

# RPI- Engineering Ethics

## A Personal Journey and then the Case of Theranos

Dr. Jack M. Wilson, President Emeritus and Distinguished Professor of Higher Education, Emerging Technologies, and Innovation

ILinc Founders named Entrepreneurs of the Year by RPI in 2019



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TECHNOLOGY JOURNAL / NET INTEREST

### Software Seeks to Breathe Life Into Corporate Training Classes

*Workers Avoid Long Courses — And Long Trips*

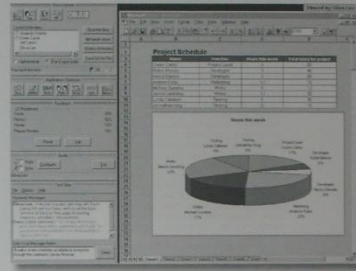
By **REBECCA QUICK**  
*Staff Reporter of The Wall Street Journal*

**T**HE INTERNET promises a lot of miracles, but here's one thing even it can't do: make corporate training classes actually enjoyable. But maybe it can make them a little less painful.

A handful of Web companies are designing software packages that allow workers, sitting at their own desks, to learn everything from basic computer skills to accounting methods from live instructors. With just a computer and an Internet connection, these software applications allow you to dial in to a virtual classroom—along with colleagues from around the globe. The instructor can call on students, lead them through a presentation or throw out a pop quiz to make sure the class is paying attention.

For businesses, the biggest advantage is that cyberbased training cuts out the expense of getting the instructor and students in the same place. It also means that training classes can be pared into shorter sessions and spread out over a number of days or weeks—meaning you don't lose an employee for entire days at a time. Even better, instructors can train employees in multiple locations at one time, allowing for rapid deployments of, say, new software being rolled out to a corporate empire.

The no-travel-required aspect may also be the biggest benefit for the folks who actually have to endure corporate training classes. That means more time at home and less on the road—no more trips to headquarters to learn how to make a spreadsheet. Shorter training sessions are also a plus for



Here is what an instructor using ilinc software sees. The left side displays a list of students logged on, command buttons for turning the floor over to a student, and a dialog box for typing messages to an individual student. The right side is where the teacher guides the students through presentations via an application like a browser.

students: Studies show that retention levels drop (and doodling, no doubt, rises) significantly after two hours.

Of course, some things can't readily be learned over the Internet. Teaching presentation skills, for example, is largely about eye contact, voice projection and body language, skills that don't translate well in the digital realm. And some critics argue that on-line training will never replace the good old-fashioned way of learning.

Still, demand is clearly growing. One interactive software supplier, Centra Software Inc. of Lexington, Mass., says its revenue has doubled each quarter for the past year. And earlier this year, International Business Machines Corp. acquired Data-

Beam Corp., a Lexington, Ky., firm that sells distance-learning software.

Here's how the software packages work: Students go to a special Web site, on either the Internet or a corporate intranet, and sign in. Once on-line, their screens split in two. On the left side are a set of controls for communicating with the instructor and other students, while the right side shows an application such as a browser, whiteboard or word processor.

Anything the instructor does on the right side of the screen automatically appears on the right side of the students' screens. So, if the instructor, say, moves to a Web site, the entire class is automatically dragged along. Speakers and microphones on the computers

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## Jack M. Wilson

UMASS LOWELL PRESIDENT EMERITUS, DISTINGUISHED PROFESSOR OF EMERGING TECHNOLOGIES & INNOVATION, AND FOUNDER OF THE WILSON CENTER FOR ENTREPRENEURSHIP



### Schedule of Events

5:30pm - Reception  
6:00pm - Fireside Chat

**TUESDAY, OCTOBER 30**

Limited seating, RSVP by Friday, October 26:

[donahuecenterspeakerseries\\_oct30.eventbrite.com](http://donahuecenterspeakerseries_oct30.eventbrite.com)  
UCC Moloney Hall - 220 Pawtucket Street, Lowell, MA  
**5:30-7:00 PM**

# A personal journey

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- Began career as a research physicist
- Research required high performance computing
- Became an Officer of the American Institute of Physics, the American Physical Society, and the American Association of Physics Teachers.
  - Was named a Fellow of both APS and AAPT.
- Continued as Professor of Physics but also became IBM Consulting Scholar
- Became interested in
  - why are students not learning about this?
  - How can this help learning?
  - Restructuring physics and engineering ed.
  - Computing Communication Cognition -> The Studio Classroom

# The RPI part of the Journey

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- Became Founding Director of the Anderson Center at RPI to help lead a transformation of Science and Engineering Education at RPI and Nationwide.
- Created Studio classes in Math Science, and engineering
  - Hands on, heavy computer based, light on lecture.
- Won the Pew Prize, Boeing Prize, Theodore Hesburgh Award, and many other national awards for our work at RPI.
- Received \$8.8 million grant from Pew Charitable Trust to form the Center for Academic Transformation and assist other Universities in making the transformation.
- AT RPI, I became the Undergraduate Dean, the Graduate Dean, and then the Dean of Faculty and the interim Provost.
- Began to develop technologies for online education as part of my research and founded the ILinc Corporation.
- Became the **J Erik Jonson Distinguished Professor of Physics Engineering Science, Information Technology, and Management.**

# IInc: The Research:

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- It all began with an idea, and that idea eventually became a research project.
- In the late 80's and early 90's, my scientific colleagues and I were working on the application of computing and communication technologies to science and engineering education.
  - After producing several multimedia projects, I turned my attention to the management of large quantities of educational materials on networks.
    - The early focus was on the modularization of materials and the ability to store and retrieve those modules in an object oriented fashion.
- In order to fund my research I had obtained research grants from the
  - National Science Foundation (NSF),
  - the Dept. of Ed. Fund for the Improvement of Post-Secondary Education,
  - The Research Corporation for Scientific Advancement,
  - the Annenberg/CPB Foundation,
  - The Sloan Foundation,
  - the AT&T Foundation,
  - Lucent Technologies,
  - The Defense Advanced Research Projects Agency (ARPA), and the IBM Corporation.

# IInc: The Idea. The Research

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- Managing learning on networks
- Consulting with IBM, AT&T, GTE, Boeing, NeXT, Microsoft, Intel, etc
- I had served as an IBM Consulting Scholar and was a frequent speaker at conferences on multimedia on networks.
  - At one point I was invited to present my vision of the future of networked multimedia education to a group of executives that included several key executives from AT&T. That speech led to an invitation to Bell Laboratories to discuss potential cooperation and to present my vision to a broader and more technical audience.
- Apparently the speech was a great hit with the audience, because the AT&T Executives asked me to create a prototype of the vision -in partial collaboration with scientists from Bell Laboratories
- Joint Venture between AT&T Bell Labs and RPI
  - WorldWorx product released
- New technology releases allow a better idea.

# ILinc: The Opportunity

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- Propose a significantly enhanced and advanced version to AT&T
  - AT&T declines
  - But Bell Labs excited!
- Research continues in Wilson's Lab
- Design and Manufacturing Learning Environment
- Degerhan Usluel, MBA student, BSEE, former entrepreneur
- Degerhan recruits Mark Bernstein, former CA "TopGun."
- They want to start company and want Wilson to lead it.
- Distributed learning environment with multicast video, application sharing, agents to control bandwidth.
  - None of these had been done reliably and internet was not ready.

# The Team: ILinc LearnLinc Founders

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- Degerhan Usluel, Mark Bernstein, Jack Wilson



Chief Technology  
Officer

Vice President  
Marketing

Chairman and CEO

# ILinc: the rest of the story.

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- To make a long story short:
  - We launched the company by bootstrapping with orders for software from IBM, New Corp, Sprint, AT&T, Aetna United Healthcare, and others.
  - Eventually we raised venture capital from
    - Exponential Investors
    - Geocapital Investors
    - Intel Corporation.
  - We grew the company and did a triple reverse merger buying Allan Communications from the Times-Mirror Group and Europe's John Bryce Training. Then we bought Gilat Communications in Israel and sold a controlling interest in ILinc back to Gilat (the reverse).
- It was a \$500 million market cap on NASDAQ in March 2000
- Then the dot-com bust hit.



# On to the University of Massachusetts

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- I left RPI in 2001 to found UMass Online as a Vice President of the University system.
  - UMass Online grew to serve over 80,000 enrollees and bring in over a \$100 million to the university for the support of our programs.
- In 2002, I become Provost.
- In 2003, I became President of the University of Massachusetts
  - Student Enrollment: Up 18%
  - UMass Spending On Financial Aid: Up 267%
  - Research Funding: Up 69%
  - Intellectual Property Income: Up 105%
  - Endowment: Up 247%
  - Total University Budget: Up 87%
  - UMassOnline Revenue: Up 1766%
  - UMassOnline Enrollment: Up 814%
  - SAT/GPA (UMass Amherst): Up 2.6% and 10% respectively
- I also launched the first Massachusetts Public Law School after 150 years of being blocked.
- In 2011, I left the Presidency and returned to being a Distinguished Professor.
- I founded the Wilson Center for Entrepreneurship.

# Theranos and its Founder Elizabeth Holmes From Startup to **Unicorn** to **Unicorpse**

-From prominent entrepreneur to convicted fraudster

Dr. Jack M. Wilson

Distinguished Professor of Higher Education, Emerging Technologies, and Innovation



# Using this case in class each semester since 2012

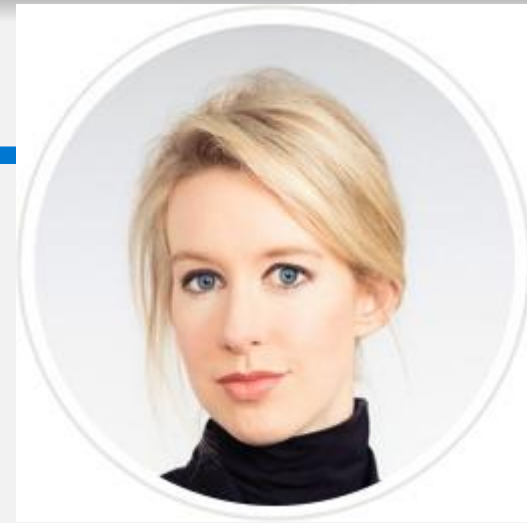
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- Each year the case was radically different.
- Issues:
  - She was a dropout who founded a company. (Jobs, Gates, etc etc)
  - Peter Thiel actually offered students millions to drop out and found a company.
    - The results have not been pretty.
  - She was able to raise incredible amounts of funding on very little tangible prospects.
  - She was able to convince some of our country's most famous politicians, venture capitalists, and industry leaders to become her advisors.
  - She made her company more valuable than her long established and very successful competitors.
  - Theranos became a Unicorn and Holmes became a billionaire.
  - Suspicions arose about the effectiveness of her technology.
  - Suspicions arose about the truthfulness of her statements.
  - Theranos became a Unicorpse and Holmes became a pauper.
  - Holmes was convicted of fraud in 2022.
  - Do they treat women more harshly?



# Elizabeth Holmes

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- Majoring in Chemical Engineering at Stanford,
- Dropped out in 2003 at 19 to found Theranos.
- The idea: a medical laboratory on a chip.  
The chip could do hundreds of tests, quickly and inexpensively on one drop of blood.
- In 2015 Forbes estimated her worth at \$4.7 Billion
  - the worlds youngest female self-made billionaire.
  - <https://www.forbes.com/sites/matthewherper/2016/06/01/from-4-5-billion-to-nothing-forbes-revises-estimated-net-worth-of-theranos-founder-elizabeth-holmes/#1ea42ef33633>
- She pioneered offering tests directly to consumers.
- Theranos was privately owned and she held about 50% of the company.
  - Investors included Draper Fisher Jurvetson, ATA Ventures, Tako Ventures, Continental Properties Inc., and Larry Ellison, CEO of Oracle.
  - Advisors included Henry Kissinger and George Schultz -2 former Sec. of State.
  - \$16 million in two rounds of initial fundraising
  - \$28.5 million in a third round in 2006.
  - \$45 million from a single unnamed investor
  - total funding more than \$70 million

# Charismatic and “Downright entrancing”

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- “NPR's Bobby Allyn, who has been covering the case, offered some insight into how Holmes was able to convince such accomplished people to back her company, calling her "famously charismatic" and noting that many people found her "downright entrancing." She wore a black turtleneck like her idol Steve Jobs, spoke confidently, surrounded herself with credible people and refused to answer probing questions about how her technology worked under the guise of protecting trade secrets.”
- "I saw her every day for many weeks, and she has an aura about her," he told Morning Edition. "Every time she would walk by I would feel it.“”
  - <https://www.npr.org/live-updates/morning-edition-2022-01-04>

# Valuing a start-up company –The Unicorn

- The fable of the unicorn: A much-hyped medical startup is suddenly plagued with doubts;”
  - The Economist; Oct 31, 2015
  - <http://www.economist.com/news/business/21677192-fable-unicorn-theranos-much-hyped-medical-startup-plagued-doubts>

“Yet in other ways Theranos evokes a central theme in today’s tech industry: startups which promise to disrupt lucrative businesses and become valued on the basis of fantasies about their potential, rather than present reality. Investors are so keen to get a piece of any sexy-sounding startup that they lap up entrepreneurs’ hype—and anyone who asks awkward questions risks being cut out of the funding round in favour of someone more trusting.”

“All this helps to explain the inflation of valuations among unlisted technology companies. Today(2015) there are 142 **unicorns**, more than three times as many as in 2013. Many of them are growing quickly. But in terms of reaching profitability, they are often far behind the stock market-listed competitors they are seeking to displace, and thus are burning through cash. Theranos, for example, is not believed to have any significant revenues or profits, yet it is valued about as highly as Quest Diagnostics, a listed laboratory company, which last year achieved \$7.4 billion in revenues and nearly \$600m in net profits.”

“Many unicorns have been insulated from scrutiny, because they have no obligation to publish figures or provide progress reports on their technology. Not having to worry about a fluctuating share price frees their founders to think long-term, but also makes it easier for them to brush aside searching questions. However, in time Silicon Valley’s growing herd of fabled creatures will have their encounter with reality. If they do not live up to their promise, their valuations will slump, either at their next funding round or when they finally go public. Many vials of blood may spill.”

# Short Digression

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- Today Unicorns number over a thousand with over a hundred in the US.
  - Do we have a problem? Or an exciting opportunity?
- Recently, investors have created a new form of going public called the Special Purpose Acquisition Company (SPAC).
  - SPACs raise billions of dollars with a vague promise that they intend to acquire (unnamed and undescribed) companies that will do great things.
  - When they do acquire companies they are not required to do the same due diligence that would be demanded of those companies doing an IPO.
  - Do we have a problem or do we have an opportunity?
- The hype about Crypto Currencies and Blockchain.
  - Bitcoin and other crypto-currencies are not backed by tangible assets or by “the full faith and credit” of any large stable country.
  - The value is determined by what someone is willing to pay for this intangible asset.
  - Is this just one more example of “the greater fool theory?”
    - There is always a greater fool who will pay more than I did –until there is not.
  - Do we have a problem or do we have an opportunity.?

# Competitors and Partners

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- The dynamic duo, LabCorp and Quest, own the market between them
  - LabCorp –public \$12 billion company
  - Quest –public \$10 billion company
  - Each offer 3000-4000 tests to Theranos 250 and heading for 1000.
  - Some investors questioned Theranos \$9 billion valuation in a private placement.
- Early Partners
  - Pfizer -use Theranos for clinical trial testing
  - GlaxoSmithKline -ditto
  - Cleveland Clinic –providing testing services for them
  - Walgreens –Arizona has legalized direct to consumer sales, and Theranos was in 40 branches as a pilot.



# Problems (2015)

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- “Elizabeth Holmes, a 31-year-old Stanford dropout who became a billionaire by starting the blood testing laboratory Theranos, is now waging a public battle to defend her reputation and that of her closely watched Silicon Valley company.”
- “Her campaign began shortly after two [articles published in The Wall Street Journal](#) last week (October 2015) questioned the accuracy of the company’s blood tests and the extent to which Theranos is using unique technology.”
  - [http://www.nytimes.com/2015/10/22/technology/theranos-elizabeth-holmes.html?\\_r=0](http://www.nytimes.com/2015/10/22/technology/theranos-elizabeth-holmes.html?_r=0)
- “The Wall Street Journal article last week, citing an unnamed former senior employee, said that as recently as December, Theranos was routinely performing only about 15 of the more than 200 tests it offered using its proprietary equipment, with the rest being performed on standard machines bought from laboratory equipment vendors.”
- “In its rebuttal, which Theranos plans to post on its website the company said that it performed more than 80 of the tests using its own technology that month. It said that 57 percent of customers in the fourth quarter of last year had blood drawn from a finger prick.”
- “Last week (ed: 2015), the company said that it was not using finger pricks at the moment — except for the herpes test — because it was following F.D.A. advice that its “nanotainer,” the tiny tube that holds the blood from finger pricks, needed regulatory approval as a medical device. The company is now seeking that approval. But Ms. Holmes said that the need to get approval for the tube did not reflect on the accuracy of the machines that analyze the blood samples.”
- Wall Street Journal
  - <http://www.wsj.com/articles/theranos-has-struggled-with-blood-tests-1444881901>
- The fable of the unicorn: A much-hyped medical startup is suddenly plagued with doubts;”
  - The Economist; Oct 31, 2015
  - <http://www.economist.com/news/business/21677192-fable-unicorn-theranos-much-hyped-medical-startup-plagued-doubts>

# The Plot Thickens (2016)

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- “It is bad enough when the Wall Street Journal gets on your case, but when the U.S. Securities and Exchange Commission and the U.S. Attorney’s Office for the Northern District of California start criminal investigations, things are taking a pretty difficult turn for the worse.”
  - <http://www.bloomberg.com/news/articles/2016-04-18/theranos-is-under-investigation-by-sec-u-s-attorney-s-office>
- *“The SEC polices whether disclosures made to investors are accurate. Chair Mary Jo White said last month that the civil agency is paying close attention to so-called unicorn companies --those startups whose valuations exceed \$1 billion --as more technologies become available to raise funding.”*
- *“A redacted inspection report released in March by CMS detailed a long list of shortcomings at the company’s Newark, California, laboratory, including failures to meet quality-control standards, such as not keeping freezers at the temperatures required by manufacturers; lack of proper documentation and missing signatures on paperwork; and unqualified personnel. CMS said in late January that faults at the lab were so severe that they jeopardized patients’ health.”*

*“On April 13, the Wall Street Journal reported that CMS took a further step to propose sanctions that could ban Holmes from the diagnostics business and stop the blood-testing startup from receiving payments from Medicare. Theranos said it has responded to CMS’s concerns and is waiting to hear back from the agency.”*

# The bigger they are the harder they fall.

“From \$4.5 Billion To Nothing: Forbes Revises Estimated Net Worth Of Theranos Founder Elizabeth Holmes”

- Forbes, Matthew Herper , June 21, 2016.

Last year, [Elizabeth Holmes](#) topped the [FORBES list of America's Richest Self-Made Women](#) with a net worth of \$4.5 billion. Today, FORBES is lowering our estimate of her net worth to nothing. Theranos had no comment.

Our estimate of Holmes' wealth is based entirely on her 50% stake in Theranos, the blood-testing company she founded in 2003 with plans of revolutionizing the diagnostic test market. Theranos shares are not traded on any stock market; private investors purchased stakes in 2014 at a price that implied a \$9 billion valuation for the company. Since then, Theranos has been hit with allegations that its tests are inaccurate and is being investigated by an alphabet soup of federal agencies. That, plus new information indicating Theranos' annual revenues are less than \$100 million, has led FORBES to come up with a new, lower estimate of Theranos' value.

FORBES spoke to a dozen venture capitalists, analysts and industry experts and concluded that a more realistic value for Theranos is \$800 million, rather than \$9 billion. That gives the company credit for its intellectual property and the \$724 million that it has raised, according to VC Experts, a venture capital research firm. It also represents a generous multiple of the company's sales, which FORBES learned about from a person familiar with Theranos' finances.

<http://www.forbes.com/sites/matthewherper/2016/06/01/from-4-5-billion-to-nothing-forbes-revises-estimated-net-worth-of-theranos-founder-elizabeth-holmes/#33079b5b2f29>



**Theranos founder's net worth goes from \$4.5 BILLION to nothing**

Last year she was on top of the world, but now Elizabeth Holmes has a net worth of zero, according to a new Forbes estimate.

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# The Search for the Guilty

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- **“Don’t Blame Silicon Valley for Theranos;”** NY Times; Randall Stross; April 27, 2016.
  - [http://www.nytimes.com/2016/04/27/opinion/dont-blame-silicon-valley-for-theranos.html?smid=fb-nytimes&smtyp=cur&\\_r=0](http://www.nytimes.com/2016/04/27/opinion/dont-blame-silicon-valley-for-theranos.html?smid=fb-nytimes&smtyp=cur&_r=0)
- This article gives insight into the hierarchy of venture capital firms and a kind of Silicon Valley definition of “smart money.”
- It also shows how the myth of the **“college dropout entrepreneur”** definitely does not apply in the life sciences.
- *“Part of the company’s appeal was the familiar origin myth of Theranos’s founder, Elizabeth Holmes, who, like Bill Gates and Mark Zuckerberg before her, dropped out of college in order to found her company.”*
- *“That might impress some social media investors, but in life sciences, everyone puts in years of formal study just to earn a seat at the table. For example, at MPM Capital, a venture firm that invests in life sciences, almost every one of its 20 investing directors and partners has either a Ph.D. or M.D., and one has both. Even the general counsel has a Ph.D. in cell, molecular and developmental biology.”*
- *“GV, formerly Google Ventures, has a five-person investment team for Life Science & Health that includes two members with Ph.D.s in bioengineering; another with both an M.D. and a Ph.D. in biophysics; and a partner who, unlike Ms. Holmes, finished at Stanford, then went on to earn an M.D. and M.B.A. at Harvard.”*

# Completely Inadequate Due Diligence

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- Craving Growth, Walgreens Dismissed Its Doubts About Theranos; WSJ; May 25, 2016
  - <http://www.wsj.com/articles/craving-growth-walgreens-dismissed-its-doubts-about-theranos-1464207285>
- *“A Hopkins scientist told her that his researchers needed to put the device in their Baltimore laboratory to verify the technology on Walgreens’ behalf, and Ms. Holmes agreed to provide one, say people familiar with the meeting.”*  
*“It never happened. Walgreens wound up making a deal that included plans to put Theranos blood-testing centers in thousands of its drugstores across the U.S. despite never fully validating the startup’s technology or thoroughly evaluating its capabilities, according to people familiar with the matter.”*
- *“Again and again, Walgreens moved forward anyway, partly because executives worried Theranos would choose a different drugstore chain as partner if they pressed Ms. Holmes too hard.”*

# Banned!

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- In July of 2016, Elizabeth Holmes was banned from the industry.
  - “*Theranos CEO Elizabeth Holmes banned for two years from industry she aimed to transform;*” STAT; Megan Thielking @meggophone; July 8, 2016.
  - <https://www.statnews.com/2016/07/08/theranos-elizabeth-holmes-banned/>
  - “*Federal regulators have banned Theranos founder Elizabeth Holmes from owning or operating a medical laboratory for at least two years.*”
- “*Theranos rose to startup stardom after promising accurate blood test results with just a prick of the finger, but a review of the company’s Newark, Calif., lab last year — following a steady drumbeat of investigative stories from the Wall Street Journal — called its technology into question.*”
- “The **Centers for Medicare and Medicaid Services** first threatened sanctions in March, after pointing out deficiencies that regulators said posed “immediate jeopardy to patient health and safety.””

# Accused of fraud by the SEC. Holmes settles.

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- March 14, 2018, Holmes, former Theranos President Ramesh "Sunny" Balwani and Theranos were charged with "massive fraud" by the U.S. Securities and Exchange Commission. *“Theranos said Holmes agreed to settle and pay a \$500,000 fine and will be barred from serving as a director or officer of a public company for 10 years.”*
- *“The SEC alleged that Theranos raised more than \$700 million from late 2013 to 2015 while ‘deceiving investors by making it appear as if Theranos had successfully developed a commercially-ready portable blood analyzer that could perform a full range of laboratory tests from a small sample of blood.’”*
- *“Innovators who seek to revolutionize and disrupt an industry must tell investors the truth about what their technology can do today, not just what they hope it might do someday.”*
  - CNBC and MSN.com March 14, 2018. <https://www.msn.com/en-us/money/companies/theranos-ceo-and-former-president-charged-with-massive-fraud/ar-BBKdjoP>

# Facing Criminal charges (2018)

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- In June of 2018 she was facing criminal charges.
  - “7 questions to watch after criminal charges filed in the Theranos saga,” Stat; by Rebecca Robbins @rebeccadrobbins and Damian Garde @damiangarde June 18, 2018
    - <https://www.statnews.com/2018/06/18/7-questions-theranos/>
- Federal Prosecutors filed criminal charges against her and the former President, Ramesh “Sunny” Balwani.
- This is further complicated by the fact that the two were reported as lovers until she fired him in 2016.
- She is charged with nine counts of wire fraud and two counts of conspiracy to commit wire fraud –all related to defrauding investors, patients, and doctors. These could be punished by up to 20 years in prison and could lead to millions in fines.
- The company went out of business in August of 2018,



## Book Review:

# The Rise and Fall of Elizabeth Holmes, Silicon Valley's startup queen.

- The Economist May 31, 2018:
  - <https://www.economist.com/books-and-arts/2018/05/31/the-rise-and-fall-of-elizabeth-holmes-silicon-valleys-startup-queen>
- Bad Blood: Secrets and Lies in a Silicon Valley Startup. By John Carreyrou. Knopf; 352 pages; \$27.95. Picador; £20
- “What went wrong? Mr Carreyrou suggests Ms Holmes cared less for patients than about advancing her own interests and personal brand. According to the SEC, she and Sunny Balwani, her deputy (and, says Mr Carreyrou, secretly her boyfriend), misled investors and other corporations about the state of Theranos's technology and sales. These falsehoods lured new partners. For example, Safeway, a grocery chain, and Walgreens, a pharmacy giant, respectively stumped up around \$400m and \$140m to collaborate with Theranos.”
- “She tried to squelch Mr Carreyrou's initial exposé, going so far as to recruit Rupert Murdoch, the *Journal's* proprietor, as an investor. (He put \$125m into Theranos in 2015, a stake that is now worthless.)”
- “A Hollywood film starring Jennifer Lawrence as Ms. Holmes is in the works.”

### Blood money

## The rise and fall of Elizabeth Holmes, Silicon Valley's startup queen

*The saga of Theranos highlights the danger of glorifying novice entrepreneurs*



# Movie Documentary

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- Of course there needs to be an HBO movie documentary.
  - <https://www.youtube.com/watch?v=wtDaP18OGfw>
  - <https://www.hbo.com/documentaries/the-inventor-out-for-blood-in-silicon-valley>

THE  
**I N V E N T O R**  
OUT FOR BLOOD IN SILICON VALLEY



# Pleading impaired mental health?

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- On September 9, 2020 the government prosecution received a requested court order that Holmes be examined by two government appointed mental health experts. This was done in response to a Holmes defense team notification that they would present evidence from Dr Mindy Mechanic, a Cal State Fullerton Professor of Psychology, on an examination of Holmes' mental health as a factor in the case.
  - <https://www.usatoday.com/documents/7205208-Order/>
- This article gives further details
  - <https://medcitynews.com/2020/09/theranos-founder-elizabeth-holmes-may-seek-mental-disease-defense-in-trial-document-shows/>

# The trial begins.

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- The Defense
  - (<https://www.nytimes.com/2021/09/09/business/dealbook/elizabeth-holmes-theranos-trial.html> )
- *“The villain the government just presented is actually a living, breathing human being who did her very best each and every day,” said Lance Wade, Holmes’s lawyer. Wade let the jury know that Holmes was a new mother and pointed out Holmes’s own mother in the audience.*
- *“Trying your hardest and coming up short is not a crime,” Wade said. He argued that Theranos had built some valuable blood-testing technology and that Holmes believed at the time that Theranos tests were accurate.*
- *“You’ll hear that trusting and relying on Mr. Balwani as her primary adviser was one of her mistakes,” Wade said. Holmes’s lawyers have said in filings that Mr. Balwani emotionally and mentally abused Holmes. That, Holmes’s lawyers argue, negated her ability to intentionally deceive investors.*

# Do women entrepreneurs face harsher treatment than men?

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- The Elizabeth Holmes Trial Is a Wake-Up Call for Sexism in Tech - The New York Times
  - <https://www.nytimes.com/2021/09/15/opinion/elizabeth-holmes-trial-sexism.html>
- *“Every announcement confirms what those of us who have spoken up have known for a while: Tech investors generally don’t care about allegations of fraud, harassment, or discrimination, especially if they can profit from it.”*
- *“She should be held accountable for her actions as chief executive of Theranos. And it can be sexist to hold her accountable for alleged serious wrongdoing and not hold an array of men accountable for reports of wrongdoing or bad judgment.”*
- *“Questionable, unethical, even dangerous behavior has run rampant in the male-dominated world of tech start-ups. Though never charged with crimes, WeWork’s Adam Neumann and Uber’s Travis Kalanick hyped their way into raising over \$10 billion for their companies, claiming they would disrupt their stagnant, tired industries. Remember the accusations of harassment, privacy violations, price gouging, misleading advertising and any of the other dozens of scandals at Uber? How about the genocide incited on Facebook in Myanmar, or its engagement-centric approach that led to the proliferation of anti-vaccination propaganda on the platform? Neither Mr. Kalanick nor Mark Zuckerberg has faced any significant legal consequences. Meanwhile, a Tesla employee reportedly described part of a Tesla manufacturing plant as a predator zone for women.”*
  - [more](#)

# Convicted

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- And on January 3, 2022 she was convicted.
- *“Holmes was convicted of three counts of wire fraud and one count of conspiracy to commit wire fraud for lying to investors about devices developed by Theranos.”*  
*“She was found not guilty on four other fraud-related charges connected to allegations that she intentionally deceived patients who received faulty results from Theranos tests offered at Walgreens locations in California and Arizona.”*  
*“The jury could not unanimously agree on three additional fraud charges, which are likely to be cast aside.”*
  - <https://www.npr.org/live-updates/morning-edition-2022-01-04>
- *Theranos’s valuation grew to more than \$9 billion, and Ms. Holmes’s bold talk and wardrobe of black turtlenecks drew comparisons to Apple Inc. co-founder Steve Jobs. She became a Silicon Valley and media star, featured on the cover of magazines.*

*Ms. Holmes, age 37, has largely retreated from public view since the dissolution of her company in 2018. Her trial was postponed several times, because of the Covid-19 pandemic and Ms. Holmes’s pregnancy.*

- <https://www.wsj.com/livecoverage/elizabeth-holmes-trial-theranos>

# Guilty! (But was it fair?)

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Photo: NurPhoto/Getty Images

# Questions:



- Why do you think that private investors once valued Theranos at \$9 B when both competitors were much larger and only valued at \$10 to \$12 billion?
- Why do you think she was able to recruit so many prominent people to be a part of her investors and her board?
- What were some of the potential problems with Theranos strategy of offering test directly to consumers?
- Discuss how media hype and silicon valley legend helped create this mess.
- Elizabeth Holmes dropped out of Stanford after her first year to found Theranos. Do you think that her youth and inexperience contributed to the downfall of Theranos? If so, then how? If not, then why?
- Do you feel that she is being targeted unfairly for the kind of behavior that male entrepreneurs exhibit frequently, but are not held accountable for?



# Readings:

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  - Company: <https://www.theranos.com/company>
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  - A second FDA approval frees Theranos to do a blood test outside lab: <http://fortune.com/tag/theranos/>
  - An Inside Look at the Theranos Direct to Consumer Experience:
    - <http://www.forbes.com/sites/danmunro/2015/07/13/an-inside-look-at-the-theranos-direct-to-consumer-experience/>
  - Holmes is where the Heart Is:
    - <http://www.economist.com/news/business/21656193-theranoss-boss-says-her-mission-extends-beyond-making-fortune-holmes-where-heart>
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  - “The fable of the unicorn: A much-hyped medical startup is suddenly plagued with doubts;”
    - The Economist; Oct 31, 2015
    - <http://www.economist.com/news/business/21677192-fable-unicorn-theranos-much-hyped-medical-startup-plagued-doubts>
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    - Startup hopes to avoid sanctions, but Holmes and No. 2 executive could be forced out of blood-testing business for failing to fix problems; Wall Street Journal; April 13, 2016.
    - <http://www.wsj.com/articles/regulators-propose-banning-theranos-founder-elizabeth-holmes-for-at-least-two-years-1460570869>
  - “Theranos Under Investigation by SEC, U.S. Attorney’s Office;” Bloomberg News; April 18, 2016
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    - <http://www.wsj.com/articles/craving-growth-walgreens-dismissed-its-doubts-about-theranos-1464207285>
  - “After the Theranos Mess, Can We Finally Quit Idolizing Entrepreneurs?;” Fortune; May 27, 2016
    - <http://fortune.com/2016/05/27/quit-idolizing-entrepreneurs/>
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# Readings -continued

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- “Theranos CEO and former president charged with massive fraud;” MSN;
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- Book review in the Economist:
  - <https://www.economist.com/books-and-arts/2018/05/31/the-rise-and-fall-of-elizabeth-holmes-silicon-valleys-startup-queen?fsrc=scn/fb/te/bl/ed/theriseandfallofelizabethholmessiliconvalleysstartupqueenbloodmoney>
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