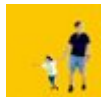


Twitter Thread by Trung Phan ■■



Trung Phan ■■

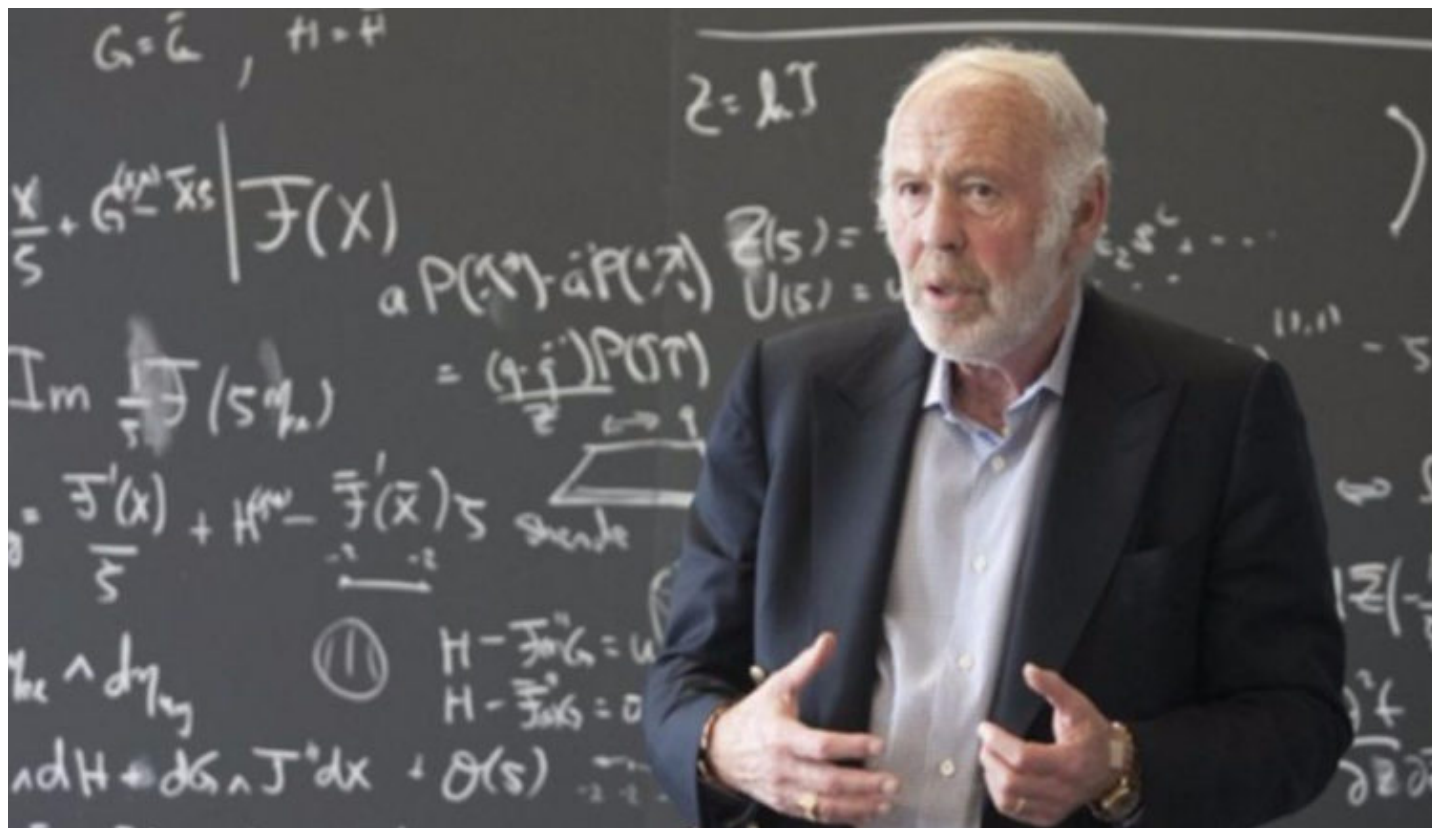
@TrungTPhan



At 40, Jim Simons left a famed math career to launch the most successful hedge fund ever: Renaissance Tech.

Even though it only won 51% of trades, the fund made 66%/yr for 30yrs (Simons worth = \$25B). It's a story of genius, but also of how hard it is to beat markets.

THREAD ■

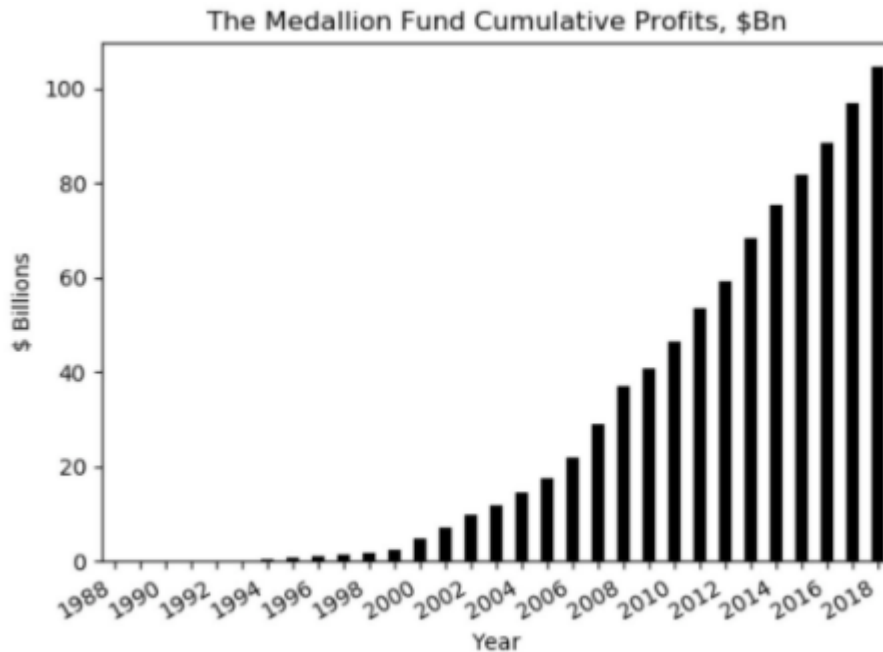


1/ The crown jewel of RenTech is The Medallion Fund (launched in 1988).

■■ From 1988-2018, it posted a return of 66%/yr (39% after fees)

■■ \$1 invested in 1988 is now worth \$14m+

■■ Cumulative profit = \$100B+ even with an avg. fund size of only \$4.5B



2/ Before creating what Bloomberg calls the “greatest money-making machine ever”, Simons was a legendary mathematician.

Jim Simons career before Renaissance Technologies

1938: Born in Newton, Massachusetts

1958: At 20, graduates from MIT (Bachelors, Math)

1961: At 23, graduates from Berkeley (PhD, Math)

1964-1968: Works as a code breaker for the NSA (specifically the Institute for Defense Analyses)

1976: Winner of the Oswald Veblen Prize for Geometry

1968-1978: Chair of the Math Department, Stony Brook University

3/ While at Stony Brook, Simons started trading commodities (with money staked by former MIT classmates).

The side investing was good enough that Simons -- also going through a divorce -- decided to leave academia and launch his own money management firm in 1978: Monometrics.

4/ At the time, there were 2 main investment approaches:

■ ■ Fundamental (understanding and forecasting an asset based on key drivers)

■ ■ Technical analysis (studying price charts)

Simons' strategy was to place a "fundamental lens" on currencies (eg. supply and demand).

5/ While Monometrics found moderate success, Simons called the emotional swings of day-trading "gut-wrenching".

He wanted something more systematic and set out to create a 3rd approach: using complex math models to find signals that predicted price movements.

6/ Simons, a former codebreaker, said: "There are patterns in the market, I know we can find them."

The job wasn't for MBAs. It was for PHDs and scientists.

His first hires were former colleagues from Stony Brook and NSA. In 1982, he renamed the firm Renaissance Technologies.

7/ It took years, but they created a 3-step process to find "statistically significant moneymaking strategies" (AKA signals):

- 1■ Find an anomalous pattern in historic pricing data
- 2■ Be statistically significant, non-random and consistent over time
- 3■ Be somewhat explainable

8/ These signals were called "tradeable effects". While many are now common in quant funds, RenTech did them first and better:

RenTech Trading Themes

Mean-Reversion: Prices tend to revert after moves higher or lower (one RenTech employee says "we make money from how others react to prices").

Trending: RenTech accurately predicted how long an investment would keep moving in a trend (whether up or down).

Economic Releases: Prices for some assets fell right before and gained right after an economic release (e.g., labor stats).

Seasonality: Monday's price action was similar to Friday's while Tuesday's saw a reversion to previous trends.

Trader Habits: Commodity traders would sell positions before the weekend so they wouldn't hold an asset if any news happened on weekends.

9/ In 1988, the single trading model -- it would remain *one* model -- officially became The Medallion Fund (named after one of Simon's math awards).

The 1st fund was \$20m. Early returns were OK...

1988: +16%

1989: +1%

...but then:

1990: +78%

1991: +54%

1992: +47%

10/ By 1993, Simons stopped accepting outside money to The Medallion Fund.

He also jacked up the fees for investors, including employees.

Basically everyone agreed to the new terms:

The Medallion Fund Fee Change in 1993

BEFORE

5% management fee

20% performance fee

AFTER

5% management fee

44% performance fee

11/ At the same time, Simons made personnel moves that would define RenTech for decades.

He hired a number of scientists and PHDs from IBM's Thomas Watson Research Centre.

Its speech recognition unit yielded RenTech's future Co-CEOs: linguists Rob Mercer and Peter Brown.

12/ As an IBM colleague observed "speech recognition and translation are the intersection of math and computer science."

Mercer and Brown actually pitched IBM to apply computational stats to manage its \$28B pension.

IBM said "no" and they (along with others) joined Simons.

13/ The IBM move opened up the world of tradable assets. To that point, Medallion had notched near all gains on currency/commodity futures.

After bringing in algorithm and coding skills from IBM, it added 1000s of equities to its model, allowing the fund to scale up in size.

14/ The fund never got too big, though.

The short-term nature of its strategies limits how much money can be deployed.

Today, the fund is capped at ~\$10B with annual profit distributions to partners (now restricted to its 300+ employees...1/3rd are PHDs).

15/ The capped fund size and the fact that the money barely compounds makes the total cash generated — \$100B+ profits — all the more remarkable.

Net of its massive 5/44 fees, the 1988-2018 annualized return for Medallion is a crazy 39% (vs. crazier gross return of 66%).

Investor	Key Fund/Vehicle	Period	Annualized Returns*
Jim Simons	Medallion Fund	1988–2018	39.1%
George Soros	Quantum Fund	1969–2000	32%*
Steven Cohen	SAC	1992–2003	30%
Peter Lynch	Magellan Fund	1977–1990	29%
Warren Buffett	Berkshire Hathaway	1965–2018	20.5%*
Ray Dalio	Pure Alpha	1991–2018	12%

From Gregory Zuckerman's "The Man Who Solved The Markets"

16/ Interestingly, the Fund only won 50.75% of its trades.

An army of top PHDs are basically a coin flip. Markets are hard AF (most should buy and hold).

Per Mercer: "We're right 50.75% of the time . . . but we're 100% right 50.75% of the time. You can make billions that way."

17/ How was The Medallion Fund able to pull it off?

Let's break down 9 reasons:

- ■ Simons the manager
- ■ Culture for top talent
- ■ Never override the computer
- ■ Data edge
- ■ Great execution
- ■ “Don't ask why”
- ■ Stealth trading
- ■ Extreme diversification
- ■ Leverage

18/ SIMONS THE MANAGER

From his Stony Brook U. days, Simons has long experience managing intellectual egos.

His academic credentials and trading chops earn universal respect.

Per Bloomberg: Simons is the “benevolent father figure” that inspired “super nerds to stick together.”

19/ CULTURE FOR TOP TALENT

A big part of Simons' job was creating a place for top scientists to want to work:

Jim Simons on RenTech's “Culture”

“The model has been first hire the smartest people you possibly can. I think we have the top scientists in their fields [astronomy, physics, math]. And then, work collaboratively. We let everyone know what everyone else is doing.

Now, some firms that do have these systems, they have little groups of people and they'll get paid according to how [each of their systems] goes up.

We have one system. And once a week, at a research meeting, if someone has something new to present, it gets presented. It gets chewed up and everyone has a chance to look at the code. Anyone can run the code and see what they think.

So it's a very collaborative enterprise, and I think that the best way to accelerate science is people working together. It's a very nice atmosphere. It's fun to work there. People get paid a lot of money, so there's very low turnover.”

20/ NEVER OVERRIDE THE COMPUTER

The driving logic behind RenTech was to create a systematic trading approach that wouldn't be compromised by human emotion.

Medallion performs best during volatile times...because it lets the model run while everyone else is losing their minds.

Jim Simons: “Never override the computer”

“The only rule is that we never override the computer. No one ever comes in any day and says the computer wants to do this and that’s crazy and we shouldn’t do it. You don’t do it because you can’t simulate that, you can’t study the past and wonder whether the boss was gonna come in and change his mind about something. So you just stick with it, and it’s worked.”

21/ DATA EDGE

RenTech’s unofficial motto is “There’s no data like more data.”

Earlier than most, the fund gathered data of all sorts (weather, prices, newspaper blurbs) for its model.

Today, its system ingests 1 terabyte of data a year to improve the trading model.

22/ GREAT EXECUTION

RenTech does 150k-300k small trades a day and holding periods are very short (~2 days).

A key part of the trading model is estimating the exact bet size so as to not adversely impact the trade (RenTech's term for transaction costs is “slippage”).

23/ "DON'T ASK WHY"

RenTech believes that market participants vastly underestimate how many variables drive an asset.

The team rarely offers up hypotheses. Instead, they let the data speak and if a signal works -- even if they don't fully understand why -- they will trade it.

24/ STEALTH TRADING

When RenTech finds a market inefficiency, it goes to great lengths as to not give away the trade:

How Medallion conceals trades

“If Medallion discovered a profitable signal, for example that the dollar rose 0.1% between 9am and 10am, it wouldn't buy when the clock struck nine, potentially signaling to others that a move happened each day at that time. Instead, it spread its buying out throughout the hour in unpredictable ways, to preserve its trading signal. Medallion developed methods of trading some of its strongest signals “to capacity,” as insiders called it, moving prices such that competitors couldn't find them.”

--From Gregory Zuckerman's "The Man Who Solved The Market"

25/ EXTREME DIVERSIFICATION

The move into equities allowed RenTech to trade many more assets (and deploy up to \$10B/yr).

At any one time, The Medallion Fund can have 4k long and 4k short trades.

Such a diversified portfolio reduces overall risk, giving RenTech access to...

26/ LEVERAGE

Having built a trading machine on great data and execution combined with diversification, banks (Deutsche, Barclays) are happy to lend RenTech money.

Medallion typically levers 12.5x (and can get up to 20x). Without leverage, its returns are comparable to S&P 500.

LEVERAGE CAN GREATLY MAGNIFY SMALL RETURNS



27/ Add it all up and the Medallion Fund's returns (1988-2018) are absurd:

- Since 1990, its *worst* year is +32%
- In 24 of the 31 years, it's up at least 50%
- It has three 100%+ return years, all in the worst market conditions: 2000 (+128%), 2007 (+137%) and 2008 (+152%)

Medallion Fund Gross Returns					
Year	Gross Returns	Fund Size (\$M)	Year	Gross Returns	Fund Size (\$M)
1988	16%	\$20	2004	50%	\$5,200
1989	1%	\$20	2005	58%	\$5,200
1990	79%	\$30	2006	84%	\$5,200
1991	54%	\$42	2007	137%	\$5,200
1992	47%	\$74	2008	152%	\$5,200
1993	54%	\$122	2009	75%	\$5,200
1994	93%	\$276	2010	58%	\$10,000
1995	53%	\$462	2011	71%	\$10,000
1996	44%	\$637	2012	57%	\$10,000
1997	32%	\$829	2013	89%	\$10,000
1998	57%	\$1,100	2014	75%	\$9,500
1999	36%	\$1,540	2015	69%	\$9,500
2000	128%	\$1,900	2016	69%	\$9,500
2001	57%	\$3,800	2017	85%	\$10,000
2002	51%	\$5,240	2018	76%	\$10,000
2003	44%	\$5,100			
			AVERAGE	66%	\$4,545

From Gregory Zuckerman's "The Man Who Solved The Market" @TrungTPhan

28/ In 2005, RenTech booted outsiders from Medallion and launched 3 public funds (RIEF, RIDE, RIDGE) with different strategies.

It once managed \$55B+ of public money but after 2020 (worst returns across all 3), \$10B+ has been pulled.

Medallion was fine, though (+76% in 2020).

Renaissance Returns

	2020 (%)	2021 (%)*
RIEF	-19	5.6
RIDA	-31	6.3
RIDGE	-31	2.2
Medallion	76	-
S&P 500 Index	16	12.0

Source: Investor documents, Bloomberg reporting
 Note: 2021 returns through May

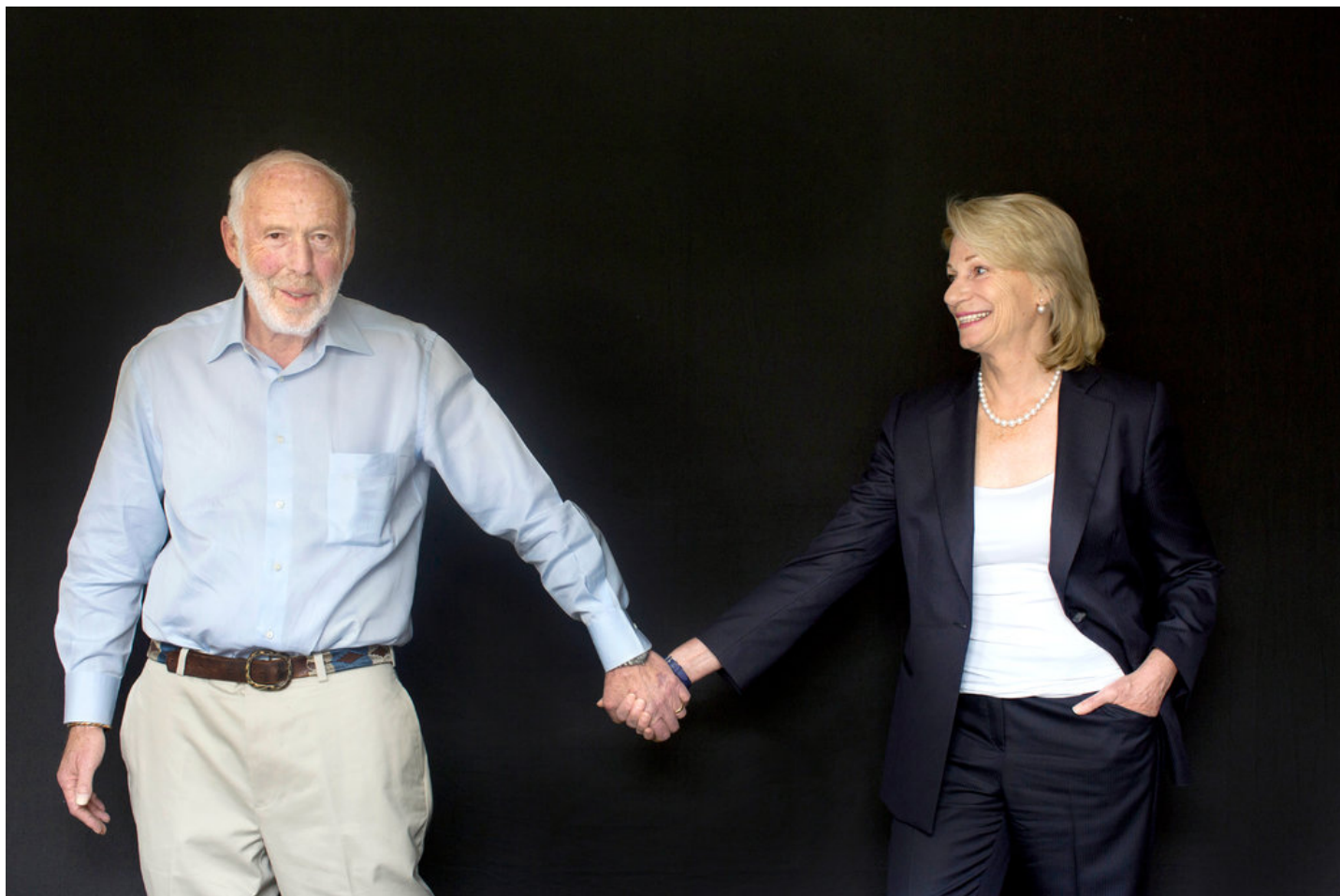
29/ Simons officially retired from RenTech in 2009.

A lifelong Democrat, he had to deal with controversy around Robert Mercer: one of Donald Trump's top donors in 2016.

Mercer stepped down from Renaissance Technologies in 2017 over his politics (Peter Brown remains CEO).

30/ Today, Simons (and his wife Marilyn) are focussed primarily on philanthropy.

Through their Flatiron Institute, he's donating billions to scientific research...in the search for signals, specifically for astrophysics, biology and quantum physics.



31/ For all his success, Simons says "luck plays quite a role in life". He's dealt with very bad personal luck: losing two sons.

Taken all together, Simons laid out his life principles during a 2014 lecture at SF University:

Jim Simons 5 Guiding Principles

1. **Don't run with the pack:** "Try to try to do something that's original."
2. **Collaborate with wonderful partners:** "Find someone that's smarter than you that can leverage your efforts."
3. **Be guided by beauties:** "It's easy to find a nice aesthetic in a math formula, but you can find beauty in many other enterprises. A well-run business is kind of a beautiful thing."
4. **Persistence:** "Something that's really worthwhile can take a lot of time to come to fruition and you ought to have patience. If you believe in something, just stick with it."
5. **Hope for good luck!**

From 2014 lecture at SF University

@TrungTPhan

32/ For other threads like that, def smash the FOLLOW on [@TrungTPhan](#).

Here's one I did after interviewing Stanley Druckenmiller: <https://t.co/uyq3OoVQ1P>

I interviewed trading legend Stanley Druckenmiller, who famously made \$1B shorting the British pound ("trade of the century").

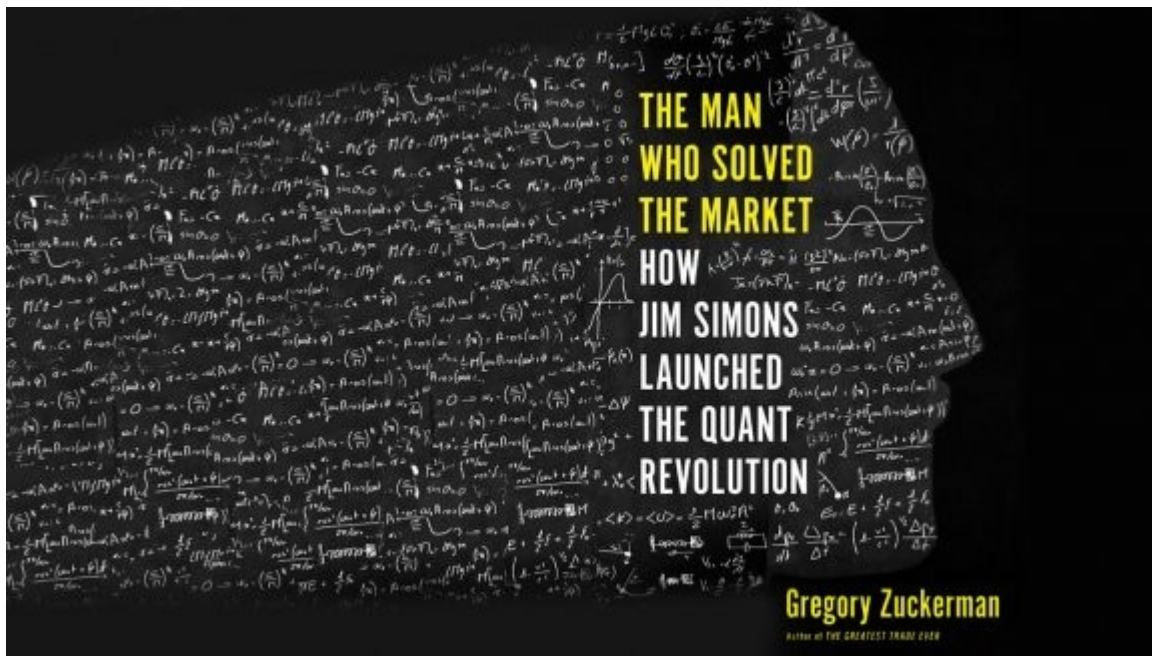
Today worth \$5B, his track record includes a 30-year stretch returning 30%+ per year (and not a single down year).

Here are 10 investing lessons \U0001f9f5

— Trung Phan \U0001f1e8\U0001f1e6 (@TrungTPhan) [May 27, 2021](#)

33/ To dig deeper into the Simons story, here's a Google doc of sources: <https://t.co/Sph5T5dfmn>

The absolute number one resource is Gregory Zuckerman's 2019 book "The Man Who Solved The Market": <https://t.co/BLvgHWJHNU>



34/ Watch like 10 hours of Simons lecture videos...will discuss more on next episode of the Not Investment Advice (NIA) podcast.

Check here: <https://t.co/pVVkOVykh7>



Not Investment Advice

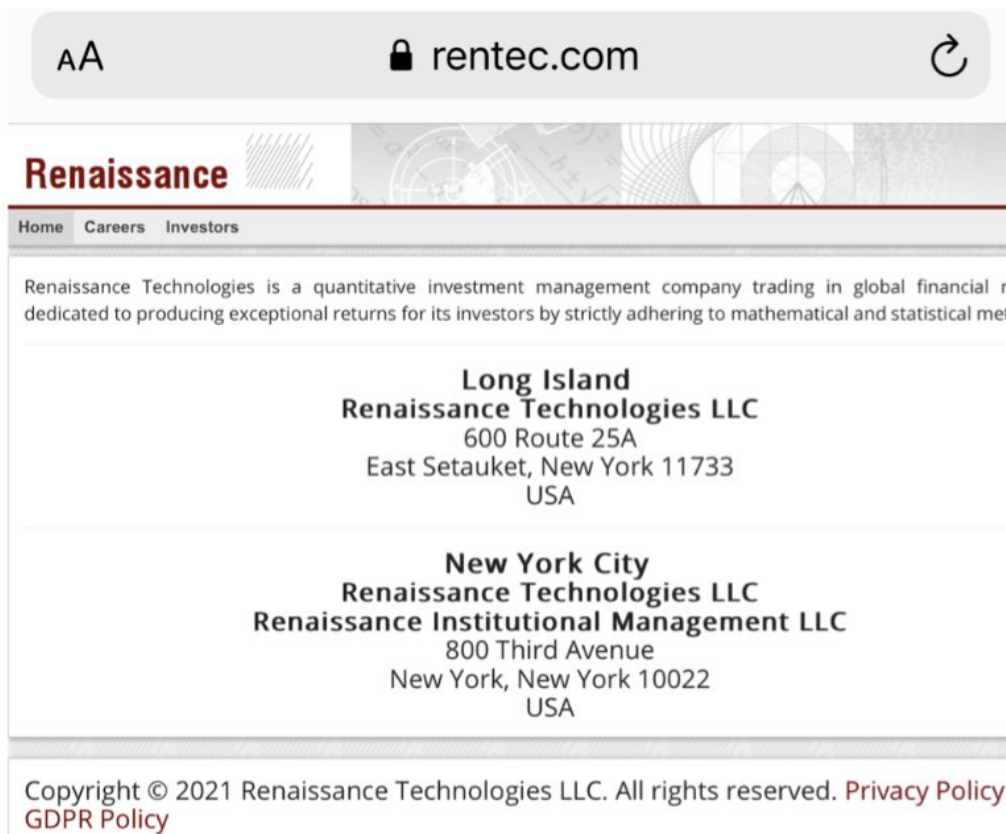
Trung Phan, Jack Butcher + Bilal Zaidi discuss
business, technology + memes.

35/ Of all the Jim Simons videos, fave part was when MIT professor Andrew Lo asked him if his ringing cell phone was a "margin call".



36/ Renaissance Technologies has generated \$100B+ in profits since 1988.

It has spent \$0 on its website, with the worst-looking landing page ever for a company with the word “Technologies” in its name:



37/ Three more nuggets from Simons story:

- Fired from NSA/IDA for telling Newsweek his opposition to the Vietnam War
- Found the Chern–Simons form, a theory widely used in quantum computing
- A chainsmoker who can pay "whatever the fine is" for smoking in his own buildings

the markets. I was mistaken, Simons said: he liked it, and his wife, Marilyn, did not, so he had removed it from their mansion in East Setauket, on Long Island. (Marilyn, who has a Ph.D. in economics, runs the business side of the foundation, and the institute, from two floors below.) An Archimedes screw that he enjoyed fiddling with sat on a table next to a half-filled ashtray. Simons smokes constantly, even in enclosed conference rooms. He pointed out that, whatever the potential fine for doing so is, he can pay it.