

This is Not my Beautiful House: Examining the Desktop Metaphor, 1980-1995

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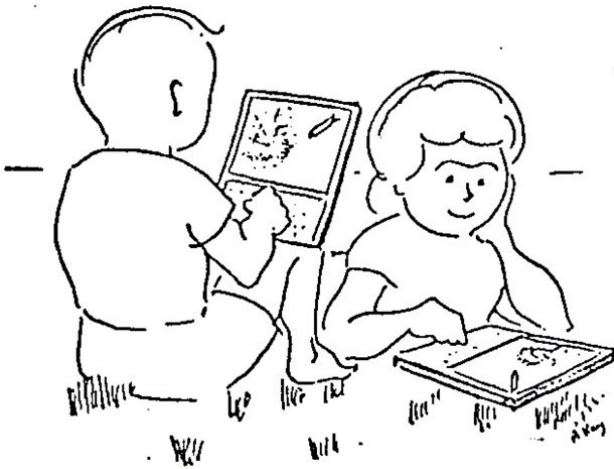
In the 1970s, the personal electronics market was experiencing a revolution. This revolution was predominantly named Pong— but through the many versions of Pong and other single-game home devices, computing machines had become a true consumer good. Pong opened a market for more flexible personal machines, and by the end of the decade, there was a proliferation of consumer electronics companies all vying for the next big hit.

This market speculation wasn't just constrained to game consoles, however. There was a new, if limited, demand for home systems that were capable of running any variety of programs, and that could also be programmed on the fly by the user— just like mainframe computers in institutions. If these new machines were to really sell however, it wasn't good enough for them to stay specialist devices. They needed to reach a home market beyond that of the occasional electronics enthusiast. Computers had to be made easy to use, and indispensable to have. This was fundamentally a problem of marketing, as well as user legibility.

Computer interfaces had historically been wildly obtuse, and even in the 1970s, some did not have a screen or graphical display at all, instead relying on printed readouts and light bulbs. Of those that did have screens, the interface was generally that of a command-line, where the user had to type specific

commands to perform actions. It was clear that part of the success of games like Pong was that they plugged into familiar CRT televisions, and booted to an immediately visual game screen. System designers realized they needed to reconsider the goals of computing, moving to make similarly intuitive interfaces. They also had to make them desirable.

A research team at Xerox PARC had been studying this problem throughout the 1960s and 70s, inventing many of the tools we still use today (like the mouse and pointer, icons, ethernet, and windowing). The goals of PARC were egalitarian, and workers there describe a "commune-like" atmosphere, with meetings held on bean-bags, and memos written like manifestos. A 1972 paper by Alan C. Kay titled *A Personal Computer for Children of All Ages* even describes a fictional educational computer called a 'DynaBook' which contained a library of all knowledge, games, tools, and programmable systems. (This proposal has turned out to be a remarkably prescient vision of how iPads have entered schools in the last 5-10 years.)

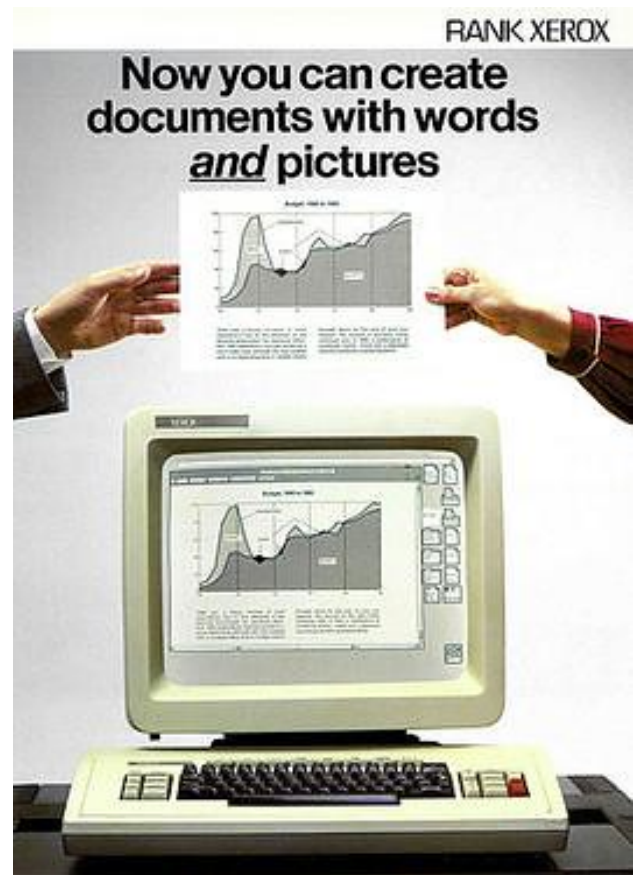


A pair of children sit on the grass, playing on the fictional DynaBooks from "A Personal Computer for Children of All Ages," Alan C. Kay, 1972.

Xerox PARC put many of these user-forward convictions into practice in the Xerox Alto, an internal prototype from 1973, and the Xerox Star, a commercial release from 1981. Paper became the primary visual-metaphor of the graphical display, which the user could interface with through a virtual "desk-top". **The desktop was an organizational space that held visual**

representations of files and folders, as well as various built-in functions, like the trash can, or network links to external machines, like printers and external drives.

This likely sounds very familiar to you, as the desktop metaphor proliferated incredibly quickly, becoming the dominant visual logic for practically all graphical interfaces within only a few years. Apple popularized the graphical user interface as we know it today with the release of the Lisa in 1983 and the Apple II in 1984, leaning extremely heavily on the research from Xerox. After the Xerox Star and Apple Lisa, dozens of operating systems were released using this visual strategy within the next decade.



An advertisement for the Xerox Star, which has heavily informed the design of most popular graphical interfaces since.

Some operating systems were extremely faithful to the logic of the desktop metaphor, like beOS, which placed external hard drives on the desktop, while internal drives were only accessible through the "computer" icon. Others took liberties with the

logical arrangements of virtual space, implementing recursive file structures.

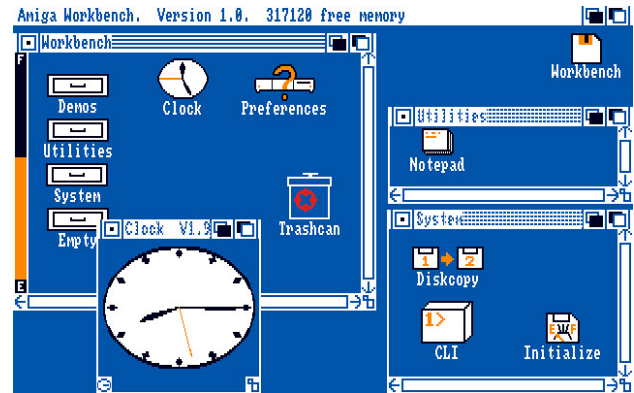
The Commodore 64's attempt at user-forward computing was Magic Desk I, a ROM cartridge that booted to a particularly illustrative desk sitting in a drawn office environment. You could move a virtual hand with the joystick to select between a typewriter (word processor), a file cabinet (file system), a clock, and the trash can. (Also on the desk was a calculator, phone, card file, and dollar bill— but clicking them did nothing at all, and no Magic Desk II was ever released to add any additional functionality.)



Magic Desk I running on a Commodore 64 (1983).

The choice of the office desk as the primary metaphor for this user revolution says a great deal about who these new machines were designed for. After all, those who would directly benefit from the allusion were those already familiar with the office environment. These personal computers were positioned as accessible because they borrowed directly from the logic of day jobs— but certainly not everyone's day job.

For instance, there are no commercial interfaces that are modeled after working farms, or assembly lines, or grocers. Only Commodore chose to implement the relatively obvious workbench metaphor in its Amiga family, despite the added flexibility that a workbench metaphor provided over a desktop, especially as the variety of available applications and tools multiplied.



Amiga's 'Workbench', used with permission from Greg Donner, <https://www.gregdonner.org/workbench/>

Unfortunately, even Amiga's consideration was mostly semantic— although Workbench used the language of “drawers” in place of folders, “tools” for programs, and “projects” for files, the actual spatial organization of the GUI was deeply similar to other extant desktop spaces. Despite a unique take on windowing (the system let you “splitscreen” multiple full-screen applications, not unlike an artisan laying out several projects) and several functional improvements, Workbench was fundamentally more of an answer to the desktop metaphor than a real proposed alternative. The choice to implement this variant may have been as much of a copyright consideration than one of a more egalitarian ethic towards the user, as Apple had taken some legal action against copycats already (despite its own roots borrowing so heavily from Xerox).

Of course, it is important to remember that these desktop interfaces were designed in the 1980s when the office desk was a distinct vision of power. It was a decade of finance and business, of power-lunches and making deals, of connection and control— a world pointing inwards at the businessman who sat in a skyscraper, making phone calls that had broad consequences.

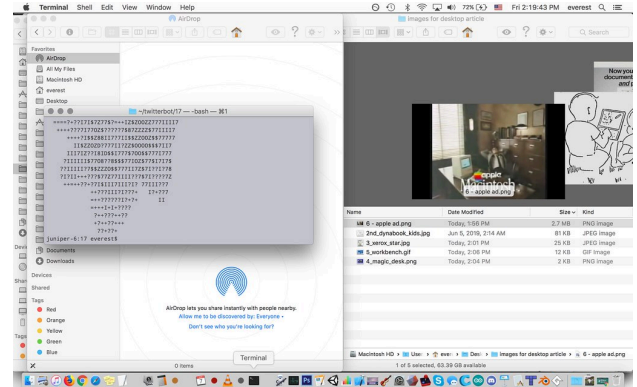
A television advertisement for the Apple Macintosh perfectly illustrates the relationship between power, the desk, and the new desktop interface. It opens on a man standing in a plush wood-paneled office, smiling in a full suit. On his desk sits a telephone, a stack of mail, a calculator, papers, and various other small appliances. He grins at them and begins pointing, and as if by magic the folders

organize themselves, mail is sent, rubbish is sorted into the bin. Each time a task is completed, its associated appliance disappears. Clutter thus removed and business done, he glances boastfully at his new Apple machine—and puts his feet up on his immaculate desk, with its vastness of empty space.



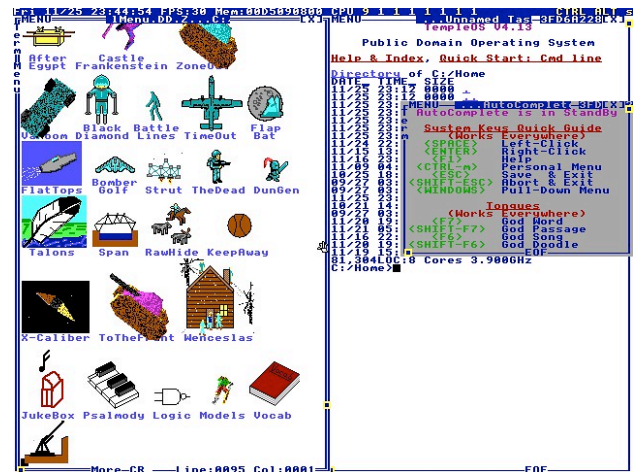
A still image from a tv advertisement for the Apple Macintosh.

The desktop has so thoroughly integrated into the act computing that it is actually hard to see it as a metaphor. The icon of a file ceased long ago to be a visual representation of the data stored somewhere on the machine and instead *is* the file. A file doesn't feel like it is "accessed" through a folder—we think of it as being physically in that folder. **It is difficult to uncouple the act of using a computer with that of using the desktop interface.** Even for someone like me who spends a fair amount of time programming in non-visual interface of the terminal, they are inextricably linked. The terminal shell feels held by the desktop, not the other way around.



My own terminal, sitting over and in the environment of my graphical user interface, Mac OS 10.12.6.

Still, thinking about the 1980s and the embedded symbols of wealth and power that were integrated into computational systems, it is perhaps a useful exercise to consider what other metaphors could have been popularized in place of the desktop. For instance, what would American computer interfaces look like if they had become "user friendly" in a different time? What about a time when power meant leisure rather than productivity, like in the Victorian Era? Or during the 1960s, when cool meant dropping out of society altogether?

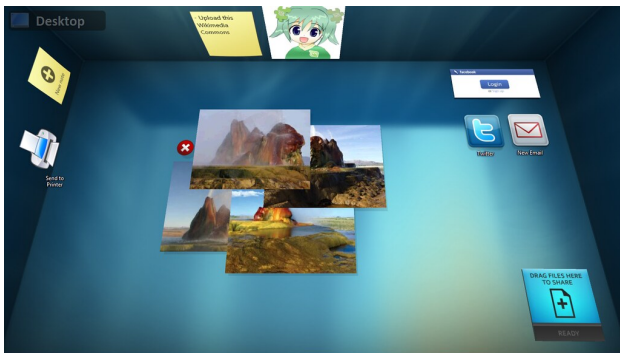


The PersonalMenu in TempleOS, from <https://templeos.holyc.xyz>

As a vision of an alternative goal for a computational system, TempleOS might take the cake. TempleOS is a lightweight 16-color operating system built entirely by the late Terry A. Davis over the course of a decade, during which Davis experienced many self-described "revelations from

God". It eventually released in 2013 as a free, public domain operating system— as well as serving its goal of functioning as the Third Temple, as prophesied in the bible. The OS is written entirely in HolyC, a version of the C programming language unique to the project, and it features a programming shell and several graphical applications, including a flight simulator and an oracle.

On his still-operating website, Davis describes **the act of building an operating system as like dedicating one's life to the building of a cathedral**, with all the "incredible devotion to God with hours of effort, toiling and slaving-away for the glory of God, for families with children to see stained-glass windows and tomes with ridiculously elaborate calligraphy to show love of God, from a people who did little else but show love toward God, lived in dire conditions by today's standards, yet with so much difficulty scraping-by, found the time to devote even all free-time to God!" (<https://templeos.holyc.xyz/>)



BumpTop v2.5 on Windows 8, Wikimedia Commons

BumpTop, from 2009, occupied a middle ground between passion-project and usable operating system. It was developed at the University of Toronto as Anand Agarawala's master's thesis and radically reimaged the desktop by using a physics-driven, 3d environment towards "more human computing. BumpTop leaned into the piled documents, crumpled paper, post-its, and other errata of a real desk space. Although originally open-source, BumpTop was acquired by Google in 2010. Its code-base reemerged in 2012 under the Apache software license on Github, but the development team no longer maintains it.

The flat, tile-like designs of Windows 8, as well as iOS, Android, and other contemporary smartphone, watch, and tablet operating systems have offered the largest shift away from traditional desktop environments. Each of these systems is arranged around specific applications, represented by an icon and generally displayed in a grid. By 2019, these types of interfaces have eclipsed the desktop, just as the mobile market has surged beyond that for computers.

These mobile systems were not the first to depart from the desktop metaphor, however, as there were a few 1990s operating systems that attempted to replace the desktop metaphor entirely. Magic Cap was an early tablet and cell phone user interface released on various devices between 1991 and 1994. It used a room-based metaphor, with multiple static "scenes" that contained different types of applications and items. The icons were illustrative but simple, intended for a small screen. Despite the aesthetic skin of a being inside a building, the touch-screen mentality of tapping various icons and swiping through space feels remarkably like contemporary cell-phones. Magic Cap did not, however, see any type of widespread adoption.



The 'Hallway' of Magic Cap, with doors to the various rooms housing different types of utilities, used with permission from Nathan Lineback, <http://toastyttech.com/guis/>

Perhaps the most infamous reconsideration of the desktop came in 1995 with Microsoft Bob. Microsoft Bob also adopted the house as a structural metaphor, complete with a variety of helpful assistants and different rooms that held different types of tools, including a browser portal

in the attic. The user could pick a room to make “yours” (for sensitive files), and decorate the whole house, rearranging the furniture and changing the architectural style. Bob shipped with a full suite of home assistant software, including a letter writer, checkbook balancer, geography guessing game, and early email client which (for an additional subscription fee) let the user send 15 emails per month. As a project, its language was populist, attempting to make computing accessible for a new type of user. Before release, Microsoft Bob went by the codename of “Utopia”.



The user interface of Microsoft Bob, used with permission from Nathan Lineback, <http://toastytech.com/guis/>

In some ways, the house metaphor was an obvious next step to the desktop metaphor. After all, a desk is often situated in a home. And if the spatial organization of being able to move files and folders around the desktop helped new users use the directory and file systems of computers, then it would follow that being able to move room-to-room could only expand functionality. The house also offered a logical way for designers to maintain a spatial metaphor, while still producing machines that could now do so much more than what was traditionally afforded by an office desk.

However, the houses of Microsoft Bob were too baroque and illustrative to be practically useful tools. Reviews of the software at the time cite the child-like interface as being almost **game-like**, which when paired with its buggy performance, remarkably high price-tag (\$99.99) and computationally expensive system requirements, made it feel patronizing at best, and scam-like at

worst.



The user interface of Microsoft Bob, used with permission from Nathan Lineback, <http://toastytech.com/guis/>

Microsoft Bob also suffered from specificity. The various homes were all western, suburban, and large, full of knick-knacks and splashy decor. These homes, much like the earlier office desk, would be little help to a new computer user who did not inhabit a home like this. If anything, all the extra detailing would be added confusion on top of a virtual space that was already unfamiliar.

The various applications also made assumptions about the user. For instance, the household manager came pre-populated with categories, which included managers for “Pets,” “Auto Information,” “Scrapbooking,” and “Collections”. It is easy enough to extrapolate to the intended audience of Bob. The egalitarian vision of the software stretched to include only a suburban upper-middle-class family— and provided little of use for anyone else.

Its sales were abysmal, it was discontinued by Microsoft within the year. Its most popular legacy is likely the Office helper Clip-It (known almost universally as “Clippy”), whose inspiration was grounded in Bob’s various household assistants.



6 home assistants from Microsoft Bob (left), Clippy from Microsoft Office (right).

In many ways, the failure of the house metaphor was a tragedy for the field. To use domestic spaces as the baseline interface for computational tools would be to **recast our relationship with those tools in fascinating ways**. When acting as a house, a computer is not purely a tool (although a house might contain tools). Instead, **the house metaphor supposes an environment that is comfortable, that is lived in, and that is fundamentally ours**. If designed with attention and care, Microsoft Bob and the other systems like it might have actually achieved their goal of situating strangers to digital space in environments that felt generous, clear, and supportive.

In some ways, these goals were addressed by the rise of home internet. In 1995, the year that the project released, the internet had made the jump from a hobbyist enterprise to something much broader. America Online was mailing their ubiquitous free trial CDs and Mosaic, Netscape, and Internet Explorer were fighting for user share in a period colloquially called the “browser wars”. Almost overnight, it felt like the world had come online.

The internet did not use a visual spatial metaphor. Despite being accessed through and often encompassed by the desktop environment, the internet felt well and truly **placeless** (or perhaps everywhere). **Hyperlinks were wormholes through the spatial metaphor**, allowing a user to skip laterally across directories stored on disparate servers, as well as horizontally, deep into a file system without having to access the intermediate steps. **Multiple windows could be open to the same website at once, shattering the illusion of a “single file” that functioned as a piece of paper that only one person could hold**. The icons that a user could arrange on the desktop didn’t have a parallel in

online space at all.

The internet was also built haphazardly by individuals. It was governed by a set of standards and constructed out of a set of shared programming languages, but the actual content of this fledgling space had little allegiance to user-interface design groups in Silicon Valley. The wilderness of early online space was wild because it was being invented as it was made.

Despite this radical departure from skeuomorphic spatial organization, the internet still used the *language* of space. The primary visual motif of the “World Wide Web” was that of a globe. Everyone had a homepage. You surfed, dug, crawled, or browsed your way through websites. Practically everywhere was “under construction”. The user innovations of web-rings, guest-books, webcounters, and “online now” tags also worked to bring personal presence to internet space, a feeling of being online and present *together*.



A screenshot of <http://textfiles.com/underconstruction/>, which collects Geocities-era ‘under construction’ gifs.

To be clear, those that were online together were still those located in a physical location that could connect to the internet, and who could furnish the very real cost of a computer. The early internet was certainly not the total user revolution that Alan Kay envisioned in his proposal for the DynaBook from 1972. But it was closer than anything that had come before, and part of this was that suddenly computers were not just about work, and were not even about play. They facilitated another goal entirely—that of just hanging out, of passing time with others. The internet became about other people.

Perhaps, looking at them now, it is the loneliness of early desktop interfaces that is their most alien aspect. Especially compared with the constant connection of the contemporary computing experience (even when I am offline, my taskbar contains 7 unique applications made merely to talk to others, and each generally supports a notification or few waiting for me when I open my laptop), early desktops feel distinctly apart. Each system was modeled after a clean desk, an undisturbed office, a focused workbench, an empty house. Sure, most had an in-tray or a mailbox and were more than capable of establishing a network connection. But until the mid-90s there wasn't any real reason to stay connected or to be actually present— in real time— online.

It is easy to valorize this type of focus now when our attention is so constantly grabbed for from every side. But this was an internet before the attention economy, before social media megaliths, before invasive data gathering and personal advertisements. It was an internet that didn't know what it was yet, but it was still *actively becoming*. Each under-construction gif promised that there would be more here tomorrow, and asked you to come back to see what had been made, by one person, overnight. It felt explosive, vibrant, and vast.

The designers of Microsoft Bob must have realized that the desk of the early desktop needed a world to sit in. They built the desktop an entire environment, a whole home of new options. But no matter how richly decorated, how baroque and dense with colors, assistants, applets and tools, **the home they made was empty**. Much like the affluent suburban homes that Bob emulated, the **disconnected** house was profoundly lonely.

Instead, the new users (and builders) of the internet of the 1990s chose to invest in each other. They dedicated their work to the idea of a *society* instead of the idea of a desk, an office, or even a house. No designed metaphor of computing could have held against the emotional power of the early internet, even with all of its spatial anomalies, mixed metaphors, and emergent design principles. It was wild, and personal, and profoundly **peopled**. It was, after all, the widest of worlds.