Book Notes

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Chapter 1

Innovators

It is a novel written by Walter Isaacson.

1.1 Intro

In the mid-nineteenth century, Thomas Carlyle declared that "the history of the world is but the biography of great men", and Herbert Spencer responded with a theory that emphasized the role of societel forces. When it comes to digital-age innovation, a variety of personal and cultural forces come into play.

The truest creativity of the digital age came from those who were able to connect the arts and sciences. They believed that beauty mattered. "I always thought of myself as a humanities person as a kid, but I liked electronics." Jobs told.

The people who were comfortable at this humanities-technology intersection helped to create the human machine symbiosis that is at the core of this history.

1.2 Foundations

1.2.1 Ada Lovelace (1815-1852)

Ada realized that math was a lovely language, one that describes the harmonies of the universe and can be poetic at times. She remained her father's daughter, with a poetic sensibility that allowed her to view an equation as a brushstroke that painted an aspect of nature's physical splendor.

Ada asked in 1842 essay "What is imagination? It is the Combining faculty. It brings together things, facts, ideas, conceptions, in new, original,

endless, ever-varying combinations... It is that which penetrates into the unseen worlds around us, the worlds of Science."

1.2.2 Charles Babbage (1791-1871)

In the 1640s, Blaise Pascal, the French mathematician and philosopher, cretaed a mechanical calculator to reduce the drudgery of his father's work as a tax supervisor.

Thirty years later, Gottfriend Liebniz, the German mathematician and philosopher,tried to improve upon Pascal's contraption with a 'stepped reckoner' that had the capacity to multiply and divide. But he ran into a problem that would be recurring theme of the digital age. Unlike Pascal, an adroit engineer who could combine scientific theories with mechanical genius, Leibniz had little engineering skill and did not surround himself with those who did. So, like many great theorists who lacked practical collaborators, he was unable to produce reliably working versions of his device.

Babbage knew of the devices of Pascal and Liebniz, but he was trying to do something more complex. Babbage had combined innovations that had cropped up in other fields, a trick of many inventors.

Babbage had already used a metal drum to control how the shafts would turn. But then he studied the automated loom invented in 1801 by a Frenchmen named Joseph-Marie Jacquard, which transformed the silk-weaving industry. He invented a method using cards with holes punched in them to automating the creation of intricate patterns. Using punch cards rather than drums meant that an unlimited number of instructions could be input. In addition, the sequence of tasks could be modified, thus making it easier to devise a general purpose machine that was reprogrammable.

1.2.3 Ada's Notes

In her "Notes" Ada explored four concepts;

- The first was that of a general-purpose machine, one could not only perform a preset task but could be reprogrammed to do a limitless array of tasks.
- The second wasmachine's operations did not need to be limited to math and numbers.
- Third contribution was to figure out in step-by-step detail workings of what we now call a computer program or algorithm.

- Last significant concept that she introduced artificial intelligence: Can machines think? Ada believed not. A century later this assertion would be dubbed "Lady Lovelace Objection" by the computer pioneer Alan Turing.

1.2.4 Summary

Babbage's most significant conceptual leap was that such machines did not have to be set to do only one process, but instead could be programmed and reprogrammed through the use of punch cards.

Ada saw the beauty and significance of that enchanting notion, and she also described an even more exciting idea that derived from it: such machines could process not only numbers but anything that could be notated in symbols.

US Department of Defense named its high-level object-oriented programming language Ada. However, she has also been ridiculed as delusional, flighty and only a minor contributor to the "Notes".