

Book Reviews

Karl D. Stephan

Secrets and Lies

Bad Blood: Secrets and Lies in a Silicon Valley Startup
By John Carreyrou. Knopf, 2018, 336 pages.

Elizabeth Holmes must have quite a reality-distortion field. That phrase was originally applied to the combination of charisma, persuasion, and charm that Steve Jobs exerted on his Apple coworkers, and reportedly derives from an old *Star Trek* episode. Holmes, who dropped out of Stanford in 2004 at the age of 20 to start a blood-testing-device company called Theranos, idolized Jobs. She even took to wearing a Jobs-style black turtleneck to complement her good looks and deep voice (the last of which turned out to be a carefully cultivated affectation). And for several years afterward, as Theranos acquired venture capital, bright employees, and eventually contracts with major enterprises such as Safeway and Walgreens, Holmes emulated her idol, making the cover of *Fortune* in 2014, giving TED talks, and generally playing the role of precocious Silicon Valley entrepreneur to the hilt.

Holmes had never outgrown a childhood needle phobia that made the conventional blood-drawing process a nightmare for her. While still at Stanford, she conceived the idea of developing a system that would require only a single pinprick's drop of blood to do all the tests that normally required several vials of

blood drawn by a phlebotomist. She wanted blood testing to become so simple and cheap that every local pharmacy could do almost any kind of test right there in the store with only one drop of blood.

Holmes's idea of inventing a cheap, small, fast, reliable blood-testing system to creatively destroy most of the world's existing infrastructure for blood tests ran into big problems early on. But with her chutzpah, persuasiveness, and eventually with the help of outright obfuscations and lies, Holmes kept Theranos going until a *Wall Street Journal* investigative reporter named John Carreyrou responded to a lead by a health-care blogger that something fishy was going on. When Holmes found out what Carreyrou was up to, she fired fusillades of legal threats at him, but Carreyrou kept going with a series of articles that revealed the truth: Theranos was a house of cards built on falsified data, unreliable not-ready-for-prime-time prototypes, and illusions. The house of cards collapsed (Theranos went out of existence in September 2018), and Holmes is now facing criminal indictments. And Carreyrou has written up the whole story in *Bad Blood*.

The title brings to mind Truman Capote's 1966 non-fiction crime novel, *In Cold Blood*, and the comparison is apt. Capote's book about the grisly murder of the Clutter family of Kansas was a suspenseful narrative that kept the reader wondering

just how much worse things could get, and Carreyrou does the same. Few business history or ethics books can be described as page-turners, but Carreyrou earns that accolade through near-exhaustive research, careful selection of telling details and quotes, and a sense for the dramatic scene, of which there are many.

Take for example the critical Theranos board meeting held in 2006, only two years after Holmes quit Stanford to found the firm. By then, she had raised millions of dollars from family friends and Silicon Valley networking, and had made extravagant revenue predictions that her four-member board of seasoned business men decided were unreasonable, once they found out what she was promising to pharmaceutical companies. After discussing among themselves, they decided that it was time for Holmes to step down as CEO and make way for someone with more experience. After all, even Steve Jobs got kicked out of Apple for a while, and he survived. So they called her in to the boardroom to tell her their decision.

In Carreyrou's words, "something extraordinary happened." Holmes brought her reality distortion field along with her, and before two hours were over, with a combination of remorse, promises to behave better, and charm she had convinced the board to keep her on as CEO. Time and again, older men armed

with adverse facts about Theranos decided to confront Holmes, only to have the facts melt away in her physical presence. The men would go away convinced that she was right after all, and that anybody who said otherwise was just being mean or vindictive. And the older the man, the better it seemed to work. For a brief period, the most prominent board members of Theranos were former U.S. Secretaries of State (and nonagenarians) Henry Kissinger and George Shultz.

While Theranos never got as big as the energy-trading company Enron, which grew to over \$100 billion in revenues at the peak of the dot-com boom in 2000 before collapsing among revelations of massive accounting fraud, the story of Elizabeth Holmes and Theranos is similar. Perhaps not coincidentally, Holmes's father worked briefly for Enron shortly before its collapse, which leads one to speculate about the dynastic nature of the modern economy. It's one thing to inherit a lot of dough, but it's something else to carry on a tradition of skating on thin ethical ice from one generation to the next.

In fairness to Holmes, she appeared to have at least equal parts of idealism and greed when she started Theranos. Her family tree included the wealthy Fleischmanns of Fleischmann's Yeast fame, as well as the man who founded both the Cincinnati General Hospital and the University of Cincinnati's medical school back when healthcare was regarded much more as a calling than as a way to make lots of money. But if you subscribe to the theory that most peoples' personalities are basically in place by the age of six, a conversation that a family member recalled with the ten-year-old Elizabeth is telling. When asked what she wanted to do when she grew up, she replied immediately, "I want to be

a billionaire." And these days, the best place to do that is Silicon Valley, where Holmes headed for college and where Theranos was based during its skyrocket-like existence.

Anyone looking for a story full of bad examples for business or engineering ethics classes will prize this book. Should you date somebody at your job who also works for you? For most of Theranos's existence, Holmes's second-in-command was one Ramesh Balwani, known to one and all as "Sunny." A more ironic nickname could not be imagined, as over the years Sunny began to play Lavrentiy Beria to Holmes's Stalin (Beria was Stalin's secret police chief who carried out most of his boss's execution orders). The only heads that rolled at Theranos were figurative ones, but as the stress rose of attempting the impossible and covering it up when it failed, staff turnover rose along with it, sometimes voluntary and just as often involuntary.

Sunny generally delivered the bad news to whoever got escorted out of the building that day. And it also appears that Sunny and Elizabeth became live-in lovers early on, though Sunny was about twenty years older than she was. Not only that, but she kept the relationship a secret as long as she could.

Should you falsify engineering test results? When Theranos ran proficiency tests to comply with the federal agency rules governing clinical laboratories, the Theranos testing devices gave answers that were all over the map, even though the staff were beginning to use them on actual patient samples. By comparison, some commercial blood-testing devices that Theranos obtained from established companies passed the tests. When the scientists running the tests wanted to report the

flawed results of the Theranos devices to the government, Sunny exploded and ordered them to report only the good results from the machines that weren't made by Theranos.

Several people thought this was wrong, including Tyler Shultz, a recent Stanford mechanical-engineering graduate and George Shultz's grandson, who had recently joined the firm.



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When Tyler tried to talk with Holmes about the issue, she referred him to someone who basically told him he was wrong and everything was fine. Then Tyler reached out to a New York State proficiency-testing agency, which confirmed to him that his suspicions were well grounded. Feeling that further discussions with Theranos employees would be fruitless, Tyler went to someone he thought would believe him: his grandfather, who was on the board of directors at the time. This led, not to Tyler's immediate vindication, but to Grandpa George ratting on him to Sunny, who sent Tyler a flaming email that inspired Tyler to resign, despite warnings from his mother that if he quit and caused any trouble, his grandfather said that "he would lose." So much for family ties.

I have described Tyler's dilemma at some length because I think engineering students in particular can identify with a young, idealistic engineer who suddenly finds himself in a moral quagmire, full of alligators that threaten to end his career before it starts. Fortunately, the Iron Curtain of secrecy surrounding Theranos's misdeeds eventually fell, though Holmes

exerted as much legal muscle as she could against Tyler, Carreyrou, and her other perceived enemies while she still clung to the levers of power. As of this writing, full justice for Holmes is still waiting in the wings, as she and Sunny have been indicted by a federal grand jury and the case is currently under trial.

The story of Holmes and Theranos shows how easy it is to cross ethical boundaries in pursuit of success. In a time like ours when everyone is expected to design and use their own moral compass, Holmes is an example of what can happen when genuine talent and tremendous drive are not tempered by an equally strong ethical framework. While Holmes distorted reality for the

outside world, Sunny ran Theranos like a dictator, and the anything-goes environment of Silicon Valley was hospitable to that combination for a while. But when real patients began to get flawed blood-test results from companies such as Walgreens with reputations to uphold, the cards began to fall, and Carreyrou's reports finished the job.

I cannot think of another book in the areas of engineering or business ethics that combines such a wide variety of blatant ethical lapses in the story line with an engaging style that makes it fun to read. But it's fun in a grim way, because the whole enterprise was based on mining the gold that medical care has become in the U.S. It's too late to call for a return to

the time when medicine and healthcare were more of a calling than a profitable career, and there is no space left here to discuss the question of how commercialized healthcare should be. But the fact that one of the most spectacular cases of business fraud in recent memory involved a healthcare company should at least give us pause, and make us think of better ways to provide healthcare while avoiding the traps that Holmes and Sunny fell into — or rather, fashioned for themselves.

Reviewer Information

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A. David Wunsch

Climate Madhouse

The Madhouse Effect: How Climate Change Denial Is Threatening Our Planet, Destroying Our Politics, and Driving Us Crazy

By Michael E. Mann and Tom Toles. New York, NY: Columbia Univ. Press, 2016, 186 pages.

I don't believe it." These were the words of Donald J. Trump, President of the United States, leader of the free world, as he addressed reporters on Monday, November 26, 2018. He was responding to a report issued by his own administration, released on the previous Friday, which was produced by 13 federal agencies and 300 major earth scientists that warned of the growing catastrophe

due to climate change. Trump said that he had read "part" of the report. It was evidently not necessary for him to read the whole document. He had assured the American people earlier that year "Throughout my life, my two greatest assets have been mental stability and being, like(sic), really smart." Putting aside the grammar, his not believing his administration's report must have come as small comfort to residents of California who in the same year experienced the largest wildfire in the state's history. For years, climate scientists have warned of the growing

ferocity and frequency of forest fires because of the earth's warming.

Reading Mann and Toles's book in 2018 is a very different experience from reading it in 2016, the year of its publication, when Barack Obama was president. Michael Mann is a distinguished climate scientist who directs the Earth's Systems Science Center at Pennsylvania State University and who has been prominent in bringing to the American public knowledge of the risks inherent in global warming. Tom Toles, a Pulitzer Prize winning cartoonist for the *Washington Post*, provides lively