

# Susan Kare: Design Icon

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Susan Kare is best known for designing the distinctive icons, typefaces, and other graphic elements that gave the Apple Macintosh its characteristic—and widely emulated—look and feel. Since then, Kare has spent the last three decades designing user interface elements for many of the leading software and Internet firms. If you have clicked on a desktop icon to save a file or tapped your smartphone screen to launch a mobile app, then you have benefited from Kare's work. This article presents a professional biography of Kare and documents her continuing influence on user interface design.

Graphic designer Susan Kare has been called the “the Betsy Ross of the personal computer,”<sup>1</sup> the “Queen of Look and Feel,”<sup>2</sup> the “Matisse of computer icons,”<sup>3</sup> and the “mother of the Mac trash can.”<sup>4</sup> Indeed, Kare is best known for designing most of the distinctive icons, typefaces, and other graphic elements that gave the Apple Macintosh its characteristic—and widely emulated—look and feel. Since her work on the Mac during the early 1980s, Kare has spent the last three decades designing user interface elements for many of the leading software and Internet firms, from Microsoft and Oracle to Facebook and Pinterest. Kare's work is omnipresent in the digital realm; if you have clicked on an icon to save a file, switched the fonts in a document from Geneva to Monaco, or tapped your smartphone screen to launch a mobile app, then you have benefited from her designs.

Kare is well-known and highly regarded among computer industry insiders and the graphic design community yet largely unknown to the millions of users who encounter her graphic art every day.<sup>5–7</sup> Over the years, Kare's design work has been described episodically in various Steve Jobs biographies, Apple corporate histories, and a handful of newspaper and magazine features.<sup>8–10</sup> More recently, Kare's iconography has been featured in exhibitions and collecting initiatives at the Smithsonian's National Museum of American History, New York's Museum of Modern Art, and the New Mexico Museum of Natural History and Science. However, historians of computing have yet to fully appreciate Kare's career and her impact on the user experience (for instance, she does not appear in standard surveys<sup>11,12</sup>).

This article presents a professional biography of Kare and documents her seminal and continuing contributions to the evolution of graphical user interface (GUI) design. Drawing on contemporary press coverage and a variety of interviews, the article explores Kare's pioneering work on the Apple Macintosh and situates it within the context of earlier GUI design efforts. It also traces the evolution of Kare's post-Apple career over the last 30 years as the adoption of graphical user

interfaces expanded dramatically with the growth of personal computing, the Internet, and mobile applications. Finally, the article sheds light on Kare's academic training, artistic influences, and philosophy of design.

## FROM THE MAIN LINE TO SILICON VALLEY

Susan Kare was born in Ithaca, New York, in 1954 and grew up in Narbeth, Pennsylvania, one of a string of tony suburbs west of Philadelphia along the Pennsylvania Railroad's "Main Line." Kare's father, Morley Richard Kare, was a sensory physiologist and taught at Cornell University and North Carolina State University before settling at the University of Pennsylvania, where he founded the Monell Chemical Senses Center.<sup>13,14</sup> Kare has described her younger self as the "type of kid who always loved art;" she immersed herself in drawings, paintings, and crafts and began to imagine a future career as a fine artist. After graduating from Harriton High School in nearby Rosemont, Kare studied English and fine arts at Mount Holyoke College and spent her summers at home interning with graphic designer Harry Loucks at Philadelphia's Franklin Institute. Kare wrote her undergraduate honors thesis on sculpture, graduated *summa cum laude* from Mount Holyoke in 1975, and elected to pursue graduate studies at New York University (NYU). After writing her doctoral dissertation on "the use of caricature in selected sculptures of Honoré Daumier and Claes Oldenburg," she graduated from NYU with an MA and PhD in fine arts in 1978. Kare's goal was "to be either a fine artist or a teacher."<sup>13,15,16</sup>

Instead, Kare moved to the West Coast in 1979 to work as an assistant curator at the Fine Arts Museums of San Francisco, which oversees the de Young Museum in Golden Gate Park and the Legion of Honor in Lincoln Park. After a few years, Kare sensed that she was not meant to be a curator. "I'd go talk to artists in their studios for exhibitions," she recalled, "but I really wanted to be working in my studio." Kare quit the museum, moved to Palo Alto, set up a studio in her garage, and began working as a sculptor.<sup>17</sup>

In 1982, Kare was working on a commission—"welding a life-size razorback hog" for an Arkansas museum—when she received a phone call from her old Harriton High School classmate, Andy Hertzfeld. Hertzfeld worked at Apple Computer in Cupertino; after serving as a programmer for the wildly successful Apple II, he had been recruited by co-founder Steve Jobs to serve as the lead software architect for Apple's latest product, the Macintosh personal computer. Hertzfeld needed some images and typefaces for the new Macintosh; would Kare be interested in interviewing for a graphic design job?<sup>14,18</sup> Kare recalled:<sup>14</sup>

*By remaining friendly with Andy after high school, I knew he obviously was really interested in computers. He showed me a very rudimentary Macintosh, and mentioned that he needed some graphics for it. He knew I was interested in art and graphics, and that if I got some graph paper I could make small images out of the squares, which he could then transfer onto the computer screen. That sounded to me like a great project.*

There was only one problem: Kare had never worked in computer graphics and she admittedly "didn't know the first thing about designing a typeface." Undaunted, Kare went to the Palo Alto public library and checked out a number of books on typography. "I even brought them to my interview to prove I knew something about type, if anyone asked!" she remembered. "I went into it totally green." Kare aced the interview, and in January 1983, she started a job at Apple designing fonts and icons for the Macintosh; her business card read "Macintosh Artist" (see Figure 1).<sup>14,15,18,19</sup>



Figure 1. Susan Kare, Apple's "Macintosh Artist," relaxes at her desk in 1984. © Norman Seeff.

## GUI DEVELOPMENT BEFORE THE MACINTOSH

"Point, click." As *Wired*'s Steve Silberman has suggested, the "gestures and metaphors of icon-driven computing feel so natural and effortless to us now, it seems strange to recall navigating in the digital world any other way." However, prior to the Mac's debut in 1984, most of our interactions with computers involved black screens, green text, and arcane commands like C: > run Autoexec.bat. Indeed, most casual observers remember the Macintosh as the "first" personal computer to feature windows, icons, a mouse, and pull-down menus. While Kare's Macintosh designs marked a key milestone, they built on two decades of prior research and experimentation with graphical user interfaces.<sup>17,20</sup>

The earliest advances in computer graphics and user interface design occurred during the 1960s. In January 1963, Ivan Sutherland completed his PhD in electrical engineering at the Massachusetts Institute of Technology (MIT). His thesis project, "Sketchpad: A Man-Machine Graphical Communication System," was one of the earliest examples of interactive computer graphics, the first program to utilize a graphical user interface, and the first-ever example of object-oriented software. Sutherland took a faculty position in the computer science department at the University of Utah, and with David Evans, established a "center for excellence in graphical research" under a \$5 million contract with the Department of Defense's Advanced Research Projects Agency (ARPA). Many of Utah's graduate students—including John Warnock (Xerox, Adobe), Jim Clark (Xerox, Silicon Graphics), and Ed Catmull (Industrial Light & Magic, Pixar)—would go on to develop key innovations in graphical user interfaces, computer graphics, and computer-generated animation.<sup>21</sup>

ARPA also funded Douglas Engelbart's Augmentation Research Center at the Stanford Research Institute (SRI), a contract R&D firm near the university campus in the heart of Silicon Valley. At SRI, Engelbart and his colleagues experimented with various improvements in "human computer interaction," such as new input/output modes to replace punched cards and text-based command-line instructions. In December 1968, Engelbart and his colleagues famously showcased SRI's oN-Line System (NLS) at the Fall Joint Computer Conference in San Francisco. In what has been hailed as "The Mother of All Demos," Engelbart demonstrated an early version of the graphical user interface, in which he used a hand-held pointing and selection tool called a

“mouse” to manipulate a combination of graphics, hypertext, and video in multiple on-screen “windows.”<sup>22–25</sup>

Engelbart’s mouse and GUI concepts had been developed in a research setting but were soon adopted and improved by commercial firms, first at Xerox, then later at Apple. Xerox, an East Coast copier company, established its Palo Alto Research Center (PARC) in 1970 to develop a new suite of computer and information technologies to supply “the office of the future.” Xerox set about hiring top talent, including SRI’s Bill English, ARPA program manager Robert Taylor, and a newly minted Utah PhD named Alan Kay.<sup>23,25,26</sup> In 1973, Kay and his colleagues introduced the Xerox Alto, an experimental workstation that incorporated nearly every major feature of today’s personal computers. Unlike the “dumb” terminals that shared time on a central mainframe, the desktop-sized Alto had its own self-contained central processing unit (CPU) and disk storage unit, intended for a single user. The Alto’s bit-mapped GUI featured overlapping windows, pull-down menus, and symbolic icons, like a trash can for deleting files. Users manipulated these features with an improved three-button mouse and enjoyed powerful desktop publishing tools, such as multiple typefaces, cut-copy-paste editing, and what-you-see-is-what-you-get (WYSIWYG) editing and printing.<sup>27</sup> Xerox was unsuccessful in its attempts to commercialize the Alto’s successor, the Xerox Star. While some critics have suggested that Xerox “fumbled the future,” there is no doubting PARC’s crucial influence on personal computing, especially the graphical user interface.<sup>28–30</sup>

Meanwhile, hobbyists Steve Jobs and Steve Wozniak had founded Apple Computer in 1976, shortly after demonstrating their Apple I circuit board at the fabled Homebrew Computer Club. They introduced the popular Apple II in 1977, and by 1979, the startup’s annual sales surpassed \$70 million.<sup>10,31</sup> Xerox executives approached Apple and asked to make a \$1 million pre-IPO investment in the company, hoping for big returns after the firm went public. Jobs agreed on the condition that Xerox “open its kimono” and grant a tour of the PARC skunk works. Over the objections of Adele Goldberg and several other PARC engineers, Jobs and a few Apple lieutenants were given demonstrations of the Xerox Alto on two different visits in December 1979. Years later, Jobs reminisced that the Alto’s graphical user interface was “the best thing I’d ever seen in my life. ... [Within] ten minutes it was obvious to me that all computers would work like this someday.”<sup>32</sup>

Did Jobs “steal” Xerox’s GUI? In short, no, he did not. It would be convenient to draw a straight line from Jobs’s Xerox PARC visits to the Apple Macintosh, but the details of the Mac’s lineage are far more complex.<sup>10,26</sup> Since 1978, Apple had already been at work developing a GUI and mouse for its next model, the Apple Lisa, which debuted in 1983 for \$12,000. Likewise, the Apple Macintosh project, originally led by Jef Raskin, was already underway in 1979 by the time Jobs toured PARC. Raskin, a former computer science professor and PARC researcher, had been lobbying Apple executives to build a low-cost, easy-to-use, GUI-based computer for the masses that would retail for under \$1,500. Raskin had already assembled a talented and cohesive team of developers—including Bill Atkinson, Joanna Hoffman, Brian Howard, Burrell Smith, and Bud Tribble—and work was well underway by January 1981, when Jobs forced out Raskin and took control of the Macintosh project.<sup>18,33</sup> One might easily characterize Xerox as naive and Jobs as a pirate, but it is more accurate to suggest that Jobs’s PARC demonstration validated and kick-started ideas about the GUI already brewing at Apple.

Thus, by the time Kare arrived at Apple in January 1983, her teammates had already been at work on the Macintosh since 1979. She and her teammates, in fact, were trying to build a cheaper, consumer version of a GUI-based personal computer that drew on earlier developments—such as Sutherland’s Sketchpad, Engelbart’s NLS, Kay’s Alto, and Apple’s own Lisa—that had been under development since the mid-1960s. Thus, Kare was not the first icon or typeface designer, but after the Macintosh’s commercial success and cultural impact, she would become the most influential.

## DESIGNING A GUI “FOR THE REST OF US”

When Kare joined Apple in January 1983, Hertzfeld tasked her with designing the icons and typefaces for the Mac’s operating system and applications such as MacPaint. Like the Xerox

Alto and Apple Lisa, the Macintosh featured a bit-mapped display in which each point of light, or pixel, on the screen was individually controlled by a single bit of data. Creating graphics was simply a matter of deciding which bits to turn on and off. Though Kare had little experience in computing, she drew inspiration from her deep knowledge of art history. “Bitmap graphics are like mosaics and needlepoint and other pseudo-digital art forms, all of which I had practiced before going to Apple,” recalled Kare. “I didn’t have any computer experience, but I had experience in graphic design.”<sup>14</sup>

Hertzfeld had not yet coded an application to design the icons onscreen, so he told Kare “to go to the stationery store and get the smallest graph paper I could find and color in the squares to make images.”<sup>15</sup> As instructed, Kare went to the University Art supply store in Palo Alto, picked up a \$2.50 sketchbook, and began experimenting with forms and ideas. In this sketchbook, which was recently acquired by New York’s Museum of Modern Art, we can discern Kare’s design process. Kare began with an idea, metaphor, or command instruction she was trying to represent pictorially; for example, her individual sketchbook pages have titles like “boot,” “jump,” “debug,” “auto indent,” and “danger” (see Figure 2). Kare used a ruler to block out a 32 × 32 square of graph paper; then, using a pencil or colored pens, she filled in (or left blank) those 1,024 miniature squares to create images. Eventually Hertzfeld coded an icon editor for the prototype Mac; using a mouse, Kare toggled the bits on and off, and the application generated the hexadecimal code underlying the grid.<sup>14,34–35</sup> Using these simple drafting tools, Kare began to “master a peculiar sort of minimal pointillism” as she turned “tiny dots on and off to craft instantly understandable visual metaphors for computer commands.”<sup>2</sup>

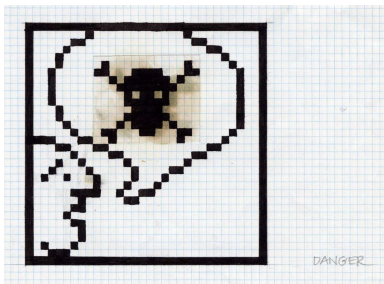


Figure 2. An original sketch for a “Danger” icon from Susan Kare’s sketchbook, about 1983. Courtesy of Susan Kare.

When Apple rolled out the Macintosh in 1984, its advertising firm Chiat/Day called it “the computer for the rest of us,” and in many ways, Kare was designing for someone like herself. As Steve Silberman has written, “The genius of Steve Jobs and the Macintosh team was recognizing a huge untapped market for home computing among artists, musicians, writers, and other creative folk who might never have cared enough to master the arcane complexities of a command-line interface.” Thus, the Mac development team cherished the input of a “creative” like Kare, who represented a “typical customer” who might be attracted by the Mac’s intuitive interface.<sup>14,17,36</sup> Because she was designing icons for someone like herself, Kare was “motivated by respect for, and empathy with, users of software.”<sup>37</sup>

Kare tweaked and streamlined certain icons that already existed, like the arrow cursor, the trash can, and the “document” icon with the turned-up page corner. She also created dozens of new icons for Hertzfeld, Atkinson, and the software group (see Figure 3). Kare remembers that she “took a very common sense approach. People would ask for something, and I would do what I thought would work. I do remember always trying—and I still do to this day—to provide a rich selection of choices, and see what works.” She also engaged in “informal user testing,” showing her multiple emerging designs to “a lot of people and just asking them what they thought.” Eventually, the group would reach consensus, with Jobs having the final word. For example, when “choosing an icon for the fill function in MacPaint, I tried paint rollers and other concepts, but I guess the pouring paint can made the most sense to people.”<sup>14</sup>

Kare found that “user interface design isn’t about design in the traditional sense;” rather, it was about “solving the little puzzle of making an image fit a metaphor.”<sup>38</sup> When it came to choosing

strong metaphors, nouns—like a document, paintbrush, or pencil—were relatively easy, but verbs—like “undo” and “execute”—were a challenge.<sup>1,3</sup> Kare still believes that “good icons should function somewhat like traffic signs—simple symbols with few extraneous details, which makes them more universal.”<sup>39</sup> For Kare, an icon is successful if “you could tell someone what it is once and they don’t forget it.”<sup>1</sup> For example, she notes that “there’s no compulsion to ‘modernize’ the stop sign every few years.”<sup>40</sup>

Kare’s iconography was inspired by fine art, folk art, advertising, and a variety of international cultures. For example, when Kare first moved west after graduate school, she lived near the Buddhist Temple of San Francisco and studied at its Japanese school; when stuck on a particular icon design, she would often consult a book of Kanji Pictograms. Another favorite source was Henry Dreyfuss’s *Symbol Sourcebook*; she especially loved its list of the glyphs that Depression-era hobos would chalk on walls and fences to signal a sympathetic household.<sup>14,17</sup> These and other source books helped Kare design the symbol for the Mac’s command key (⌘), a looped square that resembles a turreted castle seen from above. Hertzfeld wanted to give Mac users the option to invoke every menu command directly from the keyboard, so they added a special “Apple” keyboard key; when pressed in combination with another key, it selected the corresponding menu command. Thus, every menu item displayed a miniature Apple logo and key combination, but Jobs objected that “there were too many Apples on the screen!” Kare was asked to design an alternative. After “pouring through books of symbols,” Kare settled on the familiar looped square, which since the 1950s had been used on Scandinavian roadside markers to indicate interesting sightseeing destinations.<sup>14,18</sup>

Kare’s icon designs were intuitive, but they also had a playful, whimsical quality; think of the smiling “Happy Mac” that greeted users at startup or the ticking bomb that represented a system error. These friendly designs helped new users overcome what *Rolling Stone*’s Steven Levy called the “FUD principle: the Fear, Uncertainty and Doubt” that had prevented many potential users from purchasing a personal computer.<sup>41</sup> Instead, Kare’s work gave the Mac a “visual lexicon that was universally inviting and intuitive” and “set the standard for how computers could appeal to a broad group of nontechnical people.”<sup>1,17</sup> According to *Wired*’s Silberman, “there is an ineffably disarming and safe quality about Kare’s icons. Like their self-effacing creator, they radiate good vibes.”<sup>17</sup>



Figure 3. A selection of Kare’s Macintosh system and application icons, 1983–1984. Courtesy of Susan Kare and Apple Inc.

Beyond the icons, Kare helped refine other aspects of the Mac’s look and feel. For example, she added pinstripes to the title bars of windows and grey tints to their scroll bars to help offset the

interface from its content. With Hertzfeld, she also designed the 15-number puzzle and Notepad in the Mac's desk accessories, as well as various elements of the Mac control panel, like the nifty tortoise and rabbit that helped users set the mouse's click-rate.<sup>14,18,42</sup> Kare also created a family of new proportional fonts for the Macintosh.

At the time, most digital typefaces were monospaced, meaning that narrow and broad characters alike (for instance, both I's and M's) used the same amount of onscreen space. Jobs had studied calligraphy at Reed College with the Trappist monk Robert Palladino and was determined to offer a more sophisticated set of typefaces that looked better in print, especially since the Mac was to be sold with the Apple ImageWriter printer.<sup>8,15</sup> Typeface design imposed even more rigorous constraints than the icons; "each letter had to fit in a space of just  $9 \times 7$  dots, so they looked jaggedy," Kare remembered. Kare began with the bold operating system font, originally called Elefont, and decided that "it might look cleaner if the lines were only ever horizontal, vertical, or at 45 degree angles." That system typeface, later renamed Chicago, provided the textual look for two of Apple's biggest products—the Macintosh and the iPod—for more than 20 years.<sup>19</sup>

Kare would produce several other font sets for the Macintosh. In a nod to their old neighborhood, she and Hertzfeld named them after the commuter train stops on Philadelphia's Main Line, for instance, Overbrook, Merion, Ardmore, Rosemont, and Paoli. Jobs liked the naming convention, but suggested that the fonts be renamed for "world class cities," such as New York, Geneva, London, Toronto, and Venice (see Figure 4). Kare also experimented with more avant-garde fonts, such as Ransom (later San Francisco), whose characters looked like the newspaper cutouts from a kidnapper's note, and Cairo, which appropriately looked like a set of modern hieroglyphics. Like proto-emojis, the Cairo font set was composed of several miniature images—including a palm tree, a crescent moon, and a skateboard—and allowed users to easily embed miniature images within their text.<sup>13,15,18</sup>



Figure 4. A selection of Kare's Macintosh fonts, named for "world class cities," 1983–1984. From Wikimedia Commons.

The Mac development team also put Kare to work demonstrating the capabilities of Atkinson's MacPaint application. Kare had begun designing icons on graph paper and Hertzfeld's icon editor before turning to MacPaint, which allowed her to see enlarged and actual-size views of her designs simultaneously. Kare designed several icons for the MacPaint application itself, including the slip-knotted lasso, paintbrush, and paint can (fill) tools. She also became something of a MacPaint virtuoso and one of the pioneers of digital artwork. Hertzfeld remembered one memorable portrait:<sup>18</sup>

*One day, I came over to her cubicle to see what she was working on, and I was surprised to see her laboring over a tiny icon portrait of Steve Jobs. Icons were only 32x32 black or white pixels—1024 dots in total—and I didn't think it was possible to do a very good portrait in that tiny a space, but somehow Susan had succeeded in crafting an instantly recognizable likeness with a mischievous grin that captured a lot of Steve's personality. Everyone she showed it to liked it, even Steve himself. It became a Mac team status symbol to be iconified by Susan. She did a few more portraits, for various members of the team who desired to be immortalized in a thousand dots.*

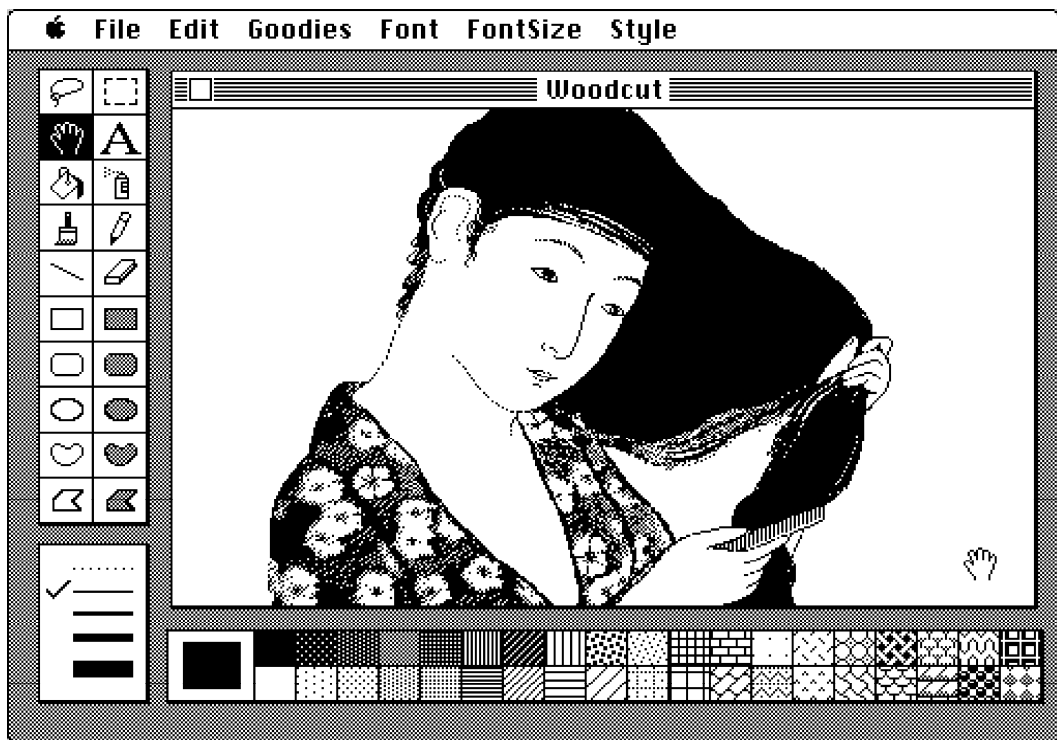


Figure 5. MacPaint screenshots featuring Kare's artistry, 1983. Notice the icon menu at left, the Chicago system font used for the pull-down menus, and the horizontal pinstripes on the title bar. Courtesy of Susan Kare and Apple Inc.

Kare also produced several exquisite MacPaint drawings for the Macintosh's glossy user manuals and promotional advertisements, such as a Japanese woman combing her hair (see Figure 5), a pair of tennis shoes, and gourmet baby food. Kare also contributed substantially to the Mac's rollout campaign; she posed for magazine photo shoots, appeared in television commercials, and demonstrated the Mac on TV talk shows.<sup>14,43,44</sup>

The Macintosh was released with great fanfare in January 1984, accompanied by a 60-second Super Bowl television ad inspired by George Orwell's dystopian novel, *1984*. The Mac's rollout also received tremendous press coverage, much of which highlighted the Mac's graphical user interface, typefaces, and overall usability. For example, without naming her, Steven Levy nevertheless paid tribute to Kare's work in his *Rolling Stone* feature:<sup>41</sup>

*On a pleasant, light background...little pictures called "icons" appear, representing choices available to you. A word-processing program might be represented by a pen, while the program that lets you draw pictures might have a paintbrush icon. ... [M]oving the mouse to certain points on the screen opens lists of options known as "pull-down menus." One menu, for instance, gives a list of type fonts. In less than a second, you can change all the characters in a file from standard typewriter print to gothic Old English. Or you can change the size of the type from eight to sixteen points. For the first time in history, typography will become a mass art. And you are not limited to type. ... Though Macintosh displays only black-and-white video, its "bit mapped" display...allows for gorgeously intricate pictures. Aided by all sorts of "whizzy" (a favorite adjective of the Mac team) features, even a graphic klutz can create fine drawings.*

Even software industry veterans had fallen hard. Levy quoted Lotus's Mitch Kapor with this assessment: "The IBM PC is a machine you can respect. The Macintosh is a machine you can love."<sup>41</sup>

## AFTER APPLE

Incredibly, Kare's seminal user interface work had occurred during just one intense year; she had started at Apple in January 1983, and the Mac shipped in January 1984. Kare stayed on at Apple for two more years, working as the Creative Director for Apple's Creative Services team. By 1985, a growing feud between Jobs and Apple president John Sculley ended in an acrimonious divorce, with Jobs forced out of the company he had co-founded. Jobs immediately founded NeXT, Inc., to build high-powered workstations for business and higher-education markets.<sup>8</sup> Jobs lured several former Apple employees to NeXT, including Kare, who came aboard as Creative Director in 1986. NeXT needed a brand identity, so for \$100,000 Kare hired one of her heroes, Paul Rand, to design the logo. Rand (1914–1996) was an American art director and graphic designer best known for his corporate logo designs for IBM, UPS, Westinghouse, and ABC. Working with Rand, Kare learned that “design is not an exact science, so there's never only one ‘correct’ solution to a design problem;” this affirmed her approach of creating multiple preliminary designs for a given icon.<sup>15,39</sup>

Kare learned something else during that period: “I realized, by working in Creative Services at Apple and NeXT, that what I really wanted to do was to be back doing bitmaps.”<sup>14</sup> After two years working mostly with print at NeXT, Kare founded her own digital design firm, Susan Kare LLP, in 1989. Kare had established a sterling reputation in Silicon Valley and she quickly discovered that “I didn't have to sit around waiting for the phone to ring.”<sup>14</sup> “When I started,” she recalled, “I made a list of all the people I might send announcements to, but the first couple of jobs came through word of mouth and it's been steady ever since.”<sup>38</sup>

Kare's first clients included some old friends and some of Apple's biggest rivals (see Table 1).<sup>45</sup> In 1989 to 1990, Microsoft hired Kare to provide a “thorough face lift” for Windows 3.0. Working with Microsoft Paint on an IBM PC, she developed several improved icons, including those for Notepad and Control Panel, which remained largely unchanged until the introduction of Windows XP in 2001. Kare also took advantage of Windows' expanded 16-bit color palette to design the playing cards for its digital Solitaire game.<sup>4,15,46</sup> Another assignment came from Apple alumni Hertzfeld and Atkinson, who co-founded the startup General Magic in the early 1990s. They hired Kare to design some 600 fonts and screen images for their Magic Carpet software, used to power a hand-held digital computer.<sup>3,4</sup> And in a last-ditch effort to compete with Macintosh and Windows, IBM hired Kare to revamp its OS/2 operating system. “Even though we were a technology leader,” recalled IBM's Jeff Howard, “people really didn't think of OS/2 as something fun to use.” The firm hired Kare, Howard acknowledged, because of her “unmatched reputation,” and crucially, “because she has that sense of fun which we wanted.”<sup>1</sup>

Table 1. A partial listing of Susan Kare's clients.

A&E Television	Cisco	IBM	Motorola	PeopleSoft
Apple	Electronic Arts	Intel	Nokia	Sony Pictures
AT&T	Facebook	Intuit	Oracle	Target
Autodesk	Fidelity Investments	Microsoft	PayPal	Xerox

Kare's business continued to thrive as the emergence of the commercial Internet in the mid-1990s helped bring in new dot.com and traditional software clients. That growth has continued over the past 15 years as smartphones and tablets have driven the need for GUI design in the app economy. For example, in 2006 Facebook hired Kare to design digital, 64 × 64 pixel “virtual gifts” (see Figure 6). For \$1, Facebook users could send their friends Kare-designed birthday cakes, roses, kisses, and disco balls. Kare designed hundreds of these virtual gifts between 2007 and 2010.<sup>15,17</sup> Over the years, Kare has worked with dozens of top-tier companies, but has occasionally rejected big assignments because she refuses to hire people to share the workload. “I do every job myself,” she says, “because I think of it as an art.”<sup>14</sup>



Figure 6. A selection of Facebook digital gifts, designed by Kare, 2007–2010. Courtesy of Susan Kare and Facebook.

Indeed, beyond her top-dollar design fees (which she won't reveal), Kare in recent years has ventured into selling more traditional visual art inspired by her pixel art. In 2010, Kare launched *ka-reprints.com* to sell limited edition, signed and numbered prints featuring some of her best-known and favorite icons. One of the biggest sellers is the Macintosh “Dogcow,” an 8-bit spotted dog (that kind of looks like a cow) from the Cairo font set that also appeared in Macintosh dialogs for selecting portrait versus landscape orientation.<sup>4,15</sup> Kare has also self-published a retrospective entitled *Icons: Selected Work from 1983–2011*, featuring her commentary on 80 of her favorite icons from the Macintosh to Facebook.<sup>17</sup> Kare has also begun selling recreations of the infamous Macintosh “Pirate Flag,” a traditional skull-and-crossbones with a rainbow Apple logo replacing the skull's left eye. Kare and Mac programmer Steve Capps had assembled the original flag after a 1983 team retreat where Jobs inspired the team with the slogan “It's better to be a pirate than join the navy.” Kare began offering the flags in 2014 after a commission from a current Apple employee who hoped to recapture that same renegade spirit.<sup>18,47</sup> And in 2015, Kare worked with Areaware to produce a 25th anniversary deck of playing cards inspired by her Windows 3.0 digital Solitaire game. Since digital Solitaire does not use jokers, Kare—who admits she's “addicted to Solitaire”—got to design two new jesters to complete the deck.<sup>46,48–49</sup>

Kare's explorations in other artistic mediums have not diminished the high demand for her digital design services. In July 2015, Pinterest announced that Kare would be joining the social bookmarking site as the product design lead. After years of running her own business, the new corporate gig is Kare's first full-time, salaried job in 30 years.<sup>50–51</sup>

## WORK STYLE, PHILOSOPHY, AND LEGACY

Overall, Kare's work style and design approach have not changed much over the years. When she's not at Pinterest's headquarters in downtown San Francisco, Kare works from her home studio in the city's upscale Presidio Heights neighborhood. The space contains an eclectic mix of artistic inspiration—framed artwork by her three sons, a San Francisco street sign, a cow skull, a red woven blanket—complemented by art books “and tons of stationery and art supplies in tall cabinets.” Kare prefers to work alone and often late into the night “when everything's quiet and there are no interruptions.” When she's not creating digital designs, Kare loves to sketch in “cool bound notebooks” and always keeps a No. 2 pencil handy. Another important tool is her iPhone; when Kare goes “metaphor shopping” she snaps photos of street signs, sheriff's badges, and other symbols for inspiration.<sup>1,39</sup> However, Kare says “I spend most of my work life in [Adobe] Photoshop and Illustrator,” since “anything bound for the screen I design on the screen.” Just like her old graph paper sketchbook, she begins by setting up “a template with rows of pale gray boxes with the specified dimensions.”<sup>39–40</sup> And therein lies the continuity; for Kare, user interface design is still about solving a problem within a defined set of constraints. “People say graphic design is so different now, because you have so many more pixels and colors to work with,” but she insists that “the goal of developing images that are meaningful and memorable remains the same.”<sup>19,39</sup>

As a tech industry veteran, Kare offers sage advice for aspiring user interface designers. First, she encourages novices to learn their craft: “Good design is good design. Learn all you can about color and design and typography.” Furthermore, Kare advises anyone creating icons “to think about economy of expression, and to aim for images that are simple and memorable.” As for working with clients, Kare is “like a broken record on the following: Keep things simple, use common sense, have empathy and respect for the user. It's important to get user feedback and take it seriously. Under-sell and over-deliver.”<sup>40</sup>

Kare has granted dozens of interviews, but she has never discussed her role as a prominent woman in a male-dominated industry. Has she experienced implicit bias, overt sexism, sexual harassment, or a hostile environment while working with Apple, NeXT, Pinterest, or her clients? Did the masculine, often misogynistic workplace culture of Silicon Valley convince her to spend most of her career working from home as a freelance designer? Kare has mostly avoided the subject, allowing the high quality of her work to speak for itself.<sup>49</sup> However, future historians will likely examine Kare's career as an interesting case study reflecting the gendered division of software labor, in which women gravitate toward graphic design, user experience, and marketing roles, while men dominate the traditional domains of coding, architecture, and engineering.<sup>52–55</sup>

Kare has earned a multitude of professional accolades for her life's work, especially within the design community. In 1997, *I.D. Magazine* named Kare one of its original “I.D. Forty,” its annual list of the most influential designers. In 2001, she received the prestigious Chrysler Design Award, bestowed on those who, through design, have “significantly influenced modern American culture.”<sup>40</sup> Kare does not let these honorifics go to her head: “I still spend my days turning dots on and off,” she says with characteristic humility.<sup>2</sup> But Kare's influence is significant. She brought “an artist's sensibility to a world that had been the exclusive domain of engineers and programmers,” and in the process, she says, “I hoped to help counter the stereotypical image of computers as cold and intimidating.”<sup>37,56</sup>

With 30 years (and counting) of simple, elegant, and whimsical designs, Kare has made personal computing more appealing for millions of new users. Kare is satisfied too: “I feel much happier that people are looking at my icons every day than having my sculptures in five living rooms across the country.”<sup>3</sup>

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