EDITORIAL by FABRIZIO PERRETTI*

When Innovations are Fake

What the Theranos case teaches us

Innovating means introducing something that previously didn't exist, and innovations are often based on the ability to imagine a future that is possible. Successful innovations will depend on how much this imagined future actually translates *today* into the reality of *tomorrow*. These simple principles are the basis of startups that will be successful. Before the final test with reality, a prior phase should be faced, that regards the ability of these innovators to aggregate the resources necessary to operate and attempt to implement their projects. Only those who prove they are able to convince the holders of those resources of the reliability of their vision can attempt to translate them into reality. To simplify, we could say that for innovators or startups, there are two tests to pass: a *test on illusions*, that is, the ability to convince others that the future they envisage is possible and not simply a mirage, and a *final reality test*, i.e. when one realizes whether the imagined future has come to be, and if the person has been able to achieve what was hoped for. While the decisive test is the final one, the one in which you have to "show your cards" and find out if you have won or lost, the initial test represents the most delicate one, because

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this is where the decision of what and where to bet is made. It's a phase in which it is hard to orient oneself. To better understand it, a recent example of failure can be useful; not so much to recognize how to make the right decision, but to avoid those which are certainly wrong.

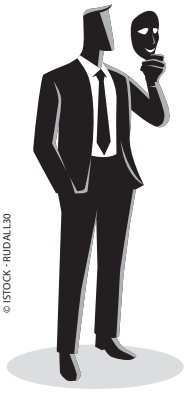
The example is that of Theranos, a startup founded in 2003 – by the 19-year old Elizabeth Holmes – that was officially dissolved in September 2018 after accusations of fraud and other legal cases. The vision on which Theranos was based was to make health care available to end users through the use of a small device similar to a printer, named Edison, able to conduct a series of diagnostic exams using limited quantities of blood. Before the final fall, Theranos underwent a spectacular rise: in December 2004 the company had collected 6 million dollars to fund its activities; at the end of 2010 it had more than 92 million dollars in risk capital; in 2014 it had a value of 9 billion dollars with over 400 million in risk capital. Famous figures joined the board of directors such as George Shultz (known for having held various Cabinet positions, including Secretary of State, under four different Presidents of the United States) or Henry Kissinger (former Secretary of State and National Security Advisor). Media attention grew as a result, with *Fortune and Forbes* covers dedicated to Holmes.

Then, in 2015, the beginning of the end came with investigations by the *Wall Street Journal* (followed by other publications), legal cases, and criminal charges **(1)**. In fact, the Edison blood analyzer produced by Theranos provided highly inaccurate results, not only because it had not been designed or built properly, but above all because the underlying technology was not (yet?) able to make what was promised possible. When Holmes initially presented the idea of collecting large quantities of data from just a few drops of blood obtained from pricking a finger to her medicine professor at Stanford (Holmes never graduated) and to various other expert medicine professors, they all responded that it was impossible. But as Holmes herself stressed, "This is what happens when you work to change things. First, they think you're crazy, then they fight you, and then all of a sudden you change the world". Unlike the experts, many gave her credit, and believed she would change the world. Why?

In part because Elizabeth Holmes epitomized the winning stereotype of some examples of success from the past (Bill Gates, Steve Jobs, Mark Zuckerberg): young, from a prestigious university, without having gotten her degree. That is, someone smart, able to see the future and think outside of the box, with the desire and impatience to bring it to life. In part because Theranos was able to bring famous people into its board of directors, who although they lacked any specific competence in the field, were seen as testifying to the project's reliability and reputation. In part because initial fundraising success also becomes a positive element of identification able to generate trust and an avalanche effect: lines out-

side of a restaurant, the presence of celebrities, etc. Yet these are logics belonging to collective behavior that in theory, should not occur in certain areas, and that in particular, should lead to a much more detailed examination and evaluation of the prospects. That is, the test of illusions should be conducted rigorously and not be based on common stereotypes. The Theranos case also partially reflects the spirit of our times: a mix of baseless storytelling, fake news, celebration of youth genius not because it is genius but because it is young, and willful ignorance, if not open refusal, towards expert judgments based on science and not opinions.

Holmes is right when she says that some innovators who have changed the world were initially considered crazy and that some goals considered impossible were in fact reached. It is possible that in the future we will have a device like Edison able to truly due what Theranos had promised. In that case the question would not be if the future will come to be, but when. The point, though, is to understand how close or far away that future may be, and not to consciously deceive ourselves and others in that regard. Yet this is not a subtlety, but rather the not unimportant difference between science and fantasy, between promise and deception.



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(1) See the book (produced based on the investigation) by J. Carreyrou, Una sola goccia di sangue. Segreti e bugie di una startup nella Silicon Valley, Milan, Mondadori, 2019