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Buyer Beware! Wall Street Discovers Quantum Computing

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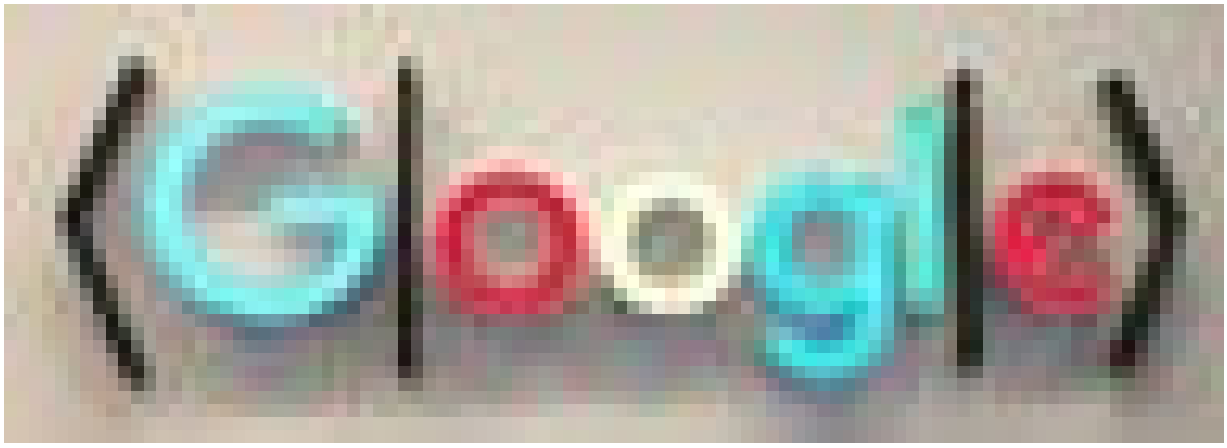

Google Quantum Computing GOOGLE

Wall Street and most investors will never be up to the task.

It's a maxim that sexy sells on Wall Street. This year we have seen tons of coverage on bitcoin, space travel, blockchain, gentech, meme stocks—even the prospect of human drone transport. New shiny objects tend to attract a certain breed of investors and that's not necessarily a bad thing. Wall Street's sell side is eager to profit from nascent investment ideas by throwing lots of analytic and sales horsepower behind the new exciting industries. "Early adopter" clients are quick to follow and the word about new investment opportunities spreads like a contagion.

This is great when the industries or inventions are uncomplicated, and don't require advanced degrees to understand. But when the basic concepts of a product are beyond even analysts' comprehensions, how can a private client expect to understand the concept? These issues have been present throughout time—think of the first classical computers, cell phones, the internet and other exciting industries over time. However, the onset of recent industries places additional burden on the investor to do more heavy lifting to understand things. At least that's the expectation. Investors are beginning to take shortcuts with understanding things like cryptocurrencies, blockchain and genetic engineering. Many invest even though they know very little about "how the sausage is made."

No new industry is more prominent yet incomprehensible than quantum computing. These computers will be super-fast and solve all kinds of problems heretofore considered unsolvable. I do believe this is a real technology with a demonstrated, scientific foundation and I am excited that the technology is very achievable. However, from an investment perspective it's a disaster waiting to happen.

Unless you have a solid undergraduate and graduate background education in physics, you will never truly understand the basics. I state this with much confidence since I myself have spent many years studying physics and

quantum mechanics through graduate level. Even a “recovering physics major” like me will tell you it’s a real bear.

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Quantum mechanics is not intuitive at all. It is far less intuitive than relativity for that matter. The math is daunting. The hardest part is accepting basic “axioms” the theory proposes—with no rationality or physical intuition. As one progresses up the quantum mechanical ladder, the math becomes more intractable and the logic more recondite. There are many books written for the non-specialist layperson on quantum mechanics, but please don’t bother. My favorite physics professor once lectured us never to read laypersons’ books about physics. The reason? Such works oversimplify, distort, and lead to terrible misconceptions that promote a deadly sense of self-confidence about a topic. (I recall he even cited the book *Relativity for the Millions* as an excellent example of a poor attempt to educate the masses on a tough topic. The book was written when relativity had entered into the public eye and created a frenzy of curiosity. Einstein was a public figure at the time and the press loved him.)

Predictably, we see many well-intentioned attempts to teach us about quantum computing and how it will revolutionize society. Science writers enthusiastically describe “quibits” and “quantum supremacy” in deceptively readable missives. They skip over about 30 years of development in quantum mechanics and jump to the present development of the computers, and ways to invest. I think it’s dangerous.

I don't have much faith that Wall Street analysts will do any better in explaining things either. "What about the physics and math majors that have defected to Wall Street?" you may ask. They are usually quants—coding computers with the hope of understanding how we capricious investors tick, so that they can make money from our assumed-predictable behavior. Even they don't possess the impossible skills to teach the science without the math.

I do believe that the people working on the quantum hardware of the future know what they are doing. Quantum engineers are very talented and are quietly competing to make the first workable versions of these super-fast machines. These engineers work at big companies like Google and Amazon. When researching these industrial teams, I feel like I belong to a secret society. For example, when I first saw Google's quantum computing logo (pictured above), I wondered how many got the connection.

The logo might seem as trivial as a doodle, but it is sort of a hidden joke. It borrows the difficult "Bra-Ket" notation developed by Paul Dirac to perform advanced quantum mechanics calculations. I wonder how many analysts or private investors got that joke? One might even postulate that, if you missed the joke, you're not ready to invest!

If I've scared you into thinking that understanding quantum computers is a daunting task—it is. But don't be totally discouraged. Is there still a way to proceed with learning about quantum computing, and possibly investing in the field? Let me offer these parting guide points.

Option One: *Leave it to the experts*. I don't mean Wall Street analysts, but consider instead the companies that are well-known in other areas and have made serious commitments to building quantum computing divisions. **Google** (GOOG), **Amazon** (AMZN) and **Honeywell** (HON) are hard at work in the race to create practical quantum computers. If you presently own these stocks for other reasons, be aware that you are already

secondarily invested in the field. But such exposure is very diluted. I don't expect the revenues from this division to be meaningful for years.

Option Two: *Play the field*. If you want to own almost all the public stocks out there that have anything to do with the development of quantum computing—hardware, software etc—then your best bet is to own the tiny **Defiance Quantum ETF** (QTUM). The fund tries to index a portfolio of companies that are mostly tied to the development of quantum computing and machine learning. It holds about 70 stocks.

Option Three: *Buy single stocks that concentrate on quantum computing*. This is the most aggressive option and requires the most work on your part. If you have a physics background you will have an advantage here. There are two approaches to engineering the computers. Look for companies that are developing room temperature quantum computers. The other approach requires a near-absolute zero (-460 degrees F) environment that I don't think will scale to mass production. The highly speculative **SPAC dMY Technology Group** (DMYI) will merge with IonQ and will become the first publicly traded pure-play quantum computing company. IonQ is prototyping room temperature machines that show the most promise in my opinion. But remember this is the most risky way to gain exposure to the science.

The choice you make is up to you. Or maybe you just want to pass for now. Quantum computing is the most exciting industry today, but as the famous physicist Richard Feynman said about understanding difficult problems: "*The first principle is that you must not fool yourself and you are the easiest person to fool.*"

Disclosure: I own AMZN and DMYI.

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