

## **iWoz: Computer Geek to Cult Icon**

By Steve Wozniak with Gina Smith  
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Reviewed by Danielle McLaughlin  
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Suffolk University Law School

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As recently as the 1970s, the idea that a computer could be small or affordable enough for personal use was unthinkable. A “perfect storm” of incremental hardware developments, Steve Wozniak’s electronics genius and Steve Jobs’ business savvy, led to the founding of Apple Computer in 1980 and a technological and social revolution which truly changed the world.

In *iWoz*, Steve Wozniak tells the story of his upbringing, early interest in electronics, and the birth and early life of Apple. Wozniak also sets the record straight about his role in the founding of Apple and the circumstances surrounding his departure. He offers the reader insight into his philosophies on business, technology and the world at large and finally offers some advice and encouragement to inventors with a dream.

Wozniak grew up in the 1960s in what is now known as Silicon Valley, and was introduced to electronics at an early age by his engineer father. An ultra-achiever throughout his schooling, Wozniak mastered Boolean logic by age 11 and wrote his first computer program before he finished high school. Wozniak graduated from UCLA Berkley at age 30; between then and his freshman year at University of Colorado Boulder, he had married twice, been victim to a car accident and plane crash, and revolutionized personal computing by launching the Apple I and Apple II and taking Apple Computer public in what was at the time the biggest IPO in history.

*iWoz* offers the reader insight into Wozniak's unique world view. He is a logician and a pragmatist and sincerely believes that technology is "good and never bad" because it "moves us forward."<sup>1</sup> This view was reflected in the spirit of the Homebrew Computer Club – a group of computer hobbyists he and Steve Jobs joined in 1976 prior to starting Apple. The group believed that computers would be of benefit to humanity; a tool of social justice. Wozniak is a life-long prankster, and *iWoz* fondly documents his earliest prank – meeting President Nixon on behalf of a non-existent school ham radio club – and many others which reveal his child-like sense of fun. Despite being brought up to respect authority, Wozniak's view on the government and other institutions changed irrevocably during the Vietnam era. Wozniak received a high draft number but had his status changed while a student so that he would have to re-enter the draft and risk receiving a lower number. Reading the Pentagon papers and realizing that even the President was subject to the pressures of the 'military-industrial complex' left Wozniak, to this day, cynical of the major institutions in the United States.

Wozniak is an engineer, first and foremost: "I was meant to be an engineer who designs computers, an engineer who writes software, an engineer who tells jokes, and an engineer who teaches other people things."<sup>2</sup> He self-effacingly admits his lack of business acumen, demonstrated in the earliest days of Apple - when he refused to believe they would make any money from the business - and beyond, when even after Apple's incorporation, Wozniak believed the Apple computer's primary consumer would be the home hobbyist. He has always played to his strengths, remaining in engineering roles rather than in upper management. Wozniak holds strong views, however, about how a business should be run. He sees a company as a family where all members take care of each other. This philosophy was shown immediately

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<sup>1</sup> STEVE WOZNIAK WITH GINA SMITH, *iWoz: COMPUTER GEEK TO CULT ICON* 17.

<sup>2</sup> WOZNIAK, *supra* note 1 at 190.

prior to Apple's IPO in 1980, when he launched the 'Woz Plan,' where he allowed any Apple engineer or manager to purchase a block of 2000 shares from him for \$5/share. Apple debuted on NASDAQ at \$22/share; its IPO made more millionaires than any other in history and surpassed Ford Motor Company as the largest IPO of all time.

Wozniak's earliest designs evolved in an era when "computers" took input from punch cards rather than keyboards and output in switches and lights rather than on monitors. However, one night in March of 1975, Wozniak designed the Apple I, comprising of a keyboard, screen and CPU. It was a merger of lessons learned in building video games, his hobby (since high-school) of re-designing existing computers so they could run on the minimum number of chips and his discovery of newly available microprocessor technology. In Wozniak's own words, "it was as if my whole life had been leading up to this point."<sup>3</sup> In fact, Sunday June 29, 1975 was the first time in history anyone had typed a character on a keyboard and seen it show up on the computer screen in front of them.

Wozniak's electronics genius, Steve Job's passion and charisma, and Mark Markkula's venture capital and vision led to the incorporation of Apple Computers in early 1977. Wozniak and Jobs met when the latter was in high school and according to Wozniak, they became fast friends due to a shared love of pranks and electronics. Their first project together was during Jobs' tenure at Atari - a one-player version of the early video game "Pong." A business venture Jobs named "Apple Computer" followed soon after; Jobs proposed that the pair build (for \$20) and sell (for \$40) printed circuit boards to computer hobbyists who could then solder their own chips to the printed circuit board, thus building their own home computers. Within weeks, they had a \$50,000 order. Wozniak was initially reluctant to leave his "job for life" at HP but with some prodding, he joined Jobs and Markkula to focus exclusively on building the Apple

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<sup>3</sup> WOZNIAK, *supra* note 1 at 155.

business. Markkula realized the significance of Wozniak's designs and announced that Apple would be a Fortune 500 Company within two years. He was right.

Wozniak left Apple in 1985, frustrated by its marketing-driven ethos and the diversion of funding and technology from his Apple II team to the newer Apple III and Macintosh projects. Wozniak returned to his beloved 'start up' roots, forming Cloud 9, a company that designed and manufactured universal remote controls (commonplace today but revolutionary for its time). He sold Cloud 9, became a stay at home dad then taught elementary school for ten years. He remains an Apple employee, drawing a salary and representing Apple at computer club meetings.

Wozniak's story is full of near-misses for the computing giants of the 1970's. HP released Wozniak from any proprietary rights to his Apple I design (it was owned by HP under the terms of his employment agreement because he designed it while working for them) and passed up an opportunity to let him work on its personal computing projects despite knowing he had designed both the Apple I and Apple II. Commodore and Atari also declined the opportunity to back Apple in its earliest days. Apple's early success was fuelled by an industry of software programs and hardware devices that sprang up around the Apple II. Apple did not have to do any marketing – the component and software manufacturers did it all. Apple also capitalized on the evolving market for personal computers – from hobbyists to home use to business use. In the late 1970's, within months of the advent of the floppy disk (which made the Apple II faster) and 'Visicalc' – the first spreadsheet program (which was so powerful it could only run on the Apple) businesses were 90% of Apple's customers. By 1980, Apple was the first company to sell one million computers.

In the late 1970's, Wozniak gave his designs for the Apple I and Apple II out to anyone who was interested. After incorporating Apple Computer however, the company established five

parts of a patent for Wozniak's designs, focusing on the incorporation of color into the monitor and his programming for the timing of the Intel DRAM chip used on the circuit boards. This patent became the heart of many law suits to come. Apple initially copyrighted their technology because it was quicker, easier and less costly than patents to outright duplicates. The first major copyright infringement was discovered by Wozniak at a trade show, where Franklin Computer Corp. introduced the Ace 100. Wozniak could tell, upon visual inspection, that the circuit board was an exact replica of the Apple II. Discovery revealed that the Franklin ROM and operating systems were exact copies also. The ensuing law suit contained a question of first impression, and the Third Circuit Court of Appeals held that computer software, including operating systems and system ROMs, could be protected by copyright.<sup>4</sup>

Wozniak is candid about his reasons for writing *iWoz*: numerous books and articles about his life and the Apple story have been written and many contain mischaracterizations or untruths. Wozniak establishes that, contrary to many reports, he did not drop out of college and nor was he thrown out of the University of Colorado for a brilliant but costly printer paper prank. Furthermore, Wozniak was in fact in college when he met Steve Jobs, who was four years his junior and still attending high school (they did not meet when both were in high school). Importantly, he tells readers, he was not 'angry' at Apple when he left the company but that he was dissatisfied with the treatment of his Apple II team who were being starved of resources and equipment due to the focus on the Apple III. Wozniak is also careful to note that he alone designed both the Apple I and Apple II (and their precursors) and that Steve Jobs had no involvement in their design.

The conversational and almost "childish" tone of the book is reflective of Wozniak's playfulness and appears calculated to enable his book to be read, enjoyed and understood by an

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<sup>4</sup> Apple Computer, Inc. v. Franklin Computer Corp., 714 F.2d 1240, 1251 (3d Circ. Ct. App. 1983)

eight year old - or an eighty year old. While his utilization of simple language is helpful to the lay reader with little or no electronics knowledge:

“RAM, short for random-access memory, was a new type of computer storage back in 1970. These are chips whose contents can be accessed in any (i.e., random) order. All computers today have RAM chips inside to store data – not permanently, but while your computer is on and you’re working. When the computer shuts down, the contents of RAM goes away. That’s why you need to save your programs to disk.”<sup>5</sup>

His use of slang is frustrating: “And my mom, she was great to me...she was always really pleasant and funny and interesting and gave us stuff to eat that was special to us.”<sup>6</sup>

Ironically, Wozniak declares his lack of proficiency (and distaste) for writing early in the book: “Well, gosh, when you’re just writing words down, they’re just words – it’s all subjective and it’s hard to tell what the real answer is.”<sup>7</sup>

With Steve Jobs back at the helm of Apple since the mid-1990’s, Wozniak’s place in Apple folklore has arguably taken a back seat. In *iWoz*, Wozniak is generous about Jobs’ initial contribution to Apple and his role as a driving force in its continuing success.<sup>8</sup> He is however careful to point out that the inventions that spurred the computer revolution were his, and his alone. He also clarifies that his relationship with Jobs is no longer a friendship. Rather, he says, they are indelibly tied to one another; bonded by a revolutionary experience. His stories hint at acrimony between the two; Jobs not evenly splitting the commission earned on their first project for Atari; later on, Wozniak did not inform Jobs he was leaving Apple (Jobs found out, like the rest of the world, reading the Wall Street Journal); Jobs then apparently prevented Apple’s plastics provider from doing business with Wozniak’s post-Apple Start up, Cloud 9. Wozniak

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<sup>5</sup> WOZNIAK, *supra* note 1 at 87.

<sup>6</sup> WOZNIAK, *supra* note 1 at 19.

<sup>7</sup> WOZNIAK, *supra* note 1 at 53.

<sup>8</sup> Wozniak writes that Jobs was able to restore loyalty, provide marketing leadership and charisma upon his return to Apple. *Id* at 297.

also emphasizes their different outlooks on life. In what may be a thinly veiled reference to Jobs, Wozniak writes about two men who die on the same day:

“One guy is really successful, and he’s spending all his time running companies, managing them, making sure they are profitable, and making sales goals all the time. And the other guy, all he does is lounge around, doesn’t have much money, really likes to tell jokes and follow gadgets and technology and other things he finds interesting in the world, and he just spends his life laughing.”<sup>9</sup>

Wozniak’s message, beyond telling the Apple story from his perspective, is one of encouragement. He directly addresses the reader/inventor, counseling belief in oneself, the power in working alone, and the necessity in being able to see the world in shades of grey (after all, an inventor can create solutions that have partial value – in between ‘all’ and ‘none’). He also extols the power of logic, simplicity, efficiency and the human need to communicate – the basic values that drive his designs.

*iWoz* tells an interesting story in a manner that the sophisticated reader will likely find simplistic and casual. *iWoz* does, however, offer insight into the character and philosophies of this computing genius and is Wozniak’s opportunity to tell his story in his own way. However, the key elements of his story are told to Jessica Livingstone at <http://www.foundersatwork.com/steve-wozniak.html>. This reviewer suggests this review and the aforementioned interview are sufficient for the reader who wants to familiarize themselves with Steve Wozniak’s role in the personal computing revolution.

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<sup>9</sup> WOZNIAK, *supra* note 1 at 148.