares with a limit of $50.50. Your trader is not an idiot, so of course he's chopping up this order into smaller pieces, either via some chopping algorithm you've got in your order management system or, more likely, some chopping algorithm that your prime broker uses to rout the big order through various execution venues over the course of the day. There are plenty of these algorithms to choose from, all designed to hide your willingness to pay up to $50.50 for XYZ stock when it's currently trading at $50.00.

But then the most amazing thing happens. As soon as your trader hits the button at 10:05 am to launch the buy order, volume at $50.00 – which was humming along quite nicely – strangely dries up. As if by magic, the market price for XYZ stock marches straight up, often in minimally sized 100 share lots, until it hits $50.50. At that point volume miraculously reappears, and your order starts to fill in earnest. The price might tick higher by a penny or two every now and then, which means that you stop buying, but it always seems to tick right back down to the $50.50 mark where your order continues to fill. A few minutes later you get a message from your trader that the XYZ order is done, at an average price of $50.48. Your trader is happy because he completed the order as per your instructions. You're happy because you've got the 100,000 shares of XYZ at an acceptable price. **But you are only minimally happy.** You only achieved your reservation price, which seems odd because you saw the stock trading at $50.00 before you got active, and you're probably seeing the stock trading at $50.00 now that you are no longer active.

No matter how hard you try to manage your trades, no matter what chopping algorithm you use or how closely you watch the Bloomberg screen, **it's as if whoever is on the other side of your trades has a bug planted in your office so that they are overhearing your conversations with the trading**

desk and picking off your limit orders. You rarely do better than the worst price you will tolerate, and that only happens when your trader finds a natural – a real human being who wants to sell what you want to buy, or vice versa. Otherwise your counterparty is a "liquidity provider", some technology company whose Big Data computer systems, combined with direct data feeds and frictionless order execution authority to and from trading venues, allows them to identify the contours and depth of the aggregate limit order book in stock XYZ. Your effort to buy 100,000 shares of XYZ forms a pattern, regardless of how you try to hide it, and it's a pattern that the powerful induction engines of HFT algorithms will quickly recognize. And once your pattern is identified within the context of a limit order book, your private information – the price you are secretly willing to pay for a share of XYZ stock – has been stolen from you just as surely as if there really were a listening device planted next to your trading desk.

Are there ways to mitigate this sad state of affairs … or rather, this minimally happy state of affairs? Sure. You set tighter limits. You look for opportunities to provide liquidity rather than just absorb it. You trade less frequently but more aggressively. You hire experienced traders who can tell when a machine is picking them off and know where to look for naturals. But it's only a mitigation, not a solution. A good trader on an equity desk used to be able to make you money by beating the volume-weighted average price (VWAP) on a consistent basis. Today it's all VWAP all the time, thin gruel that supplies enough calories and nutrients to keep you alive, but tastes like … thin gruel. **Institutional investors are angry about HFT because it has turned actively managed order execution and tactical portfolio decision-making from a source of fun and profit into a dreary toll-paying exercise.** Day after day, trade after trade, we are skinned. And we know it. But it's always just within the tolerance levels that *we ourselves set*, which is really the brilliance of the whole thing.

When you talk to anyone in the HFT world, you inevitably get three arguments as to why the current situation really isn't a problem.

#1 – *"But our margins are razor thin. We really don't make much money in our business, or at least we don't make much money anymore, because the secret is out and it's so darn expensive to maintain our machines."*
My response: Boo-freakin'-hoo.

#2 – *"But we provide a valuable service to markets with our liquidity provision. Without our participation the bid-ask spread in every trade would be wider, and market volumes would plunge."*
My response: Look, I admire the fact that you are not an Ebola-esque parasitoid that kills its host in a gory, blood-spewing mess, but rather something more akin to a parasitic worm that provides its host

with a bit of protection against certain auto-immune diseases as it gorges itself. It's an evolutionarily stable strategy (ESS), and I think it's adaptive genius. Really, I wish I had thought of this whole HFT idea myself, and I'm more than a little jealous. But give me a break about liquidity and bid-ask spreads. The life of an active manager was so much more fun and profitable (or at least *that was our perception of the experience*) with lower liquidity and wider bid-ask spreads. We'll take our chances in a worm-less market environment, thank you very much.

#3 – *"But there's always going to be someone extracting rents from the market infrastructure. We're certainly no worse than the parasites before us, and in some ways we're better for you."*
My response: Ummm … that's a pretty good point.

I love to read memoirs and first-hand accounts of markets, and recently I've been focused on the late 19th century, particularly the period 1873 – 1879 … what was called back then the Great Depression until the 1930's rolled around and the name had to be changed to the Long Depression (even more apropos for the UK, where the depression/recession lasted until 1896). The story of the Long Depression is one of a market panic and a liquidity crisis that collapsed financial institutions everyone thought were too big to fail, followed by a 20+ year period of puzzlingly high unemployment, anemic growth, political fragmentation, and experimental monetary policy. Sound familiar?

But even as one reads these memoirs and histories for whatever macro-economic lessons they might provide for coping with our own Long Recession, you cannot help but be struck by the constant discussion of market structure in these materials. And it's not a dry description of the formal aspects of the market. No, for the most part it's a full-throated celebration of the men and the institutions that controlled the flow of information within markets by controlling the machinery of markets. Men like Cornelius "Commodore" Vanderbilt, who was renowned for setting up friends and relatives with "points" and "tips" so as to drive the price of some stock way up, only to betray them with one last false tip that would give the Commodore a chance to exit his long position and then turn around and short the stock, crushing both the price and his "friend". Men like Jay Gould and Diamond Jim Fisk, who bribed entire state legislatures to get their way on market rules and came within an inch of cornering the entire US gold market.

You can't have a market in a mass society without constructing a robust market infrastructure. What is that infrastructure? It's not a building on the corner of Broad Street and Wall. It's not a trading pit on South Wacker. **Market infrastructure is a collection of rules for the playing of a massive game.**

Market infrastructure is information. And whoever masters those rules, whoever sees the information flowing between market participants most clearly, whoever can create private information by becoming embedded within that information flow … well, one way or another they're going to make a fortune, and one way or another it's going to come out of the hide of the rest of us.

Ultimately, I think the problem for HFT liquidity providers is not that they are skinning investors, but that they are outsiders. They're doing what the keepers of the market infrastructure keys have always done – skin investors, retail and institutional alike, to the outer limits of what technology and the law allows. But while their outward behavior and appearance may be familiar, they are clearly an alien species on the inside, without so much as a microgram of Wall Street DNA. They are Rakshasa's. HFT liquidity providers are technology companies disguised as financial intermediaries. They hijacked the market infrastructure in the aftermath of the Great Recession, stealing it away from under the noses of the big financial firms who had come to see control over market structure as their birthright, and they had a good run. But now the big boys want their market infrastructure back, and they're going to get it.

I won't be shedding any tears for the demise of the HFT shops, and there's no small amount of entertainment value in the witch hunts and show trials to come. But I'm not so naïve as to expect some magical return to the halcyon trading days of yesteryear where, to paraphrase Garrison Keillor and his description of the children of Lake Wobegon, all of our trades beat VWAP. The big boys will co-opt the Big Data skinning techniques of the HFT shops, just as they have always co-opted the technologies of social control and surveillance. Oh sure, they will make the theft of my private information regarding limit orders even more palatable than the HFT guys did, because that's the genius of a highly evolved, highly adaptive parasite – they possess an extremely robust ESS (evolutionarily stable strategy). But you can't un-ring this Big Data bell.

No, Dylan said it best. You gotta serve somebody, and that certainly goes for all of us who choose to participate in modern markets. There is a rigged quality to all market structures in all times and in all societies, and you're going to serve whoever controls the information flow of the market, because that's what market structure IS. This was true in 1870, it was true in 1970, and it will be true in 2070. But don't worry, you'll hardly feel a thing. In fact, you'll be happy to serve – albeit minimally happy, and increasingly to the limits of your minimal happiness – those who are manning the market structure gates, because that's the adaptive genius of these particular parasites. Same as it ever was, same as it ever was, same as it ever was, same as it ever was.

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