Beware of Quants in Brooks Brothers Suits

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This Athenaeum paper is going to be different than most; at the end of this paper someone is going to walk away with $1,000,000 in cash or poker chips. First, I ask that you stand up and move to the appropriate table:

- If you are a quant, please sit at table one;
- If you have a Bachelor of Science degree or enjoy chemistry, biology, anatomy, mathematics, physics, or astronomy, please sit at table two:
- If you have a Bachelor of Arts degree or enjoy history, political science, religion, philosophy, sociology, or psychology, please sit at table three; and,
- If you majored in economics, finance, or have an MBA, please sit at table four.

Thank you for your cooperation and before we begin to spend our imaginary $1,000,000 we need to establish certain ground rules. Thinking ahead let us give serious thought how the money should be spent. Should the money be spent?

- In Las Vegas?
- In the stock market?

And if invested in the stock market, please look around the room and decide which table is most capable to manage $1,000,000. The scary part is that the intellectual talent in this room represents some of the best intellectual talent in Hopkinsville. Just for thought, is it likely that others in far away cities or countries have more intellectual firepower than our fellow brethren? The plot thickens.

For brevity's sake, we are going to avoid bothersome issues such as market efficiency, derivatives, sub-prime mortgages, lack of government oversight, excessive pay, high frequency trades, cycle trades, and should hedge funds be regulated. Although each impacts our economic livelihood we are going to respect the Athenaeum's time honored guideline and not discuss politics; the dirty rat bastards. Instead, we are going to take the high road and decide if it really makes sense to trust Wall Street quants with our $1,000,000.

For those of you that have read books by Malcolm Gladwell or Ori and Rom Brafman, they insightfully observe that humans often act irrationally. We are going to expand their inquiry and use the stock market as our case study. For economic purists, perhaps those at Table One, you recognize that such issues derive from the emerging field of behavioral economics.

Behavioral economics has earned sufficient credibility to generate several economic Noble prizes. Behavioral economists attempt to provide meaning to situations such as the following: although none of you asked for the nuts in front of you, why would you care if I now took them away? Or, when a Harvard Business School professor auctions a twenty bill each beginning semester, why does the winning bidder always pay more than twenty dollars? (The winning bid now stands at over two-hundred dollars.) Similarly, let us not go on a tangent and confuse our selves with game theory. Although both academic areas are interesting, to paraphrase Freud, "Sometimes a cigar is just a cigar." As we proceed, let us be careful to not take our selves too seriously.

That said, let us evaluate the likely investment tendencies of each of our four tables:

> Table One: For our purposes, a quant is one who performs quantitative analysis in the investment industry using numerical or quantitative techniques. If anyone is at table one, you most likely obtained a Masters or PhD level education in mathematical finance, computational finance, financial reinsurance, or financial engineering. If you are a quant and over sixty you most likely have mathematics or physics degree and planned to work at NASA before funding was reduced. If you are under forty, you have one of the best minds of your generation and opted for Wall Street rather than academia. Arguably, seduced by the greed of Wall Street, many quants traded the "noise" of space for the "noise" of Wall Street. Their attempt to discover the elusive "theory of everything" was placed on hold in a classic twenty-first century Faustian bargain. If any quants are standing, Warren Buffett warned us about you during Fall, 2008 when he said, "All I can say is, beware of geeks bearing formulas."
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> This table, if any, includes people who are as smart as anyone in the room and who truly believe that a cause and effect relationship exists in economics. They are certain that the same hard facts known by table two can be discovered in the next Monte Carlo simulation model. Although earning money is not their main goal, it does provide a nice substitute to keep score and to prove to others how smart they really are. As important, the reason they work on Wall Street to make money is their employers want them to make money. As one observer noted, there is a reason why Goldman Sachs hires quants, ". . . they [aren't] hiring particle physicists to help the company win science fairs." But because they are smart, wear nice suits, and work hard, we trust them to invest our money. Unfortunately, their approach to Wall Street has one fundamental flaw: since human behavior is involved they cannot achieve the precision they found in the world of science. This fundamental flaw somewhat bothers quants and it should really bother any serious investor.

For philosophical purposes, we will describe this as the Timothy O'Leary table. For investment purposes, even though our common sense tells us to run away as fast as we can, we will call this the Ponzi table.

- Table Two: Not to stereotype, but from a pure IQ standpoint these are the people in high school who made straight A's and enjoyed classes like calculus and chemistry. They work in a world which requires precision and where all the pieces must fit together. Creativity is often a distraction. From a philosophical standpoint we will call this the Aristotelian table. If we acted rationally, these are the people we should entrust to manage our money. We will call their investing style the "safe and boring" approach.

- Table Three: These are people, like me, who prefer a world with lots of wiggle room and where creativity is always an ally. Most likely, such people live in a world of political utopias, view history through rose colored glasses, and view philosophy as "the best of all worlds". From a philosophical standpoint, we will call this the Platonic table. We will call their investment style the "get me in on the ground floor" approach.

- Table Four: Most likely, this table represents people that can master the facts of the first two tables, have solid people skills, and who enjoy making money. If forced to memorize data they prefer the "time value of money" formula over the periodic tables. These are the money professionals. For philosophical purposes we will call them the Jeremy Benthams, not always creative but always practical and efficient. For investment purposes, simply because stocks do go down despite their best intentions, we will call this table the Invisible Hands.

For discussion purposes, I am going to play the devil's advocate and briefly state my economic beliefs:

- First, I argue that the $1,000,000 should be given to table four. My reasoning is that table one will eventually lose our money, table two will just sit on the money, and table three will act irrationally. At least if table four loses our money they will have remorse. Table one will just say, "Well, it should have worked."

- Two, most people do not have any business investing in the stock market. For most people, a night in Las Vegas would be much more enjoyable.

- Third, investment decisions made by small groups are equally unqualified to manage $1,000,000.

- Fourth, we must realize that the stock market has all the characteristics of a complex system, similar to a nuclear power plant or space travel. Before we invest in the stock

market we must clearly understand what we are up against. If my arguments are persuasive, it should soon be clear that the iconic bronze bull and bear at the entrance to Wall Street should be removed and replaced with a robot. The robot would be the one found in the 1960's television show **Lost in Space**. The robot would constantly repeat, "Warning! Warning!", "That does not compute", and "Danger, Will Robinson!"

- Fifth, let us forget what we learned in our college micro and macro-economic classes. The economic false certainties I have learned the hard way include the following:

    1. Market timing is a wildcard over which we have no control. Market timing is like boarding a train en route from New York City to Los Angeles. We get to say we are on a train ride but we will not all have the same experience. For example, investors who took the Wall Street train ride from 1926 through March, 2007 saw their long-term annual return fall from 10.4% to 9.3%. In contrast, a passenger that invested $1,000,000 on September 30, 2007 returned with $498,300 on March 31, 2009. This represents over a 50% loss in less than eighteen months. Similarly, from 1926-2008 the stock market lost money in twenty-five of eighty-three years, or one out of every three years.

    2. The stock market is an economic game of musical chairs. Any investor's ability to cash out is tied directly to what others are doing in the marketplace at the same time. If everyone is selling it is impossible for stocks and real estate to increase. At any point in time, self-interest is what drives individual trades, not logic, ideology, or rationality. Despite graphs that indicate the contrary the stock market does not always move in a linear direction.

    3. The government is not our friend or protector. As James Madison so aptly observed in The Federalist # 51:

        > If men were angels, no government would be necessary. . . In framing a government which is to be administered by men over men, the great difficulty lies in this: you must first enable the government to control the governed; and in the next place oblige it to control itself. A dependence on the people is, no doubt, the primary control of the government; but experience has taught mankind the necessity of auxiliary precautions.

    This warning is particularly appropriate when money is involved. Unfortunately, government regulation usually arrives two years after an economic meltdown. Approximately ten years before the most recent meltdown, the Chairman of the Commodity Futures Trading Commission, Brooksley Born, repeatedly testified before Congress that an economic meltdown was imminent. Her accurate and repeated attempts were ignored. Only in economics can a long-term Chairman of

the Federal Reserve, Allan Greenspan, conclude that his economic ideology was "incorrect." Testifying before Congress after the meltdown, Greenspan sincerely apologized that the market dropped sixty-seven trillion dollars:

> "Yes, I found a flaw but I have been very distressed by that fact. . . A flaw in the model that I perceived as the critical functioning structure that I defined how the world works, so to speak. . . . I was shocked, for forty years or more I believed that it worked exceptionally well."

For those at table two, if any of Sir Isaac Newton's three laws of motion failed to perform can you imagine Newton shrugging his shoulders and saying, "My bad?"

4. When we invest in the stock market, the mental models that serve us well in our daily lives are not transferable. In our heart of hearts, we want the world to make sense. We want to believe that the cause and effect relationships known by table two are transferable to all subject areas. In law we want to believe that the concept of a "reasonable man" is realistic, in religion we want to believe there is a higher being, in philosophy we want to believe there is a "best of all worlds", and in economics we want to believe the market is efficient. In the big picture, we want the world to operate in an orderly process and believe that the people we have entrusted will always "do the right thing". Although rarely emphasized in economic textbooks, this investment approach is known as the "greater fool" theory.

   As investors, we must realize that the financial models developed by table one are helpful but not absolute. As one quant so succinctly stated, computer models are "powerful sales tools":

   > As a result, we all have to be existentialists in matters of financial valuation, making our own decisions about what's meaningful. There is no model-God, and he won't give you the data to calibrate his ultimate model. . . If you can get everyone to look at the world your way, then you can sell them things based on your view. This isn't dishonest. It's a reflection of the fact that the locus of financial value is vague and confusing, and any order you can plausibly impose on prices is immensely helpful to investors. Unless you can replicate perfectly and hold to expiry, **a large part of value is in the mind"** (emphasis added).

As we continue to narrow our investment options, let us review how individuals make investment decisions. Continuing to play the role of devil's advocate, I argue that any individual making his own investments has a fool for a client, and here's why:

How is the investment opportunity framed? Regardless at which table we are sitting psychological tests indicate that most of us are risk adverse. Most people are not comfortable making decisions and do not act quickly enough to eliminate risk. When in a losing situation

most people become creative but keep on doing what got them in trouble in the first place. Examples include continuing to hold a poor poker hand or a reluctance to sell a loser stock. On the other hand, when presented with an opportunity (a bull market) most people keep doing the same thing but are not as creative to maximize potential gains. For investment purposes we must always ask: how is the risk framed?

Our everyday intuition does not work on Wall Street: Based upon our routine, everyday experiences we try to find workable solutions by searching for patterns and reasoning by analogy. Lacking the time to evaluate all possible alternatives we quickly decide and usually go with our first option. This is why many professionals cannot explain their first opinion or judgment when they see something new; they "just know". When investing we are often presented with new and complex opportunities outside our experience. Unfortunately, unlike choosing the wrong road, too many incorrect investment decisions will not only leave us lost and confused but also broke.

The "overconfidence" bias. Almost always, we are overconfident of our abilities when moving from one subject area to another. We often take more credit for prior outcomes than we deserve. Just because we successfully selected stocks once does not mean we can do it again. Just because one business model works does not mean it will always work well. Attempts to transfer the Home Depot model (eliminate local Mom and Pop stores) did not extend to community dry-cleaning or florist shops. Or, just because a coach succeeds at the college level does not mean he will succeed in the pros.

The "sunk-cost" bias". The tendency to become overly committed to a prior course of action and escalate our commitment to an even greater extent when a rational review of the facts clearly indicates a different approach should be adopted. One example is Bernie Madoff's initial investors. Despite too perfect investment returns that defied common sense, few investors withdrew any money after their initial investment and failed to perform any continued due diligence. This tendency has also been described as "summit fever" as when mountain climbers continue to climb after the weather has changed and a rational person would have returned to base camp. In each situation, the decision maker does not want to admit that the initial decision was wrong; all that is needed is more time to prove the initial decision correct.

The "confirmatory" bias. The tendency to gather information about a particular assumption that confirms our existing views. We stubbornly resist any information that discounts our mental models or challenges long-standing beliefs. Rare is the person that always has an open mind and seeks ways to challenge his mental models. Rarer still is the leader that encourages its group members to actively question the group's fundamental assumptions. Examples include why certain NASA engineers continued to reject the possibility of an O-ring failure and when the CIA was certain that Cuban nationals would revolt during the Bay of Pigs invasion.

The "hindsight" bias. The tendency to look back and judge prior outcomes as easily predictable when they were not easily foreseen. An example is to have insured both World Towers on 9/11 rather than just one. Or, as Lawrence Summers, President Obama's top economic advisor recently noted:

> "If we had known that derivative markets would mushroom the way they did and that regulators would remain spectators, we would have acted. With hindsight, all of us with involvement in financial policy wish we had done more to forestall problems."

Hopefully, the above biases illustrate that individual investors often act irrationally. In retrospect, each bias represents a decision trap that is often hard to justify and can prove quite costly.

Continuing to play the devil's advocate, is it logical to believe that a small group can make a better investment decision than an individual? A group offers greater pooling of intellect, talents, and perspectives. Instead, unless led by an exceptional leader most groups experience "process losses" that decrease the group's effectiveness. Examples include members that feel pressure to conform, members who dominate "air time", and members who "free ride". Oftentimes, key data is not made available to the entire group but is "filtered" as the data moves up the chain of command. In what has been described as "groupthink", members "go along to get along", fail to discuss all possible alternatives, fail to seek outside experts, and become focused on rules of protocol. Oftentimes, the culture of an industry prevents its leaders from making the most logical decision. Over time, many industries and businesses develop a "yes", "no", or "gotcha" culture. Either to placate the leader or for territorial reasons many times excellent investment opportunities never materialize. Investment examples include when GM refused to acknowledge Toyota's more efficient production processes or when IBM rejected Bill Gate's vision of personal computers.

If individuals and small groups are not the best investment managers, to whom do we turn to manage our money? Not surprisingly, I am going to discount the investment advice offered by table one. If selected, table one would advocate that computer models be utilized and stocks be held for short periods of time. In fact, quants don't even care what the stock is, whether it pays a dividend, or the ability of its management team. I realize this approach is way over the pay grade of table three, but how crazy is this approach? I for one am unwilling to make such an economic leap of faith. That said, I will agree that quants recognize a major insight that we must fully appreciate when making investment decisions. When viewed as a whole, the stock market is a high risk, complex system. What exactly is a complex system? Trying to explain complexity theory is well, complex, but let's try.

- Anyone who only holds one stock at a time deals in a "simple" landscape. If viewed as a single mountain, like Mount Fuji, this is the type of investment landscape that most of us understand. An example is when our one hot stock peaks; where do we go from there? Once our Mount Fuji stock has been conquered, a step in any direction is a step down in elevation.

- Another equally straightforward investment type is called a "rugged" landscape. This economic landscape has multiple peaks and valleys and can be imagined as if viewing the Appalachian Mountains. A rugged landscape includes the interaction of many different actors and is usually difficult to recognize when one is atop the highest peak.

- The third and most complex type is called a "dancing" landscape. It can have one or multiple peaks but its key feature is that the peaks change over time. Examples include a nuclear power plant, any trip into space, and the overall stock market. The problem with a complex, dancing landscape is that not even the world's fastest computer can always time trades to generate a profit. We might as well attempt to understand the cosmos.

Complex systems possess their own group dynamics and include different elements that interact in ways that are unexpected and difficult to perceive or comprehend. Almost always the different elements are highly interdependent and closely linked to one another. The consequence is that a change in one area quickly triggers changes in other aspects of the system. In a dancing, complex landscape unanticipated events will always occur. For our purposes, inherent organizational weaknesses will lead to failures in the stock market; we just do not know when or under what circumstances. The typical market meltdown should be viewed as the inevitable result of processes and not as a one-time surprising event. A recent example is when real estate brokers stopped qualifying homebuyers based upon their ability to pay. Over time it was inevitable that unqualified buyers would become the norm. Over time it was inevitable that banks assumed more risk. Viewed as a dancing landscape, it was inevitable that multiple and interdependent actors changed the landscape of the prior corporate culture. Although it is now easy to describe such unimaginable events as Back Swans, this explanation is not accurate. When we invest in the stock market the one constant is that the unexpected eventually becomes the expected.

Hopefully, now that we are much wiser about the stock market, let us decide who is going to win $1,000,000 in cash or poker chips. For simplicity's sake, let's agree with our Greek philosophical peers and Billy Joel that "sooner or later it comes down to fate." For this reason I ask that each of you write down or remember a number from 5-40 and let me clarify how our $1,000,000 winner will be determined.

First, as President White played a significant role in allowing me to speak tonight I have decided he gets an additional five chances. This is because we need President White's leadership and we all agree that the Athenaeum Society is too big to fail. I am confident that President White will do the right thing and if successful donate all of his winnings back to the Society. Second, I am going to allocate an additional five chances to Secretary Nicolas. This is because he effectively served as President White's lobbyist. Because of the additional fees paid to me by Secretary Nicolas I was able to provide the nuts, money, and poker chips now before you. Besides, Secretary Nicolas is family and this only seems fair. Third, I am going to grant an additional five tokens to Judge Adams, my co-presenter tonight who had

inside knowledge of tonight's topic and did not share this information. And fourth, I have allowed an additional ten tokens for me. After all, I worked hard on this paper and this only seems fair. (And if you have quickly done the math, you realize that you only have a 60% success rate. This means that approximately 40% of the chances have already been taken off the table through back room negotiations and before this opportunity ever became public.)

Lottery drawing is held and lucky winner is----------

And the lucky winner decides Vegas or cash?

And if cash, which table do you trust to manage your money?

As we now distribute the $1,000,000, President White advises me that unfortunately the stock was invested during the eighteen months the stock market dropped over 50%. President White also notes that taxes must be paid since it costs a great deal to maintain the high culinary standards to which we have become accustomed at Athenaeum Society meetings. This debit totals 21% (15% Federal capital gains tax and 6% Kentucky state income tax). After such adjustments are made the actual proceeds to our lucky winner is only $392,657.

Now speaking on behalf of all organized societies around the world, I sincerely thank each member for your willingness to assume the financial risk (often with borrowed funds) to accumulate the initial $1,000,000 of investable assets. And until next month, despite what even the smartest quant may recommend, let us always remember to rely upon our common sense, because **". . . if it sounds too good to be true, it probably is!"**

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