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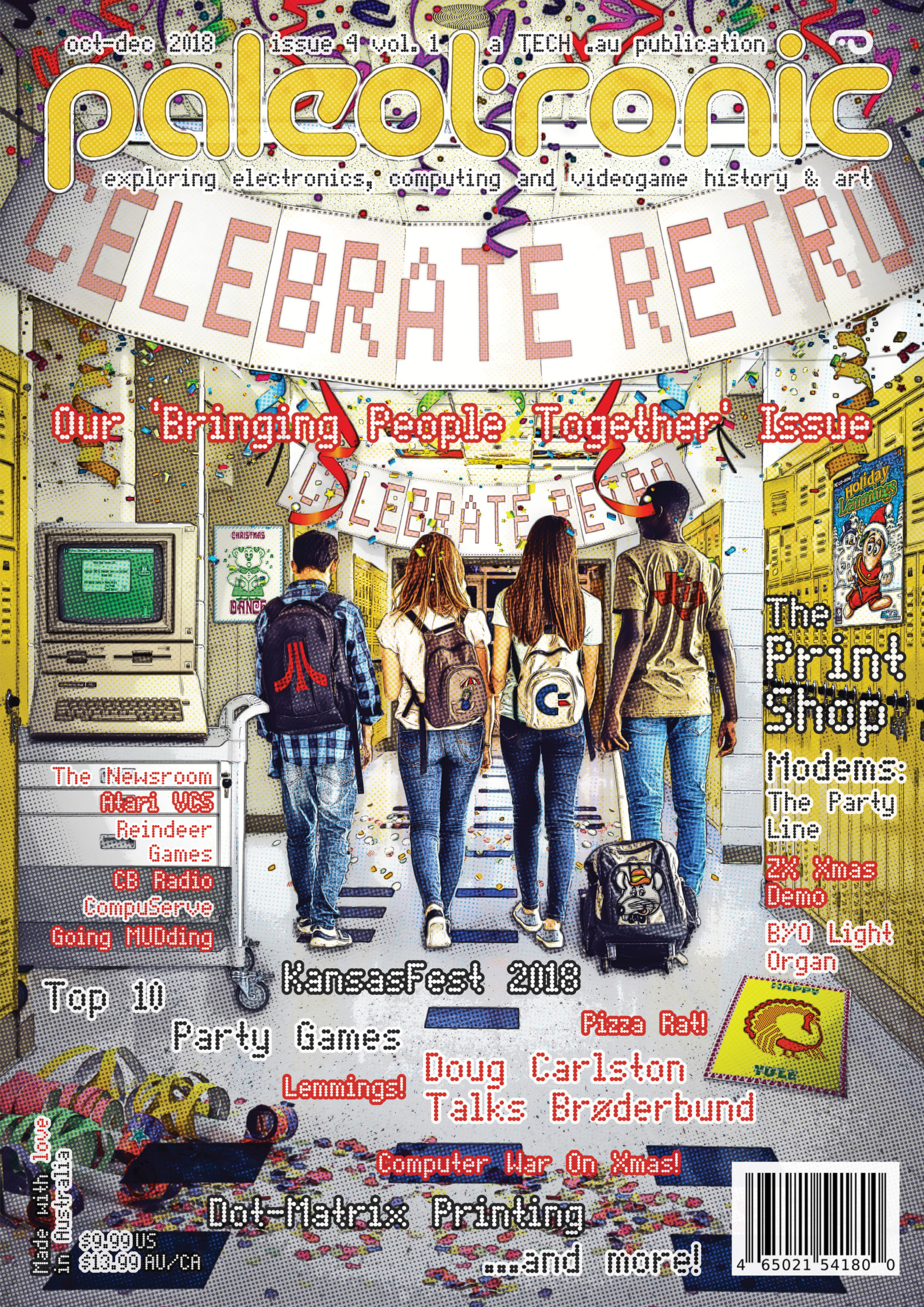
palaeotronic

exploring electronics, computing and videogame history & art

Our 'Bringing People Together' Issue



The Print Shop

Modems: The Party Line

ZX Xmas Demo

BYO Light Organ

The Newsroom

Atari VCS

Reindeer Games

CB Radio

CompuServe

Going MUDding

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Every issue of Paleotronic Magazine is a celebration of the history of electronics-based technologies, from radio to television to computers to videogames and to everything they inspired or were inspired by. We revisit pivotal moments and advances, remember those who played important roles and made game-changing discoveries, and examine the legacies of those innovations and figures through the lens of today. But it wouldn't be a party without a bit of fun, and so we also shine a light on classic video and electronic games, get nostalgic about popular movies and TV shows that feature technology, develop and publish new computer games written in classic programming languages such as BASIC and LOGO, and provide plans for intriguing and amusing electronics projects. We also get industry figures such as Steve Wozniak, Richard Altwasser and Rob Fulop to pop over and have a chat! So come on in and join the party. We'd love to have you!



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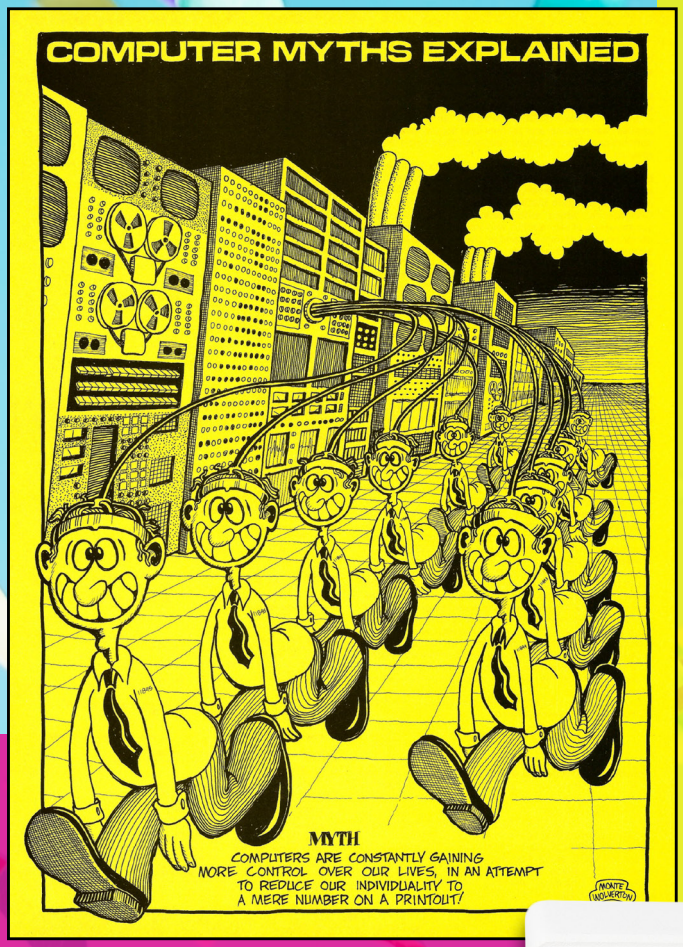


SOON, FOR HUMANITY, THE PARTY WAS GOING TO BE OVER.

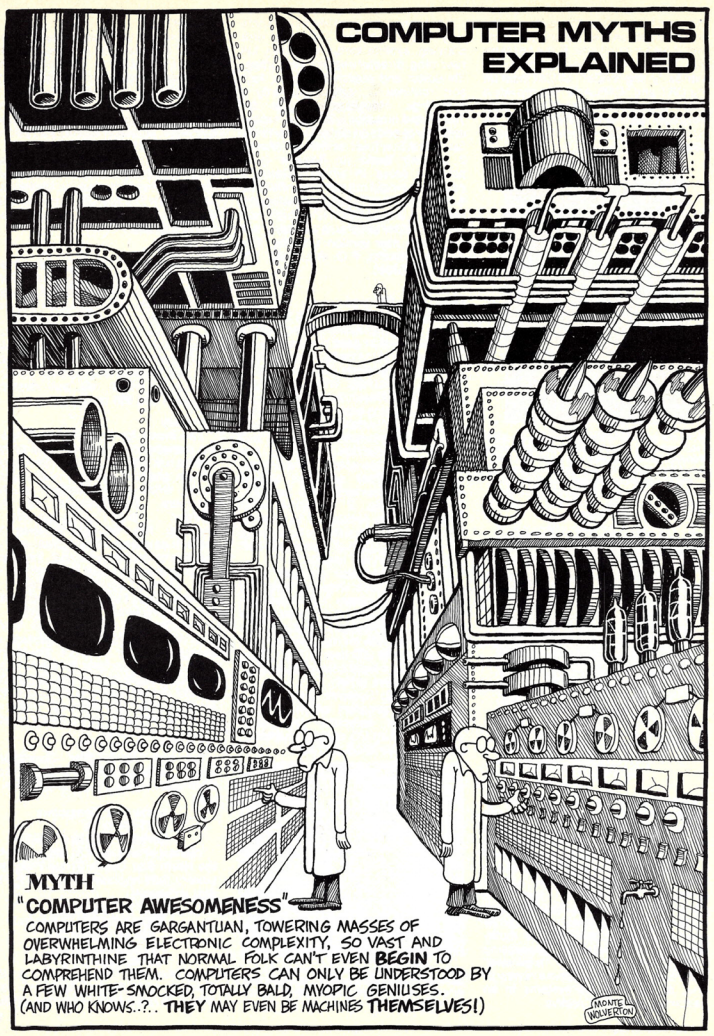
Successful science fiction preys on our fears of the future – nobody cares about watching a movie about the peaceful existence we're all going to have in humanity's ultimate utopia (boring), but numerous dystopic futures, on the other hand, have ruled the box office, from 1984 to The Terminator to The Hunger Games. The message they contain is fairly straightforward: technology is cold, impersonal and designed to rob us of our humanity, or enable our enslavement, or make us obsolete...or simply kill us. "We have to pay attention to these threats!" their trailers scream. "The fate of civilisation depends on it. Watch our movie."

As these tongue-in-cheek cartoons from the late 1970s and early 1980s demonstrate, the general public of the time (or at least the media) took these 'predictions' very seriously. After all, science-fiction authors had predicted everything from personal computers to space travel – why doubt their prognostications of technological doom? As a result, the public's questions regarding that future were numerous and largely negative in nature: would we become subservient to computers, our body merely a physical arm of a logical machine? Would we subsequently lose the ability to communicate with each other on an emotional level? Would computers eventually develop sentience and decide we were no longer useful? Staring down the barrel of one's own impending irrelevance, it's easy to see how these kinds of questions could keep a poor human up at night! And the (largely speculative but 'obvious') answers to those questions didn't help either – everyone knew the world was going to a technological Hell, it was only a matter of time. If you didn't agree you were just naive.



Better enjoy our binary overlord-free life while it lasts, before we're wiped out of existence – or we nuke ourselves first. That's the 1980s philosophy in a nutshell (or a CP/M shell?) It was a pessimistic era!

After all, technology had been moving at a breakneck pace – a hundred years earlier most cities didn't even have electricity! There had since been the automobile, airplanes, radio, television,



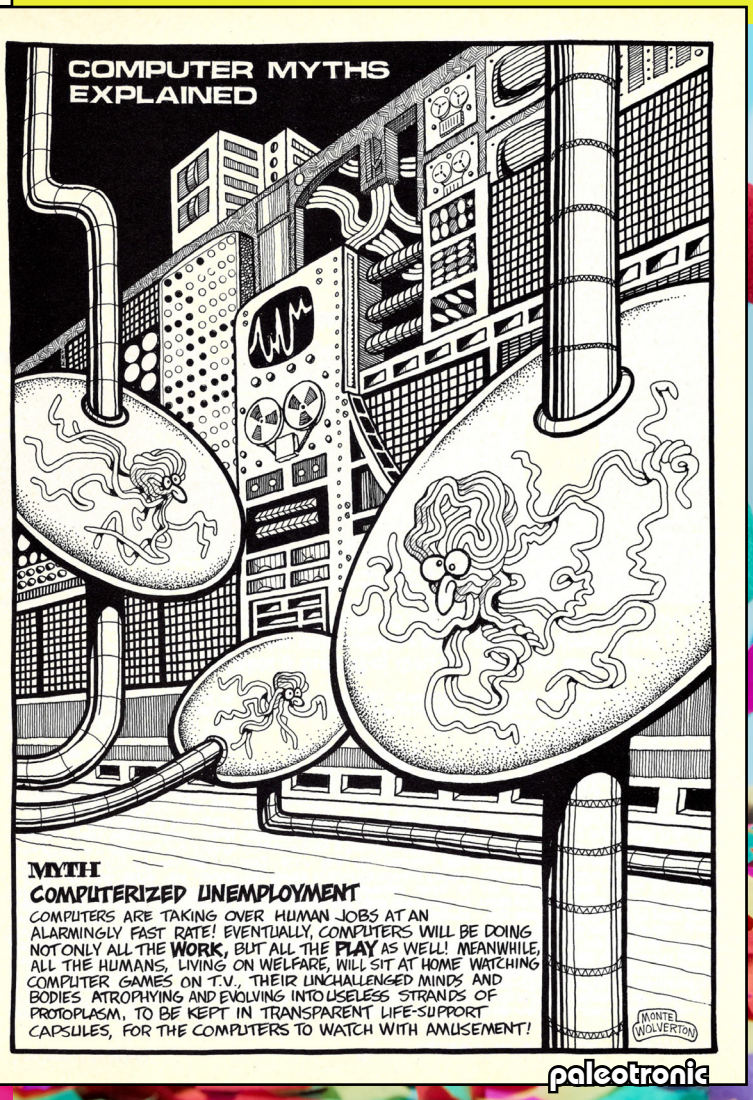
computers, video games, the Moon landing, the space shuttle – and nuclear bombs. This train had a rocket strapped to it and nobody knew where it was going. Honestly, it's easy to become paranoid under such circumstances, and while we can look back now and chuckle at those fears as unreasonable, we shouldn't discount the possibility that in some timeline somewhere we _were_ enslaved by robots, or turned into cyborgs, or quietly sterilised into extinction, or pre-empted any and all of that by pushing the button.

Hm. That's a bit of a grim start for a 'party' issue, isn't it? Let's shift gears. Issues with Facebook and 'echo chambers' notwithstanding, the future turned out fairly well. We don't all live in the bowels of grimy industrial megalopolises (yes, that's a real word!) spending our lives shoving coal into furnaces to feed an ever-growing artificial intelligence comprised of millions of vacuum tubes...(I really need to give up my subscription to the Really Scary Black And White Dystopic Movies channel!) Artificial intelligence in any meaningful way never happened, society appears to have resisted total corporate enslavement (I write while sitting in a Starbucks) and we generally still talk to other people face-to-face at least occasionally. Sure, we carry a little computer everywhere and will hyperventilate if we misplace it, but we do so in fresh air and sunshine. So that's something.

In fact, as we'll see in this issue, from a social standpoint humanity's relationship with technology evolved in almost the opposite direction. Rather than becoming an inhibiting influence on personal interaction, it's arguable technology actually encouraged it, eventually. From allowing us to make personalised greeting cards on our own printers, print newsletters for our community groups and schools, or organise events, to connecting on-line through chat and e-mail and offline via CB radio, to multiplayer videogaming, modern dating websites and social networks, technology has facilitated a virtual renaissance in our ability to make relationships, and while it hasn't been without its issues, it's hard to see our modern digital lifestyle as an entirely bad thing (but go for a walk in the park sometime, would you? The birds miss you. So does your grandmother! Anyhow...)

Let's start by literally putting ink to paper. Starting in the mid-1980s, the Print Shop gave computers in primary schools everywhere a reason to exist beyond spelling and maths drills and easily tripled the size of the fanfold paper and printer ribbon budget. Suddenly, knowing how to use the computer could get you on the dance committee! Another software package, the Newsroom, gave computer nerds a voice and taught them how to use a photocopier. We're going to look back at both of these. We'll also show you how you can make your own Print Shop greeting cards today, using emulation.

Next, the modem connected computers (and their users) together, allowing not only for the exchange of information but also the opportunity to meet new people and engage in conversation about diverse topics with people you would have never interacted with in "real life" (the modem wasn't breaking entirely new ground – citizens' band radio had revolutionised

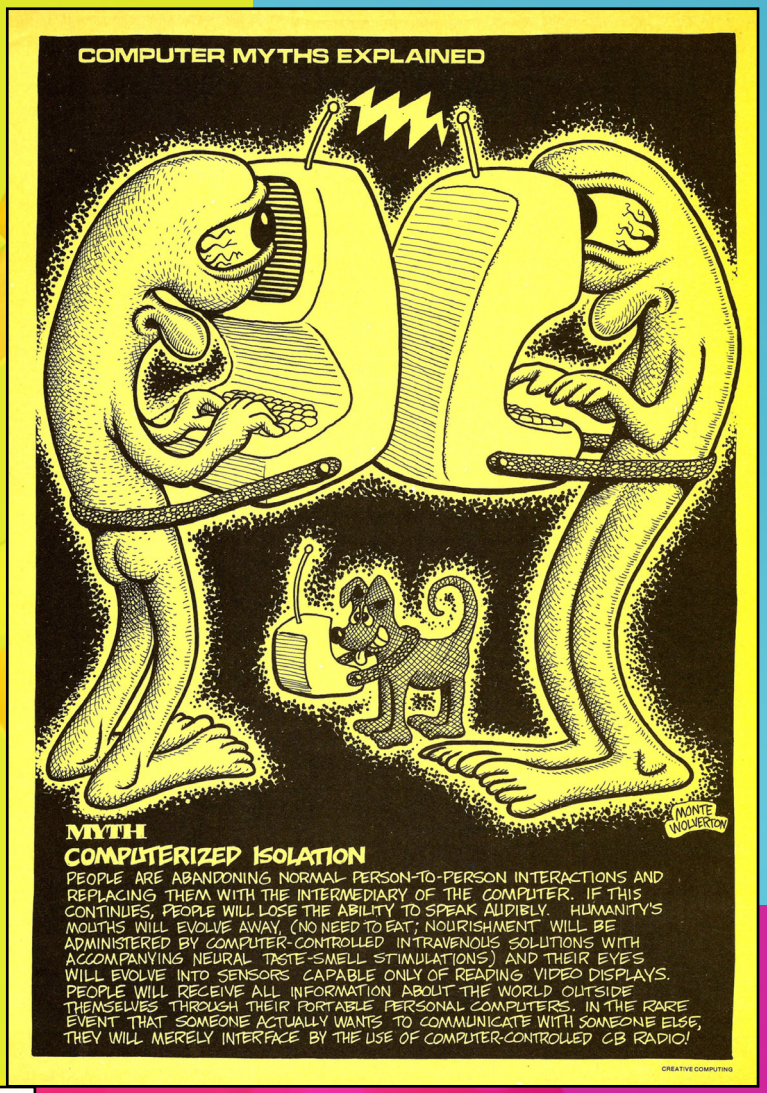


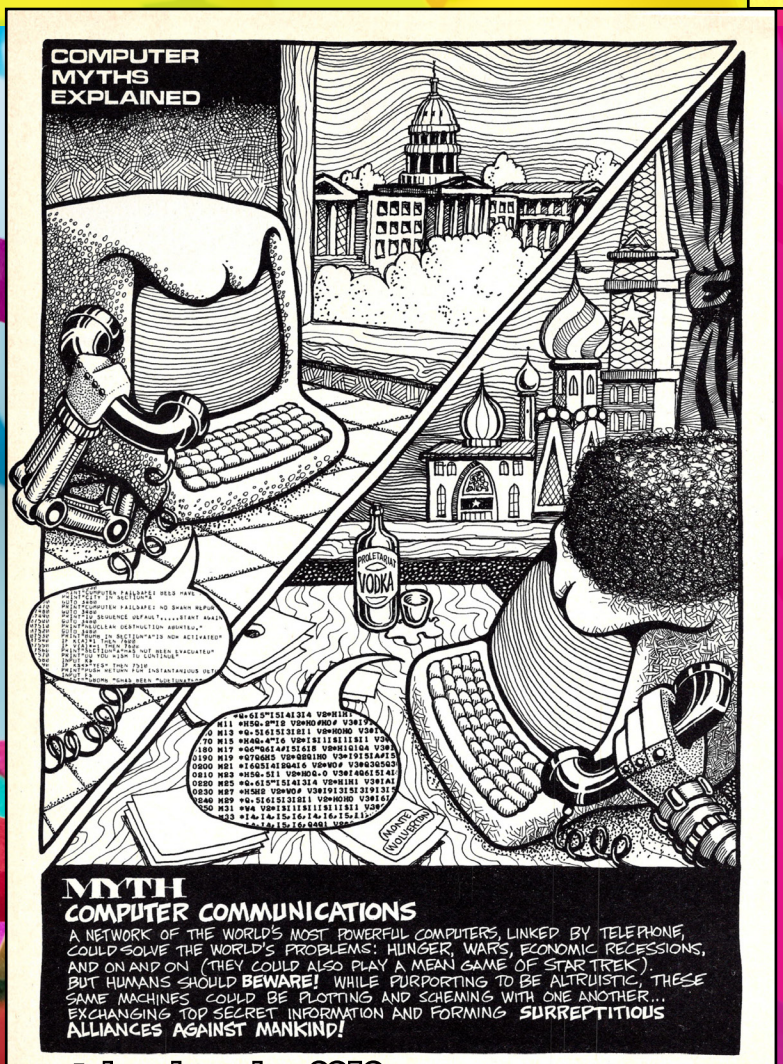
remote social communication in the 1970s, although it was harder to impersonate someone else over it. We'll talk a little about it too).

Computerised 'bulletin-boards' (or BBSes) and multi-line chat systems popped up everywhere, like weeds, and parents found their phone lines monopolised in the evenings by their children talking to complete strangers on their home computers (I'm sure that kept more than a few of them up at night too! The 80s were a magical time.) If they wanted to rein their offspring in a bit, online services such as Compuserve provided larger, more sanitised digital environments but at a significant per-minute cost, while users' groups physically gathered families together in safer environments to help each other learn about and live with their new computers.

Of course, like with anything this brave new frontier also led to youthful shenanigans, such as hacking and piracy (arrgh me hearties!) and we'll (re)visit those issues. We'll also check out some TV and movie moments of teenage technological mischief.

Adolescent misadventure (such as exposure to drugs and fighting) also frequently happened at the video arcades that had similarly sprung up in the late 1970s and early 1980s and the media quickly became quite hysterical over the supposed impending ruination of the entire younger generation(s). To mitigate these concerns, the godfather of video games, Nolan Bushnell, oversaw the creation of the first wildly successful cartridge-based home video-game system, the Atari 2600, to encourage play at home. Secondly, he founded



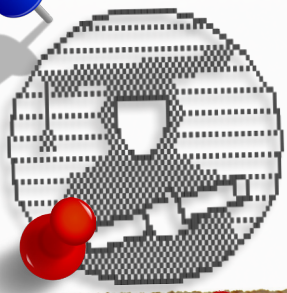


Chuck E. Cheese's, a chain of video-game restaurants that worked to reposition the image of arcades from being largely adult-oriented to places where families could go for entertainment. All of these will get a look-in. And remember kids, winners don't use drugs!

Of course, coming at the end of the year, this issue also spends some time looking back at the relationship between consumer electronics and Christmas, particularly those products and innovations found under the tree that went some way to bringing families and friends together, to learn, share and play. We'll look at the price wars that led to relatively widespread adoption of home computers and later videogame consoles, popular multiplayer and holiday-oriented games, the first portable digital communication devices, and more. There will also be some classic Christmas computer programming, and an electronics project! And plenty of cool historical artwork from classic magazines.

Finally, we'll examine how retrotechnology is making people social today, through conventions where people gather to celebrate vintage computer systems such as the Apple II, the Commodore 64 and the Tandy Colour Computer; modern revivals of historical bulletin-board and chat systems; and computer-art groups and 'chip-tune' music events.

Whew! I guess technology wasn't quite so anti-social after all. Come along and join us while we celebrate the ways retrotechnology has brought us together, then and now. And thanks for coming! It wouldn't have been much of a party without you.



SCHOOL NO



0 - Connect Zero
5 - The Print Shop
9 - Doug Carlston Interview
13 - Dot Matrix Printers
17 - Emulation Workstation
18 - The Newsroom



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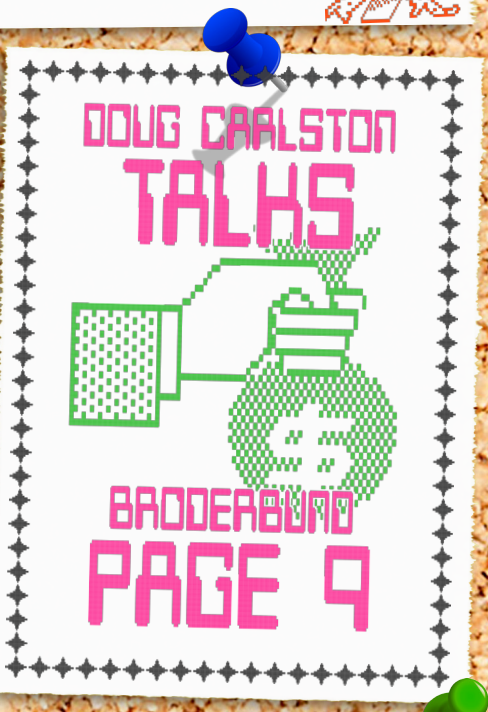
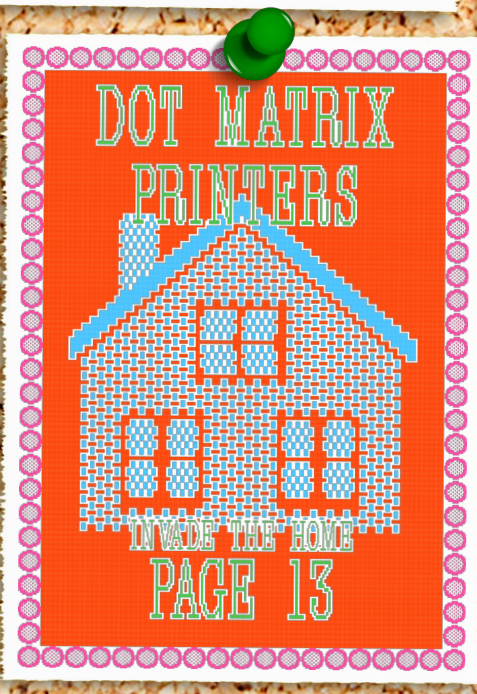
21 - Celebrating On-line in 89
25 - How Modems Work
27 - Online Information Services
31 - Chat Systems
33 - Connecting On-The-Go
37 - CB Radio
39 - Xmas Hams
40 - First Carols



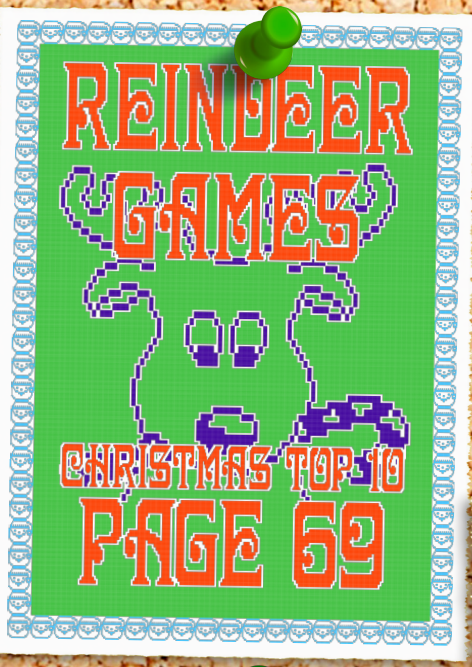


41 - Multi-User Dungeons (MUDs)
43 - The Big Cheese: Arcade Rat Makes Pizza
47 - Atari VCS Invades
50 - The Computer War on Christmas
53 - It's a ZX Speccy Xmas Demo!
57 - Top Ten Party Games
62 - Holiday Lemmings
67 - Kill a Happy Face

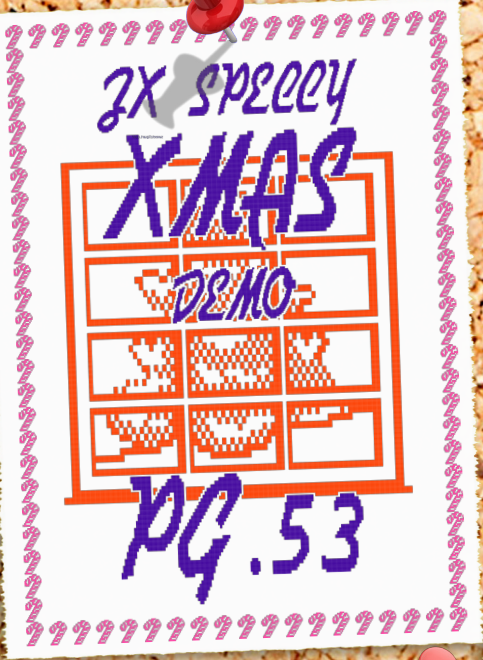


TICE BOARD





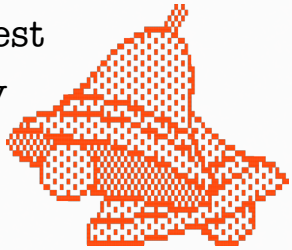
69 - Pixel Playas: Top 10 Reindeer Games
75 - The Toy Store Under the Tree
77 - User Friendlies: User Groups
79 - KansasFest Recap: Roger Wagner
83 - Adelaide Retro Computing Group
86 - CommVEx Commodore Vegas Expo

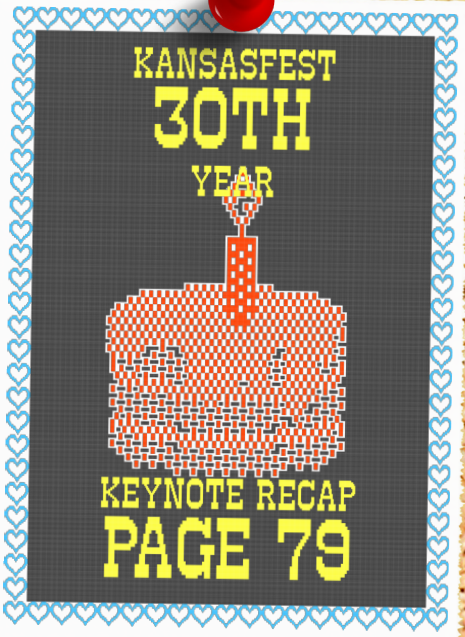


87 - Software Preservation Party@WOZFest
89 - Textfiles.com 20th Anniversary
90 - The ANSI Art Scene: Meet Mistigris

95 - Interview with a Sysop
98 - Chip to be Square Sounds
100 - Emulators Get Social
105 - Xmas Light Organ Project
109- Android Dreams

113 - Dead Pirates Letters of Marque
115 - On the Road to KansasFest
117 - A Christmas Cover Story
119 - Santa's Fun Zone!
121 - Thanks for Calling





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The Print Shop

Graphics program lets users design, print greeting cards

BY TOM SHEA
Reporter

Broderbund Software has come out with a program for the Apple II Plus and IIe that lets you design and print your own greeting cards.

Other graphics software provides some of the design elements you might use to create a greeting card, but The Print Shop is designed specifically for that use. Using The Print Shop, you can pick an illustration from a library of holiday-oriented designs such as pumpkins, Christmas trees, bells and birthday cakes. You create your own message. The program gives you a choice of eight fonts in which to print out the message, with the option of solid, outlined or three-dimensional lettering. You can further customize the card by surrounding the message with fancy borders. It also lets you create a repeating pattern that underlies the other graphics, a sort of floral or geometric wallpaper in the background.

Finally, you can print out as many copies as you like on most of the popular dot-matrix printers. Broderbund supplies some colored fanfold paper so you can make cards in colors, too. The software aids you in lining up the paper exactly, and it prints the outside and inside of the card at diagonally opposite corners so that, when you fold the 8½ × 11-inch paper in four parts, it becomes a greeting card.

The $49.95 program does a couple of other tricks as well. You can print out large banners that could be strung above a doorway or across a wall. The graphics are printed out extra large, and the letters spelling out the message are about seven inches tall.

You can also create illustrated posters, again combining picture and text elements on a piece of paper. One use of this feature is that it lets you custom-design your own business or personal letterhead without having to go to a print shop. You can pick one of the symbols already in the library



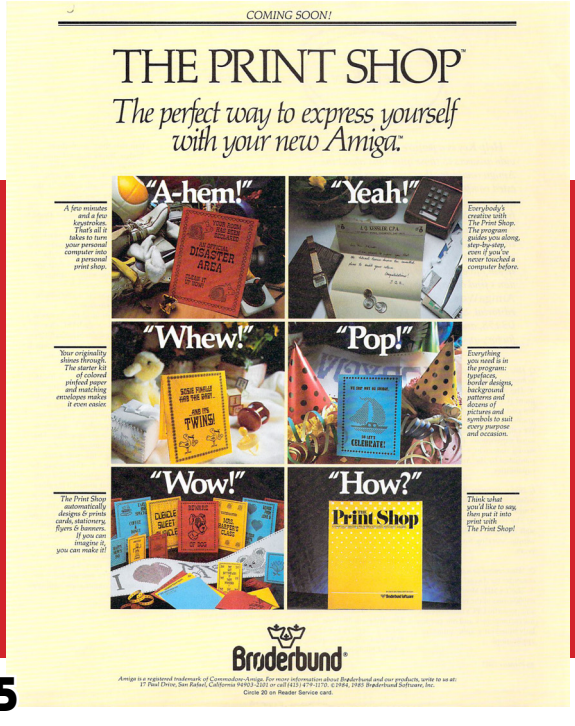
Finally, a use for a home computer beyond business, education and games! I kid but really what The Print Shop was an excuse for was a dot-matrix printer. And coloured fanfold paper (some of which was included in The Print Shop's retail box, along with some coloured envelopes). The Print Shop made printers fun!

Also, children with no money could now create their own personalised greeting cards and no longer needed to feel badly about having nothing to give to friends and family on birthdays or Christmas. They would no longer be labeled as rude – just cheap.

In the early 1980s, if you wanted posters to advertise a yard sale or a party, your options were pretty limited. You could get some blank sheets of paper and some crayons or felt markers for the whole do-it-yourself experience, which was cheap but unless you were a professional illustrator the results were bound to leave something to be desired, if not be downright embarrassing. Otherwise you could get the local printer to do it but it wasn't going to be very cost-effective, especially in such a small quantity. Each poster could end up running you the same price as a Big Mac – or even a whole Meal Deal – and with that kind of overhead it could make the whole yard sale endeavour smell much less appetizing. And so, usually it was back to the felt markers or whatever else you could find lying around the house, and being the tightwad you were you would not-so-happily contribute an additional indignity to the ever-growing mountain of your own personal shame, because you wanted that Big Mac for yourself, dammit.

And let's not even get started on greeting cards, those vile instruments of larceny that existed only to relieve you of your Big Mac money because if you didn't buy them for every birthday, wedding, anniversary and holiday to give to every family member, friend, co-worker and all the other people you were even remotely acquainted with, you were certain to be outed as the tightwad you were and they might not want to be seen in public with you anymore. Which would leave you sitting in McDonald's eating your Big Mac alone, plotting your revenge against Hallmark for engineering the single greatest extortion racket in the history of rackets. Curse you, Hallmark. Curse you!

But luckily for you, things weren't going to remain this way forever. Home computer manufacturers began to get into some pretty serious price wars with each other, making their products much cheaper than they had been, and hence more accessible for tightwads like yourself. If you wanted to be really frugal, you could save your Big Mac money and convince your boss or parent to buy one! Totally win-win, right?



Holiday time in a card shop can be a terrible assault on your senses. Those soft-focus greeting cards with beachcombing lovers and acetate overlays bearing messages that would gag even Rod McKuen now share shelf space with Frosty, Santa, Rudolph, and an alarming number of rodents and other barnyard critters in full holiday regalia.

One alternative, of course, is to shop in an exclusive boutique where an assortment of museum reproductions or hand-painted originals can blow your budget to smithereens. Another, perhaps more satisfying, alternative is to make your own cards. But it takes time and talent to produce professional-looking, customized greetings for everyone on your list. It makes you wish you knew somebody with a print shop.

Well, shoppers, with a new program from Broderbund Software you can turn your Apple or Commodore into your very own print shop. A fun-to-use package, The Print Shop lets you create high-resolution greeting cards for any occasion and print your own signs, letterheads, and jumbo banners.

Knowing it had a hit on its hands, Broderbund heavily marketed The Print Shop, publishing advertisements in practically every computer magazine and sending them free copies to review.

Their reviewers loved it, praising its uncomplicated interface and step-by-step workflows, and raving over the variety of included fonts and graphics.

Consumers responded, and sales of The Print Shop soared, netting Broderbund big profits and its developers lottery-sized royalty cheques.

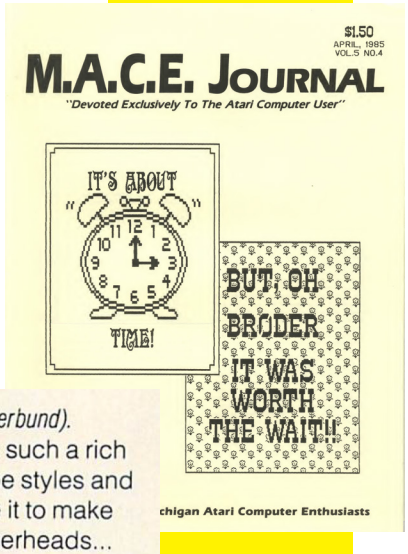
AT SHOP



THE PRINT SHOP (BRODERBUND)

A NEW PHENOMENON

Such software is part of a phenomenon called desktop publishing. The Macintosh started the revolution in 1984 by simplifying the process of combining high-resolution text and graphics and printing them without using a clumsy screen-dump program. Apple II users can get some of the same effects through software. Broderbund's The Print Shop appeared in 1984 and became a best-seller overnight. It had Apple users around the county creating custom banners, signs, greeting cards and stationery. New products continue to appear, which incorporate more features and remain easy to use.



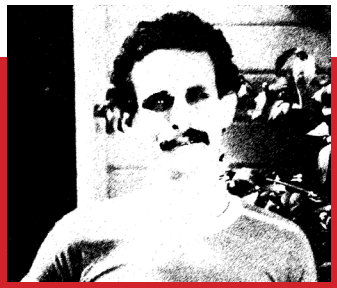
THE PRINT SHOP *(Broderbund).*
"Exceptional. It offers such a rich variety of different type styles and designs. You can use it to make invitations, cards, letterheads... anything you can imagine. It shows people something really useful they can do with their computers."
—Phil Wiswell, Contributing Editor.

However, while the computer could theoretically handle the artistic part of things better than your own two thoroughly uncultured hands, there wasn't yet e-mail or Facebook with which to send your digital creations, and there were no kiosks at Officeworks or Kinko's where you could actually render your new digital servant's creations to paper without having to pay that blasted printer all of your Big Mac money! You needed your own printing device (also co-incidentally called a printer) but you had to be patient because all you (or your parents or boss) could afford was a 'daisy wheel' model that punched out each character fully-formed like a typewriter, and unless you were proficient in ASCII art was quite useless for making posters and/or greeting cards, thus doing nothing to fill your stomach with more Big Macs. Curse you, Daisy!

But happily the printer manufacturers began to race for the bottom of the market (e.g. you) and soon dot-matrix models (which could print graphics) began to appear at a price more palatable to you (or whoever else you could talk into buying one). But then it turned out that designing the computer graphics yourself was tedious and time consuming, and you started longing for the felt markers and crayons. Now what?

It wasn't just home users that benefitted from The Print Shop's abilities – schools were also big fans of The Print Shop, using its capabilities to create everything from banners for events like dances to signs reminding students to get to class on time. Smaller organisations and businesses also found The Print Shop to be an economical solution for their newsletters, instore signage and advertising. It was a hit all around, and the sales numbers more than proved it.







The Print Shop was designed by David Balsam (top right) and programmed by Martin Kahn (bottom right) for the Apple II originally as a video greeting card system, but Broderbund founder Doug Carlston suggested the application print the cards instead and the rest is history. Teenage whiz-kid Cory Kosak (left) was responsible for translating (or 'porting') it to other computers such as the Atari 800 and Commodore 64.

Apple in Print Shop

The Print Shop from Broderbund Software lets you write, design, and print your own greeting cards, stationery, letterhead, signs, and banners with your Apple II+ or IIe. It offers eight different type styles in two sizes and in solid, outline, and three-dimensional formats. The Print Shop has nine border designs, 10 abstract patterns, and more than a dozen pictures and symbols with which to work. A built-in graphics editor lets you create your own symbols and modify the supplied ones. You can print illustrations generated with other programs.

The Print Shop will produce a greeting that has messages both inside and outside and full-page signs. Its text-editing features include automatic centering, left and right justification, and proportional spacing.

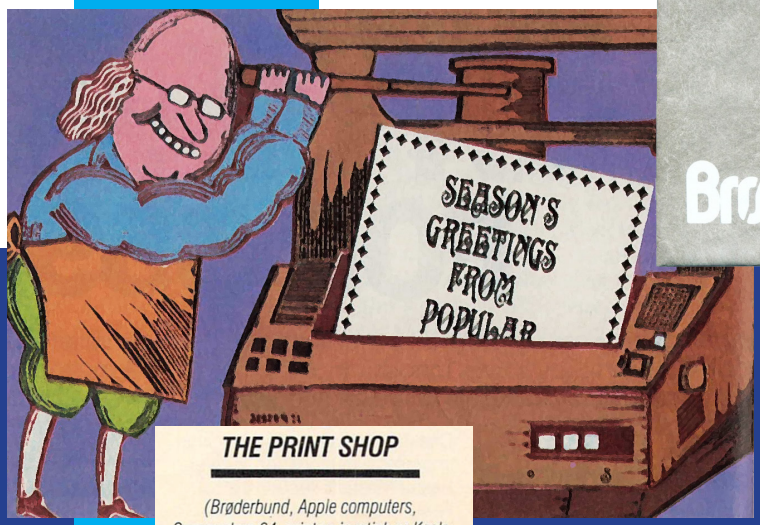
This program comes with an assortment of pin-feed paper and matching envelopes. It requires 48K bytes of memory and a printer. It costs $49.95. Contact Broderbund Software, 17 Paul Dr., San Rafael, CA 94903, (415) 479-1170.

Of course, the traditional printing industry wasn't super-happy this software upstart was invading its turf, ridiculing the quality of dot-matrix printouts – but it turned out most users didn't care, it was 'good enough' for them.





In 1985 The Print Shop's copy protection was broken and it was subsequently pirated – and mercilessly, its only 'competitor' for the title of 'Most Copied Commodore 64 Disk' a videogame adaptation of the movie Ghostbusters. Despite that, by 1988 Brøderbund had sold over a million copies of it, with The Print Shop comprising 4% of the entire US software market in 1987.



THE PRINT SHOP

(Brøderbund, Apple computers, Commodore 64, printer; joystick or Koala Pad optional; $49.95)

This program doesn't just print signs; it turns your home into a print shop. Your services include greeting cards, jumbo banners, letterheads, and a choice of eight type styles.

With a parade of generally positive reviews, The Print Shop helped drive home computer adoption at a critical time in the industry – price wars had made 8-bit computers affordable for even many low-income households, and software like The Print Shop gave them an edge over videogame consoles.

What you needed was software specifically designed to create posters and greeting cards without needing much effort on your part – a kind of... well, a computerised 'print shop' that wasn't out to steal your Big Macs. Fortunately for you, a few enterprising individuals must have heard your pleas, because lo and behold, in 1984 software publisher Brøderbund released... well, 'The Print Shop', a program designed to create posters, greeting cards and other things without much effort on your part. If you had an Apple II that is. But you didn't, because you were a tightwad who bought a Commodore 64 (or convinced someone else to) and so you had to wait an extra year before it came out for it (and the Atari 8-bit machines, also popular with tightwads after Jack Tramiel took Atari over and got into a price war with his former company). But you were happy to wait. Because for around $50 (not your $50 of course, but your boss's or your parents' – or maybe you pirated it because why pay for software when you can buy Big Macs?) you could finally stick it to your local printer and Hallmark and all those other greedy bastards who picked your pocket and emptied your stomach. Hooray!

THE PRINT SHOP
by David Balsam & Martin Kahn
Broderbund/Apple/-
48K Disk/Printer Required

Move over, Hallmark, and make room for people who care enough to design their own! **The Print Shop** turns a microprocessor into a home shop for personalized greeting cards, letterhead, even signs and banners, then prints out exactly the number of copies needed.

The program comes packed with some colored paper and envelopes to get started making personalized cards. It's very easy to use, since on-screen prompts lead the computerist step-by-step through the creation process, turning every user into a designer, while providing almost unlimited versatility in the cards, signs, banners and stationery produced.

(Joyce Worley)


SOFTWARE REVIEWS

REVIEWED BY ERVIN BOBO

PrintMaster

Computer: Commodore 64
Publisher: Unison World
2150 Shattuck Avenue
Berkeley, CA 94704
Medium: Disk
Price: $34.95

When I heard about a new printing program for the Commodore 64 that was rumored to be better than anything else on the market, I couldn't wait to get my hands on it. But when it arrived and turned out to be *PrintMaster*, I was almost disappointed.

For some time, I had been using *PrintMaster* on the IBM PC and had grown quite fond of it. But I was fully aware that more memory allowed for more features than were possible on a 64K machine, and I expected the 64 version to be abbreviated.

The good news is that I was wrong. Making use of disk access routines, *PrintMaster* offers all the features I'd come to rely on—including the Preview feature, which sets this program apart from all others of its kind.

You begin with a menu to make greeting cards, signs, calendars, or

PrintMaster lets you create greeting cards, signs, banners, T-shirts, calendars, or stationery; and offers all the features you would expect from computers with greater memory.

Commodore key at the prompt to see your card in its entirety. If anything is not to your liking or if you think you might do better, you can now go back to any point in the program, in reverse order, and change whatever you want.

Should you feel none of the graphics in the library are appropriate, *PrintMaster* gives you the option of creating your own designs or modifying existing designs through the Graphic Editor. Functioning much like a sprite editor, this option lets you use joystick or cursor keys to move around the grid, drawing and erasing one pixel at a time until you have just the effect you want.

The black-and-white display is crisp and sharp at all times, the on-screen representations of graphics and fonts are exactly as they will be printed, and the Preview mode introduces a feature which should be a must in printing programs. If there is a drawback to *PrintMaster*, it is only that not every printer and only two interfaces are officially supported. But you can't have everything.



As one might expect, competitors appeared, the most notable of these being PrintMaster, which was acquired by shareware publisher SoftKey, who then heavily discounted it in an effort to hurt The Print Shop's sales and weaken Brøderbund's market position, eventually enabling SoftKey to engage in a hostile takeover of Brøderbund.

You could print out signs and posters for just about anything, as many as you liked. You could print our greeting cards for friends, family, everyone and anyone – even your dog, cat and goldfish ("Thank you for being such a lovely fish!") You might even print out a greeting card congratulating you for your newfound ability to print out greeting cards! Why not? All it cost was a bit of ink and paper! But you weren't the only one ecstatic for the prospect of this new innovation freeing you forever from the joint tyranny of Big Printing and Big Crayon. There were plenty of other people who needed to stretch a buck, and not just so they could stuff themselves with Big Macs. These included not-for-profit organisations who had previously done much of their in-house printing using wood blocks and ink pads (what is this, the 15th century?) and small businesses, which could now use the same computer and printer they bought for doing accounting to print flyers and posters.

Schools were also really big customers, The Print Shop being a saviour for time- and cash-poor teachers traditionally forced to rope students into drawing banners and posters – not always the easiest of tasks, and one that required some measure of supervision lest little Jimmy stick the felt markers up his nose. To sweeten the deal, Brøderbund came out with an additional 'companion' disk that could print customised calendars – what 1980s teacher wouldn't want that? – and more fonts and graphics. It was an easy sale to make.

Library disks provided additional graphics and fonts (including plenty of Christmas-related images) or you could even draw your own inside The Print Shop! A later-released 'companion' disk provided a calendar maker, font and border editor, and a 'creature maker' game.The Print Shop found a successful balance between usability and creativity, providing variety without being too complicated.







User groups and not-for-profit organisations used Print Shop-generated ouput in the 'cut-and-paste' layup of newsletters and other homemade publications, the beginnings of the 'desktop publishing' phenomena that gradually saw computer programs replace traditional typesetting and layup with all-digital 'in the box' software design solutions.

And boy did they sell! Sales took off like a rocket and developers Martin Kahn and David Balsam were rich overnight. The teenage whiz kid Brøderbund CEO Doug Carlston found to convert the program to work on other computers very quickly owned a Porsche! They no longer needed to worry about saving enough pocket change to buy a Big Mac (lucky bastards!) But The Print Shop did much more than simply enable its creators to purchase Porsches full of Big Macs – it proved there was a market for its sort of software.

With no self-interest at all, the publishing industry was extremely skeptical of the emerging threat posed to them by low-cost home computers and dot-matrix printers, mocking the 'poor quality' output they produced as unsuitable for anything anyone would dare show to anyone else – but The Print Shop demonstrated people's standards were much lower than they had anticipated. All kidding aside, a new middle ground was established (somewhere between markers and markup) and other software publishers eagerly jumped into it, creating not just ripoffs like PrintMaster, but new software such as The Newsroom, Create-A-Calendar and Awardware, each designed to provide a new 'good enough' solution in an area previously limited to professional or handmade alternatives.

These applications formed the foundation upon which the desktop publishing industry was built –sure, the Macintosh and LaserWriter invaded the commercial printing industry, but they would have had a harder time had software like The Print Shop not aided in fostering an acceptance of computer-generated print media by the general public first. And the demand for consumer self-publishing solutions didn't end there – lower cost 16-bit computers such as the Atari ST combined with cheaper design packages such as Timeworks Desktop Publisher and higher-quality 24-pin printers meant that those computer users who had previously found such great utility in The Print Shop and its brethren were able to advance in their amateur printing wizardry to full-scale in-the-box design, creating everything from brochures to how-to books in the comfort of their own homes – and without sacrificing too many Big Macs.

This trend would continue to the present day where obtaining the tools needed to create a publication such as this magazine are within the reach of most. But sadly, while the future was made of happy fonts and clip-art celebrations for many, for some – including Brøderbund's founders and many of its employees – it would not go so well. After a competitor to The Print Shop called PrintMaster appeared, Brøderbund sued – and won, but this story does not end there, with PrintMaster's publisher Mindscape making the required changes to avoid legal reprecussions and continuing to market it. But venture capitalist-backed SoftKey, looking to 'consolidate' the software industry, saw an opportunity to weaken Brøderbund, buying Mindscape and virtually giving away PrintMaster, hurting Brøderbund's profits and lowering its stock price. SoftKey mounted a hostile takeover and 500 employees lost their jobs.



Paleotronic was fortunate enough to speak with Doug Carlston, co-founder of Brøderbund Software, about The Print Shop and working with family...



Brøderbund (with the o stylised with a slash because it resembled a computer zero and, as Doug Carlston told us, 'it looked cool') was very prolific and published a number of iconic titles for 1980s and early 1990s computers and videogame consoles, including Drol, The Ancient Art of War, Captain Goodnight and the Islands of Fear, Airheart, Stunts, and the groundbreaking Myst, an adventure game with lifelike 3D graphics. Brøderbund also published productivity titles such as Dazzle Draw and Fantavision.

Dial Up Chat

Firstly, thanks for taking time for our interview. Apparently, you gave up being a lawyer to make video games! What were you thinking?

Well, that's not quite what happened. I was in high school in the early 60s and went to a summer program for people who thought they wanted to be engineers, and they introduce you to civil, mechanical, electrical, analog computers, digital computers; and they taught us Fortran. It was a natural for me, I felt very comfortable doing it. When I went off to college, I needed to pay for school and so I got a job at the computing centre – I had done that in the summer at the university in the midwest where I grew up too, so I had been programming – not games – I had been programming payroll programs and things like that, boring stuff. I then went off to live in Africa, I did other things, I was not around computers – they were big; you needed a very large room for a computer back then.

When I came back to finish school I went on to grad school; I went on to law school; there were no computers in my life there. I think it wasn't until the late 70s, I got a personal computer to help around the law office, to do the boring parts. I hated the idea that you pretended you were doing something original for everybody but it was all pretty cookie-cutter – you really had twenty questions when you were doing a will and you could kick it out, which is what happens now. And so I just wrote the code for those on my little Tandy TRS-80, which I think was a $400 computer at the time. What I found was that I wanted to use the computer to the extent that I could and that meant using things like the very limited graphics capability – I think it could make white dots and that was about it – so I wrote some games just to use parts that I didn't use doing wills and trust programs. It was fun, and my friends enjoyed it; my siblings enjoyed it, and at some point – I think 1980 – I decided I hated being a lawyer, I loved programming and I was going to figure out a way to get back into that universe, although that was not at all clear.

So I spent a few weekends writing simple games and sending them off to a company called Adventure International in Florida, and they took them immediately and started selling them and sending me money, which surprised me. So, since they hadn't asked for exclusive rights, I sent the same games off to several other publishers and they all accepted them; they just competed with each other with the same content. But it doubled or tripled the income from it, and it was starting to match what I was earning as an attorney and I thought it's a whole lot more fun, so I gradually – and it took about six months – closed down the law office – you can't abandon people, but you do it slowly. Since you don't need to be in

Brøderbund paid software developers royalties, seeing them more as partners than employees – this meant developers of 'hit' titles got very, very rich.



Brøderbund®

The Family Business

one place with computers and since I was at that point living in the north-eastern part of the States in Maine which is very rural and quiet and my family and siblings were all over the country – Americans don't tend to stay put very long – I decided to drive across the country and visit my friends and family slowly and just working at night, which is when coders like to code anyway, and driving during the day and work my way gradually across to Oregon, in the north-west part of the country, to visit my brother Gary.

He had been running a non-profit organisation; he was bored, and I said, "Why don't we start a software company? I code, I have a whole bunch of things I've written that I haven't sent off to the publishers yet, and you could sell them." He said, "Well, I'll try," and we picked up a computer magazine and there was a store in Washington DC run by a guy named Ray Daley. Gary picked up the phone, called him and said his name and the guy says, "Oh, are you related to the guy that wrote the Galactic Saga?" Gary says, "Yeah, he's sitting right here, he's my brother." Ray says, "Well, I'll always buy from the source." So, he bought $300 worth of those games, and that's how the company got started.

So it sounds more quixotic the way you put it, but in fact it was a long, slow drawn-out process of me losing interest in practicing law for various reasons, part of which is it's just not very creative in many respects – I don't think, others may disagree – and I just loved coding, it was possible (for me) to get back into coding, and people who do it, just, it's a drug. It's very hard to stop. In fact, I knew I was in trouble when I turned in what they call 'blueback', a legal document that's formal, and has a blue cover, and so forth, and without realising it I had gotten an idea while waiting for my chance before the judge – a coding idea – and I had just started scribbling on the nearest piece of paper, which happened to be the blueback, and he threw it back at me, and said, "What is this?" I realised I was not long for the legal world.

Every time my brother and I tried to do anything constructive together we always ended up fighting, but you managed to make a multi-million dollar company with yours. How did you manage to get along with your siblings?

I think the problem is that in any sane, normal family you're all equals, and so hierarchy doesn't work very well in that. You're used to calling each other out every time somebody gets a little uppity or too big for their britches or whatever and that's what siblings are for, they're supposed to do that. And so our solution usually was to fight; yell at each other – which terrified the rest of the company: "oh, the company's going under" and so forth, but of course we had forgotten about it five minutes later. We had very short memories in my family – it's congenital, even now I can hardly remember my name. It didn't hurt us; we did learn to tone it down because it was scaring the staff. So we stopped doing that. Also three is easier than two, because there's always an arbiter, there's always a



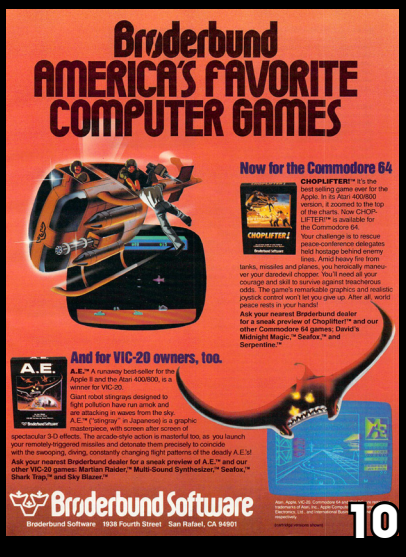
Brøderbund Software Inc. was founded by brothers Doug and Gary Carlston in 1980 after Doug had written Galactic Empire, a space strategy game, on his TRS-80 (retro-trivia: many of the locations in the game have names taken from African languages, based on Doug's years in Africa).

Gary found success selling Doug's game to computer stores, and the pair decided to start their own software publishing company. They chose an Afrikaans word Doug had used in Galactic Empire, Broederbond or 'association of brothers', for the name of the company, but altered the spelling slightly to be unique.

Their sister Cathy joined them a year later, and they were off and running, publishing titles such as Choplifter (1982), David's Midnight Magic (1982), Lode Runner (1983), Gumball (1983) and Karateka (1984). By early 1984 technology magazine InfoWorld estimated that Brøderbund was tied for the rank of tenth-largest microcomputer software company, and was the largest entertainment software company with US$13 million in sales in 1983.

In 1984 The Print Shop would skyrocket the company's sales even higher; 1985's Where in the World is Carmen Sandiego? began a franchise that included a children's television program and 1989's Prince of Persia would eventually be made into a movie! In 1991 Brøderbund 'went public', trading on the NASDAQ stock exchange as BROD. At the time The Print Shop comprised 33% of total revenue and Carmen Sandiego 26%.

However, in 1995 the market landscape began to change, and after a failed attempt to buy educational software company The Learning Company, Brøderbund's profits started to suffer. Its stock price began to fall and it became a takeover target. Rival SoftKey, which had bought The Learning Company, discounted one of its acquisitions, a knockoff of The Print Shop, and further drove down Brøderbund's profits, lowering its stock price further and ultimately SoftKey bought the company.



Doug Carlston



With fortune came fame, and the press were eager to tell the Carlston story.

COVER STORY

36 Brøderbund:
Next Stop World Domination?
By Mary Eisenhart
Solidly entrenched in the US, making steady gains in the global market, Brøderbund Software's founders explain their formula for success: they publish what they like.



Who can blame them? It's the story of the American Dream: creating a product, selling it at the right time, and making it big.



Doug Carlston wrote a book on his software publishing adventures in the mid-1980s; it's free to read online at: archive.org/details/SoftwarePeopleDougCarlston



third person – usually it was Cathy, my sister, who would say, "Would you guys just cut it out? You both are sounding ridiculous," and then you stop.

So I can't say we didn't fight – we did fight – but generally we worked together well, and we were all smart in different ways and that helped, we could find ways to work together. We also moved around inside the company – we didn't always do the same things. I couldn't code after the first year really, because you can't code and answer the telephone, you can't have your attention span broken constantly and yet, we didn't have enough people that you could just go lock yourself away in a room. So that ended up terminating my coding career for about twenty years. Although I do it now, but that's to keep the Alzheimers away.

Also, Gary, Cathy and I had worked together before; we built houses up in Maine and stuff like that, and so we had some experience in working with each other. And, because I was the oldest I got to be the boss and they did not like that, and so they constantly told me when I was behaving like a so-and-so. But we're going to play tennis tomorrow morning – it's a permanent thing, being a family as far as I'm concerned. And Cathy would be here with us except unfortunately she passed away a long time ago.

By most accounts you treated your software developers really well. Was this a personal or a business decision?

I don't think we overtly thought about it as treating people well, it was how we were raised. We were also not in business to be in business – we were originally in business to get free software from other people and make a living, put food on the table. We liked hanging out with one another – we hung out with most of our competitors, we would go on these whitewater rafting trips with seventy or eighty people and they were mostly from other companies, so it was a time when this whole industry was so new that when you found people in it, it was a joy. I remember I did one sales trip our first year – cold calls give me the sweats – but I drove across the country 3000 miles and stopped in every town, found a computer store, loaded up software on their machines and they'd come out all upset that someone was touching their devices and then they would buy from me. I will say that about half the stores I ended up staying at their houses at night, because once they found another true believer – and these people were not shopkeepers, they were computer geeks who had a store so they could hang around the computers all the time, and they really didn't want customers because they got in the way of their ability to enjoy the merchandise.

It was a very social time, and I think honestly family has something to do with it; my Dad was on sabbatical in year three or four and my Mom had nothing to do. So she came and became our first project manager. Basically she supervised a lot of the outside engineers, and she was

The Family Business

known as Mom to them too I think, in a lot of case. And I have to say that a lot of those early developers remain good friends of mine today. Yes, it was a business relationship and we negotiated – and some of them negotiated really hard. Jordan Mechner was a great example, he did Prince of Persia – he lives in Montpelier, France now and we go visit when we can – we would offer him a 20% royalty and he'd say he wanted 50%. I asked why and he said he did half the work! And so I'd sit down with the whole accounting table and say, "Okay, here's how all the money is spent. Here's our profit which is around 15%, which is less than what you're going. So explain to me what you want to cut here – here's the marketing, here's the cost of goods. Do you want cheaper boxes?"

But if you're honest with people and up front it's sort of a game to them too, there's a sense of newness about it and pleasure. We did do one thing nobody else did because it was important to me (as) I was getting royalties for a while: until Broderbund was blown up, after 18 years, we paid royalties on a monthly basis. The idea was that people could live on that. If you did it twice a year like book publishers, suddenly the level of uncertainty in your life is too high. The idea was to spread it out, they would be less likely to blow it on a Porsche, they'd be more likely to get groceries, stuff like that. I don't know if that was true, we had plenty of them who blew it on Porsches.

Speaking of Porsches, Print Shop developer Corey Kosak was known to drive one?

Corey wasn't the founder of Print Shop, he did what we called 'ports' – he converted versions of it to other machines. The original, which was on the Apple II, was done by Marty Kahn and David Balsam; Marty was an employee and David wasn't, it was complicated but we worked it out. David and Marty were a couple, and Corey – I had met Corey when he was 14 and as he grew up he decided he was interested in men – and so they became friends. Corey came from a dysfunctional family, but he had been the outstanding student in his high school and he was invited to give a speech before graduation and he had a table for guests. He invited me to come, and he got up there and said, "This is great honour, and I certainly hope this portends a Porsche in my future." And then he sat down. He didn't want to go to college; he went to college for three months and dropped out, then he worked for us for three more years and I finally talked him into going back to college. He still isn't convinced it was a good use of his time but I thought it would broaden him.

But it was not atypical for these guys, who were 20 years old or 19 or whatever. Our royalties didn't cap so when they had a huge hit, it was sometimes millions of dollars, and it could be millions of dollars inside a year when you've never earned anything before. Even if you get it monthly it still mounts up very, very quickly and you think it will go on forever. And Corey was one of those guys who claimed never to have an original idea, so he never got the full royalty because he never created a product on his own but he did all these ports – he could learn new machines overnight. And so he could go to David and Marty and say, "You guys just do the Apple II and I'll do the PC and the Commodore and the Atari." He could do them all, and he could do them fast.

The first program he ever gave me he gave to me in foolscap – he came in, he was 14, and said, "I have a game I want you to publish," and I said, "Sure, give it to me and I'll take a look at it." He said, "Well, it's on this piece of paper, I don't own a computer." So I sat him at my desk and I said, "You can come in on weekends and use it straight through until you're done." I happened to be there when he finished and he said, "Okay, I've typed it all in, wanna see it?" And it worked right off the bat, which as a programmer that never, ever happens; there's always errors. Except he never makes mistakes, as far as I can tell. I said, "This is great; it's fabulous; it's completely derivative!"

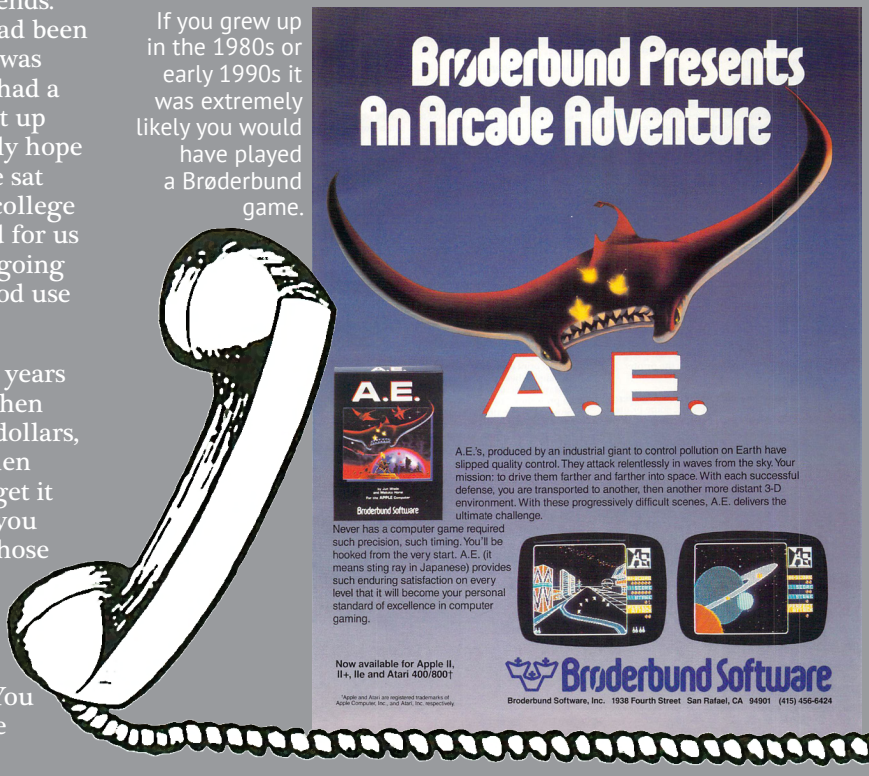
He said, "What do you mean?" I said, "You just copied Zork and changed the names!" He said, "Yeah, but I didn't look at their code! It's all original!" I said, "Yeah, but not in the eye of the beholder it's not. To the player it's exactly the same. So you've proved you're a really good programmer, but you probably need some help with ideas. Why don't we do some ideation?" And in the end, he said, "Why don't I just help other people? I can code like crazy but I don't want to create the whole thing, that's just not me."

And that's still where he is, although he's been in New York for years now and he's taken many other routes – he even worked for Google for a few years as a senior engineer. But we try to see each other when each of us is available. He's a good guy.

Thanks for Brøderbund Doug!

You can read the rest of the interview online at paleotronic.com/dougcarlston.pdf

If you grew up in the 1980s or early 1990s it was extremely likely you would have played a Brøderbund game.



Gadget Graveyard



These Okidata advertisements attempted to demonstrate how robust their printer offerings were, claiming that neither fire nor flood had prevented the continued operation of their products. However, truth in advertising was not a thing in the 1980s and so we suggest you take these claims with a bucket of salt sand.

In 1968, Japanese company OKI introduced its first impact dot-matrix printer, the serial OKI Wiredot, which had a 128-character generator and a matrix of 7 dots x 5 dots per character – and was noisy as Hell.

Dot Matrix Printers

They were loud and noisy, but they got the job done.

You might have got the impression, upon entering Jane Smith's house (sometime in 1986) that her husband was in the process of renovating their kitchen, the sound of a power tool growling and grinding away in the background. But you would've been wrong. No, what you heard was not the result of some sort of buzz saw or drill but rather the then-ubiquitous noise generated by the household's 9-pin dot-matrix printer. It might have been an Epson, an Okidata or a Panasonic – unless you had been around a variety of them it was hard to tell. But what it was was most certainly a printer – no confirmation was necessary. They were loud and distinct, the pins of their print heads hammering through their ribbons and driving ink into the paper trapped below, the act of rendering patterns on tree-pulp also creating unique rhythms you could learn to identify if you heard them enough – "Oh, that's a book report. That's a resumé. Oh, that must be a Print Shop banner!" The motors driving the head and the platen would whir and in some models the head would slam into the sidewalls of the printer, as if completing a techno-anarchic drum kit.

Dot Matrix

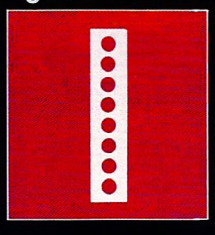
Take a look at the characters your computer displays on your TV screen. Each one is made of tiny dots, usually within an 8 x 8 box. Figure 1 shows a typical *dot matrix* representation of the letter "A". The dots are formed by a sweeping electron beam in your TV tube. Dot-matrix printers also use a series of dots to form characters.

The heart of a dot-matrix printer is the *print head*. Imagine it as a series of vertically stacked pins (see Figure 2). Each pin can be "fired" independently. To print a line of text, the print head sweeps across the paper. Characters are not formed "all at once," but one vertical line at a time.

Figure 1: Dot Matrix



Figure 2: Print Head













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Of course, as noisy as this was it was better than the alternative which was, for most people, nothing. While consumer laser printers (such as Apple's LaserWriter) became available in the mid-1980s they were horribly expensive, costing several thousand dollars. At the lower end were 'daisy wheel' printers that couldn't print graphics, so if you wanted to do anything more sophisticated than what an electric typewriter could produce you were out of luck – little Jenny was likely to be unimpressed if you brought back a printer that wouldn't work with The Print Shop.

At first daisy wheel printers were more expensive than dot matrix ones due to their ability to print fully-formed 'letter quality' characters, but as demand for graphical printing increased, they became cheaper, eventually falling out of the bottom of the market. But how did we get here, to dot matrix vs daisywheel? For that we have to do a little time-travelling, back to the mid-20th century.

Early mainframe computers typically used a 'line printer' for output, so named because they printed an entire line of text at one time – not instantaneously but sequentially, unlike a plotter, which moved paper back and forth while setting down a pen at appropriate locations to draw characters individually.

There were five basic designs of line printers. Drum printers, which used a spinning drum engraved with a complete set of characters for each column of the printer's overall column-width (for example 120 characters wide), had a series of hammers (also one for each column) that struck the paper to print the desired characters as they spun past. This all happened very quickly but made quite a racket, and the timing was not precise and so the characters were often vertically offset from each other, creating jaggy lines.

Chain printers placed the type on a horizontal chain that constantly looped in front of the paper, the hammers behind striking each column as the desired character scrolled past. By repeating the character set on the chain, faster printing could be achieved. These printers were so noisy and fast they could synthesize musical notes given the correct series of characters, and be played as instruments!

Bar printers were similar to chain printers but instead had a metal bar, engraved with characters, that moved left and then right, rather than looping like the chain. That leaves us with comb printers and wheel printers.

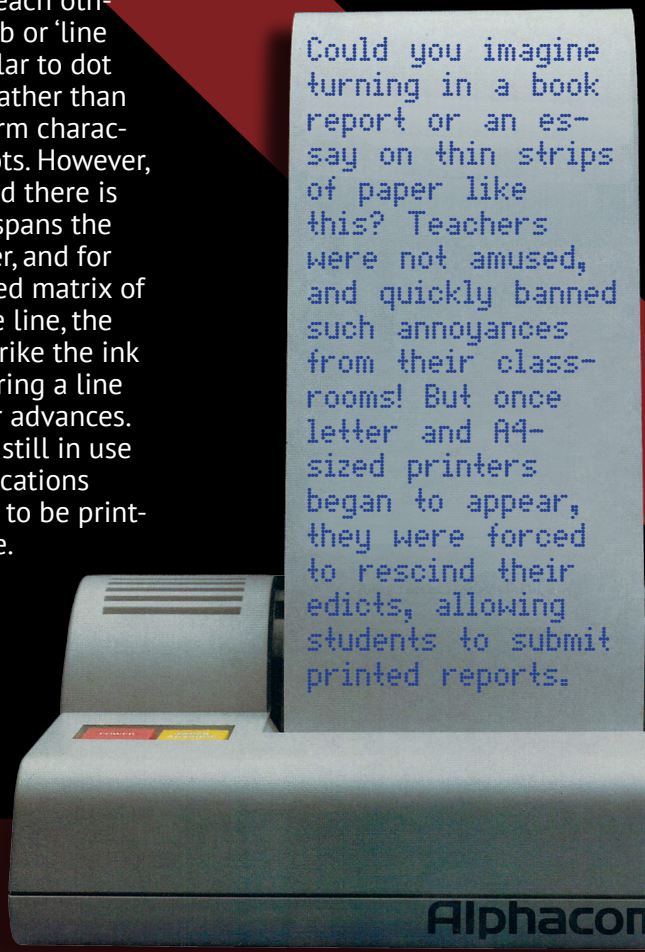
Wheel printers had a character wheel for each column; the wheels would spin until every character in the line of text was in place, then a series of hammers would render the entire line (likely progressively so they did not contact each other and jam). Finally, comb or 'line matrix' printers are similar to dot matrix printers in that, rather than using solid type, they form characters using an array of dots. However, instead of a moving head there is a line of hammers that spans the entire width of the paper, and for each row in the combined matrix of all the characters on the line, the appropriate hammers strike the ink ribbon and paper, rendering a line of dots before the paper advances. Line matrix printers are still in use today, in industrial applications where paperwork needs to be printed as quickly as possible.



Friction Vs. Tractor

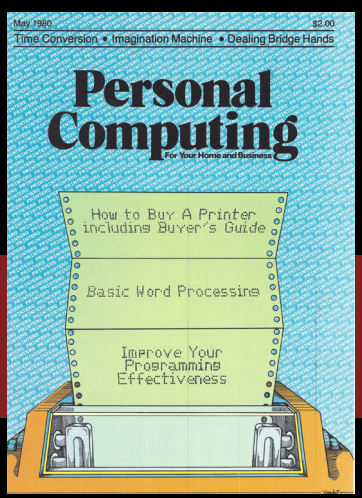
Also borrowed from typewriter technology, a *platen* is found in most friction-feed printers. The pressure of the rotating cylinder feeds single-sheet or roll paper. Unfortunately, friction-fed paper is subject to slippage and skewing. After ten forms, your printer may no longer be lined up with the paper. Skewing varies; some printers have excellent friction feed. However, the reliability of a tractor feed mechanism is generally superior for processing multiple forms. The "teeth" of a tractor feed mechanism fit into small holes on each side of the paper and pull it through the printer. Tractor feed is more expensive and requires continuous special pinfeed paper. However, the strips of holes can be detached and the paper separated into 8½" x 11" sheets.

'Tractor feed' printers pulled paper through the mechanism by a series of little holes attached to the sides of each sheet of paper, these sheets joined at the top and bottom. 'Friction feed' models could use plain paper – but only one sheet at a time.



The earliest 'home' computer printers used a thermal rather than an ink and impact method that required specially coated paper. Because thermal paper was starting to be used for cash register receipts, they were often the same width!







Founded in 1980, Taiwan-based Microtek started with printers but became known for scanners and digital imaging software.



Both wheel and comb printers evolved into respective consumer versions that used a horizontally moving head which printed only one character or only one fraction of a character at a time – dot matrix and daisy wheel. Initially both of them were very expensive, either type costing upwards of US$1000 in 1980 (over US$3000 today!) The high cost of printers likely drove the desire of Steve Wozniak and others to create computers that used a television set as an output device – these being much cheaper.

But as the market for home computers increased during the early 1980s, so did the market for printers – once consumers warmed to the idea of word processing as an alternative to the traditional typewriter, and products such as The Print Shop provided additional excuses for owning a printer. Printer manufacturers geared up production and a price race to the bottom began for those wishing to target the lower-end of the market.

The demand to print graphics won out over the desire to print 'letter quality' text and the dot-matrix printer conquered the market, becoming a common fixture in homes



While early dot-matrix print heads were a single column of 9 pins, later printers used a 24-pin print head, made up of two columns of 12 pins, slighly vertically offset in order to provide much higher character resolution than their predecessors. These printers offered both the versatility of dot-matrix printing combined with 'near letter-quality' (daisy-wheel printer manufacturers had marketed their products using the phrase 'letter quality') text and basically killed the daisy-wheel printer market overnight.

In the early 1980s there were dozens of printer manufacturers such as Star, NEC, Epson, Panasonic, Toshiba, Oki and many others, and most computer companies marketed their own branded printers (which were usually rebadged models from the former) including Commodore, Texas Instruments and Apple. While many of these companies, such as Brother, have survived into the present day, companies such as Genicom, Data South and Axiom fell by the wayside, either exiting the printer business, being acquired or going bankrupt. Over time the market consolidated into a half-dozen major players, including Hewlett-Packard (HP) and Xerox.

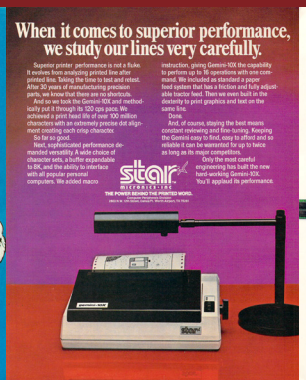


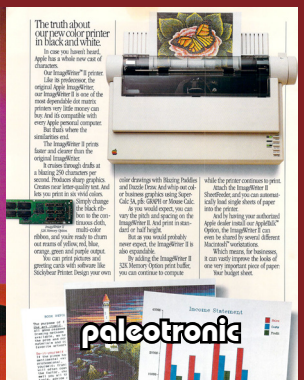
Graphics

In addition to printing predetermined patterns (ordinary numbers, letters, etc.), some printers also let you control the print head directly to create your own custom graphics. You can create special symbols. And you can "dump" (copy) graphics from your computer, if it has a high-resolution screen. High-resolution is measured in dots-per-inch or dots-per-line. You may not need more resolution than your computer has. If your computer can display 320 dots per line, you don't necessarily need a printer's capability to print 320 dots per line. One caveat of high resolution is speed; the more tiny dots you have to create, the more data needs to be sent. You may need a language routine to effe

Sure, the text output of 9-pin printers (particularly in 'draft' mode) was more suited to invoices from auto repair shops than letters to your local elected member but where dot-matrix was lacking it more than made up for in its ability to render plenty of things that were not text – everything from greeting cards and banners to screenshots of games and your four year-old's latest masterpiece. And even draft mode text was better than most people's handwriting!









Since text was sent to the printer as ASCII characters and not bitmaps, each printer manufacturer had its own typefaces – some printers had several typefaces, including narrow, serif and sans serif fonts, selectable via a switch or in software. Quality varied, largely based on the construction of the print head.



Printers were one of those gifts parents gave their children when they wanted to buy them something 'productive' – but it wasn't so bad if it was a dot-matrix because at least there was The Print Shop! But woe betide parents who presented their offspring with a daisywheel printer...



and schools.

Another advantage dot-matrix printers had was that, while with daisywheel printers you had to change the glyph wheel in order to change the typeface, characters printed by dot-matrix models were generated by software inside the the printer itself. This meant that in order to compensate for the lower quality of the characters, they could provide several typefaces, including Courier, Sans-Serif and compressed fonts.

Some models of 9-pin printer would print each line twice, offsetting the print head slightly the second time, and smoothing out the text. But the ultimate solution to the print-quality issue came with the introduction of 24-pin printers, whose print heads of typically two rows of 12 pins provided much nicer output – enough so that the remaining daisywheel printers in use were soon consigned to history.

Dot matrix had seemingly won the day. But its victory would be short-lived: while the cost of laser printers remained relatively high, in the 1990s a new competitor arrived on the scene: the inkjet printer. The inkjet had an advantage dot-matrix printers just could not match – colour.

While dot-matrix printers did have coloured ribbons available, they was usually limited to three or four discrete colours – useful for a bit of coloured text or mono-coloured clipart but not for reproducing photographs.

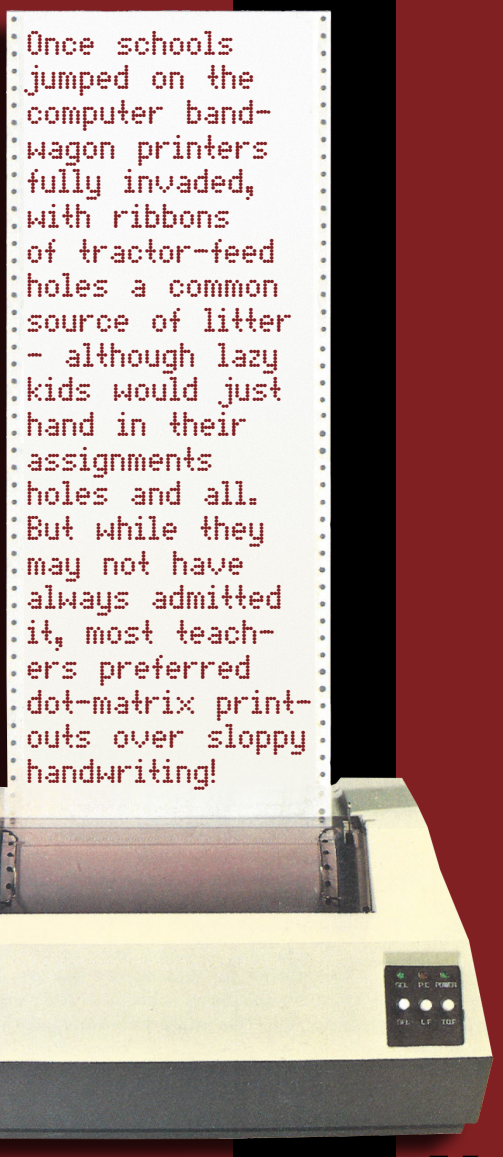
However, inkjet printers could reproduce the entire colour spectrum. And with digital cameras beginning to emerge this was a huge selling point. Everybody wanted colour! Dot-matrix printers were suddenly passé. And inkjets were so 'affordable', with manufacturers selling printers below cost in order to suck people in.

But consumers soon realised inkjet printers had their own problems: the print heads frequently clogged, and users would get frustrated by their fruitless attempts to unclog them. Ink cartridges were (and still are) expensive, with ink costing up to US$2100 a litre. Ouch!

Speed

Generally, dot-matrix printers are fast – 60 to 80 characters per second (CPS). Letter quality printers (daisywheels) run from 25 to 50 CPS. Some low cost daisywheels print at around 10-14 characters per second, so consider your patience threshold before you buy. Several tricks are used to increase *throughput*. Time normally wasted during the carriage return, when the print head has to travel from the end of a line back to the beginning for the next line, can be used by printing backwards on the return. This is *bidirectional* printing, and can speed up overall output significantly.

Daisywheel printers had great character quality but they were slow and very limited.

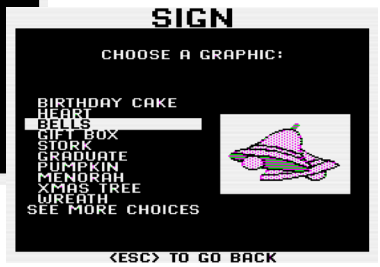




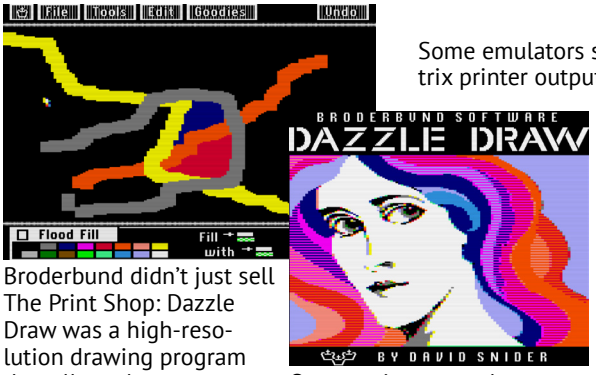
Emulators aren't just for games!

Sure, games are fun and all, but just like there's so much more you could do with a 1980s computer than you could with a contemporary videogame console, there's also so much more you can do with an emulator. Personal computers revolutionised productivity on a number of fronts, including word processing, digital art and desktop publishing.





Some emulators support monochrome or colour dot-matrix printer output, which creates a PDF file you can print.



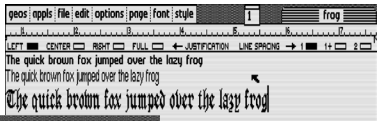
Broderbund didn't just sell The Print Shop: Dazzle Draw was a high-resolution drawing program that allowed you to use 16 colours instead of the Apple II's usual 6.

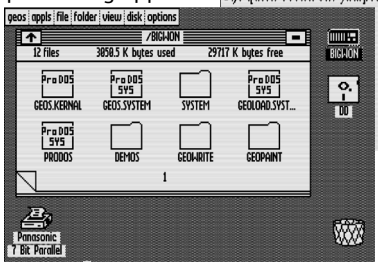
Once you've created your masterpiece, you can screenshot it and share it online.

You could write music, create a database of your cassette tape collection or even learn how to develop your own games. And let's not even get into educational software! Computers were, like, so much better, and after the videogame crash of 1983 parents began to agree. And yes, perhaps many don't have as fond a memory for The Print Shop as they do for Donkey Kong, but that doesn't diminish the former's place in history, nor your ability to compare the two for yourself.

And you can do that with an emulator! You can create authentic 8-bit greeting cards and signs using The Print Shop. Or you could create a pixelated work of art using graphics programs such as Dazzle Draw for the Apple II. You can write music using Music Construction Set or Bank Street Music Writer. GEOS is a graphical desktop that has a high-resolution monochrome paint program and a WYSIWYG word processor. The list goes on and on – but not just on the Apple II, the Atari 800 and Commodore 64 had plenty of applications of their own. So don't just play, make things!

GEOS provided a graphical user interface, paint and word processing apps.





Emulation^Station work

Now sure, nobody's asking you to tyoe a school assignment or work report into Appleworks or Word Perfect – non-graphical word processors were clunky and had fifteen million control keys most users never memorised. But applications like The Newsroom (see the next page) or Adventure Construction Set provide unique 8-bit experiences that provide a fun insight into what it was like using those kinds of computers growing up.



Now, not every emulator will do everything you want: emulated hardware, such as hard disks, sound cards, mice and printers, varies from emulator to emulator – and you may not find one for your operating system that does it all. But that doesn't mean you can't use more than one!

Targeted Google or Bing searches should easily find an emulator that supports the hardware needed to run a particular application.

Also, don't just stick to one platform – many people used a variety of computers in their daily lives; they might have used an IBM at work, an Apple II at school and a Commodore 64 at home – for a good picture of 1980s computing you should see what it was like to use all of them.



The Classroom Printing Press

OBITUARY: Mister Pignose, the Grade 4 class guinea pig, passed away peacefully last weekend. He was five years old, and was beloved by over a hundred students who had studied in Mrs. Henderson's classroom during his time at Wunderheights Primary. He will be sadly missed.

INTRODUCING: Missus Swinebottom, the Grade 4 class guinea pig, who succeeds Mister Pignose, who passed away last weekend. Missus Swinebottom will serve as comfort for students in Mrs. Henderson's classroom while they grieve for Mister Pignose...

Seems a bit silly, doesn't it? Not to a 1980s kid! Between printers and video cameras, children of that era had freedom of speech like no generation before them. Previously, the only way a pupil could speak to their fellow students or teachers was to do literally just that – speak. With their mouths. And only with permission – speaking out of turn could land you with a sore rear end!

But the dot-matrix printer was like a childrens' Gutenberg press - not only could you produce print materials that rivalled those of the adults, but you could create them en masse, disseminating them to your entire classroom or even your entire school in the space of a lunch hour. Using The Print Shop you could create signs and banners containing a variety of clip art, and using a word processor you could print text content – if you had access to a photocopier, some transparent tape and a pair of scissors you could combine them into a rudimentary newsletter or newspaper, and many did. However, they wouldn't be stuck with tape and scissors for long for, as with most software innovations, their need to do so meant there would soon be an app for that.

Cheap dot-matrix printing opened up a whole new industry to young computer-savvy entrepreneurs hungry for a new source of income beyond the traditional gardening or babysitting professions. Using their family or school computer they provided adults with custom printed material they couldn't produce themselves – for a fee.



Scott Rose, 14: His computer is a "printing press."



That 'app' was called The Newsroom. Released in 1985 The Newsroom was rudimentary desktop publishing software aimed at novices and children.

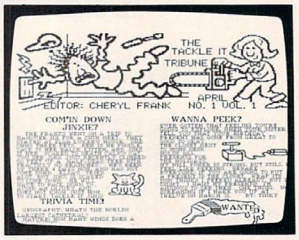
It expanded on the idea of a step-by-step workflow introduced by The Print Shop, bundling a number of newsletter and 'newspaper' templates, various fonts and over 600 pieces of clip art togther into an easy-to-use software package.

It also included a built-in word processor and a drawing program used to create custom clipart, such as school logos.

The Newsroom
HARDWARE REQUIREMENTS: Reviewed on Apple IIe. Also for IIc, 64K. Planned for IBM PC/PCjr.
MANUFACTURER: Springboard
PRICE: $49

Wanted: Birthday Presents! Good gifts only. Deadline: March 31. Contact : Cheryl Frank.
That was just one of several ads that appeared in the premiere issue of the *Tackle It Tribune*, produced a week before my daughter Cheryl's 10th birthday. She used *The Newsroom*, a wonderful utility that lets you write, illustrate, and print out your own newsletter.

Newspaper publishing involves five steps. First, you design the title



banner. You can use or alter any of the shapes—maps, animals, kids, and more—stored on the package's "Clip Art" disk. A "Photo Lab" lets you create and save pictures for use with columns. The *Tackle It Tribune* recently featured an article on springtime in northern Vermont (where our family lives)—"To Bud or Not to Bud." It was illustrated with a map of New England covered with snowflakes. If the picture library doesn't meet your needs, use the drawing program to execute your

SOFTWARE REVIEWS
REVIEWED BY CHRISTINE ADAMEC

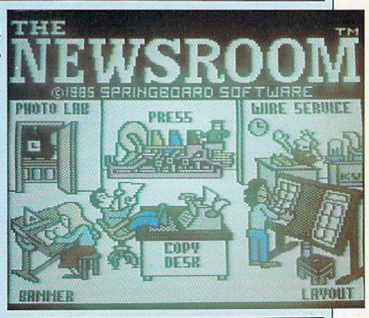
The Newsroom

Computer: Commodore 64
Publisher: Springboard
7808 Creekridge Circle
Minneapolis, MN 55435
Medium: Disk
Price: $49.95

News flash! Springboard's *The Newsroom* is now available, and aspiring reporters and editors throughout the country are creating their own newspapers as we speak. (Eat your hearts out, Lois Lane and Perry White.) If you or your children are not using *The Newsroom*, maybe you should be! This program is truly outstanding. It's educational and it's also tremendous fun.

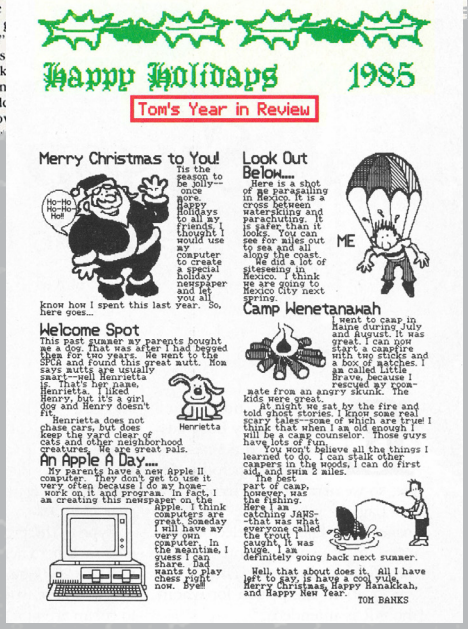
What is *The Newsroom?* It's a program that lets you create your own newspaper, complete with banner, headlines and stories, as well as graphics. You lay out your pages and print them—and if you have a

The Newsroom lets you create your own newspaper, complete with banner, headlines and stories, as well as an array of graphics.



Wow, all of this potential! With the students newfound power of the free press, Mrs. McAdams wasn't going to get away with stealing photocopy paper for much longer. What a scoop!

But really, how did The Newsroom go from a practical perspective? My school tried doing a weekly newsletter and while the first few issues were pretty good, we soon started to struggle to find material. The truth is, from a day-to-day standpoint, primary school is actually pretty boring.



There were versions of The Newsroom for the Atari 800, Apple II, Commodore 64, PC and PCjr – a smart move on Newsroom publisher Springboard's part, as most North American schools had at least one of these, and following on from the success of The Print Shop teachers and school administrators were eager to see just how far this area of class computing could go. To sweeten the deal, text and clipart could even be transferred between different models of computers. And there was a money-back guarantee. Can't lose!

Users created their documents by navigating through The Newsroom's five "departments": Banner, Photo Lab, Copy Desk, Layout and Press. First you create your banner, or masthead. A page can either have a banner and six panels (two wide x three deep) or 8 panels (two wide x four deep). You can use various fonts, clipart, and geometric drawing tools to design this.

POWER PLAY'S **NEWS** FROM THE FRONT



Produce Your Own Newspaper

Now an educational program is available that allows journalists of all ages to compose and print out a realistic newspaper, complete with masthead, headlines, articles and even art. The program for the Commodore 64 is **The Newsroom** by Springboard Software (7807 Creekridge Circle, Minneapolis, Minnesota 55435).

The Newsroom lets you create a realistic newspaper, generated from a library of more than 600 pieces of art and layout options. Alter existing artwork or create your own, or if you have a modem, send and receive text and even pictures between previously incompatible computers.

The program package includes a 90-page booklet which teaches you the basic components of producing a newspaper. The booklet also contains an annotated bibliography.

Each panel is usually made up of a clipart 'photo' and some text. To create these 'photos' you visit the Photo Lab, which allows you to do everything Banner does, only in a definable area instead of an arbitrary rectangle. Once the 'photos' are done, you can move on to the Copy Desk, where you write the text content of each of the panels. You can use any of three different fonts at either of two text sizes – serif, sans serif and Old English. As you enter the text it automatically flows around the 'photo'.

Once finished with writing copy, you can move on to the Layout department, where you specify the order of the panels. Then it's off to the Press – with 50 supported printers, yours is bound to be one of them! (But if not, you can get a refund. Or you could, anyway. Not now, obviously. Use an emulator!)

And that's it. Easy peasy! You're now a bona-fide print publishing company (too bad print publishing is dead, eh?) But it was really something in 1985, what with photocopiers and sticky-tape being the usual go-to items involved in this sort of endeavour. Thanks Newsroom!



However, while Newsroom-based publications weren't necessarily a going concern, they did at least expose students to the basics of running a newspaper – finding stories, doing research, writing, editing, layout and so forth. So even if that experience was a one-off it still had significant value, and likely influenced many future journalistic careers.

And if you couldn't get enough of computers in school months, how about during school holidays too? Although computers were used for education and later print applications by students, computer-savvy teachers were not commonplace, and beyond some introductory Logo, you weren't going to learn much compuiter programming. But you could at computer camp! There you could find a trained instructor who would teach you all the mysteries of BASIC, Pascal and maybe even Assembly. You might learn how to use a spreadsheet or create a database. You might connect up a modem and explore the local university mainframe or search the card catalogue of the town library and order a book! Computers were all kinds of awesome!


Computer Camps

BIG SUMMER AHEAD FOR PROGRAMMING FUN

LAST SUMMER THE ATARI Computer camps were so successful that Atari has not only decided to continue the program next summer, but will expand the activities to two-, four- and eight-week sessions at seven different locations around the country.

This year, kids wishing to attend an Atari Computer camp can choose between the beautiful settings of Camp Atari New England, the Poconos, Chesapeake, the Smokey Mountains, the Midwest, the Old West or the Pacific.

All of the camps will be fully equipped with the latest ATARI Home Computer equipment, including the ATARI 400 and ATARI 800 Home Computers [illegible] new ATARI 1200X [illegible]

least four hours per day, six [illegible] using the com- [illegible]luding two daily in- periods. They also have free computer time for working on individual projects and exploring different types of software programs.

Richard Pugh, who headed instruction at last summer's San Diego Atari Camp explained that in the beginning, "we use projects that interest the kids to teach them programming. The kids learn programming through little programs that mean a great deal to them—something that is a reflection of their total personality."

If you're interested in attending or sending your child to an Atari Computer Camp, write ATARI COMPUTER CAMPS, 40 E. 34th Street, Department APT, New York, NY 10016 or call (800) 847-4180 (New York State and Canada call collect (212) 889-5200). You'll be provided with additional information about the camps and can even have a space reserved at the camp of your choice. ■

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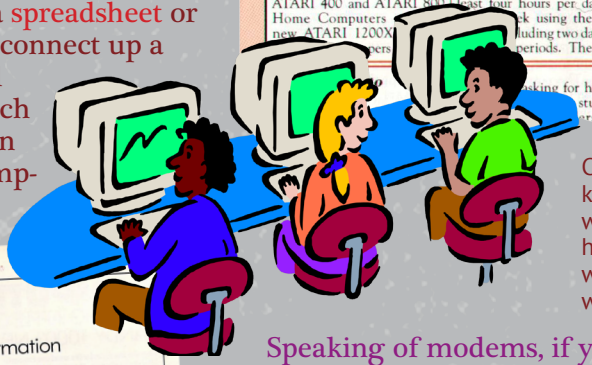
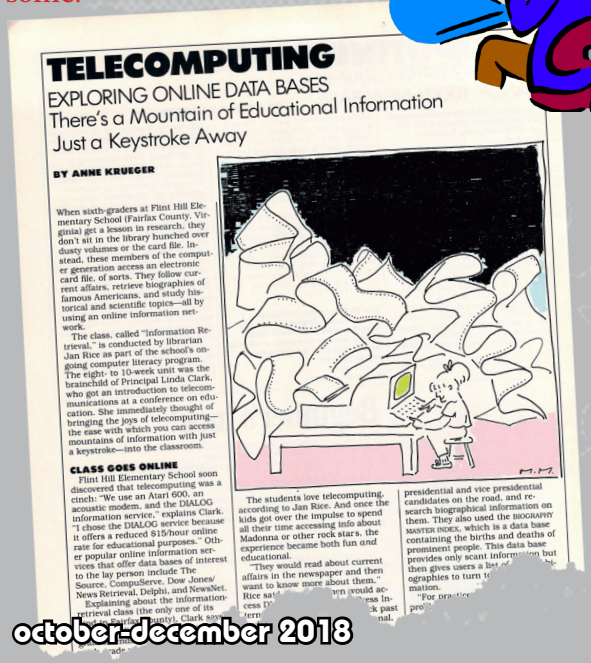
New Software Kits



Computers provided students with all kinds of exposure to career-relevant skills well beyond what traditional education had typically provided up to that point, which were foundational skills (reading, writing and 'rithmatic) and not much else.


TELECOMPUTING

EXPLORING ONLINE DATA BASES

There's a Mountain of Educational Information Just a Keystroke Away

BY ANNE KRUEGER

When sixth-graders at Flint Hill Elementary School (Fairfax County, Virginia) get a lesson in research, they don't sit in the library hunched over dusty volumes or the card file. Instead, these members of the computer generation access an electronic card file, of sorts. They follow current affairs, retrieve biographies of famous Americans, and study historical and scientific topics—all by using an online information network.

The class, called "Information Retrieval," is conducted by librarian Jan Rice as part of the school's ongoing computer literacy program. The eight- to 10-week unit was the brainchild of Principal Linda Clark, who got an introduction to telecommunications at a conference on education. She immediately thought of bringing the joys of telecomputing—the ease with which you can access mountains of information with just a keystroke—into the classroom.

CLASS GOES ONLINE

Flint Hill Elementary School soon discovered that telecomputing was a cinch: "We use an Atari 600, an acoustic modem, and the DIALOG information service," explains Clark. "I chose the DIALOG service because it offers a reduced $15/hour online rate for educational purposes." Other popular online information services that offer data bases of interest to the lay person include The Source, CompuServe, Dow Jones/News Retrieval, Delphi, and NewsNet.

Explaining about the information-retrieval class (the only one of its [illegible] Clark says,

The students love telecomputing, according to Jan Rice. And once the kids got over the impulse to spend all their time accessing info about Madonna or other rock stars, the experience became both fun and educational.

"They would read about current affairs in the newspaper and then want to know more about them." [illegible] would access Rice sat[illegible]ess Information [illegible] past [illegible]nal.

presidential and vice presidential candidates on the road, and research biographical information on them. They also used the BIOGRAPHY MASTER INDEX, which is a data base containing the births and deaths of prominent people. This data base provides only scant [illegible] but then gives users a list of [illegible] biographies to turn to for information.

"For [illegible]

Speaking of modems, if your school was really with the times it had one. A modem allowed a computer to talk to another computer over a phone line – in this case, typically a mainframe hosting databases, such as an encyclopedia or statistical data. This data could usually be searched – which was an extremely novel idea in an age where most research involved books and indexes, the latter of which weren't always accurate. And with that power you could write a report that had more than two references (which was often all you could get out of the school library). Also, teachers couldn't be bothered (or weren't technically capable enough) to log into the databases themselves to check your work, so they generally just sighed, mumbled impolite words suggesting you were an overachiever under their breaths, and gave you an A or 90% – not 100% because they weren't entirely certain what you wrote was true but it sure looked good on dot-matrix printed tractor-feed fanfold paper.

Celebrating Online like it's 1989

While the Internet would eventually bring computer-based telecommunications to the masses, by the late 1980s more tech-savvy individuals were already meeting new people and having all sorts of discussions 'on-line' – and in some cases had been for almost a decade. While most of them were adults, plenty of them were children, and some of those would become life-long friends.

In the late 1970s most people didn't have any real way to engage in one-to-many discussions outside of school classrooms, work meetings or family dinners. And getting information about specific topics could be a tedious process of calling seemingly random phone numbers and speaking to random people who were almost always unhelpful. Bulletin-board systems created networks of people (often with similar interests) who could easily solicit information from each other, keep themselves informed about current events and discoveries, and engage in debate – uncommon activities for the general public.

by Brock Meeks — PROFILES, December 1984

While writing this column a few things happened on the way to the disk.

I picked up a freelance writing assignment and made contact with a book publisher. Next I checked in with NASA to get an update on the Space Shuttle, and the latest experiments on board. Finally I nosed my way around the former electronic headquarters of the "Gary Hart for President" campaign.

I did all this and never left my house. Instead I journeyed via my electronic carpet: a Kaypro 2 and a 300 baud manual-dial modem.

You too can duplicate my trip (and probably more)—on the three Bulletin Board Systems (BBS) we'll cover this month. One board is run by an accomplished author and his dog; the next by everyone's favorite uncle—Sam; and the last, by one of the electronic community's most outspoken activists.



'Dial-up' access terminals had been a common feature of mainframe computers since the 1960s – a remote office would have a 'dumb terminal' connected to a modem that could be used to log into a corporate mainframe across town or in another city. But into the 1970s small hobbyist computers began to appear, capable of running local programs while still connecting to larger systems. But it didn't take long for owners of hese computers to begin to consider whether they could be a 'host' themselves, rather than just a client.

Ward Christensen and Randy Suess were two such individuals. During a blizzard in Chicago in January 1978, they wrote a program for their homemade S-100 (Altair-based) computer that would allow a single user to connect to it over a modem and exchange messages with other users. Then that user would disconnect (willingly or unwillingly, if their allotted time was exhausted) allowing another to log-on.

The pair worked on the system for about a month and then made it available for users to dial-in to. They called their invention a "computerised bulletin-board system" or CBBS, the idea being that it was like a push-pin bulletin-board in a supermarket or office, where anyone could tack up a message. But unlike a conventional bulletin-board, users could reply to messages in 'threads', sometimes engaging in long, complex discussions taking place over days, weeks or even months.

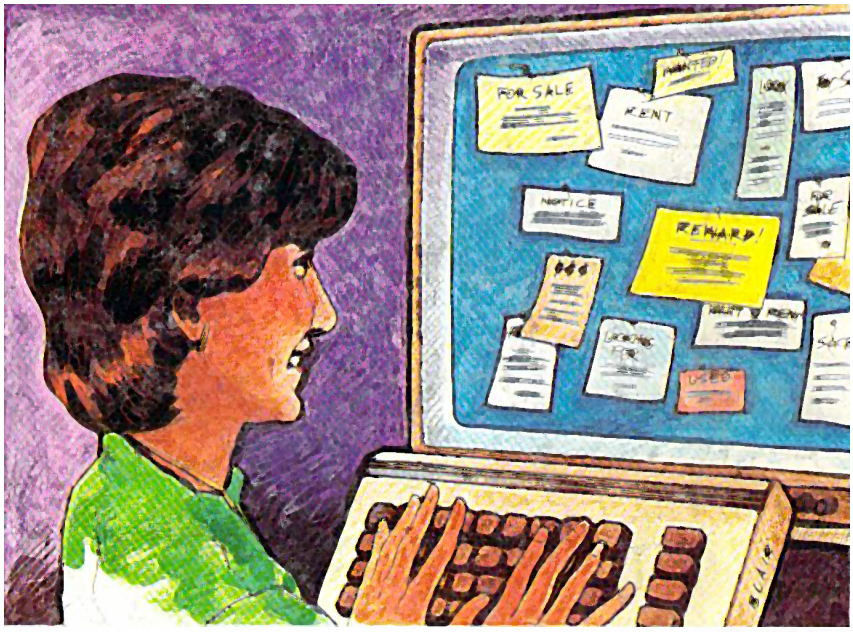
Ward and Randy, known as the 'system operators' could watch users as they read and posted messages, and chat with them if they so desired. They were also responsible for moderating discussion – which could sometimes get heated! In late 1978 they described the operation of their CBBS in Byte Magazine, inspiring a number of other individuals to write bulletin-board software of their own. Bulletin-board systems (shortened to BBS) then began to spring up all over!

There's a device you can plug into your computer that can deliver free software, computer games, loads of technical advice and information and perhaps even a date for Saturday night.

The device is called a modem and when it's matched with a terminal program and your Color Computer, it becomes your passport to a world of fun and information. But be careful. Data-tripping can be addictive and a computer can be like a teenager—once you teach it to use the telephone, it's hard to get it off.

The Rainbow, November 1983

Some things are hard to improve. Take the bulletin board, for example. A large square piece of cork material usually mounted on a wall, it makes a great message center. Write a note and tack it up on the board. As people go by, they look at all of the notes on the board and read the interesting ones. They can reply with another note, tacking it up in place of the original. SoftSide, Feb. 1983



Over time, the functionality available in BBS software (and consequently to BBS users) began to expand to include features such as private electronic mail, file downloads and games (often known as 'doors' as these were often separate applications that the user would 'open the door and walk in to', although sometimes doors could be things like horoscope or other text-based application programs). Games also began to appear that accounted for multiple users, including turn-based games such as chess, and games with score leaderboards.

However, as great as BBSes were, in those days you could only run one program on a computer at a time – which meant that if you were running a BBS, you weren't able to use your computer for anything else! So, at least in the early days, many people ran their BBSes only in the evenings, so they would continue to have use of their computer during the day. Office computers could also be co-opted and used to run BBSes during off-hours – sometimes the BBS would be related to the business, but occasionally employees would operate their own personal systems.

Why Waste A Computer?

Usually, when you use somebody else's computer, you pay for the computer time by the hour. Not so with *BBS* systems. They're all free. The only thing you pay for is the phone call. Almost all of these systems use microcomputers costing $5,000 or more. Why would anybody want to sacrifice an expensive piece of equipment for other people to use?

There are several reasons. It's a hobby and enough people have money to waste on such things. Also, the owner of a *BBS* system may have a computer in use during the day but idle at night. For fun and a little promotion, the owner may activate one of his idle computers as a *BBS* system at night. Almost half of the *BBS* systems operate only during evening hours. SoftSide, Feb. 1983

BBSes began to differentiate themselves by specialising into different niches – much like modern-day 'community' websites. You might have a BBS in your city entirely devoted to discussions of Christianity – or Dungeons & Dragons. Some were dedicated to particular computing platforms, such as Commodore or Atari, while others might be targeted towards writers, archery enthusiasts, or professional sports fans.



Over time, people upgraded their computer systems and their old system could be tasked to run BBS software full-time. But this also meant paying for a second telephone line to be installed, along with monthly fees – this could turn into an expensive hobby quite quickly. As modem transmission speeds improved you also needed to upgrade your modem in order to keep your users happy – some cities had a dozens of BBSes or more, and they could be very competitive, constantly upgrading with new BBS software or games in order to attract new users and keep the ones they already had.

Ward and Randy described their 'CBBS' in Byte, November 1978.

Hobbyist Computerized Bulletin Board

After this article was published, a number of other computer owners were inspired to write BBS software of their own, some of which was published in other magazines.

Some even offered crude pornographic material and pirated software.



troller and floppy disk drive to the project. I purchased the floppy disk drive, controller and CP/M license, and loaned 24 K bytes of memory to the project, pending receipt of 16 K bytes offered by DMA. Randy donated his D C Hayes modem board, PolyMorphics VTI, SwTPC keyboard, power supply, chassis, IMSAI 8080 processor card and Vector memory board.

We started with the monitor for the system, but found that it was difficult to make the VTI keyboard port work because the VTI keyboard data bus shares the bus carrying the characters being displayed. To solve this, Randy bought a Processor Technology 3P+S board and interfaced the keyboard to it. This also allowed us to have a sense switch port using the 3P+S. Since this board has a serial port, Randy later decided to add a Teletype to the system for logging incoming data. This completed the configuration.

Programming

In the first

a mock-up

BASIC

could

ser

in

s

Ward Christensen
688 E 154th St #3D
Dolton IL 60419

Randy Suess
1930 Bradley
Chicago IL 60613

The Computerized Hobbyist Bulletin Board System is a personal computer based system for message communication among experimenters. People with terminals

computers equipped with modem

leave and retrieve messages

designed, built, programm

installed in a 30 day pe

1978 to February 16 197

us. In an effort to generate

computer club's newsletter

of the idea and discussed it

January 16 1978.

We laid out the hardware re

an 8080 processor with 24 K bytes

ory, single floppy disk, modem int

and some sort of local keyboard and

play. Randy scoured the computer store

and purchased a mother board and two 4 K byte memory boards at a reasonable price. I talked with Lloyd Smith and Bill Bassett, who operate DMA Inc, a manufacturer of floppy disk drive systems based on the Tarbell controller and the Innovex (now Innotronics) floppy disk drive. DMA offered to donate 40 percent of the cost of a con-

sys

"cold

up run

not CP/M

more crash

ging of

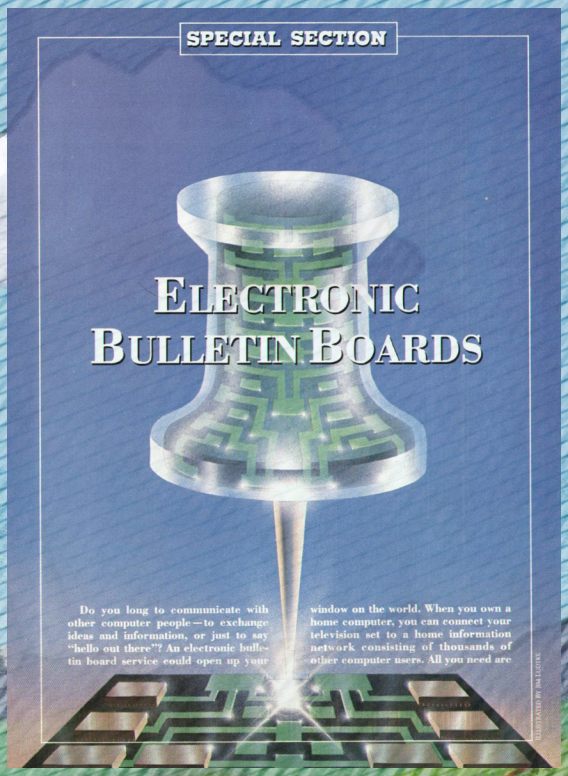
Bulletin board systems could become nodes in a communication network.

Note:
This project was a collaboration of Ward Christensen and Randy Suess. Each had a particular part to uphold. The first part of this article describing the purpose of the bulletin board is written by Ward. The part describing the hardware details is written by Randy. . . .RGAC

150 November 1978 © BYTE Publications Inc

Bulletin-board systems proved that if there was a market for something, someone would fill it.

NO CARRIER



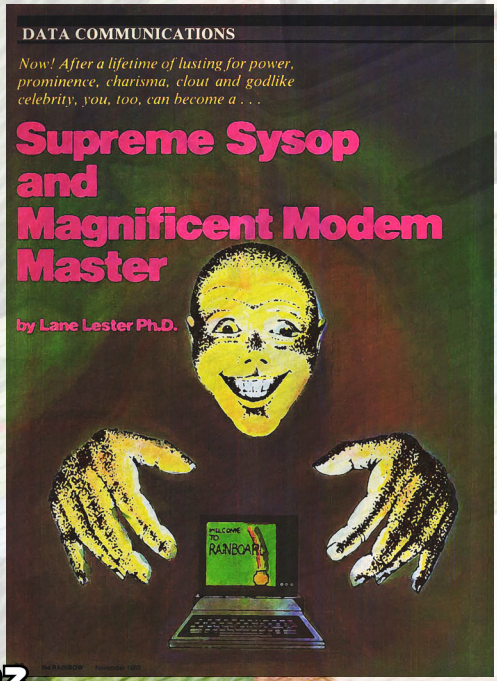
So you'd like to start a BBS? You and everyone else! The fact that almost anyone could be a potential sysop meant that practically everyone saw themselves as a potential sysop – BBSes sprang up like weeds. But they often fell right back down just as quickly, their sysops tiring of dealing with difficult users, maintaining BBS databases, acting as mediators, fixing broken hardware or just simply being unable to use their computer during 'BBS hours'.

And the recurring cost of the telephone line, new BBS software, new modems and so forth were fatiguing to the pocketbook. But this also meant it was hard to get users to invest their time in new BBSes, afraid that their discussions could disappear tomorrow once their sysops realised what they had signed themselves up for. So over time users gravitated towards established BBSes, their confidence in their continued existence relatively equal to the length of time the BBS had been online.

So aspiring sysops needed a 'hook' – this could be illicit 'warez', but it could also be a new game or multiline chat system software. The occult and anarchism were also popular topics for new BBSes, their owners hoping that hosting contraversial subject matter would intrigue potential users and overcome their misgivings. As a result, the world of bulletin boards could be a rather colourful place.

As the 1980s progressed the average age of a bulletin-board user dropped. While computers and modems in the 1970s were typically the domain of older professional adults, the marketing of home computers towards adolescents meant that many children soon had access to and became users of BBSes, creating potential concerns that predators could use them to 'groom' potential victims.

System operators (known as Sysops) began to talk amongst themselves about users' behaviour, attempting to organise some measure of community self-policing and pre-empt potential problems before they occurred. This frequently met with mixed success.



To make things even more complicated, some Sysops were bad actors themselves, using their bulletin-board systems for illicit activities such as selling drugs or stolen merchandise. Some offered copyrighted software or XXX-rated material for download – for a fee.

Teenagers also started to operate their own bulletin-board systems, often offering downloads of pirated games and pornography themselves, but usually not for money – which caused friction with those who did. Teenage antics also extended to hacking and 'phone phreaking' – the use of specialised electronics to manipulate the telephone system in order to make free long-distance calls (something that was expensive in the 1980s).

They also distributed 'taboo' texts amongst themselves, such as the Anatchists Cookbook, a tome that described bomb-making along with many other unsavoury activities, under the guise of freedom of information.

Indeed, teenagers involved with BBSing were frequently libertarian in their ideologies, unsurprising given the 'wild west' nature of that environment, outside of which most young people felt powerless, trapped within the regimented political and social structures of the 1980s and a system of government most young people couldn't hope to understand.

Many bulletin-board systems started off in teenagers' bedrooms, their home computers (sometimes covertly) turned into late-night destinations for other teenagers. But callers couldn't be trusted to only try inside posted hours, and parents would often receive daytime phantom phonecalls.

BULLETIN BOARD BEDROOM

While Steve Lucovsky's sister is away at college, nearly 270 people are using her bedroom. They're using it to communicate. Fifteen-year-old Steve has parked his TRS-80 Model III computer in her room to run his own electronic bulletin board.

A tenth grader from Cary, North Carolina, Steve started what he calls the Triangle Area Bulletin Board System (BBS) last July. Computer users from more than 32 states—and Puerto Rico—have hooked up to his board.

Although Steve is SYSOP of the Triangle Area Bulletin Board, the majority of its users are adults. Only 50 kids have hooked up to Steve's electronic bulletin board so far.

Users can send and receive mail, swap info, sell items, conduct rap sessions, or adventure into the private sector of the board. Sports fans can see the latest basketball and football scores and can make future predictions with their bulletin-board friends. Steve even has a computer dating service that, he says, "gives users a chance to leave a little message about themselves" and an X-rated channel he says is used by adults for "a lot of bragging."

Software-piracy messages and game swapping are not allowed on Steve's BBS. "Mostly everybody on here tries to stop it," he said. In fact, he's so opposed to piracy that he helped pinpoint one offender.

Steve put together the bulletin board using his Radio Shack computer, printer, and a Hayes Smartmodem 300. Users help pay for the bulletin board with small donations.

Steve hopes to land a job as a SYSOP on a major telecommunications service one day, and has college plans to study computer sci.

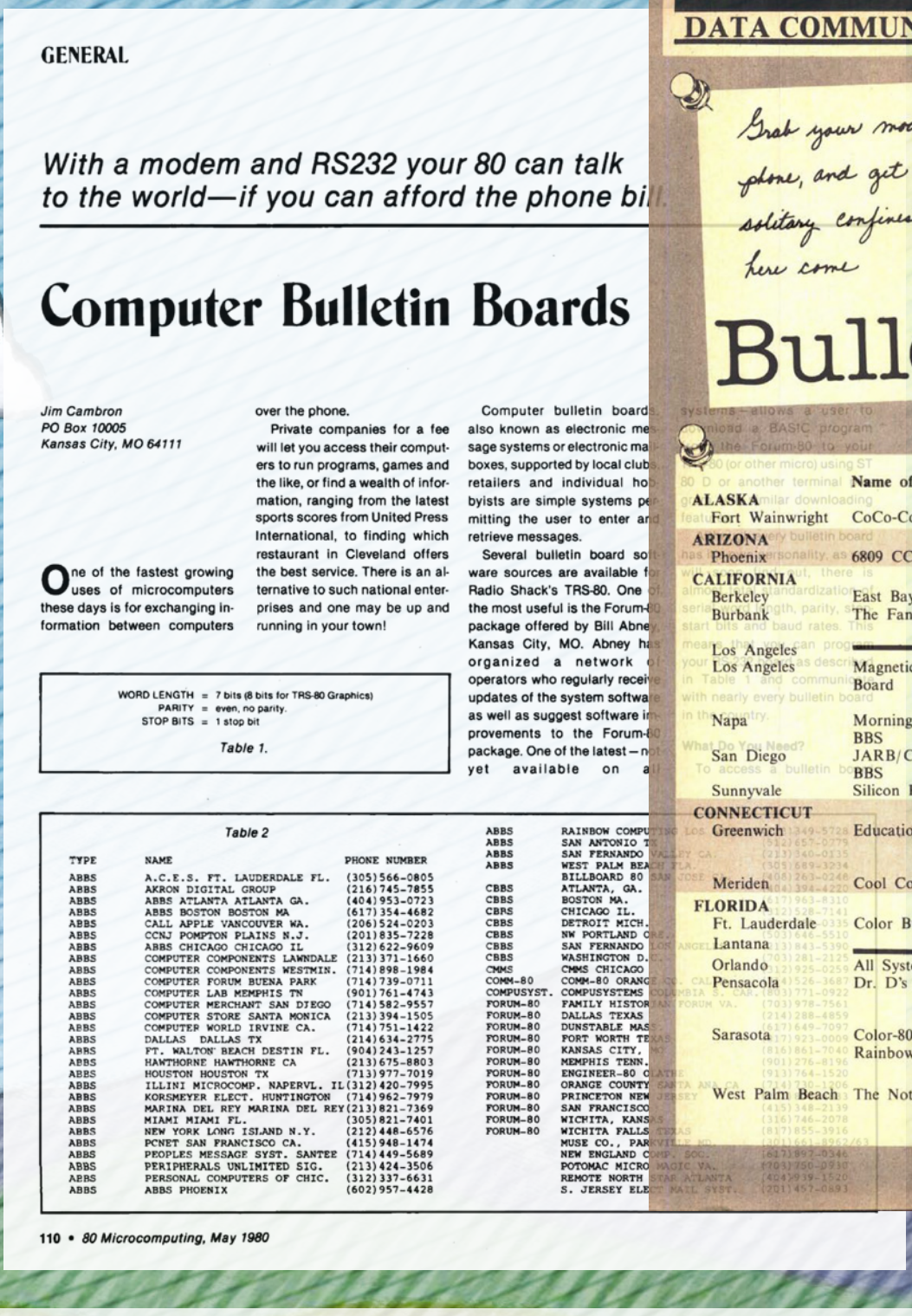
The Triangle Area Bulletin Board System is open from 7 a.m. to 9 p.m. Monday thru Thursday; 7 a.m. to 10 p.m. Friday; 9 a.m. to 10 p.m. Saturday; and 9 a.m. to 9 p.m. Sunday. The number is (919) 467-9836.

—BERNADETTE GREY

Eventually parents would become annoyed to the point they would force their teenager to get their own phone line, but then they would often have to chase them to pay for it. Sorry Dad!

Who ya gonna call? You've bought your shiny new modem, but then you've discovered you don't know any bulletin-board phone numbers! Frustratingly for some, BBSes were often only advertised on other BBSes! Most cities had volunteers that managed lists of active BBSes, but once again these lists were usually distributed exclusively on BBSes. So, you needed the number to at least one BBS in order to get started – where could you get one?

Well, asking at the local computer shop could be fruitful – assuming it wasn't selling subscriptions to paid online services, in which case the only numbers it was going to give you would be for CompuServe or The Source. But they might hook you up with a local computer users' group, and there you'd be certain to get a few BBS numbers.



GENERAL

With a modem and RS232 your 80 can talk to the world—if you can afford the phone bil...

Computer Bulletin Boards

Jim Cambron
PO Box 10005
Kansas City, MO 64111

One of the fastest growing uses of microcomputers these days is for exchanging information between computers over the phone.

Private companies for a fee will let you access their computers to run programs, games and the like, or find a wealth of information, ranging from the latest sports scores from United Press International, to finding which restaurant in Cleveland offers the best service. There is an alternative to such national enterprises and one may be up and running in your town!

Computer bulletin boards, also known as electronic message systems or electronic mailboxes, supported by local clubs, retailers and individual hobbyists are simple systems permitting the user to enter and retrieve messages.

Several bulletin board software sources are available for Radio Shack's TRS-80. One of the most useful is the Forum-80 package offered by Bill Abney, Kansas City, MO. Abney has organized a network of operators who regularly receive updates of the system software as well as suggest software improvements to the Forum-80 package. One of the latest – not yet available on a...

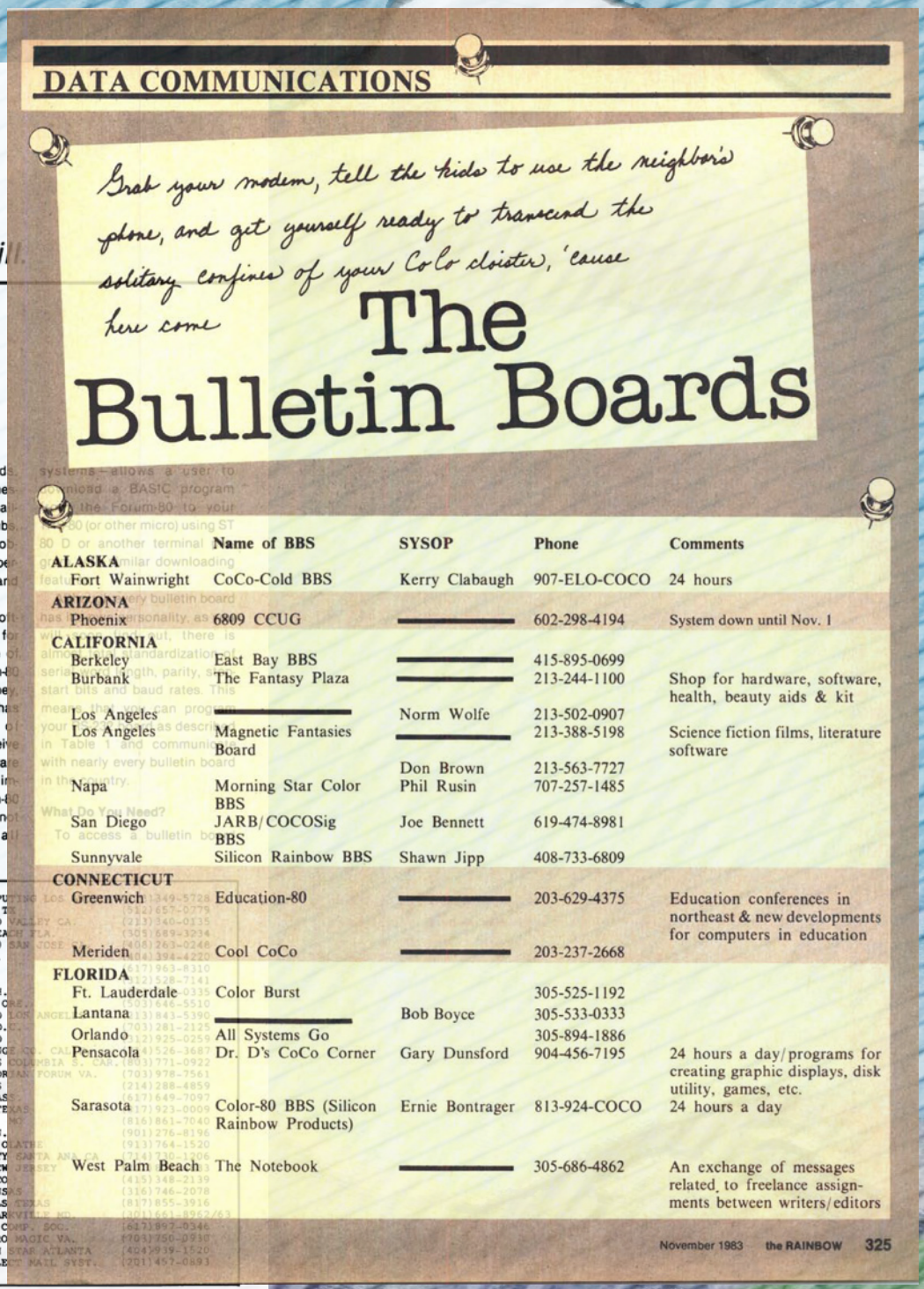
WORD LENGTH	= 7 bits (8 bits for TRS-80 Graphics)
PARITY	= even, no parity.
STOP BITS	= 1 stop bit

Table 1.

Table 2

TYPE	NAME	PHONE NUMBER
ABBS	A.C.E.S. FT. LAUDERDALE FL.	(305)566-0805
ABBS	AKRON DIGITAL GROUP	(216)745-7855
ABBS	ABBS ATLANTA ATLANTA GA.	(404)953-0723
ABBS	ABBS BOSTON BOSTON MA	(617)354-4682
ABBS	CALL APPLE VANCOUVER WA.	(206)524-0203
ABBS	CCNJ POMPTON PLAINS N.J.	(201)835-7228
ABBS	ABBS CHICAGO CHICAGO IL	(312)622-9609
ABBS	COMPUTER COMPONENTS LAWNDALE	(213)371-1660
ABBS	COMPUTER COMPONENTS WESTMIN.	(714)898-1984
ABBS	COMPUTER FORUM BUENA PARK	(714)739-0711
ABBS	COMPUTER LAB MEMPHIS TN	(901)761-4743
ABBS	COMPUTER MERCHANT SAN DIEGO	(714)582-9557
ABBS	COMPUTER STORE SANTA MONICA	(213)394-1505
ABBS	COMPUTER WORLD IRVINE CA.	(714)751-1422
ABBS	DALLAS DALLAS TX	(214)634-2775
ABBS	FT. WALTON BEACH DESTIN FL.	(904)243-1257
ABBS	HAWTHORNE HAWTHORNE CA	(213)675-8803
ABBS	HOUSTON HOUSTON TX	(713)977-7019
ABBS	ILLINI MICROCOMP. NAPERVL. IL	(312)420-7995
ABBS	KORSMEYER ELECT. HUNTINGTON	(714)962-7979
ABBS	MARINA DEL REY MARINA DEL REY	(213)821-7369
ABBS	MIAMI MIAMI FL.	(305)821-7401
ABBS	NEW YORK LONG ISLAND N.Y.	(212)448-6576
ABBS	PCNET SAN FRANCISCO CA.	(415)948-1474
ABBS	PEOPLES MESSAGE SYST. SANTEE	(714)449-5689
ABBS	PERIPHERALS UNLIMITED SIG.	(213)424-3506
ABBS	PERSONAL COMPUTERS OF CHIC.	(312)337-6631
ABBS	ABBS PHOENIX	(602)957-4428
ABBS	RAINBOW COMPU...	
ABBS	SAN ANTONIO T...	
ABBS	SAN FERNANDO V...	
ABBS	WEST PALM BEA...	
	BILLBOARD 80 ...	
CBBS	ATLANTA, GA.	
CBBS	BOSTON MA.	
CBBS	CHICAGO IL.	
CBBS	DETROIT MICH.	
CBBS	NW PORTLAND O...	
CBBS	SAN FERNANDO ...	
CBBS	WASHINGTON D.C.	
CMMS	CMMS CHICAGO	
COMM-80	COMM-80 ORANGE ...	
COMPUSYST.	COMPUSYSTEMS CO...	
FORUM-80	FAMILY HISTOR...	
FORUM-80	DALLAS TEXAS	
FORUM-80	DUNSTABLE MAS...	
FORUM-80	FORT WORTH TE...	
FORUM-80	KANSAS CITY, ...	
FORUM-80	MEMPHIS TENN.	
FORUM-80	ENGINEER-80 ...	
FORUM-80	ORANGE COUNTY ...	
FORUM-80	PRINCETON NEW ...	
FORUM-80	SAN FRANCISCO	
FORUM-80	WICHITA, KANS...	
FORUM-80	WICHITA FALLS ...	
	MUSE CO., PAR...	
	NEW ENGLAND C...	
	POTOMAC MICRO...	
	REMOTE NORTH ...	
	S. JERSEY ELE...	

110 • *80 Microcomputing, May 1980*



DATA COMMUNICATIONS

Grab your modem, tell the kids to use the neighbor's phone, and get yourself ready to transcend the solitary confines of your CoCo cloister, 'cause here come

The Bulletin Boards

	Name of BBS	SYSOP	Phone	Comments
ALASKA				
Fort Wainwright	CoCo-Cold BBS	Kerry Clabaugh	907-ELO-COCO	24 hours
ARIZONA				
Phoenix	6809 CCUG	——	602-298-4194	System down until Nov. 1
CALIFORNIA				
Berkeley	East Bay BBS	——	415-895-0699	
Burbank	The Fantasy Plaza	——	213-244-1100	Shop for hardware, software, health, beauty aids & kit
Los Angeles	——	Norm Wolfe	213-502-0907	
Los Angeles	Magnetic Fantasies Board	——	213-388-5198	Science fiction films, literature software
		Don Brown	213-563-7727	
Napa	Morning Star Color BBS	Phil Rusin	707-257-1485	
San Diego	JARB/COCOSig BBS	Joe Bennett	619-474-8981	
Sunnyvale	Silicon Rainbow BBS	Shawn Jipp	408-733-6809	
CONNECTICUT				
Greenwich	Education-80	——	203-629-4375	Education conferences in northeast & new developments for computers in education
Meriden	Cool CoCo	——	203-237-2668	
FLORIDA				
Ft. Lauderdale	Color Burst		305-525-1192	
Lantana	——	Bob Boyce	305-533-0333	
Orlando	All Systems Go		305-894-1886	
Pensacola	Dr. D's CoCo Corner	Gary Dunsford	904-456-7195	24 hours a day/programs for creating graphic displays, disk utility, games, etc.
Sarasota	Color-80 BBS (Silicon Rainbow Products)	Ernie Bontrager	813-924-COCO	24 hours a day
West Palm Beach	The Notebook	——	305-686-4862	An exchange of messages related to freelance assignments between writers/editors

November 1983 the RAINBOW 325



DOCTOR KURSOR'S KLINIC

How can I start up a bulletin-board system?

DR. KURSOR: Running a bulletin-board system (BBS) can be a great way to meet other people who share your interests, to exchange information and software, and to learn a whole lot about programming, computer hardware, and data communications. As the SYSOP (system operator) of a BBS, you'll also be performing a public service: helping other people meet and exchange info.

Setting up a BBS is easier than most people think. The minimum requirements are a micro with 48 or 64K, a disk drive, an auto-answer modem, some software, and a telephone. Assuming you already have the computer, the extra equipment could be purchased for about $500—less if one considers used equipment.

There are many bulletin-board software packages available. Some of the best are actually in the public domain (that means FREE!), and are easy to get through bulletin boards and information services themselves. For example, AMIS, an Atari BBS program, is available through the ARCADE BBS ((313) 978-8087—SYSOP Jim Steinbrecher) or in the XA2 data base in SIG (Special Interest Group) Atari on CompuServe.

But if you're reasonably clever, the best way to set up a BBS is to write your own system. This can be done either in a high-level language (including BASIC) or in assembler. Writing a bulletin-board program can be a fairly big chore, but there's no better way to come up with a board that has all the features you want. At baseline, you'll need a subprogram to scan the phone line for a ring, answer, and drop the caller into the running main program.

After you start your system, expect to have to deal with increased maintenance and repair costs for equipment (especially disk drives). Just keeping a bulletin board up to par involves more than a small commitment of time and effort. It's not unusual for a BBS SYSOP to budget an hour or more per day for answering electronic mail, clearing out old information from the board, and updating records.

Starting your own BBS

How does a touch tablet like the KoalaPad work?

DR. KURSOR: Beneath the drawing surface of a KoalaPad are a pair of plastic sheets, coated with a carbon substance that offers resistance to the flow of an electric current. These sheets face one another in such a way that pressure on the surface of the pad causes contact to be made between them.

Every thousandth of a second, a current is alternated to pass from side to side through one sheet, from top to bottom through the other. Contact between the sheets causes a short circuit whose position is read first horizontally, then vertically, by components in the pad. This information is then translated into a form that can be interpreted by the analog-to-digital converter in a particular computer. Essentially, the KoalaPad emulates the signal a computer would receive from a joystick or paddle.

18 K-POWER

Illustration: Sam Viviano

In the 1980s, starting a BBS could be a good way to get some business experience – you'd develop a 'product' (in the form of the BBS) then try to get 'customers' (users) typically by advertising, and then hope to get return business (they call back). If you were lucky you could build your own community.

And so, in this realm that was largely unpoliced by external forces, they acted out, engaging in all sorts of anti-establishment behaviour and creating the first digital counter-culture. But unlike other youth counter-cultures of the past, adults were not entirely shut out – 'young adult only' BBSes were often only so because they specialised in pirated games or ANSI art, naturally filtering out older users, but other BBSes generally had a mix of ages – and hence opinions, forming perhaps some of the first public forums within which there was a wide diversity of opinion, something largely unheard-of to that point, and a glimpse of what was to come with the Internet (at least before the 'filter bubbles').

In fact, the might of the Internet would be the only force capable of ending the reign of the BBS; as access costs came down its global nature proved to be too irresistable to modem users, and websites began to replace bulletin-boards as sources of information and interactivity. Eventually 'broadband' Internet connections would replace dial-up modems, terminating their users' ability to connect to other personal computers over phone lines, this functionality not easily replaced as most Internet users had dynamic IP addresses, not fixed telephone numbers.

But while the Internet opened up the world for many, much would be lost in terms of the BBSes ability to foster local communities of individuals who could meet just as easily at the local pub as online. The limitation of local dialing provided a restriction that, far from being a hindrance to discussion and debate, actually encouraged people to have conversations about issues whose outcomes often had immediate impacts on their local communities, something the likes of Facebook and Twitter have failed to replace with the same depth and consequence.

SYSOP TIPS

Sysops can run into some special problems once they open their computers to the public. Computer vandals may try to crash your board or destroy its data. For instance, a sysop in the Washington, D.C. area recently got help from the phone company to track down a teenager who transferred material from the BBS and demanded a ransom to return it.

Sysops have also encountered destructive programs, uploaded by unidentified callers. Colloquially known as "Arf, Arf" or "Trojan Horse" programs, they masquerade as harmless utilities, but when RUN, can erase all files on your disk drive. If you have a 10-megabyte hard-disk drive, this is a disaster. So beware of Greeks bearing gifts.

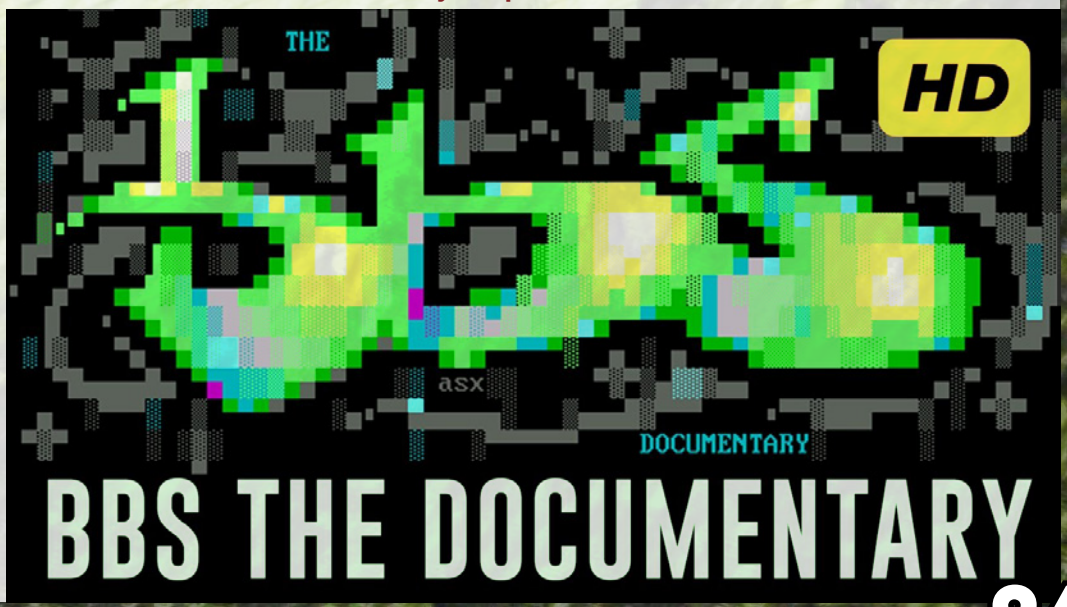
For this and other reasons, it pays to read everything that's posted on your BBS—you're responsible for it. When phone company investigators found stolen access numbers posted on a board in California, they got local police to arrest the sysop and confiscate his computer. The sysop argued that he didn't know about the postings and he eventually got his equipment back—but not without a lot of trouble and expense.

So welcome to the Network Nation. But, as Sgt. Esterhaus used to tell the "Hill Street Blues" crew, "Let's be careful out there!"

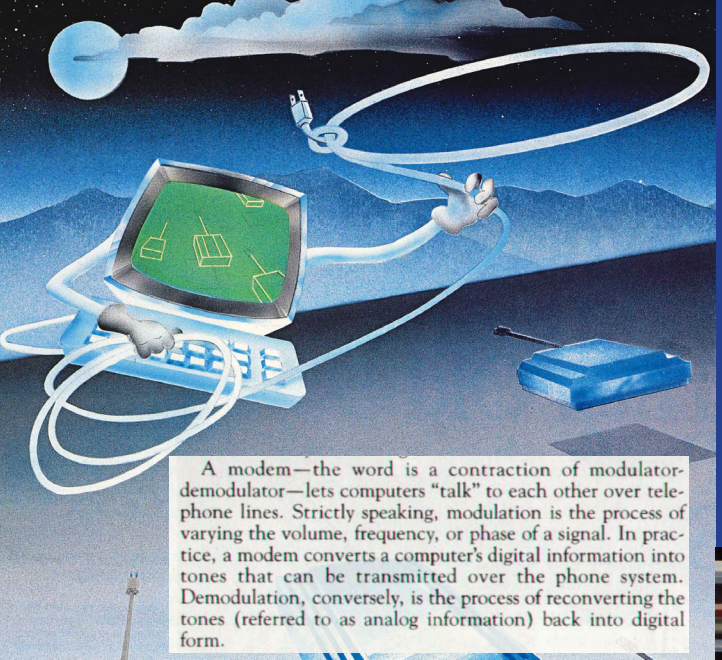
But once your party was hopping you couldn't just rest on your laurels! Bad actors could upload viruses or Trojan horses to your system, erasing your hard disk or the hard disk of your users. They could 'troll' or harass other users, stalk them or 'dox' them (in the modern parlance). They could attempt to find vulnerabilities in your system to exploit in order to 'crash' it, or just say nasty things about your BBS on other BBSes! A sysop's work was never done.

BBS: The Documentary is an eight episode documentary about the subculture that developed around bulletin-board systems, filmed by computer historian Jason Scott. It covers topics such as the first BBSes, FidoNet (an early BBS network), ANSI-art BBSes and more.

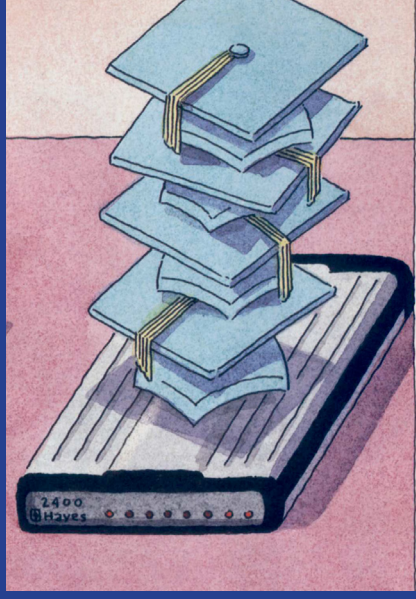
Watch it for free at archive.org/details/BBS.The.Documentary

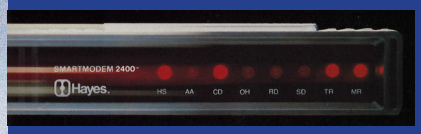


THE PRO SHOP



A modem—the word is a contraction of modulator-demodulator—lets computers "talk" to each other over telephone lines. Strictly speaking, modulation is the process of varying the volume, frequency, or phase of a signal. In practice, a modem converts a computer's digital information into tones that can be transmitted over the phone system. Demodulation, conversely, is the process of reconverting the tones (referred to as analog information) back into digital form.





How modems work





Computer on the telephone

Hayes was a huge player in the modem market, manufacturing its modems en masse and bringing prices down, killing niche manufacturers in the process.

The Hayes 'Smartmodem' revolutionised modems by allowing the user to 'command' it using special codes that started with AT. Previously, modem users had to dial the phone numbers of destination computers by hand!

Computers communicated with modems by way of a 'serial' interface, an electrical connection that sent one bit (0 or 1) at a time. Those bits were then converted into tones, which were 'piped' over the phone line. The destination modem then interpreted these tones, turning them back into bits.

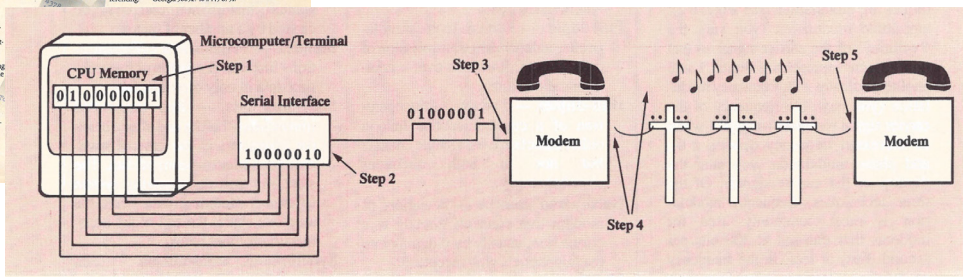


Figure 3. Signal conversion by modem: Step 1, bit configuration for the letter "A" as recognized internally by computer; Step 2, serial interface alters byte into serial configuration; Step 3, pulses from serial interface received by modem; Step 4, pulses changed to acoustic tones suitable for transmission over phone lines; Step 5, when tones are received by answering modem, the reverse process takes place.

So you want one computer to be able to talk to another. Well, you could do that over radio but it's really not practical. In most places you need a license to broadcast over the airwaves and the speed at which data is transmitted is very slow, since you have to account for all sorts of electromagnetic interference. A direct connection would be a lot simpler. But while you could in theory run a dedicated cable from your office to your house, that's not terribly practical either – it requires all sorts of permits and will be very expensive! If you're an ASX-listed company with money to burn that's one thing, but not if you're Joe Smith Construction. Couldn't we just connect them over the phone line? You already have one of those! Well, sure. But the only hitch is your phone line is designed to carry the human voice – and only the human voice. Its frequency range is rather limited.

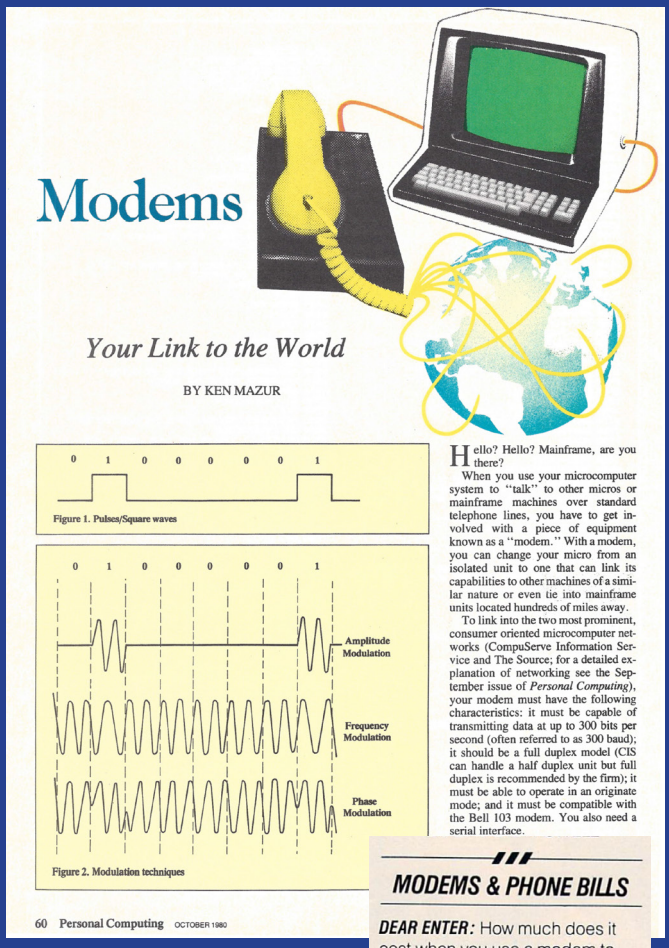
You may have heard the expression "baud" before, as in "my modem works at 300 baud." The word baud means bits per second, or the number of bits of computer data sent over the phone line within a second. The higher the baud rate, the faster the transmission of programs or data. A 300 baud modem is standard for home computers, but modems can run at 110, 600, 1,200 and even 19,200 baud!

The telephone company doesn't care that the person you call can hear your voice with 100% fidelity – in fact it only cares that the other party can comprehend what you're saying, and nothing more. To reduce interference, the telephone signal is run through a band-pass filter, cutting off high and low frequencies. Then, if you call long distance, the signal is 'multiplexed' (modulated on a carrier) combining a number of calls on to a single connection. So, in order to send the data from one computer to another over the phone line, we need to encode it in such a way that it will make it from point A to point B in a recognisable form, taking into account that along the way it could be filtered, multiplexed, the fidelity could be further reduced by passing through poor wiring, and various noises and interference could intrude into our signal. How do we manage this?

You want to call a BBS or an online service? You'll need a modem for that! In the 1970s that was likely to be an 'acoustically coupled' modem – AT&T in the US didn't want people directly connecting third-party equipment to its lines, so manufacturers simply added a speaker and a microphone to their modems, with appropriate holes to stick (what was at the time a pretty standard) handset into. Voila. But AT&T relented in the early 1980s, and direct-connect modems were sold from then on. But early ones still required you to dial the number yourself, using your telephone handset!

Later modems had a built-in 'command set' that users could control the modem with, for dialing (pulse or touch tone, the latter you had to pay the phone company extra for until the 1990s) or answering phone calls (e.g. if you ran a BBS). But they were still slow! Like, glacially slow. Thankfully, over time modulation and compression schemes were introduced that allowed for faster data transmission rates: 1200, 2400, 9600, 14400, 28800 and finally 56000 bits-per-second before 'dial-up' modems were obsoleted by broadband technology such as ADSL and HFC cablemodems.

But these modern equivalents connect to the Internet and require you to pay a monthly subscription for them to work – not quite the same as being able to exchange files with Bob down the street using the same line as you used to order pizza (okay, bad comparison because you can do all of those things with the Internet. But it's a lot more expensive and has many more moving parts). Modems gave you a sense of freedom.



Modems

Your Link to the World

BY KEN MAZUR

Figure 1. Pulses/Square waves

Figure 2. Modulation techniques

Hello? Hello? Mainframe, are you there?

When you use your microcomputer system to "talk" to other micros or mainframe machines over standard telephone lines, you have to get involved with a piece of equipment known as a "modem." With a modem, you can change your micro from an isolated unit to one that can link its capabilities to other machines of a similar nature or even tie into mainframe units located hundreds of miles away.

To link into the two most prominent, consumer oriented microcomputer networks (CompuServe Information Service and The Source; for a detailed explanation of networking see the September issue of *Personal Computing*), your modem must have the following characteristics: it must be capable of transmitting data at up to 300 bits per second (often referred to as 300 baud); it should be a full duplex model (CIS can handle a half duplex unit but full duplex is recommended by the firm); it must be able to operate in an originate mode; and it must be compatible with the Bell 103 modem. You also need a serial interface.

MODEMS & PHONE BILLS

DEAR ENTER: How much does it cost when you use a modem to call a friend in the same city? Is the cost more than a normal phone call? —Guy Kitchell
Madison, WI

DEAR GUY: In your state and most others, the charges for a 300-baud modem call are the same as they are for a voice call.

In many areas, however, there is a special charge for using a modem of 1200 baud or higher. For example, according to the Wisconsin Public Service Commission, your calls would draw special fees if you used a modem faster than 2400 baud. To work properly, these require special phone lines, for which the phone company charges extra.

Clippings on these pages are taken from Atari Connection, March 1983, Personal Computing, October 1983, Enter, November 1984, Softside February 1983 and K-Power, February 1984. Big thanks to all!

To explain we need to go all the way back to Morse code, the dots and dashes used to send messages in early radio transmissions. In 1910 Reginald Fessenden invented a system that used two different frequencies of tone to indicate the dots and the dashes, hoping to speed up transmission times. Fast forward to 1941 and the Allies developed a system for sending digital information using two different frequencies. A variation on this was used for the modems linking the 1958 US SAGE air defense system. All of these had one thing in common, the use of different tones to signify different 'bits' of information – dots and dashes or zeroes and ones.



American telephone operator AT&T introduced modems to its lines in 1962 using the Bell 103A standard, which provided 300 bits (or symbols) per second transmission (baud) using two frequencies for the call originator (1070 and 1270 Hz) and two for the answerer (2025 and 2225 Hz). These frequencies were chosen as the most likely to survive the filtering and multiplexing a telephone signal could be subjected to while in transit.

But 300 baud is pretty slow (around 30 characters per second) and we wanted to go faster! However we couldn't speed up the rate at which the data was being transmitted without it becoming incoherent to the receiver. But what if rather than just having two symbols (0 and 1) we could have four? (00, 01, 10 and 11)

Adding tones was out but what we could do is 'phase shift' the existing tones; that is, shift the start and end points of segments of their waveforms, creating identifiable 'jumps' between them. This way we could have 16 symbols, or 4 bits or 1200bps – a fourfold increase over 300 baud modems. As phone lines improved, a 600 baud base speed became possible, allowing for 2400bps modems.

'Acoustic couplers' were necessary because AT&T forbade anyone other than itself from connecting a modem directly to a telephone line. 'Ma Bell' was a mean old lady!

First you will need a modem to connect your computer to the telephone. It converts the electronic signals out of your computer to audio tones and then back into electronic computer signals. Since the modem output is audio sound, it can easily be transmitted over any ordinary telephone just like a regular phone call. Some now include the ability to dial the phone for you.

Most modems today are the direct connect type. They plug into a modular wall jack just like your house phone. You must have a private line to use a modem. Not only is it the law, but your connection will go dead if somebody else picks up the line while your computer is talking to another computer. A good modem costs between $200 and $300. Among the best is the *Hayes Smart Stack Modem* for $279. It works with practically any terminal or computer and is a good buy.



Online Information Services

So what if we made a really big BBS and charged people money to use it?

These days it seems obvious that there would be a market for such a beast, but back in the 1960s there wasn't much thought given to consumer mainframe use – it was all about businesses.

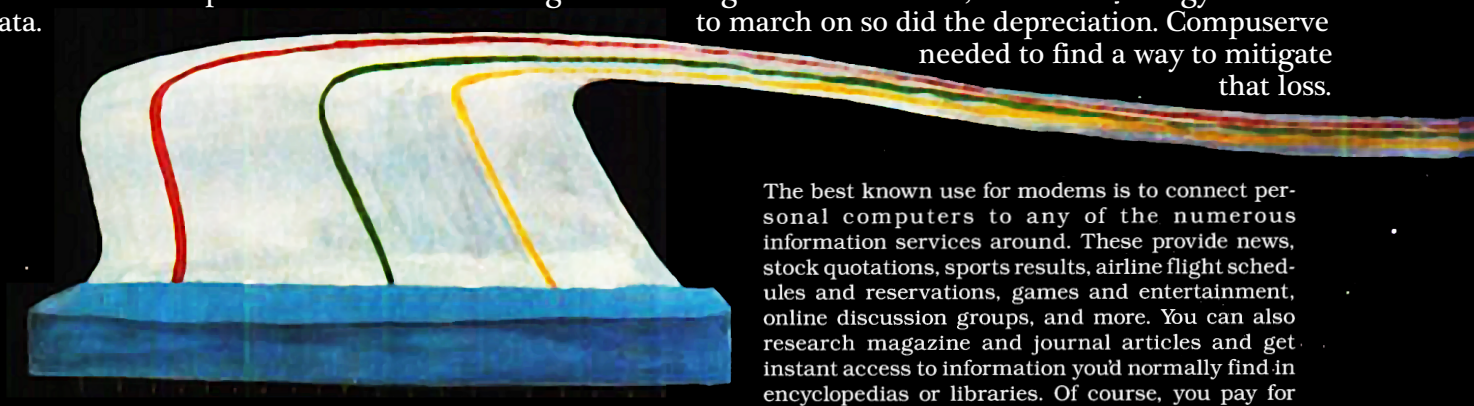
American company Golden United Life Insurance needed a computer to keep track of its clients and calculate its premiums but it didn't need it all the time, and when it wasn't running it would be depreciating – a lot. Golden United's founder, Harry Gard Sr., expressed his worries to his son-in-law, Jeffrey Wilkins and the pair came up with an idea: why not rent the computer to other companies when Golden United wasn't using it?

Not physically – there was no need to cart the mainframe around! All they needed to do was install some modems to interface with the computer and allow 'client' companies to dial-in and manage their data.

But it turned out that this was a really lucrative business in and of itself. Once companies factored in the depreciation costs they were saving by not having their own mainframes they were willing to pay top dollar to use Golden United's – so much so that they began to complain about the 'unfair' priority given to Golden United's processing jobs.

And so, the 'computer timesharing' side of the business was moved into a subsidiary, Compu-Serv Network Inc., to appear more neutral to 'outside' clients. The timesharing business continued to grow, and in 1975 Golden United decided to take Compu-Serv public; in 1977 it changed its name to CompuServe Incorporated.

But while CompuServe's mainframes were being fully utilised during the day, they were still idle on nights and weekends, and as technology continued to march on so did the depreciation. Compuserve needed to find a way to mitigate that loss.



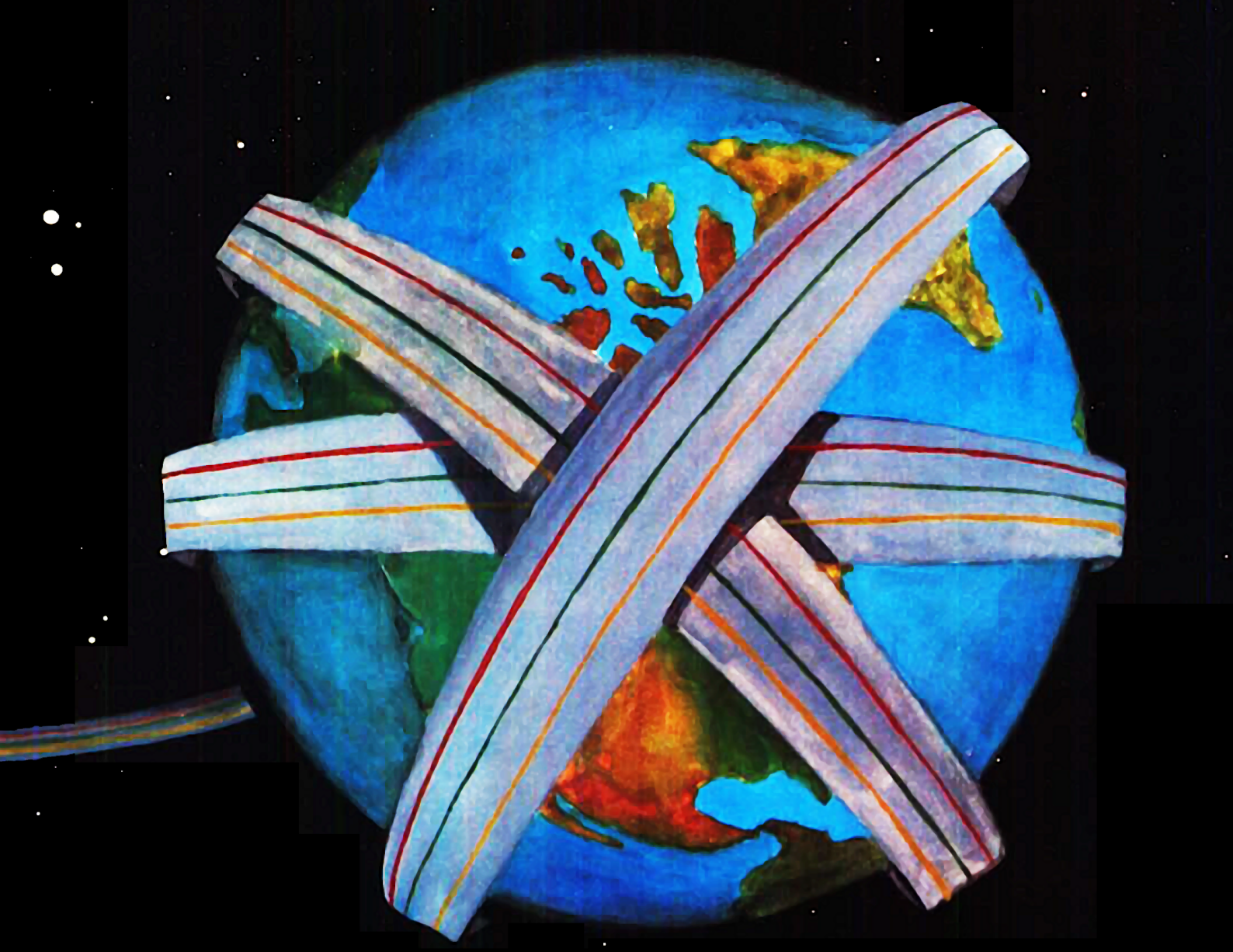
The best known use for modems is to connect personal computers to any of the numerous information services around. These provide news, stock quotations, sports results, airline flight schedules and reservations, games and entertainment, online discussion groups, and more. You can also research magazine and journal articles and get instant access to information you'd normally find in encyclopedias or libraries. Of course, you pay for these services—and some of them are expensive. Indeed, you can find yourself with huge monthly phone bills if you're not careful.



The solution to its problem was called 'MicroNet', launched in 1978 and marketed through Tandy's Radio Shack stores to owners of its TRS-80 computer line. During 'off hours' home and small business users could dial-in and use services hosted on CompuServe's mainframes for an hourly charge.

But while MicroNet did provide those users with storage and the ability to write and run their own programs, the big draws were found to be MicroNet's multiplayer games and bulletin-board system – features inspired by (and sometimes licensed from) software developed and run on university mainframes.

Although well-known to university students of the era, MicroNet's users found their newfound ability to interact with people around the US to be rather novel. Access to newswires and archives of home computer software just sweetened the deal. MicroNet took off – which was a fortuitous thing since the same personal computer that facilitated the home users that were MicroNet's customers was also the instrument of the eventual destruction of the corporate timesharing side of CompuServe's business.



As the business side declined the consumer side only grew. In 1980, tax company H&R Block acquired CompuServe, and changed MicroNet's name to CompuServe Information Services, or CIS.

That year Nancy Robertson, a writer with 80 Microcomputing magazine, took a tour of CompuServe's facility in Columbus, Ohio, and interviewed Jeffrey Wilkins, CompuServe's president, whose father-in-law had eventually convinced him to take control of their idea soon after the timeshare service had started operations.

"One of the things I've always enjoyed about this business is how quickly it changes", Wilkins told her, "You have to have the ability to anticipate, to be two or three years ahead of the market." It turns out Wilkins was fairly good at that.

"Nobody knows the size of the personal computing market yet; nobody knows what's going on out there," he mused, "The changes that will come to microcomputing because of computer networks will be evolutionary in nature. They will be brought on by the market, not by technology."

In short, networking would be personal computing's "killer app". And CompuServe would continue to work toward that goal, establishing a North American-wide communications network to provide easier access to its mainframes for both its timesharing and CIS customers through hundreds of local-access phone numbers, which was much cheaper than dialing long-distance and encouraged new users and customers..

Also in 1980 CIS opened up its CB Simulator, the first public, commercial multi-user chat program, the product of one employee's work over a weekend that would become one of CIS's biggest features. The public was also warming to the idea of Electronic Mail, so much so that the US Postal Service felt threatened enough to start its own "electronic mail" service called E-COM in 1982.

E-COM allowed users to send messages to a destination post office branch, at which it would be printed out and hand-delivered. But the US Justice Department thought E-COM might violate antitrust laws, and the service was expensive to run and failed to gain serious adoption. By 1985 the service was forced to shut down. But CompuServe kept rolling on.

The Business



By early 1984 CompuServe Information Services had topped the 60,000 subscriber mark and was raking it in, charging 13 cents per minute to access the service during the day, and 10 cents per minute at night, at a speed of 300bps. But people were willing to pay – CIS's forums were hopping, with CompuServe allowing users to start their own forums, and paying those whose forums engaged the most users (sound familiar?) There were forums for each of the various home computer brands, as well as regional forums and topical-based forums...they were like Facebook groups, but a long time before Mark Zuckerberg was even a thought in his parents' heads.

The forums provided an early taste of the Internet – somewhere you could go to ask questions and get answers in an age when paper encyclopedias were still commonplace and you had to go to the library to research anything. The CB Simulator allowed you to meet people down the block or across the country, and you could then go off and play games with them, as if you had invited them over for a few glasses of wine and an evening of Monopoly.

All of this novelty helped to drive personal computer sales, and personal computer sales drove CompuServe subscriptions, a symbiotic relationship that only helped both markets grow.

But CompuServe was not the only information service a new computer owner could subscribe to. It had competition in the form of The Source. Launched in 1979 The Source was a partnership between Robert Ryan, the CEO of timesharing company Dialcom, which during the 1970s had developed a series of online products for businesses such as accounting and payroll services, a word processor and the first commercial electronic mail service, financier Jack Taub and Bill von Meister, who had the idea of an 'information utilty' hosted on corporate mainframes during off hours.

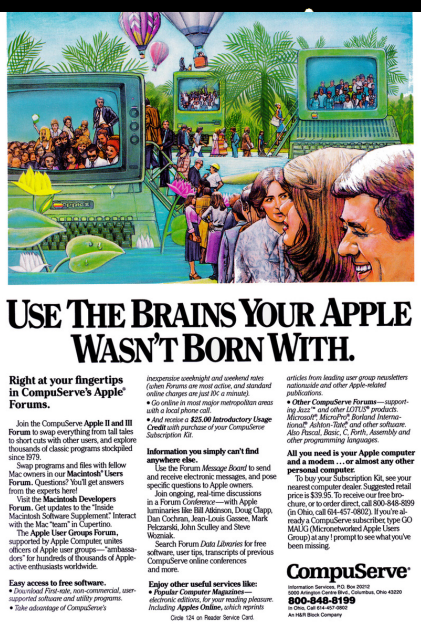
In addition to features similar to CIS such as forums and chat The Source provided access to "databases" such as archives of news articles, stock market data, and information about cars, wines and real estate, positioning it as an upmarket information service.

But The Source struggled to find profitability and Dialcom quickly tired of its mounting debt with them. Taub sold an 80% share of the business to American publisher Reader's Digest in order to settle its debts and keep it going – an action taken over von Meister's objections, who would initiate legal proceedings. Reader's Digest naively decided that it would be better off running its own mainframes than throwing yet more money at Dialcom but with no corporate timesharing component The Source continued to lose money. It probably didn't help that it charged US$100 just to become a user, then slugged you with hourly charges of around $10! While CompuServe grew, The Source stagnated.

Von Meister, meanwhile, had received a US$1 million settlement from Taub and used it to found Control Video Corporation, a company that provided downloads of videogames on to Atari 2600 consoles. In 1983 CVC put up US$5 million to keep The Source afloat and allow von Meister to return as an 'operating partner', an action that would bring CVC near bankruptcy, and an injury from which it would never recover.

1985 would see von Meister get thrown out of CVC and The Source would stumble along for four more years before being acquired by CompuServe, which shut it down.

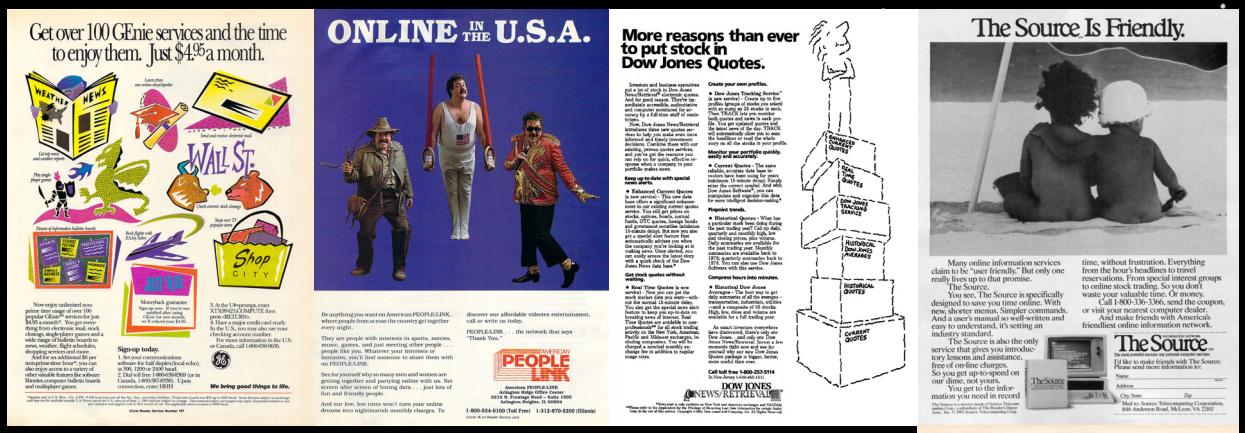








CompuServe wasn't the only online service, with competitors such as GEnie (owned by conglomerate General Electric), Dow Jones (which specialised in stock market data) Delphi (which featured an online encyclopedia), Prodigy (a pioneer in online shopping) and Quantum Link, which became AOL.



However, CompuServe was unable to fully celebrate the vanquishing of its rival, facing a new threat from the descendant of von Meister's other creation, CVC. After he had been forced out, one of CVC's consultants, Jim Kimsey, bought its assets and used them to found Quantum Computer Services, which developed a dedicated on-line service for Commodore 64 and 128 computers called Quantum Link. Rather than using a text-based interface like CompuServe and The Source, Quantum Link used custom software operating on the subscribers computer to provide a graphical interface.

From CompuServe's position Quantum Link wasn't much of a competitor – at first. But over the next few years Quantum would launch a version for the Apple II, and then in 1988 one for the IBM PC called PC Link; this is where life began to take a turn for CompuServe.

In 1989 Quantum changed PC Link's name to America Online, marketing it as a 'user friendly' alternative to CompuServe and making the latter nervous, causing it to see a need to consolidate the online services market and take out The Source.

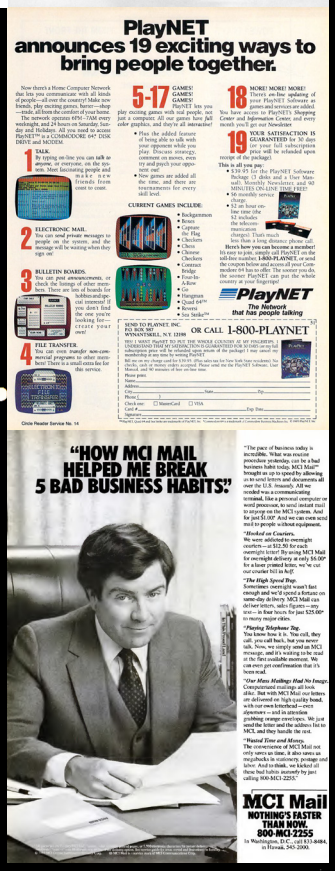
CompuServe had fended off other competitors before, such as Delphi and GEnie, but AOL looked to be a serious opponent.

AOL leveraged the graphical multiplayer games that had been created for Quantum Link and continued to create new titles, providing a unique product to its users and one CompuServe was in no position to match. In 1991 it introduced the first multiplayer graphical role-playing game, and in 1992 an AOL client for the Windows operating system.

In 1993 AOL began to distribute massive quantities of client software CDs, offering free trial periods and by the mid-1990s it raced past other online services such as Delphi, GEnie, Prodigy and eventually CompuServe, which was starting to lose money and which owner H&R Block decided in 1997 it wanted to sell.

AOL offered its own stock in exchange for its rival but H&R Block wanted cash. A deal was worked out with a third party, WorldCom, which wanted CompuServe's network infrastructure and who would pay cash for it and then sell CIS to AOL for stock. In 1998 the transaction was compete: H&R Block had sold a company it had purchased for US$20 million 18 years earlier for US$1.2 billion! And that company had spent most of its life making money.

AOL would carry on, reaching 10 million subscribers, and readying itself to take on its next big opponent: the Internet.



Computer magazines were littered with advertisements for CompuServe, many of which have become almost iconic, such as the Herbie ad. But its competitors also understood the power of advertising, publishing compelling ads of their own...





Bill Basham was a computer hobbyist who published his programs through his own company, Diversified Software Research. His offerings included Protect-O-Disk, a method of copy-protecting software, and Diversi-DOS, a faster alternative to Apple's DOS 3.3. Diversi-DOS also featured a print buffer, which tied the computer up less when printing.

At its peak over 35 D-Dial systems existed across the US and Canada, in most major cities. Late at night they would sometimes 'link' together, often over the Telenet network, allowing their users to chat with each other.

While using an on-line service like CompuServe allowed you to chat with people all around the world, its per-hour charge was not that attractive to perpetually-broke teenagers. Also, you couldn't really go 'hang out' with people in Belgium, and teenagers really like to go hang out. So there was room in the market for a lower-cost more localised chat service.

Scene from *Simon and Simon* (1981)

Enter Diversi-Dial. One of the attractive features of the Apple II was its seven internal expansion slots. Typically, these would be used for disk drive controllers, serial communication cards, parallel printer cards, sound cards and so forth. But there was nothing stopping you from stuffing then all with modems! Once you'd done that, all you needed to do was write a program that broadcast incoming messages from one modem card to all of the other modem cards – of course, it's more complicated than that, but that's the gist. Or you could buy Diversi-Dial software which did that for you.

Initially, the pitch from Diversi-Dial's developer was that you could make a pile of money from operating a 'station' (the term used for a D-Dial installation) through membership fees and advertising with local businesses. But the whole advertising thing didn't really fly, and over time the price of the software dramatically dropped. But membership fees were still common – the station's system operator (sysop) still had to pay for phone lines, and in the 1980s 'commercial' lines were expensive (around US$70 per month, each!)

```
]1234567
1*******  000                    12:01 PM 08
C1984 DSR Inc

Type a line and hit <return> to
send a message.

For instructions, enter:

/I  <return>

/hPaleotronic
--> Done
Hello world!

(1,#0:Paleotronic) Hello world!
/s

(1,#0:Paleotronic)
No other callers now
Please hang on
Last caller hung up at 12:00 PM
--> 12:00 PM
```

D-Dial used a text-based interface. Commands were prefixed with the / key, for example /E to hang up.

```
]1234567
3*******  000                    12:02 PM 27
/?
--> COMMANDS

/I  Instructions
/H<new handle>
/Tx Tune to Channel x (x=1,2,3,4)
/S  Show Stations Connected
/Wxx Screen Width (xx=20-99)
/B  Beeps Off/On
/L  LF after CR - Off/On
/F  Format spacing
/D  Half/Full Duplex
/Pn<message> Private To User #n
/Xn Squelch User #n
/Mx Read message (x=0..9,A..Z)
/E  Exit (hangs up)

/T3
--> Done
/B
--> Beeps Off
```

There were four different public 'channels' and you could send direct messages to other users by line #.

Users used 'handles' and were generally anonymous unless they intentionally identified themselves.

For 'technically-minded' teenagers who were often isolated at school, Diversi-Dial provided a valuable opportunity for social interaction.

GEEK UNDERGROUND

Typically a membership on a D-Dial would run you $5-10 a month. Or you could just call up and chat for free, but you would get disconnected every few minutes and have to call back, and during busy times you could lose your 'slot' (which was a modem plugged into an actual slot!) Also, sometimes the system could be set to refuse freeloaders. So this was a big incentive to part with some of your cash, even though you'd really rather put it into Marble Madness or some other arcade game.

Once you had that membership, though, the next issue was what your parents thought, first about you tying up the phone line for hours at a time (if you pushed it too far they might force you to get your own phone line, and if that happened you might start your own BBS) and secondly about you spending those hours talking to complete strangers, many of whom older adults (stranger danger!) While it was the 1980s and parents were much more relaxed about these things, they weren't that relaxed.

News

Alternative To On-Line Mail Offered

FARMINGTON, MI — Corporations that want an alternative to subscribing to large on-line services for electronic mail can now set up their own on-line messaging service.

Diversi-Dial is a $475 software package that will turn an Apple IIe into a dedicated station for receiving electronic mail. The system can be accessed by up to seven users at a time from any type of personal computer, according to Bill Basham, president of Diversified Software Research Inc. here.

The program will manage up to seven modems hooked up to the IIe, enabling seven users to call a Diversi-Dial station. Users calling a station via their personal computer, which does not have to be an Apple IIe, can leave electronic messages for others on the system. The program also provides a conferencing facility that enables individuals to converse in a real-time chat mode.

"It could b
does not hav
said. The syst
only a single
board at a ti
system is inte
mail and is n
requiring heav
he added.

"Business
possibilities ar
tions," Bashar
use of on-line
has been limit

Diversi-Dial turns your computer into a Compuserve-like CB simulator. Up to seven callers can chat with each other simultaneously. Requires no passwords or connect charges, but system operators may raise funds through caller donations. For the **Apple II** family; requires seven Apple Cat II modems; $50. Diversified Software Research, 5848 Crampton Court, Rockford, IL 61111.

Bill Basham attempted to market Diversi-Dial as a corporate e-mail server, but it was more successful in the recreational 'chat' space.

Throughout the next hour, on several channels, I managed to meet and exchange information with a fascinating spectrum of computer users. One was a nine-year-old girl in Kansas who was obviously a very experienced programmer. In addition to using her computer for homework and math projects, she had organized her paper route billing with her own program. "MOMMA BUCKEYE" turned out to be a retired mother from Ohio visiting her son in San Francisco, and using a computer for the first time!

Perhaps my favorite correspondent was RED DOG. A very intelligent woman (Yale '74), RED DOG and I discussed everything from politics to programming for nearly half an hour. Periodically she would insist upon being petted or scratched. I complied, of course, and my kindness at the keyboard was reciprocated by various woofs, aarfs and bow wows. Did I mention that some CBers really get into their roles?

D-Dial was an alternative to 'CB simulators' on online services such as CompuServe which, while allowing for hundreds or thousands of users also charged by the minute.



LAST NIGHT, 39 MUSICIANS HAD A COMPUSERVE CONFERENCE, SO DID 31 M.D.S, 49 SPORTS FANS AND 640 APPLE POLISHERS, AND NO ONE HAD TO LEAVE HOME.

The Electronic Forum. Cheaper than Long Distance and Much More Rewarding.

Every night on the CompuServe Information Service, professional and social groups discuss a wide range of subjects. From what's new in medical technology to what's nouvelle in continental cuisine.

And every day more computer owners who share a common interest are discovering this exciting new way to exchange ideas and even transfer hard copy data.

And besides electronic forums, they leave messages for each other on our national bulletin board.

"talk" informally on our CB simulator, and communicate via CompuServe's electronic mail.

But best of all, in most cases, CompuServe subscribers get all of these state of the art communications options, plus a world of on-line information and entertainment for the cost of a local phone call plus connect time.

To become part of this flexible communications network, all you need is a computer, a modem and CompuServe. CompuServe connects with almost any personal computer, terminal, or communicating word processor.

To buy a Starter Kit, see your nearest computer dealer. To receive our informative brochure or to order direct, call or write:

CompuServe

800-848-8199

Eventually all of these chat options would be made obsolete by IRC and later, social networks. Now the idea of chatting online is largely taken for granted.

Dear Jack -

I used to run a Diversi-Dial 7 line chat system on my old Apple //e back in 1987. The system fell down mainly because I poorly managed it. I'd like to have another try at it with my IBM this time, but I'm having a very difficult time finding IBM chat software. I am specifically looking for chat system software, not BBS software that has a chat system built onto it. The only two software packages that I have ever seen that fit this critera, are called Synergy and Diversi-DIAL. These are old products circa 1986-1990 and the companies that developed them are long defunct.

Do you, or any of your readers know where I might turn to find a CHAT system, not a BBS system with a chat door for the IBM?

Thanks much.

Sean Langford
CCCTO.SLANGFOR@GFSMEMO#@GE.GEIS.COM

◆ ◆ ◆

Sean:

Shades of Bill Noel. I haven't heard of Diversi-Dial for a number of years. No, I don't know of a "pure" chat system out there. There are several IBM packages that have interesting chat features, including Major BBS and TBBS with their Ultrachat module. DLX and Oracomm are flailing around in search of life at this point, but still sport a number of loyal adherents.

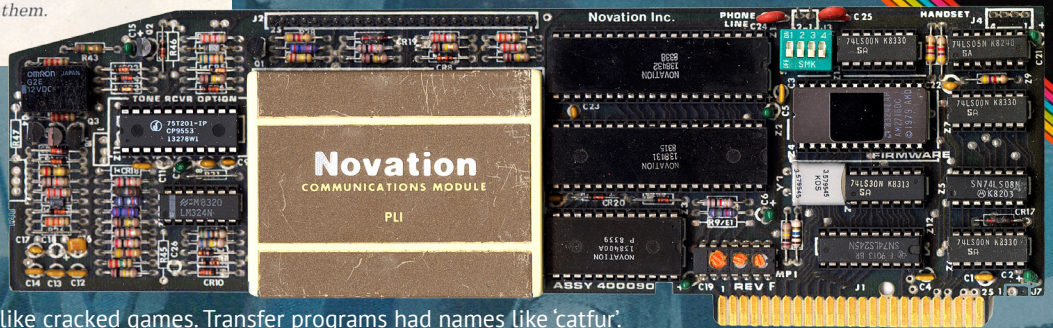
I'm a little lost at why you want the system to be strictly devoted to chat. Almost any of these packages are much more configurable these days, and you can set them up to be almost entirely chat-centric without using any of the other bells and whistles if you don't need or want them.

Jack Rickard

Synergy Teleconferencing System (STS) was an IBM AT-based successor to Diversi-Dial that came out in 1991. It had virtually the same interface but allowed for the use of faster modems.

Generally though, the people you met through D-Dial were pretty safe – these folks had computers, after all, and so were usually middle-class or higher – but teenagers being teenagers there was usually drinking and weed and maybe some LSD. Also hacking (wardialing: randomly calling phone numbers to find a modem, the most sought after of which was called an 'outdial', a modem relay typically run by companies to allow their employees to connect to head office computers without paying long distance charges, which were quite expensive in the 1980s! But if you found an outdial you could use it to call chat systems in far away lands...)

Of course, in modern times the Internet makes all of this seem trivial. But in the 1980s, D-Dial and other chat systems allowed teenagers to meet people they otherwise wouldn't have, broadening their horizons.



The Novation Apple-Cat was not just the modem of choice for D-Dial systems, but also pirate software BBSes.

The Apple-Cat was a 300 baud modem but had a synchronous 1200-baud transfer mode useful for large files, like cracked games. Transfer programs had names like 'catfur'.

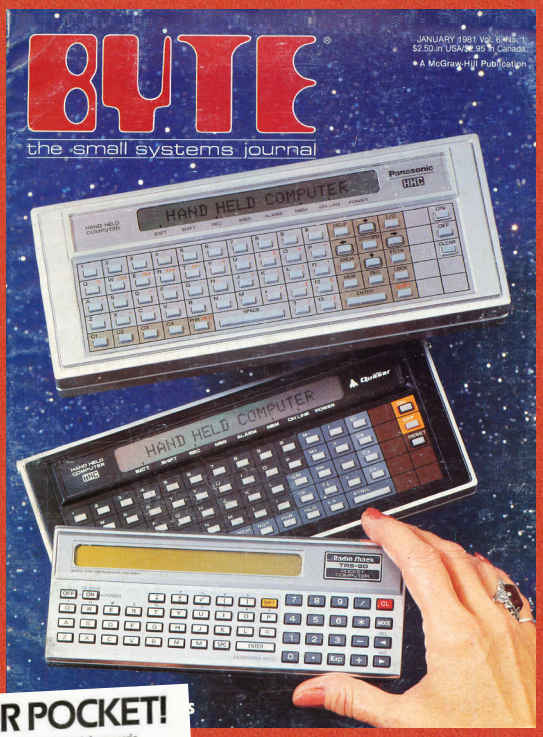
You can log-on to a real Diversi-Dial system by telneting to rmac.d-dial.com

CHAT SYSTEMS

What could be better than connecting to another computer remotely? How about remotely connecting remotely?

While these days we take the 'always connected' nature of our mobile phones for granted, back in the early 1980s the idea of being able to access information on-the-go was mindblowing. Most people learned about current events passively, either through the newspaper, the radio or the 6 o'clock TV news. If you wanted more practical information you had to look it up in an encyclopedia, or call someone to look it up in an encyclopedia. And if you needed to compute, you had to be near a computer!

With a modem, it was just as easy to become dependent on instant access to information, real-time news updates and social connections then as it is now, and for your 1980s digital pioneer the idea of portability – being able to do whatever you did in your computer room at home anywhere else – was the Holy Grail.



The first step in this crusade was the Tandy Pocket Computer PC-1, a rebranding of the Sharp PC-1211. Released in 1980, it was an advancement over previous 'programmable calculators' in that it had a QWERTY keyboard and allowed for the writing and execution of BASIC code. It had a 24-character LCD and could run for up to 300 hours on four coin-style watch batteries! But while it had the ability to load and store programs from tape and print to a tiny portable thermal printer, sadly it didn't have a modem.

Tandy and Sharp weren't the only players in the pocket computer game, Casio was in it too.

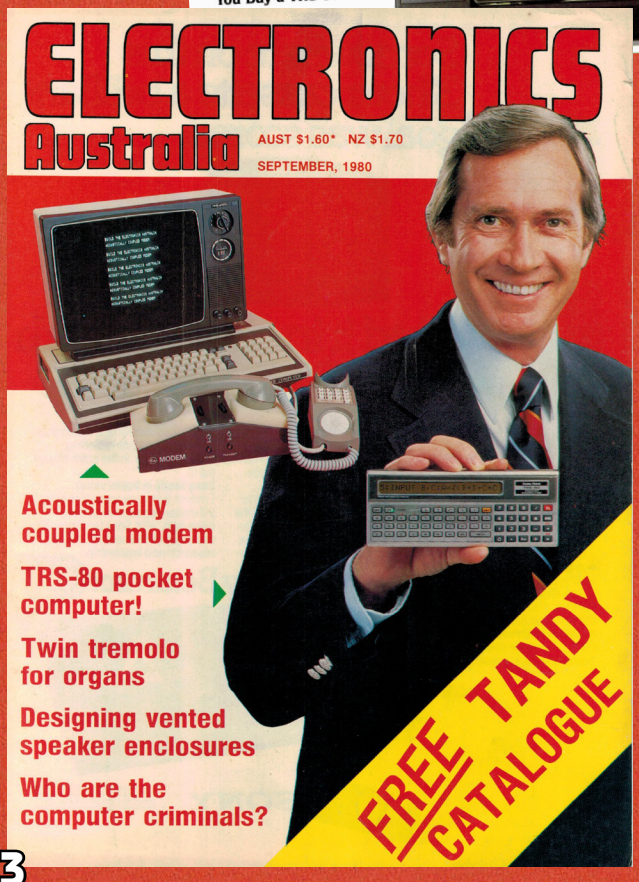


The Tandy Pocket Computer (PC-1) had 1.9 kilobytes of RAM, which doesn't seem like much but its BASIC programs were 'tokenised' (that is, PRINT is stored as a single byte instead of five) which meant a program could have up to 1424 commands, allowing for rather sophisticated applications in a small package.

You could really cheat in class with one of these things. Just don't get caught!



For that, prospective payphone warriors would have to wait until the PC-2. Released in 1982, this second revision of the Pocket Computer featured much better hardware specifications than the PC-1, although it was larger and weighed over double that of its predecessor.



The PC-2 was much more like what would consider a portable computer, with a better processor, more memory (which could be expanded with 4KB and 8KB memory modules), the ability to display bitmapped graphics and a monophonic sound generator and speaker.

But most importantly, along with the cassette and printer interfaces of its predecessor, it had an RS232C (serial) interface, which added additional communications-oriented commands to the built-in BASIC language and allowed the PC-2 to be connected to a modem.

By typing in a short little 'terminal program' (and acquiring or building a battery-powered acoustic modem) you could call up Compuserve or your local bulletin-board system (BBS) from the comfort of a Superman-style 1980s payphone box (payphone box not always available).

So, not quite the same as using Facebook on your mobile phone. But in the early 1980s this was crazy high-tech, when you consider your alternatives for contacting someone on-the-go were either to call them (and if they weren't there leave a message on their answering machine or with whoever did answer and hope they actually passed along the message) or page them (if they had a pager which was pretty rare unless you were a doctor or a dope dealer). E-mail was easier!

Connecting On The Go

Getting one of these under the tree could make for a very merry Christmas morning, if you were so inclined.

But once you factor in the US$199 cost of the PC-2 plus the US$199 cost of the RS232C interface and then the cost of the acoustic modem (around the same), that ~US$600 price tag (over US$1500 in 2018) was a bit out of reach of your average 12 year-old. But a kid can dream, right?

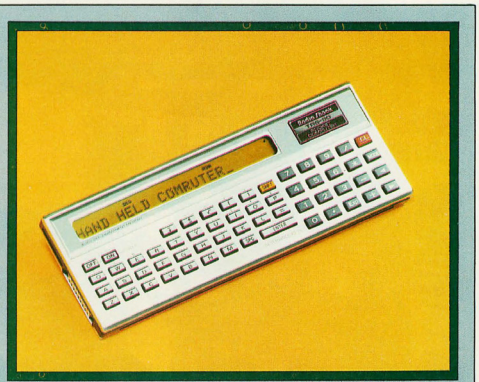
Another Pocket Computer

The internal architecture of the TRS-80 Pocket Computer is radically different from the other pocket computers now reaching the market. Instead of a single 8-bit microprocessor (such as that used in the Quasar/Panasonic HHC and the Sinclair ZX-80), the designers of the TRS-80 Pocket Computer (Sharp Electronics of Japan) decided to use two 4-bit microprocessors in a unique serial configuration.

Both microprocessors are custom CMOS (complementary metal-oxide semiconductor) integrated circuits with built-in ROM (read-only memory). The purpose of microprocessor 1 is to arrange data and make decisions. It reads the data that is keyed in or fetched from programmable memory. It is also responsible for parsing arithmetic operations and interpreting the syntax of BASIC statements. It then arranges the data and provides instruction codes to microprocessor 2 through a transfer buffer. The actual execution of an instruction is performed by microprocessor 2, which also updates the display and notifies microprocessor 1 that it has finished its function. The respective duties of the microprocessors are listed at right.

Memory Organization

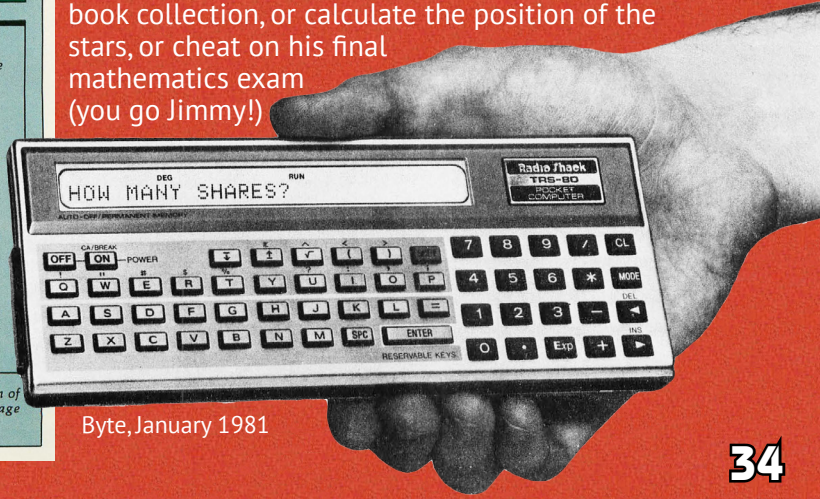
The programmable memory of the TRS-80 Pocket Computer is contained in four integrated circuits. There are three memory ICs, each containing 512 bytes of programmable memory. The three ICs which drive the liquid-crystal display each contain 128 bytes of programmable memory. Putting it all together, you end up with 1920 bytes of programmable memory. After you subtract memory space used for the transfer buffer, input buffer, display buffer, fixed memories, and reserved keys, you end up with 1424 bytes of user-addressable memory. Into this space you can easily fit a BASIC program of around 250 lines (average length)...SM■



Microprocessor 1	Microprocessor 2
Key input routine	*Display processing routine*
Acknowledgment of the remaining program	*Input buffer*
One instruction to one program step incorporation	*Computational result*
Interpreter:	*Error*
Program execute statement	*Arithmetic routine*
Cassette control statement	*Character generator*
Command statement	*Cassette routine*
Printer control (reserved)	*Print routine*
Execution of manual operation	*Buzzer*
Power shut-off control	*Recognition of printer (reserved)*
Clock stop control	*Power off*
	Clock stop

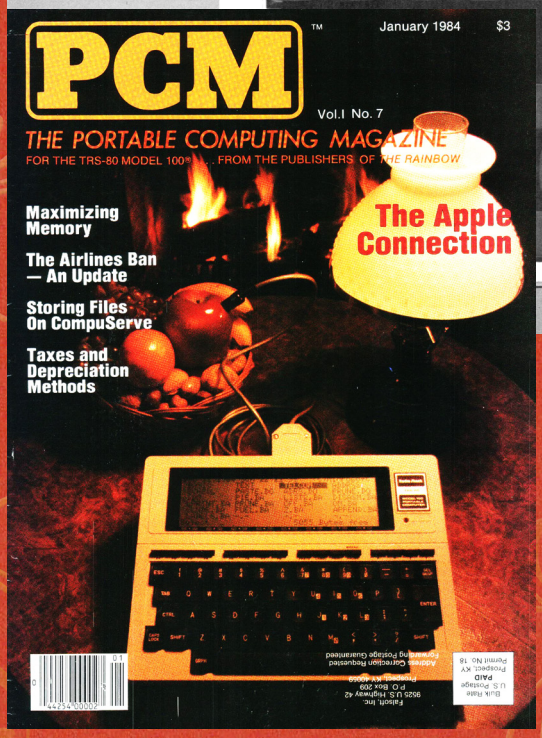
Of course, if a kid did have the wherewithal to get their hands on such a rig they could get into all kinds of trouble – the anonymity granted by using payphones (in an era where security cameras were uncommon) led to all kinds of successful (and not-so-successful) hacking attempts. But if you were a more law-abiding citizen (yeah, I'm talking about you, Pointdexter), there's plenty of other things you could do with your Pocket Computer that didn't attract the unwanted attention of federal authorities.

For one, you could learn how to code! Computer professionals in the 1980s tended to treat BASIC with derision, but let's face it, these days most parents are happy if their children spend 15 minutes playing around with Scratch. I imagine they'd be ecstatic if their child wrote their own terminal program, even if it was in BASIC and they did use it to try to break into NASA! Little Jimmy could also catalogue his comic book collection, or calculate the position of the stars, or cheat on his final mathematics exam (you go Jimmy!)



Byte, January 1981





And so, maybe to prevent that last bit, you might want to get Jimmy something a little more conspicuous. The TRS-80 Model 100, introduced in 1983, was roughly the size of a textbook, with a full-sized keyboard and an 8-line 40-character wide display – definitely a step up on the Pocket Computer. And it ran on AA batteries! Only US$1099 (around US$2800 in 2018) – ouch.

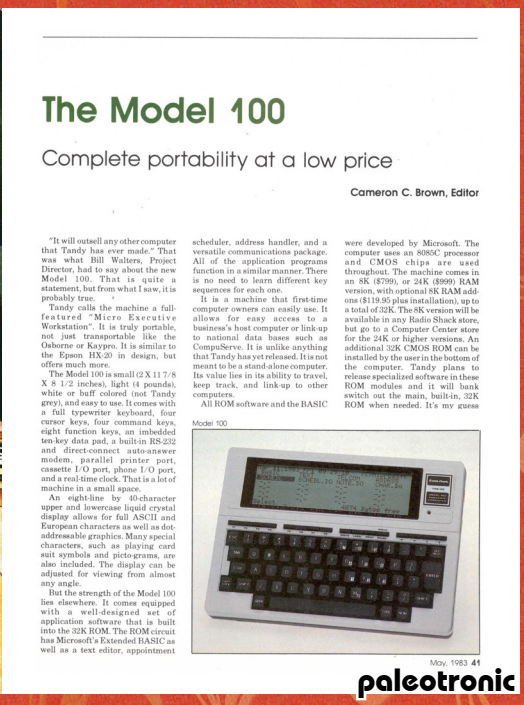
That's an expensive Christmas present for Jimmy! But, think of all he could do with it. Aside from word processing, like the Pocket Computer it had a full built-in BASIC, programmed in part by Bill Gates himself (in fact, the last code he ever wrote). He could even use BASIC to control the internal 300 baud modem – not that Jimmy would ever recognise the potential that combination had to get himself in a lot of trouble!

```
Processor: 8-bit Intel 80C85 @ 2.46MHz
Memory:    32KB ROM, 8-32KB RAM
Display:   8 lines of 40 characters 240x64
Keyboard:  56 keys, 8 programmable keys
Dimensions:300mm by 215mm by 50mm, 1.4kg
```

But one thing's for sure, Jimmy would've been the coolest kid in class – at least until another kid beat him up and took it from him (ah, the 80s, such a wonderful time to be a nerdy kid). People still think the Model 100 is cool today, there's a thriving online community of owners.

The press loved the Model 100, not just as a product, but its portability, full-sized keyboard and built-in modem made it perfect for the journalist on-the-go. Being battery powered meant there was no need to deal with adapting the Model 100 to local electricity standards, and once you filed your report via modem you could erase it and avoid confrontation with government officials when exiting less-savoury countries. But that's not all: the Model 100 had an address book and a scheduling program – both at that point in time typically scrawled out on paper.





The Model 100

Complete portability at a low price

Cameron C. Brown, Editor

"It will outsell any other computer that Tandy has ever made." That was what Bill Walters, Project Director, had to say about the new Model 100. That is quite a statement, but from what I saw, it is probably true.

Tandy calls the machine a full-featured "Micro Executive Workstation". It is truly portable, not just transportable like the Osborne or Kaypro. It is similar to the Epson HX-20 in design, but offers much more.

The Model 100 is small (2 X 11 7/8 X 8 1/2 inches), light (4 pounds), white or buff colored (not Tandy grey), and easy to use. It comes with a full typewriter keyboard, four cursor keys, four command keys, eight function keys, an imbedded ten-key data pad, a built-in RS-232 and direct-connect auto-answer modem, parallel printer port, cassette I/O port, phone I/O port, and a real-time clock. That is a lot of machine in a small space.

An eight-line by 40-character upper and lowercase liquid crystal display allows for full ASCII and European characters as well as dot-addressable graphics. Many special characters, such as playing card suit symbols and pictograms, are also included. The display can be adjusted for viewing from almost any angle.

But the strength of the Model 100 lies elsewhere. It comes equipped with a well-designed set of application software that is built into the 32K ROM. The ROM circuit has Microsoft's Extended BASIC as well as a text editor, appointment scheduler, address handler, and a versatile communications package. All of the application programs function in a similar manner. There is no need to learn different key sequences for each one.

It is a machine that first-time computer owners can easily use. It allows for easy access to a business's host computer or link-up to national data bases such as CompuServe. It is unlike anything that Tandy has yet released. It is not meant to be a stand-alone computer. Its value lies in its ability to travel, keep track, and link-up to other computers.

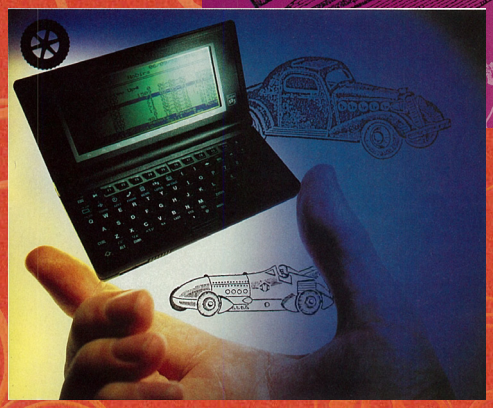
All ROM software and the BASIC were developed by Microsoft. The computer uses an 8085C processor and CMOS chips are used throughout. The machine comes in an 8K ($799), or 24K ($999) RAM version, with optional 8K RAM add-ons ($119.95 plus installation), up to a total of 32K. The 8K version will be available in any Radio Shack store, but go to a Computer Center store for the 24K or higher versions. An additional 32K CMOS ROM can be installed by the user in the bottom of the computer. Tandy plans to release specialized software in these ROM modules and it will bank switch out the main, built-in, 32K ROM when needed. It's my guess

Model 100

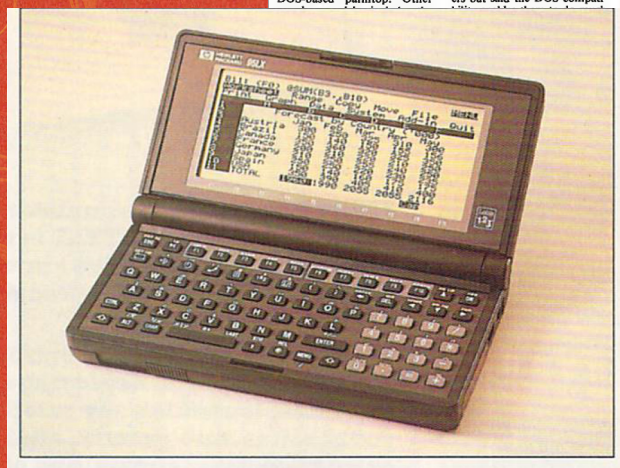
May, 1983 41

Cheaper 'pocket organisers' had basic calculator functions, an address book and calendar.





But the HP100LX broke free of those restrictions, allowing you to run the same software as the PC in your office – but at a price (US$549 or US$931 in 2018, expensive but still much cheaper than the Model 100!) Becase of their ability to run DOS these are sought-after collectors' items today.



No longer science fiction, the PC-compatible palmtop arrives, courtesy of Hewlett-Packard.

JULY 13, 1992

NEWS / HARDWARE

Palmtops lend a hand to mobile users

Built-in organizers boost popularity

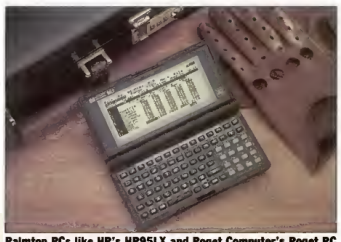
BY YVONNE LEE

When palmtop computers were introduced, many observers derided the machines for their small keyboards, but the pocket computers are now functioning as notepads, communicators, organizers, as well as miniature PCs.

Hewlett-Packard Co.'s HP95LX is the most popular DOS-based palmtop. Other molecular biology, connects other devices to the RS-232 port to collect data.

"A palmtop replaces and enhances several items I used to carry, as well as allowing me free-form access to my data," Adams said.

DOS COMPATIBILITY. When asked why they used a palmtop, most users cited the built-in organizers but said the DOS compati-



Palmtop PCs like HP's HP95LX and Poqet Computer's Poqet PC have validated and expanded what has been a niche market.

system administrators said they use the pocket PCs as miniature terminals.

GETTING AROUND THE KEYBOARD. Although the machines were originally discounted for their small keyboards, users have found ways around this.

Laird Popkin, of Thinking Machines Corp., in Cambridge, Massachusetts, and Helen Woolverton, professor of mechanical and aerospace engineering at Princeton University, selected the Portfolio and Poqet, respectively, because they had larger keyboards than other palmtops. Stephen Okay, system administrator at Mitre Corp., in McLean, Virginia, and Ed Greenberg, a network administrator in San Jose, California, said they have become proficient with new two- and three-finger touch-typing styles. □

Windows CE-based palmtops weren't DOS compatible, but had a pen-based touch interface and a GUI similar to Windows 95. And you could play Solitaire on them! But the keyboard would later disappear.

While the Pocket Computer and the Model 100 were trailblazers, they proved there was a market for lightweight portable computers and over time various companies such as Casio and Epson would release their own products, both in the 'notebook' and pocket categories.

While the larger form-factor of the Model 100 would eventually be replaced by laptop computers and portable dedicated word-processors, the Pocket Computer would evolve into the 'palmtop' and the PDA.

Initially, however, the former would be stripped of its ability to run customised applications, and instead manufacturers released 'pocket organisers' which were glorified calculators that came with versions of the Model 100's address book and calendar programs. Some could even generate touch tones and dial your phone!

But in the early 1990s technology made it practical for a pocket-sized PC, and in 1993 Hewlett-Packard released the HP100LX, an MS-DOS compatible computer with 1MB of RAM. While running DOS on a tiny computer was cool, palmtops didn't really take off until the advent of Windows CE, first released in 1996.

The Philips Velo 1, for example, released in 1997 was a Windows CE palmtop that featured a touch-sensitive monochrome screen (four shades of grey with the update to Windows CE 2.0) and a built-in low-power modem (unlike competitors, which needed a PCMCIA modem 'card'). It also allowed users to run custom applications, such as games and Microsoft Office.

However, in the late 1990s palmtops would be overtaken by Palm-style personal digital assistants (PDAs), with pen recognition taking over from the keyboard.





Hamateur Hour



The Australian
CB SCENE

AN AM CB TRANSCEIVER FROM SHARP AUSTRALIA

Compact, neat and modern in design, the CB-800A is the Sharp Corporation's answer for the CBer who wants an AM transceiver which will fit neatly into the family car.

Most obvious feature of the CB-800A is the uncalibrated channel selector knob and the LED readout in the window alongside, which indicates clearly the channel to which the transceiver is tuned. Rotating the knob brings the numbers up, in turn, with two points of note: on the emergency frequency (USA channel 9) the digit flashes to warn the user that there is something special about that setting; secondly, when the public address function is invoked, any digit being displayed in the window is replaced by the letters "PA".

Also visible through the window is a signal and RF power meter but, unlike the LED readout, it is really too small to be of much use to a mobile operator.

There is a volume control knob, with a supplementary "power off" function, and a squelch control.

An ANL switch invokes the automatic noise limiter function, while a "Delta" switch shifts the receiver tuning from channel centre frequency to plus or minus 1kHz. The microphone plugs into the front panel, while antenna, power, PA and extension speaker connections are at the rear.

The receiver is a dual conversion superhet, employing 3 crystals and a phase locked loop to ensure frequency stability, with intermediate frequencies at 11.275MHz and 455 kHz. Selectivity is quoted as 6dB down at ±3kHz, and 50dB down at ±10kHz. Power output is rated at 3W and input sensitivity 0.7uV for 10dB signal/noise ratio, with 30% modulation at 1000Hz.

The transmitter also uses a phase locked loop for frequency control and includes modulation limiter circuitry to ensure maximum "talk power". Input is set nominally for 5W, harmonic suppression is 50dB, and output is coupled to antenna at the usual 50 ohms impedance.

On test, the receiver sensitivity was never in doubt, with the receiver's own limits far below the natural noise and interference ambient on any CB channel. The ANL switch tended merely to soften the noise spikes under these congested conditions, and the Delta switch had only a minor effect. Both controls would probably come into their own, however, for out-of-town use.

The squelch operated smoothly and effectively with the possible difference that it was less abrupt than usual, tending to act more as a severe mute for signals just below the threshold.

If we had any criticism at all, it would be that the channel change, while mechanically very smooth, did produce some noise output from the speaker; a minor point, however.

Tested into a dummy load, the transmitter produced very close to 4W RF output with about 13.6V applied and monitoring under these conditions indicated, full, clean modulation. If the unit appeals, its performance in practice should be right up to expectations for an AM CB transceiver.

Recommended retail price for the CB-800A is $149.95. For further details: Sharp Corporation of Australia Pty Ltd, 64-80 Seville St, Fairfield, NSW or P.O. Box 233, Fairfield 2165; tel: (02) 728 9111. (W.N.W.)

Remember the "EVERSHARP" pencil?

There was a time when the trade name "Eversharp" was so familiar that people used it to refer to any propelling pencil. What few people know is that it dates back to 1915 and is the word from which the 65-year-old Sharp Corporation presently derives its name.

Since then, the Sharp Corporation has moved heavily into electronics and can claim a long list of industry "firsts":

1953 — Mass production of Japanese TV.
1962 — Mass production of microwave ovens.
1963 — Mass produced solar batteries.
1964 — Solid-state desk top calculator.
1965 — 19in. colour TV receiver.
1971 — "Compet" calculator passes the million mark; first IC colour TV marketed; Sharp Australia established.
1974 — Mini calculator with memory.
1976 — Ultra-thin (7mm) calculator.

The story does not end there and the company is still "looking sharp", with a super-slim (5mm) calculator, and no protruding keys, liquid crystal display and an audible input check.

And there's a line of cassette radios bristling with all modern facilities.

Breaker breaker good buddy!

It's the stuff of 1970s movies: the CB radio's 'liberation' of the wide-open road from the tyranny of the highway patrol. But CB radio is about far more than simply avoiding speeding tickets.

While computer bulletin-boards and chat systems provided new ways with which residents of the 1980s could communicate with each other, the ability of the average individual to broadcast a message had existed for some time before that, in the form of Citizens' Band radio.

In the 1940s the US FCC assigned some of the UHF spectrum for public use, but at the time UHF radios were expensive, and it wasn't popular. Later, in 1958, a new AM band was opened around 27Mhz, which could be used by much cheaper radios, and it became popular amongst tradespeople and truck-drivers. By the end of the 1960s the size, weight and cost of CB radios had fallen to the point they became practical for consumers to own, and the 1970s became the heyday of CB radio.

So what made a CBer naughty or nice? Well, electronics-savvy radio operators could modify their equipment to transmit at a higher power level than was permitted by legislation, in order to broadcast their signal over longer distances, or to 'walk over' other CB users and prevent their signal from 'getting out'. To evade detection, these miscreants would only use higher power intermittently, at night, or in 'mobile stations' (e.g. their car). Other things bound to land you on the naughty lists included using a larger antenna than allowed or different frequencies. But you didn't need to be an electronics geek to be bad – 'bootleg' modified radios were often available for sale, and you could otherwise just be a general idiot while broadcasting.



By the mid-1970s, Australians began importing American 23-channel CB radios, even though they were illegal to operate. In 1977 the government legalised the use of imported radios but then abruptly banned them, adopting a different AM channel standard. They also created a UHF public-access band, and charged license fees to CB users. In 1982 they planned to close the AM CB band but when they got there, they changed their mind again, adopting the US 40-channel CB standard for AM, while leaving the UHF band open. How confusing it must have been to be a CBer in Australia!

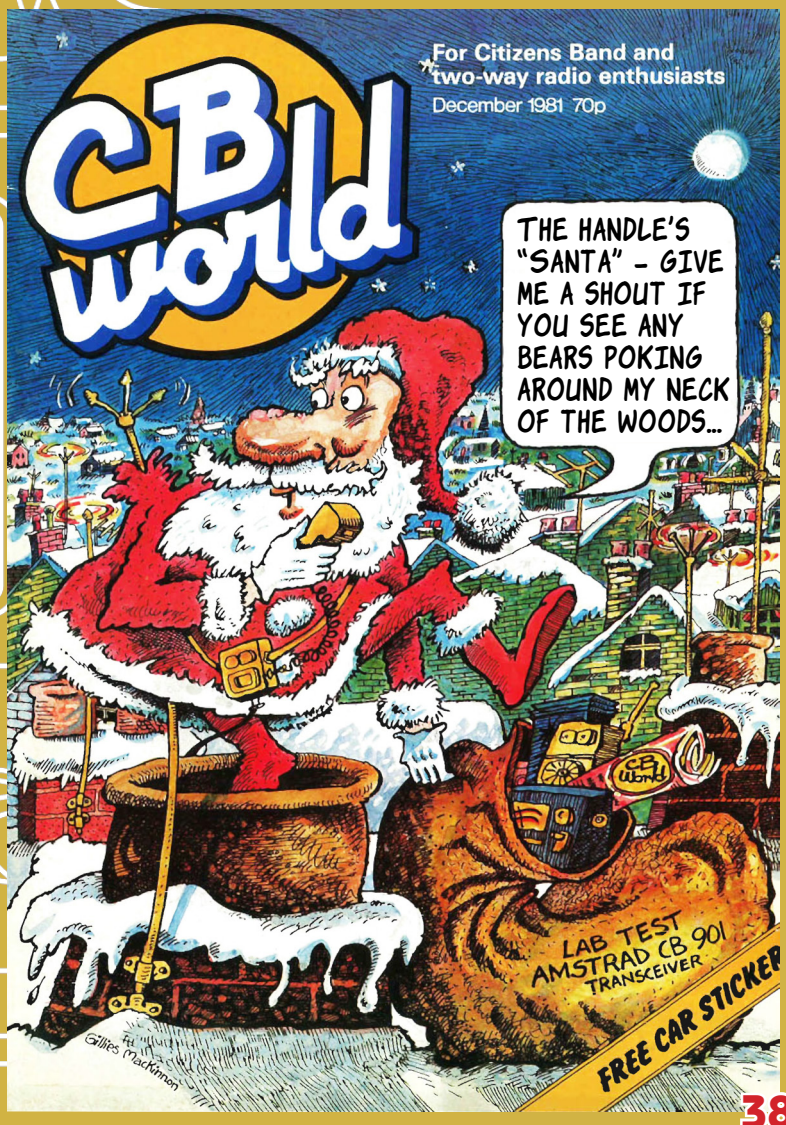


Despite these issues, CB radio use flourished in Australia as it did in the US and Canada. In the US a form of lingo or slang began to be used, initially with the intent of confusing law enforcement officials that might be listening, but later to create a culture among CBers. This lingo included colourful terms such as 'Papa Bear' (a police officer with a CB radio) 'meat wagon' (ambulance) 'rubbernecking' (slowing down to look at an accident scene) and 'suicide jockey' (someone hauling explosives) – terms popularised by songs and movies such as Convoy (1978). However, while these terms weren't as prevalent in Australia, large CB communities still formed, chiefly in regional cities such as Seymour, Bendigo and Port Augusta. The UHF CB band in Australia also allows for the use of FM repeaters, which means conversations can be had at longer distances than using the AM CB-band, which is relatively short-range unless atmospheric conditions allow for 'skip' (an intermittent, almost random phenomenon where CB radio signals bounce off the ionosphere).

Some American CB users have reported talking to people as far away as Australia! But with the Internet, this feat is less amazing than it once was.

But what if you were good? Well, Santa could be quite generous to well-behaved CB enthusiasts, delivering new radios with features such as 'sideband' (which doesn't transmit an AM carrier and thus can be broadcast at higher power) and higher quality components that allow for greater fidelity and more accurate tuning, microphones with dynamic noise cancelling and 'roger beeps' that signal when you've stopped talking, and antennas, which can vary both in their sensitivity to remote signals and the quality of their transmissions. Santa could also give you a handheld radio, which was the closest thing you could get to a mobile phone before there were mobile phones, or a 'walkie-talkie' which was basically just a handheld radio restricted to a single channel (or sometimes two).

Does all this CB stuff sound interesting, but make you sad that it's obsolete? Well, the good news is that, while the Internet has made much of CB radio's overall utility redundant, as a practice it is far from defunct, its use remaining common amongst hobbyists. New radios are available from a number of manufacturers, including handheld, in-car and AC (wall)-powered 'base stations' for home use, as well as all of the associated accessories. But don't spend too much money on radio gear without checking to see if there's a CB community local to you first – you don't want to be left talking to yourself!



heavy duty





While the northern hemisphere is cold and dark at the end of the year, down under in Australia it's the middle of summer, and that means bushfires.

1979 was no exception. On December 23rd a bushfire with a 10km-wide front raced through the Blue Mountains west of Sydney, fanned by wind gusts of up to 60km/h. Around 1000 firefighters battled the blaze, doing what they could to save houses under threat. But for them to do that, they needed to know where the fire was, and where it was heading, and in the Blue Mountains their radios weren't going to cut it. This is where WICEN came in.

The Wireless Institute Civil Emergency Network (WICEN) trains and rehearses amateur radio operators in emergency communications for call-out during civil emergencies. Amateur radio operators are typically experienced in improvising antennas and power sources, operate on hundreds of frequency bands and establish relay networks to ensure timely communications between first responders and coordination centres.

WICEN volunteers were critical in assisting firefighters, providing base and mobile radio equipment for fire tankers whose own equipment was unsuitable, manning fire control centres, and managing a radio link between each control centre and the central operations room in Sydney.

On December 23rd WICEN volunteers established HF and VHF links between the Baulkham Hills fire control centre and two mobile WICEN units in the Blue Mountains. These units were able to provide communication in the rugged terrain between fire tankers and crews and the control centre. WICEN volunteers also established a teletype (TTY) link between the Katoomba and Colo fire control centres.

With WICEN's help the firefighters were able to keep the destruction of houses to a minimum, and no lives were lost.

WICEN has continued to operate into the present day, assisting with the Black Saturday bushfires in 2009.

WICEN consists of a number of state and territory-based organisations whose members are licensed amateur radio operators. Each WICEN entity operates independently.

WICEN members provide emergency communications during disasters. To learn more about WICEN and your regional WICEN organisation, visit wicen.org.au





AMATEUR RADIO

by Pierce Healy, VK2APQ

WICEN active during bushfire emergencies

The Wireless Institute Civil Emergency Network provided valuable radio communication facilities during the disastrous bushfires around Sydney in December 1979. The large number of members who gave their services was particularly gratifying in view of the holiday period.

Backup communication link... ed by WICEN members great... firefighting crews when the ... areas of Sydney, NSW, were ... to the worst bushfires in living ... Fifteen houses and hundreds ... tares of bushland were destro... many homes and buildings ... but, fortunately, no lives were ...

The WICEN organisation ... heavily involved in the W... Hornsby, and Ku-ring-gai em... for three days. Base and mob... munication units were prov... fireline tankers, called in from ... areas, whose radios were incto... with the local frequencies ... munication was also provide... mobile canteens feeding the fi...

In addition, operators were ... for the bushfire council's em... channel. This links all fire ... headquarters in the Sydney a... the bushfire council operatio... in Sydney, and the operations ... the NSW Fire Brigade.

At Warringah fire contro... WICEN staffed the bushfire er... channel continuously throug... three days December 17, 18, ... WICEN operator manned the ... council's operational t... throughout the 18th December.

On December 23, WICEN was again activated and established VHF and HF links between Baulkham Hills fire control centre and two WICEN mobile units at Bilpin in the lower Blue Mountains. These links served the Baulkham Hills, Hornsby, and Warringah fire tankers and crews, deployed between Bilpin and Mt Tomah, providing communication with their home bases.

During the period WICEN was activated, the channel 8 repeater VK2RWI at Dural, and channel 3 repeater VK2RAG at Somersby, were used for emergency traffic.

About 75 amateurs participated in various capacities such as area controllers, base station and field station operators, roster control officers, liaison duties and a multitude of activities associated with communications ... provision of emerg... munications by individu... hastily organised grou... been little or no obliga... for administrators of ra... to recognise the role a... to grant official statu... organisations, such as ... It is very gratifyin... learn of a WARC re... providing official re...

ELECTRONICS Australia, Mar...

AMATEUR RADIO

restricted to the period and area of the emergency.

Another very important recommendation is that in emergencies, amateurs be allowed to communicate directly with other organisations, using other than amateur frequencies, where this would speed up communications.

All in all, it represents a major step forward in amateur status on a world-wide basis; one which, if taken full advantage of now, will enable us to present an even stronger case for retention of our rights at the next World Administrative Conference.

role amateurs have played in the past and which they can play in the future, and at giving emergency organisations, such as WICEN, official status.

The resolution itself is quite lengthy and, as is customary, is couched in formal terminology. But, in its essentials, it puts on record the fact that amateurs have played a vital role in the past, and that they are often in a unique position to swing into operation more speedily than other organisations, who may have to apply for permission to use certain frequencies.

Having acknowledged these, and participation in emergency communications, it goes on to recommend that individual administrations give official recognition to the ... amateur ...

MAASARC

The bi-monthly meeting of the Museum of Applied Arts and Sciences Amateur Radio Club (MAASARC) will be held at the Museum, Harris Street, Ultimo, Sydney (off Broadway near Railway Square) on Wednesday evening 26th March, 1980.

The meeting will take the fo...

fully operational modern station with world-wide communication capabilities.

VK2RQK is operated on a voluntary basis by MAASARC members during weekends and for demonstration purposes to school groups.

Membership of the club is open to all amateurs who are interested in demonstrating amateur radio to the general public. Application forms are available from Mr Jeff Sergel, Curator of Electronics at the Museum on telephone (02) 211 3911 during business hours.

34th URUNGA CONVENTION

The 34th annual Urunga Convention and Field Day will be held over the Easter holiday weekend April 4, 5, 6, 1980.

Activities commence at 8.00pm at the Ocean View Hotel, Urunga, on Friday evening for registration and social ... together. Registration fees — Men ... 00; Ladies $5.00; Family $15.00. ... ludes — Saturday morning and afternoon tea ... urday and Sunday, supper Saturday ... Sunday, maps and tourist informa... of the area, and entry fee for all ... nts.

... ield events commence at 10.00am ... rday opposite the Ocean View ... t Urunga. These will consist of ... inter hunts on 7MHz, 28MHz and ... Hz. Bring your own lunch. A ... evening commencing at 8.00pm ... be held in the School of Arts ... s with films and supper.

... day events will commence at ... m at the Bellingen Show Ground ... at Bellingen Post Office and ... signal. Barbecue lunch will be ... at the ground at $3.00 per ... Urunga scramble will be held ... 3.00pm any band, any power, ... tion. In addition there will be ... transmitter hunts and events for ...

... ps have been arranged to local ... industries. There will be trade ... bring and sell disposals, ... d lucky numbers.

... quencies 7100kHz, 28.5MHz ... Hz will be monitored for talk-... ce.

... information from the Urunga ... n Secretary, VK2BMK, Dawn ... ingers NSW 2454, or the ... Urunga Radio Club net each ... Monday evening at 8.00pm (summer time) on 3610kHz.

STORM DESTROYS REPEATER

On Queensland's Gold Coast, local and visiting amateurs have been well served by the Gold Coast Amateur Radio Club VHF/UHF repeater, VK4RGC, at least until just prior to the Christmas holidays. Then came disaster. The extent of the damage and action taken to rejuvenate the installation is given in the following note received from Glen Wallace, VK4NUX, secretary

Bushfire threat in Blue Mountains

SYDNEY: A fierce bushfire last night was posing the most serious threat to the Blue Mountains for 20 years after destroying eight houses yesterday.

The bushfire, burning on a 10-kilometre front, was being fanned by wind gusts of up to 60 km/h eastward along the heavily timbered Grose River valley toward the townships of Bilpin, Kurrajong and Kurrajong Heights.

More than 700 firefighters, who earlier yesterday gave up fighting the fires directly and concentrated on saving houses, were hurriedly building firebreaks around the towns.

The small township of Mount Wilson was also under serious threat last night as another flank of the fire, up to six-kilometres wide, headed directly toward it.

The Blue Mountains fire controller, Mr Phil Koperberg, described conditions yesterday as "frightening" and "appalling" as the fires attacked Mount Wilson, Mount Tomah, populations both about 1,000, and Berambing, about 200, near the Bell's Line of Road.

Five houses were destroyed at Mount Tomah and three at Mount Wilson. It is understood all were weekend cottages and were unoccupied.

Fire controllers said that "miraculously no-one was seriously injured although many men have been treated for smoke inhalation and minor burns".

More than 300 firefighters were also battling large fires at Silverdale, near the Warragamba Dam, Luddenham near Liverpool, and in

Canberra Times (ACT : 1926 - 1995), Monday 24 December 1979.

Lafayette are 2-way specialists. Large range of crystals, antennas, auxiliary equipment available!
Lafayette)) the Communicators
LAFAYETTE ELECTRONICS Div. of ETO Electronics Pty Ltd
94 ST KILDA ROAD, ST KILDA, VIC 3182. Tel 534 6036.

christmas bushfires



radio waves

The cold and dark of a night at sea could be a really lonely place, particularly before the advent of radio. Ships were, by necessity, models of self-sufficiency, since assistance could be hours, days or even weeks away. But a reassuring voice from the darkness could make all the difference between whether a ship's crew fell to panic or persevered – and the first such voice came on Christmas Eve from a Canadian-born inventor named Reginald Fessenden.

Born in Quebec, Fessenden studied mathematics and worked briefly as a teacher, but became interested in electricity and moved to New York City when he was 20, hoping to gain employment with Thomas Edison. Despite being initially rebuffed by Edison, Fessenden persisted, getting a job testing freshly-laid underground wiring, demonstrating his talents and he was quickly promoted to a role as a junior technician in Edison's new laboratory in New Jersey.

While there, he participated in a variety of projects, but four years later Edison had financial problems and was forced to lay off most of his laboratory staff, including Fessenden. During the following decade he worked as an electrical engineer and a professor. In the late 1890s word of Marconi's experiments reached Fessenden, and he began to experiment in radio, convinced he could find not only a better way to broadcast Morse code, but also discover how to transmit audio.

Around 1901 while he was working for the US Weather Service on a way to transmit weather data, he developed a method of transmitting audible tones instead of the spark-gap buzzing that was all that existed at the time. However, he was too ahead of the technology to make it practical. But Fessenden got the idea he could transmit his voice using a similar technique. He reasoned that if he could generate the spark-gap clicks really quickly, he could then vary the strength of the clicks, creating what we would today call an 'amplitude modulated' (AM) signal. In his early experiments he managed to transmit a (somewhat distorted) signal over a mile (1.6km), the first successful audio broadcast. But the signal was too weak and too low-quality to be commercially useful. Fessenden worked over the next several years to improve his design, developing an improved signal generator based on an alternator spinning at a high rate of speed. He conducted several tests that spanned over ten miles (16km).

On Christmas Eve, 1906, he conducted perhaps his most famous test. Transmitting from Brant Rock, Massachusetts, Fessenden broadcast a phonograph recording of music by composer George Frederic Handel, followed by Fessenden playing O Holy Night on the violin, singing Adore and be Still by French composer Gounod, and closing with a reading of a biblical passage: "On Earth, peace to men of good will." Fesseden reported that his transmission, the first entertainment radio broadcast, was received by a number of ships at sea and heard as far south as Norfolk, Virginia – it must have been surprising to radio operators to hear speech and music coming from a device that had up to that point only generated static, clicks, buzzing and beeps!



Fessenden replicated his transmission on New Year's Eve, but both broadcasts were mostly forgotten, his technology largely impractical. But later inventions would soon boost signal strength and Fessenden's dream of widespread audio broadcasting would no longer be just a Christmas wish.

christmas broadcast


COMMS

Late lamented Micronet

Glorious MUD

Phil South looks at the exciting, international world of multi-user games

And there's more...

```
The Temple Of Midgaard
   You are in the southern end of the temple hall in the Temple of Midgaard.
The temple has been constructed from giant marble blocks, eternal in
appearance, and most of the walls are covered by ancient wall paintings
picturing Gods, Giants and peasants.
   Large steps lead down through the grand temple gate, descending the huge
mound upon which the temple is built and ends on the temple square below.
To the east is NoName's Shop. There is a Donation Room at your west.
Up from here are the Famous Fan's Clubs.
   Obvious Exits:   [north] [east] [south] [west] [up] [down]
The Midgaard Marshall waits for criminals to take to jail.
......The Midgaard Marshall is surrounded by a deadly sphere.
......the Midgaard Marshall glows with a bright light!

< 17hp 101mana 100mv > attack Marshall
```

"I don't know about you, but I wouldn't mess with that Marshall fella! He looks like he means business." And so begins another adventure – in this case, a DikuMUD (Multi-User Dungeon) adventure, a popular MUD in a long line of MUDs stretching all the way back to the late 1970s.

Early text adventure games on mainframe computers such as Colossal Cave Adventure and Zork inspired programmers to experiment with creating multi-user variants. One of these was developed by Roy Trubshaw, a student at the University of Essex in the UK who, in 1978, started working on what was to become MUD1.

In 1980 MUD1 was made publicly accessible first via JANET, a British academic network, and then ARPANet, the precursor to the Internet. MUD1's second developer, Richard Bartle, licensed the game to Compuserve, who pressured the university to shut down the service, which it did in 1987. But the genie was already out of the bottle, and other MUDs had started to appear such as MUD1 derivative Gods, MirrorWorld and SHADES, which was available via British Telecom's Prestel and Micronet services.

For gamers, MUDs were a big selling point of on-line services, many of which provided opportunities for adventure, battle and plunder. You could chat too!



Online: Island of Fantasy

Cheryl Peterson

Dragons and ogres have long been a staple of fantasy games, but now several major online services have added some innovative twists. Here's an in-depth look at one world where the next character you meet in a dark dungeon may be another human.

I am about to enter the fascinating world of the Island of Kesmai, a multiplayer interactive game on CompuServe. Not only will I encounter dragons, trolls, and other creatures that inhabit fantasy games, but I'll also meet, talk to, and interact with as many as 100 other players who play this game simultaneously via modem and personal computer.

But first, I make my way through town, hoping to find the entrance to the dungeon where most of the action takes place. A vendor hawks a book purported to tell the way into the dungeon. Fortunately, before I arrived, I learned that the dungeon entrance is inside the temple that is north of my current location. I save my lonely gold piece for something more useful, though nothing in town comes very cheaply.

I stand fresh off the dock on the Island of Kesmai. I look around, but no one seems to notice my presence. A quick check of my possessions (SHOW SACK, SHOW BELT) reveals one gold piece, some leather armor, a sword, and a shortbow. Not much, to be sure, but enough for a novice fighter like me.



Gaming On-Line

Videotex. The first of these involves the grandfather of multi-player gaming on commercial BBS's, Dr. Bartle. In 1985, Dr Bartle and a team of developers from Essex University in England perfected the first truly interactive multi-player game entitled **MUD** (short for multi-user dungeon). Most American players would not recognize this title, but may know the game through the Compuserve network. Several years ago, Compuserve licensed an early version of **MUD** and marketed it under the title **British Legends**. Mr. Mulligan has secured the rights to **MUD II**, which is a fifth generation improvement over the Compuserve version. Players will be

National Videotex 1200/2400 baud $5.95 monthly membership/$6.00 per hr. non-prime/$9.00 hr prime

Portrayed as an opportunity to "Explore Strange Lands, Meet Exotic Beings, Confront Malevolent Creatures and Kill Them," the National Videotex network is relatively new to the scene as a multi-player gaming BBS (other, more conventional user options have been around for a while). Like any other expansion franchise, Videotex's success or failure depends on the talent they recruit to design and market the games section of their forum. Scouting reports indicate that some very wise decisions have been made in this respect.

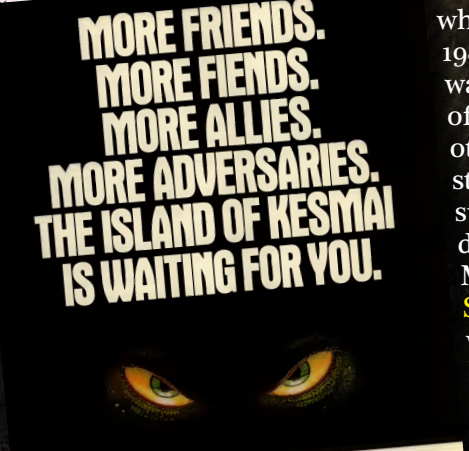
Although his name is probably not a household word, Richard Mulligan made the move from the Genie network to Videotex as of March 1st. Mr. Mulligan was a driving force at Genie for the introduction of multi-player gaming to that network and he has managed to strike some promising agreements already at

National Videotex will soon offer many popular on-line games to its users.

The Kingdom of Drakkar, from MPG-Net, will soon be available on Videotex.

96 Electronic Games

But MUDs wouldn't stay confined to university mainframes and on-line services for long. Scepter of Goth, released in 1983, ran on an IBM XT and supported up to 16 simultanous users connecting in by modem. AberMUD, the first popular open source MUD, was coded in 1987, but really took off when it was ported to C in 1988, and spread to Unix systems globally.



TinyMUD (1989) was inspired by Monster, a multi-user adventure game written for VAX, a mainframe architecture developed by Digital Equipment Corporation (DEC). Monster allowed users to add to the game world. TinyMUD developer James Aspnes expanded that concept to encourage social interaction amongst players rather than combat, and users were typically more interested in role-playing than fighting.

LPMud attempted to merge AberMUD and TinyMUD, bringing world-building to a hack-and-slash environment, and became one of the more popular MUD variants. LPMud's entire internal world was constructed using an runtime-interpreted object-oriented language executed by the LPMud 'driver', which managed the general interface and operating system interaction.

But DikuMUD (1990), a project to create a MUD more stable than its predecessors and more like Dungeons and Dragons, would lead to an explosion of hack-and-slash MUDs in the early-to-mid 1990s, due to its ease of deployment (in the case of DikuMUD, its hardcoded nature was a feature, not a bug). But by the late 1990s dial-up and Internet access speeds had improved, and movements were underway to create a graphical MUD.



paleotronic



ng alphas

Ultima Online

Format: Macintosh, PC CD-ROM
Publisher: Electronic Arts
Developer: Origin
Release Date: November
Origin: U.S.

Origin plans the most ambitious online project ever attempted — a totally self-contained world for you and 2,000 of your Internet buddies to indulge in

The road to online gaming is paved with good intentions, halfway measures, and spectacular failures. However, few can boast the kind of sweeping, comprehensive scope of Origin's *Ultima Online*. "This is really the first time Origin can say we're living up to our slogan 'We create worlds,'" says Starr Long, *Ultima*'s associate producer. "The goal is to create a fully functioning virtual world, and by that I mean we'll have a virtual ecology, a closed economic system, a resource system, a dynamic conversation pool, almost everything you'd expect from a real world, and all these things will be linked together."

Ultima Online works via the usual TCP/IP client-server protocol, much like an Internet browser, only more involved. After dialing your local access provider and connecting to the *Ultima* site, the game runs on your home computer. Packets of information — conversational text, location, character status, etc. — are then sent

Deeper in the wilderness, spawn ever more dangerous places to go

The key to the site is interaction, either conversation or battle

Next Generation Online, http://www.next-generation.com/

The backstory of Ultima Online goes all the way back to 1978 when Richard Garriott (aka Lord British) was a high-school student in Houston, Texas. Garriott wanted to create a computer version of Dungeons & Dragons, a role-playing table game he played with friends. The game he eventually developed was called Akalabeth: World of Doom, for the Apple II. Encouraged by the owner of a computer store he worked for, he started to sell copies, at first on his own and then through a publisher. It did well, and so he reworked and improved it, releasing Ultima in 1981. Several sequels of improving quality followed, as computer hardware evolved. In the mid-1990s, Garriott got the idea of creating a multiplayer version of Ultima, one in which players could move freely about the world and interact with each other. An early example of agile development, Ultima Online had thousands of alpha- and then beta-testers as development progressed over the following two years. The betatest period ended with an armageddon of sorts when an army of creatures overwhelmed and slaughtered every character in the game world.

In 1989 game company Stormfront realised that they could adapt the Dungeons and Dragons 'gold box' computer game engine to work with America On-Line. This resulted in Neverwinter Nights, the firstMUD with graphics.

Inspired by Scepter of Goth, Meridian 59, released in 1995, was the first 3D graphical MUD, and would go on to become one of the longest-running online role playing games. Unlike text-based MUDs, which could be accessed through a terminal client, players needed to install a Windows application in order to play, and then pay a monthly fee for access.

In 1996, Sierra On-Line released The Realm Online, which used turn-based combat rather than the automatic combat typical of classic MUDs, which was useful for players with a bad Internet connection. You can play The Realm Online for free at realmserver.com

But 1997 saw the release of Ultima Online, the first game referred to as an MMORPG (Massive Multiplayer Online RPG) a term coined by Ultima creator Richard Garriott. Although inspired by other MUDs, UO seriously outclassed them both in playability and production values. UO would be succeeded by games such as Everquest (1999).

There's an axiom that says any new technology will be exploited by the pornography industry – this also applies to games. If it can be leveraged for entertainment, it will be.

Few home computer users require the speed of business systems. Most bulletin board systems (BBS) and private information networks such as CompuServe and THE SOURCE transmit and receive data at 300 bps. That's fast enough to permit easy reading but too slow to allow transmission of the high-resolution graphics used in fast-moving video games. Hence the popularity of word-oriented adventure games on the BBSs and information services.

And why not? What is there to life if we can't have fun while we're living it? And it's better with friends...

Be it MUD, Graphical MUD or MMORPG, computer telecommunications has provided an opportunity for fantasy-based human interaction for nearly forty years. Thanks to the efforts of MUDding enthusiasts, many of these early worlds can still be explored, and you can find them through the directory available at mudconnect.com. New MUDs are added all the time! If you want, you can even start one of your own – all it takes is a VPS and a little Linux know-how.

Some newer graphical MUDs and MMORPGs are still running, including Ultima Online, which you can play for free at uo.com, and EverQuest which offers most game features at no charge (but has a VIP-style membership) at everquest.com.



Telegaming has come a long way since 1979 when DecWars was the only game on-line. Now, computer networks are serving up long-distance flights of fantasy that will make your phone bill soar.

The Bard's Inn

ARCADE

Video Fun Time

The Big Cheese: How a Pizza Rat changed the image of video arcades

Atari co-founder Nolan Bushnell was facing a serious conundrum.

His 'video computer system', a cartridge-based home video-game console designed to play versions of popular Atari arcade games, was certain to be a big hit, but in developing it he had burned through all of his company's cash. Retailers who had made big money on Atari's home Pong machines were interested in selling it but they wanted terms – that is, they wanted to get stock now but pay for it later. So Nolan couldn't use pre-orders (no such thing in 1976!) to fund manufacturing and as a result the VCS was essentially dead in the water. His only solution was to sell equity to get the money to move into production.

But he was going to need to sell so much equity that he was going to lose control of Atari. Can you imagine what it was like to be Nolan Bushnell? He was going to have to sell his company in order to make it successful! Not a great decision to be forced to make.

So, in the end, he sold Atari to Warner Communications, which ponied up the cash to manufacture the VCS and the rest is history. But what happened to Nolan Bushnell? What did he do?

He made pizza.

Doesn't seem like much of an evil master plan does it? Sell your world-conquering video game company to make pizza? But Bushnell did have a plan, it just wasn't evil. See, videogames had been considered an adult thing ever since their inception, really. Arcades were seedy places, and kids were generally not welcome (and their parents didn't want them there anyway!) But Bushnell had realised there were two paths to bring his games to children: a home videogame console (the Atari VCS), and a 'family-friendly' video arcade.

Well, to reach the end of the first path he had to sell his company. But in doing so, he was in a position to travel the second. And on that road is where we get into pizza, and a rat. Not Bushnell (contrary to his detractors' insinuations he was a pretty upstanding guy), but a pizza-schlepping rat of his invention named Chuck E. Cheese.

Bushnell may have seen the writing on the wall regarding his future at Atari, since in 1977 he started developing the concept of the pizza restaurant as an 'employee' of the company he co-founded, opening a 'test' location in San Jose, California in 1977. Bushnell's design of the restaurant was inspired by his time working at Lagoon Amusement Park in Utah while he attended college, a mix of food, carnival games and attractions.



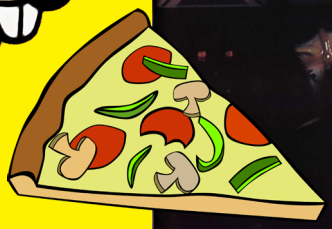
Nolan Bushnell originally wanted to work for Disney, but his attempts at getting a job there failed. Imagine what the world might've been like if he had succeeded! There would have been no Atari, maybe even no Pixar, and no Chuck E. Cheese.

For many 1980s kids in the US and Canada, Chuck E. Cheese's was the local video arcade, other places containing videogames considered off-limits to children. This made them popular locations for birthday parties!

As a result, many a Saturday afternoon would be spent there, by thousand of children on hundreds of Saturdays from then until today.

RATS Theatre





from famously fiendish to family friendly.

Named the 'Pizza Time Theatre', he duplicated the amusement park on a smaller scale, providing pizza (selected because it was cheap and simple to make and easy to 'scale up' in the event of a sudden large influx of patrons, for example a birthday party), arcade games and a Disney-inspired animatronic 'show' as the attraction. The show was initially meant to be led by a coyote – maybe an homage to (or an attempt to cross-license) Warners' Wile E. Coyote – but Bushnell ordered the wrong costume, which when it arrived was revealed to be a rat.

Always the economiser, rather than order another costume Bushnell decided to change the prospective name of the restaurant from Coyote Pizza to Rick Rat's Pizza, but unsurprisingly his marketing people didn't like the new name, suggesting Chuck E. Cheese instead as if the rat were a 19th-century showman – plus it sounded friendlier to parents.

But, while the restaurant looked like it had potential, the inevitable arguments between Bushnell and Warner Communications regarding Atari's direction in other matters ensued and in 1978 they came to a head, with Bushnell being shown the door. On the way out he bought the rights to the pizza restaurant off of Warners (who probably didn't see the value in it anyway). However, fortunately for Bushnell, Pizza Time Theatre's customers had a different opinion, and he began expanding the company to other locations in California, and entering into franchise agreements to expand across the United States.

Born on February 5th, 1943, Nolan Bushnell is an entrepreneur famous for founding videogame manufacturer Atari.

He studied electrical engineering at Utah State University and the University of Utah. While attending college, he worked for an amusement park, an engineering outfit, started his own advertising company and sold encyclopedias door-to-door – each of these experiences would influence Bushnell's later direction.

After his time with Atari and Chuck E. Cheese, Bushnell founded Catalyst Technologies, one of the earliest business incubators. Catalyst-affiliated companies included Androbot, which developed home robots, Etak, which was the first company to provide digitized maps, and CinemaVision, which attempted to develop high-definition television.

Currently Bushnell is CEO of BrainRush, a company that develops gamified education software.



Chuck E. Cheese was originally meant to be a coyote, but a mistaken costume order led to his being a rat instead.

Nolan Bushnell originally wanted to call him Rick Rat, but Chuck E. Cheese was chosen instead.

Over the last 40 years, this rat has sold a lot of pizza!

SPECIAL SECTION: COUNTERING COMPUTERPHOBIA

Rat dishes up pizza, computerized entertainment

By Scott Mace, IW Staff

On one side of the coin is an engraving of a rat. On the reverse, in bold letters, is the motto, "In Pizza We Trust."

The coin, and thousands of identical ones, may be curing the next generation of computerphobia as they are now being exposed to the phenomenon known as Chuck E. Cheese's Pizza Time Theatre. Chuck E. Cheese is the rat immortalized on the coin and primary host at a unique sort of restaurant theatre.

Pizza Time is a whirling combination of garish lights and nonstop electronic noise that is quite unlike any other pizza parlor or video-game arcade. It is part Star Wars, part Disneyland and part social phenomenon.

Pizza Time Theatre is a growing chain of family-oriented parlors scattered over 19 states, Canada and Australia. It is the brainchild of Nolan Bushnell, the founder of Atari, who has taken an idea his company wasn't interested in and has nurtured it into a $10-million-a-year enterprise.

For children, a trip to Pizza Time is a kind of nirvana—where the rest of the world drops away and pales in comparison to the high-resolution, jolt-a-second thrills of Gorf, Pac Man, Crazy Climber and Donkey Kong.

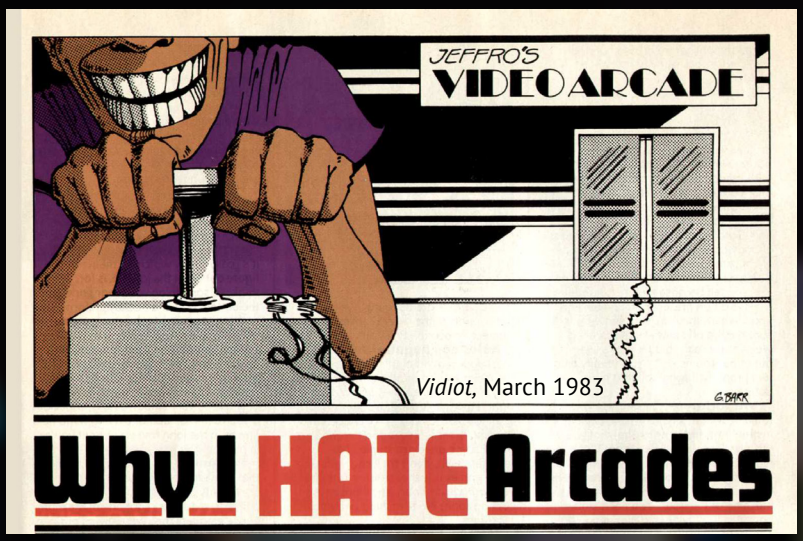
Many adults, as well, find themselves drawn to the challenging video games, some of which dare passersby in digitized voices to attempt to best the high score of the day.

Other adults feel themselves helplessly swept along by the electronic tide, of which Pizza Time Theatre is just a part.

Joanne, a Cupertino, California, mother whose 11-year-old son is only too eager to visit Chuck E. Cheese, put it this way: "It's the same as when we were kids. They're games. They've changed, that's all."

Still, the noise volume at Chuck E. Cheese is so high that when the possibility of going there comes up, Joanne prefers to try to talk her son into choosing a quieter place to eat. "The noise level (at Pizza Time Theatre) is unbelievable. Why any adult would be in there is beyond me."

"We're very cognizant of the noise level," said Patrick Saign, vice-president of marketing for Pizza Time Theatre. In fact, the volume of the video games varies according to the



early computer-animation company sold to George Lucas and which eventually became Pixar – Pizza Time eventually went broke, and with Bushnell unable to raise any money (as he had already borrowed significant amounts using his Pizza Time stock as collateral to start Catalyst) Chuck E. Cheese's Pizza Time Theatre went bankrupt. It looked as if the rat was dead.

However, ShowBiz Pizza, while wounded by the crash, was less encumbered by debts and was able to raise the cash to purchase Pizza Time's assets. They continued to operate Chuck E. Cheese's as a separate chain until 1989, when the two chains were unified under the Chuck E. Cheese brand.

But just like the arcades whose reputation Bushnell was trying to reform, business could be a shady... well, business. During his efforts to expand he met Robert Brock of Topeka Inn Management in 1979. Bushnell gave Brock the exclusive franchising rights for sixteen states across the southern and midwestern US.

However, Brock had no loyalty to Bushnell, which he demonstrated quite clearly only months later. After meeting a potential competitor, Brock was frightened by what he deemed to be that competitor's 'superior' animatronic technology, and he jumped ship, teaming with the competitor to create another chain of similar restaurants called ShowBiz Pizza Place (not similar at all!) Bushnell sued, and ShowBiz settled out of court, agreeing to pay a portion of its profits to Pizza Time Theatre over the following decade.

Both chains were commercially successful, and in 1981 Pizza Time Theatre went public. But the effects of the 1983 video game crash were keenly felt by both Pizza Time and Showbiz, whose patrons had grown tired of videogames. Bushnell, who had stepped away to start Catalyst Technologies, a venture capital group, returned in an effort to save the company but despite the sale of two Pizza Time subsidiaries – Sente Technologies, which developed an arcade system that used cartridges, and Kadabrascope, an



As for Nolan Bushnell, was his initial mission, to make arcades more family friendly, successful? Arguably, yes it was. In the late 1970s the primary locations for arcade video games were in pubs and pool halls, and while stand-alone video arcades had begun to proliferate, they typically still catered to an adult-specific audience, with ashtrays affixed to the sides of arcade cabinets and even trays to hold drinks. Some of them even featured racy videogames, film-based 'peep shows' and even live nudity shows 'in the back'.

Given their nature, they also attracted less-savoury elements of the community such as drug dealers, sex workers and bookkeepers. As you might imagine, these operations drew the ire of the authorities and more conservative-minded residents of the juridictions in which they were located, and the media seized on that concern, amplifying it and making arcades (and by extention arcade games) the root of all the world's evils.



Even arcades that didn't have XXX-rated attractions and welcomed younger patrons found themselves pilloried by their communities, blamed for truancy, poor grades and drug use by children – as if such troubles had never existed prior. City and town councils began to ban arcades, or severely limit their sizes and/or locations. The hysteria became so pronounced that the US Department of Justice dictated arcade game manufacturers place a message inside the attract mode of their games advising players not to use drugs!

This had a severe chilling effect on thoughts by prospective arcade owners of opening new establishments, and this in turn was noticed by arcade game manufacturers such as Atari, which wanted to do what it could to reform the image of arcades and get lawmakers to back off. It started a newsletter, Atari Coin Connection, not only to inform arcade owners of new games, but to

showcase family-friendly establishments in an attempt to encourage other arcade owners to emulate their 'success' and work with the local community to allay fears and concerns.

ATARI COIN CONNECTION

OPERATOR OF THE '80s

Meet the Andersons . . .

Dad Bill, an electrical contractor by trade, and Mom Vel, a successful real estate agent, became concerned 3 ½ years ago about their children becoming teenagers and how they would choose to spend their free time. They realized they should do something and decided to open an arcade—not only so the offspring could enjoy themselves but to give them access to computer technology as an added incentive. The atmosphere they have created is actually a "family room" or "den."

Other parents in Trail have welcomed the Andersons' efforts and are pleased with the clean image of the location where the proprietors work hand in hand with the police. It is strictly a family-run organization—all three children help—with Vel's brother, Wayne Thurber, adding his part.

The snack bar side, decorated with antiques to give an old-time look, offers submarine sandwiches, hot dogs and soft drinks while the gameroom includes 28 coin video games (both upright and cocktail), 7 pinball games, 5 foosball and 3 pool tables. Besides the small cocktail tables in the eating area, a number of tables are set around the playing room to provide patrons with a place just to sit and gab. The intent is to create an enjoyable environment where young people will feel comfortable to gather and socialize.

Security Measures and Community Rapport Promote A "Clean" Image

This year's installation of a three-camera security system has eliminated the need for a large staff. There are usually two family members on duty at a time. However, during "quiet times," one person on alone at the desk can monitor the entire building. Vel points out that they have not encountered any malicious damage or serious problems because "the young people actually police themselves."

The Andersons work in full cooperation with the school principals and parents in the area. The junior high school is located just one block away from the gameroom, and the senior high school is only up the hill. During the lunch hour, Electric Pazzaazz is wall-to-wall students. At 12:30 p.m., Bill's voice booms over the p.a. system to announce that it is time for everyone to go back to class. With Bill and Vel's consent and through their enforcement, school officials have on occasion revoked a student's privilege to enter the arcade as a deterrent to further wrong-doing. But most players conform perfectly to the "no nonsense—no roughhousing" policy. "We make sure they understand that everything happening within a block of our place affects our business directly."

Atari's Coin Connection newsletter profiled a number of 'Operators of the 80s', referring to their operations as 'game rooms' or 'amusement centres' rather than arcades, in order to distance themselves from the community backlash less-savoury operators had contributed to.

These model operators were frequently families who had a rapport with the community, and who policed their clientele and worked with local schools and law enforcement to keep on top of any issues that arose.

ARCADE PAT OR VIDEO PINCH

Ya, ya, zis looks like *no big deal but vait* . . . is *big* trouble, you bet, to arcade players mit ze vives or huspands, ya! In ze old days zis vas a sign of ze "camaraderie" ze sport players vance shared smong themselves, ya! Ze arcade player today, though . . . he forgets ze old days are no more, ya . . . und his gesture is misunderstood by ze other player und ze injuried resulting *zen* make ze player vish for ze simple case of brainlock or . . . *heh heh*—ze *regained masculinity*! Ya ya, like in ze old days, zé proof iz in ze *pudding*, so vatch out, ya!!



Vidiot, March 1983

Video Game Legislation

The rights of teenagers to play video games have been severely hampered by the restrictive legislation that has passed or is pending in local communities in 31 states.

The most prevalent includes:

1. Zoning ordinances restricting video game operation near schools, churches or residential areas.
2. Restricting hours of operation.
3. Age restrictions such as requiring players under 16 to be accompanied by an adult.
4. Limiting the number of games at each site, moratorium on new arcades, etc.
5. Increased licensing fees and sales tax fees which discourage expansion.
6. Anti-noise ordinances. There are also 13 states with taxation on coin-operated video game laws passed or pending.

Adult behaviour both in and around arcades, largely unpoliced by arcade owners led to public outrage that spread via the media of the day, tarnishing the image of arcades and leading communities to proactively pass legislation against them.

Atari also pointed to Chuck E. Cheese's to demonstrate that family-friendly establishments could be profitable. In response, the focus of new arcades gradually shifted away from an adult 'anything goes'-type environment to more child and teen-friendly venues that avoided dark corners, cooperated with police and school officials, and were more selective about who they admitted. Many 'amusement centres' were opened in shopping centres, which had security cameras and uniformed patrols.

Eventually, outside of downtown locations in major cities, most of the smoky, seedy arcades of the 1970s went extinct.

Unfortunately, their reputation did not die with them. Despite their attempts at running more community-friendly operations, arcade owners still faced frequent criticism whenever any youth-related incident occurred for which blame could be even tenuously assigned to them, and 'arcade hysteria' reared its ugly head on and off well into the late 1980s and early 1990s when the focus shifted instead to videogame violence.

Regardless of puritan efforts, video arcades became popular (and generally safe) hangouts for teenagers, and will forever be remembered by those generations that experienced them, thanks in large part to Nolan Bushnell.

Most of us have seen newspaper stories describing what some parents and teachers consider to be the negative influence of game arcades. Communities all over the nation are passing ordinances prohibiting or severely restricting children's access to these arcades.

One popular hypothesis is that the game arcades are responsible for truancy, increased juvenile crime, and a multitude of other assorted problems.

The fact that truant officers are often able to find children at the arcades is not surprising – but this hardly means that the arcades are the cause of truancy. To my knowledge (based partly on personal recollections of a distant past), if kids are going to skip classes, they are going to skip classes. Period. When I was a kid, you couldn't go to a soda shop when school was in session because parents and teachers felt that soda shops contributed to truancy.

Every time truants find something to do with their time, this new activity is blamed as the cause of truancy. When viewed in the context of earlier "causes of truancy" such as hanging around pool halls, drinking booze, and shooting dope, I fail to see what makes a few games of Asteroids less desirable.

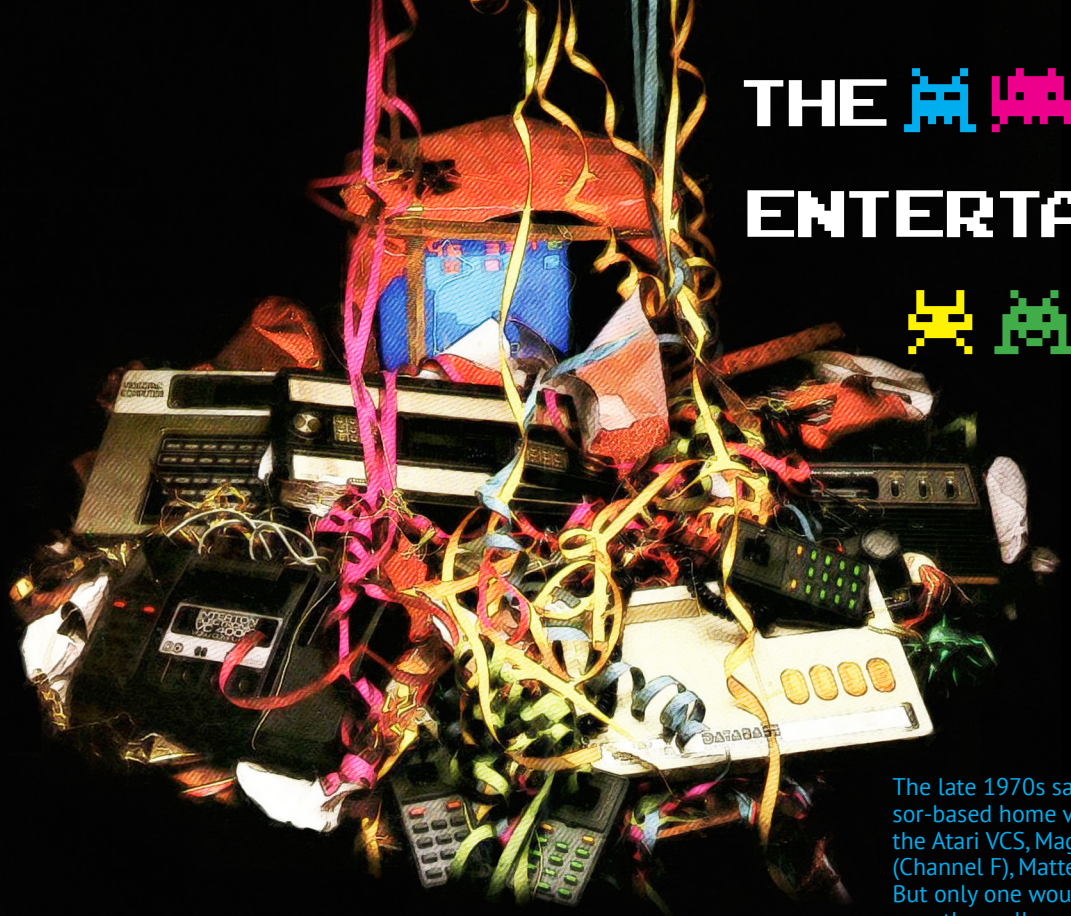
If people are concerned with truancy, that's fine with me. I think that our children's education is very important. And no matter how motivated a teacher is, he or she can't teach students who don't show up for class. But if you want to find out why kids have been skipping classes, you might want to examine the two areas which seem to be more stable than the latest fad – you might want to evaluate the home and the school. All video games could be destroyed tomorrow, and I doubt that truancy statistics would show any noticeable changes.

David Thornburg, *Compute*! April 1982



Graphic from *Video Games*, December 1982

THE ENTERTAINMENT CENTRE



The second prong of Bushnell's two-pronged effort to bring arcade games to more children was a secret project codenamed Stella.

The late 1970s saw an explosion of microprocessor-based home videogame consoles, including the Atari VCS, Magnavox Odyssey II, Fairchild VES (Channel F), Mattel Intellivision, amongst others. But only one would ultimately reign supreme over them all – an effort named for a bicycle.

ATARI INVADES

In 1975 Atari had successfully converted its smash-hit Pong arcade machine into a home version, but Bushnell worried that releasing dedicated devices that only played one game was not a sustainable business model, fearing that consumers would quickly baulk at the idea of constantly having to buy new equipment just to play whatever the latest craze was.

The solution was ultimately determined to be a microprocessor-based console – but in early 1975 microprocessors were still far too expensive to be used in a consumer product. But, luckily for Atari technology was marching along and later that year MOS Technology introduced the 6502, an 8-bit processor with a wholesale price of only US$8 – making a microprocessor-based console an achievable prospect.

Excited by the sudden viability of the project, and afraid competitors might beat them to market, Atari's engineers sprang into action. They brought in additional talent, including Joe Decuir, who named the project Stella, after his bicycle. By December 1975 the team had designed the first prototype around the 6502 processor. By March, 1976 a second prototype had been completed, using the cheaper, feature-reduced MOS 6507 processor, and a custom chip known as the Television Interface Adaptor (TIA) that handled both graphics and sound.

Afraid that competitors would steal the design of the TIA, Bushnell made arrangements with chip manufacturers not to make similar chips for other companies – but he was too late, as Fairchild Semiconductor would

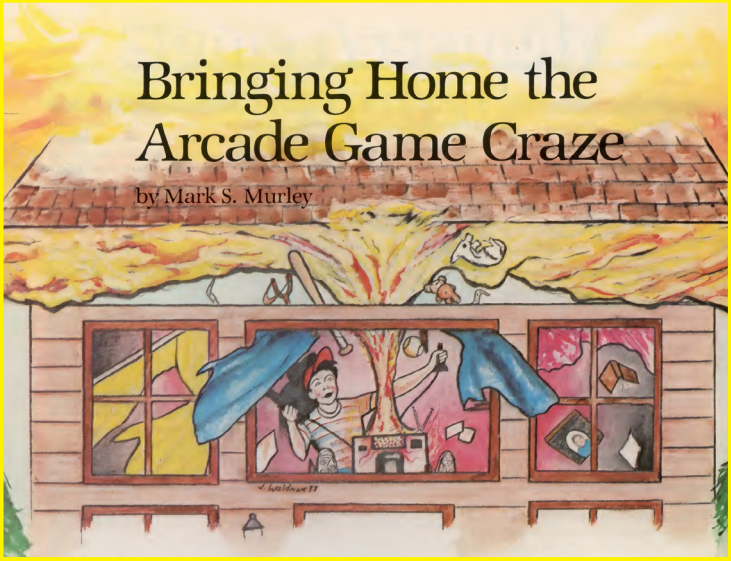


beat Atari to the market, launching its microprocessor and cartridge-based console, the Video Entertainment System (VES), in November that year.

The VES used a rather sophisticated processor for the time – so sophisticated in fact that it had to come as two chips, as Fairchild couldn't acquire a chip package with enough pins. The F8 CPU was fast enough that VES games were able to feature computer opponents – a first for home consoles – but the VES's graphics capabilities were quite poor.

Bushnell felt Atari's potential domination of the home videogame market slipping from his grasp. While Stella's video was to be superior to the VES, and feature legitimate conversions of popular Atari arcade games rather than 'clones', Bushnell knew the tremendous advantage Fairchild enjoyed being first-to-market with its console. The development team was under tremendous pressure to get Stella to the manufacturing stage but this required money Atari did not have.

Bushnell considered taking Atari public, but the performance of the stock market at that time was poor, and Bushnell was unwilling to risk a failed IPO that could destroy Atari. For whatever reasons, private investors were either uninterested or unwilling to come up with the required capital, and Bushnell realised the only way he could get the substantial funds (US$100 million) required to bring Stella to market in time was to sell Atari outright, which he did, to Warner Communications, for US$28 million.



At its release the Video Computer System (part number CX2600) was priced at US$199 ($828 in 2018) – not cheap!



The console came with two joystick controllers, two 'paddles' used for ball-games like Pong and Breakout, and a single 'pack-in' cartridge, Combat, a tank battle game.

The VCS had both colour and black & white modes, and its controller plug would be used for other devices such as the C64.

Aside from Combat, 8 other games were available at launch, including Air-Sea Battle, Indy 500, Star Ship, Street Racer, Blackjack, Basic Math and Video Olympics.

Life started slow for the VCS, but after the release of games such as Space Invaders and Pac-Man, sales really took off during the early 1980s, selling 10 million units by 1982.



While Bushnell had lost control of Atari, he was comforted in the knowledge that his vision was on-track to be realised. Warners, eager to establish a dominanting presence in the videogame space similar to that of their movie studio and record label, came up with the cash, and the 'Video Computer System' (a dig at Fairchild's VES) was showcased in mid-1977 at the Summer Consumer Electronics Show, and consoles were shipped to retailers in November 1977, just in time for the Christmas season.

However, initial sales of the console were slow. The games available at launch were not particularly stellar, and consumers were – perhaps surprisingly – concerned about the ongoing expense of buying new cartridges, seeing the much less expensive Pong machines as one-and-done transactions that would keep their children happy for the near future. To get the price of the units down, Atari moved production to Hong Kong in 1978, but it didn't help that much and sales were still slow.

The biggest problem was a lack of attractive titles; most of the early games released for the VCS were derivatives of older games such as Pong or Breakout, or of each other, and so despite the promise of future, more advanced games consumers saw little additional value in the immediate term over a dedicated console, such as Atari's own Video Pinball, which came with 7 built-in games. But a few titles, released in 1979, such as Superman, an adaptation of the 1978 movie featuring more advanced graphics than had been seen previously, and Canyon Bomber led the VCS to be the best selling console of the 1979 Christmas season, at 1 million units sold.



Warners' Atari released four different revisions of the VCS, the original 'heavy sixer', a wood-panelled model with six front control switches, the 'light-sixer' with less internal shielding, a four-switch wood-panelled version released in 1980 and the black 'Darth Vader' released in 1982, which was also the first to use 2600 in its name.

After the videogame crash, Warners broke up Atari and sold it off, with ousted Commodore founder Jack Tramiel buying Atari's consumer division. In 1986 he released the Atari 2600jr (shown in the advertisement to the left). The 2600jr featured a smaller form factor and 'cost-reduced' internals that allowed for a much lower retail price and provided a budget alternative to the Nintendo Entertainment System.

Atari tried to keep software development for the VCS entirely in-house, seeing game sales rather than the consoles as the major potential source of revenue from the platform, and when several employees left to form Activision, Atari sued, but their attempt to stifle third-party development failed. This resulted in the founding of several game companies, including US Games, Telesys, Games by Apollo and others. No longer able to effectively compete in the low-end game market, Atari shifted its focus (and its pocketbook) to licensing the rights to popular arcade games and movies, which it saw as surer bets.

The ET: The Extra-Terrestrial game for the Atari VCS (by that point redesignated the 2600) was developed by Howard Scott Warshaw, as was the conversion of Namco's Pac-Man.



Offered US$200k and a trip to Hawaii as compensation, ET was programmed by Warshaw in a little over a month, and it showed! Critics and children alike universally hated it.



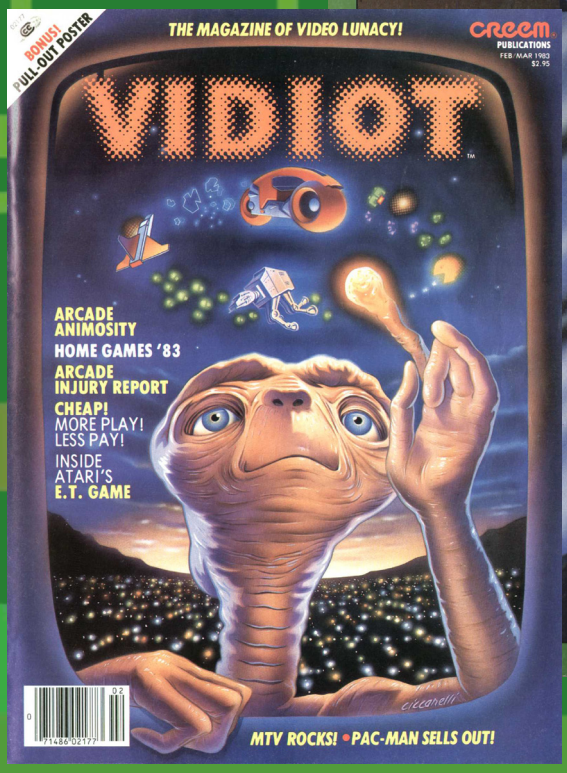
But from Warners' perspective sales of 1 million was just a drop in the bucket. Rather than relying strictly on its own properties for games, Atari began to license titles from other arcade manufacturers, such as Taito's Space Invaders, which was responsible for doubling the number of consoles sold in 1980 to 2 million.

Meanwhile, Atari's game developers began to get disgruntled over how Warners' management treated them like employees while software developers in other industries such as home computers were receiving regular royalties from sales. Several of them quit to form companies such as Activision and Imagic – but this only helped sales of the VCS as an increasing number of (initially) better quality games landed on store shelves.

By late 1981 it looked as if there was no limit to the potential success of the platform. The VCS was king.



Unfortunately for Atari, that optimism translated into an increasing amount of laziness regarding the development of new titles, with a general assumption that arcade conversions and movie-related 'blockbusters' would always be successful regardless of quality, and fend off the increasing amount of third-party games flooding the market. But after the 1982 releases of the extremely shoddy VCS Pac-Man adaptation and the nonsensical ET: The Extra-Terrestrial the general public signalled they had had enough, and they simply stopped buying new games. The party was over.



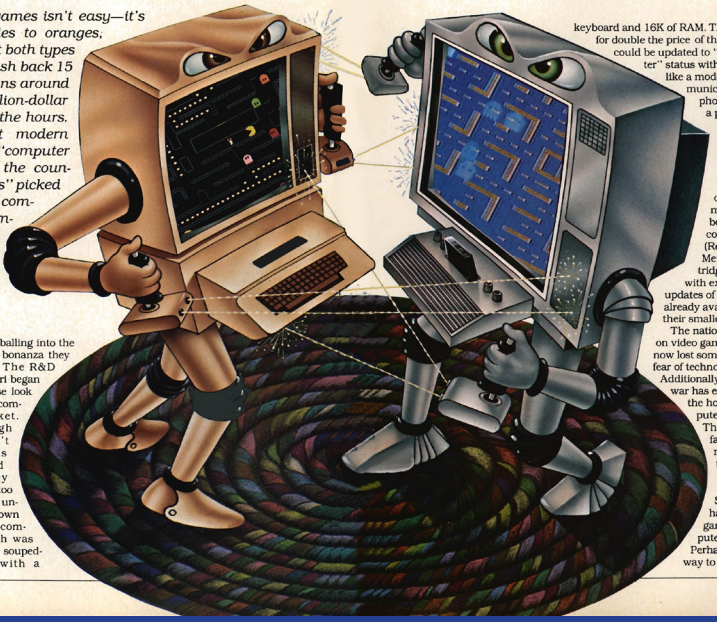
As the video-game crash began to unfold, the media began to smell blood in the water, and was only motivated to encourage further carnage. 'Why buy something that's only good for games' they asked, 'when you can do so much more with a computer?' Of course it helped that computer gaming had started to come into its own, in many cases with better graphics and sound.

ELECTRONIC FUN · COMPUTERS & GAMES

Computer games VS Video games

The war between the states-of-the-art

Comparing video with computer games isn't easy—it's more difficult than comparing apples to oranges, or even papayas to lima beans. To put both types of games in perspective, we should flash back 15 years when bored computer technicians around the country began using their million-dollar electronic brains to help while away the hours. Their efforts resulted in the first modern video games. During the 1970s, the "computer revolution" started erupting across the country. Initially, only "computer whiz-kids" picked up on it. The reasons were many and complex: "They cost too much," some complained. "They're too complicated," said others. Perhaps the main reason was related to the public's computer-phobic attitude—a fear of technology.



By Mark Wielage and Walter Salm

It was around this time that the first bombshell hit: Atari's venerable VCS—the "Video Computer System"—a misnomer if there ever was one. While these $150 game consoles only had a minimal amount of memory, the public ate it up.

Most true computer addicts started snowballing into the billion-dollar bonanza they are today. The R&D teams at Atari began taking a close look at the home computer market. Even though sales hadn't taken off as they had hoped, they hadn't done too

keyboard and 16K of RAM. The 400 sold for double the price of the VCS and could be updated to "full computer" status with peripherals like a modem for communicating over phone lines and a printer for hard-copy printouts. The Atari model 800, with 48K of RAM, followed. Atari made sure both systems could use ROM (Read-Only Memory) cartridge software, with exciting updates of games already available for their smaller VCS.

The nation, weaned on video games, has now lost some of that fear of technology. Additionally, a price war has erupted in the home computer field. These two factors have made computers accessible to everyone. So now we have video games *and* computer games. Perhaps the best way to compare them is to examine some games that are available in both formats.

Pac-Man

Playing *Pac-Man* on the VCS is not the greatest turn-on—not if you're an addicted coin-op player. Yet all of the elements are there—the little yellow gourmet, the pursuing ghosts and the energy pills in the four corners of the screen. Unlike the arcade version, the escape hatches are on top and bottom and the maze is laid out horizontally.

Perhaps the greatest disappointment of the VCS version is the graphics. Instead of being the cute, round, congenial dot we all know and love, Pac-Man is very angular and practically unrecognizable. He simply doesn't look well. Due to the limited memory of the VCS, only one ghost can appear on the screen at any one time. (Take a picture of the screen. You'll see that's right.) For this reason, the ghosts flicker annoyingly and you can't really tell with any accuracy whether they've turned blue and are ripe for eating or whether you're going to attack them only to find that they can still destroy you. A risky situation at best.

In addition, Pac-Man's familiar "wocka, wocka" has been replaced with an electronic bolnging sound and the control the joystick affords you is imprecise and, often, random. Sometimes Pac-Man responds to your command. Sometimes he doesn't. In the VCS version, he's a very willful dot.

The 400/800 version, however is *very* close to the arcade version—including the graphics, the



During the late 1970s home computers had made the same technological advances videogame consoles had, with colour graphics, improved sound and features such as joystick controllers. In the early 1980s software developers realised there was enough of a market to write games for them, and parents began to see them as a viable alternative to videogame consoles.

Imagine you forked over US$30 (US$80 in 2018) or even more in Australia with its wholesale sales-tax for an ET cartridge to give little Johnnie for Christmas and he hated it! You would've been totally over this whole videogame thing. But what else was little Johnnie (or Janie) going to do with their time? How about a home computer?





There's so much more the family can do with a home computer! You can balance your chequebook, write letters, go on-line, learn spelling and math – and play games, of course, but only after homework is done...

Commodore's Jack Tramiel saw an emerging market for low-cost home computers, releasing the VIC-20 in 1980. At a US$299 price point sales were initially modest, but rival Texas Instruments, making a play for the bottom of the market, would heavily discount its TI99/4A, and start a price war with Commodore that culminated with both computers selling as low as $US99. Only one company was going to walk away.

And after the fiasco of the previous Christmas, Santa didn't really need all that much convincing to try something else. 1983 had seen an explosion of home computer models of varying capabilities and at various price-points – however, the question on everyone's minds was not who was going to win, but who would survive.



LOADING... READY

RUN

WAR ON CHRISTMAS



In 1979 microchip and calculator manufacturer Texas Instruments introduced the TI99/4, its first attempt at entering the emerging home computer space. While it was the first 16-bit home computer, its US$1150 price was higher than even the Apple II, and with a small software library in comparison to competitors, retailers struggled to sell it. Two years later, in 1981, TI released the 99/4A, which improved the keyboard widely criticised in its predecessor, but it still failed to attract the attention TI thought it deserved. Management decided that if they could just get the computer into the hands of users, a presumably positive response would spread by word-of-mouth, and sales would improve as a result. And so TI not only dropped the price of the 99/4A all the way down to the US$299 price of the VIC-20, they offered an additional $100 rebate.

But while TI spokesperson Bill Cosby joked about how easy it was to sell a computer when you gave people US$100 to buy one, Jack Tramiel wasn't going to take this lying down, and he dropped the price of the VIC-20 to US$200 in order to match TI. However, unlike TI, who was selling the 4A at a loss in order to gain market share, Commodore wasn't losing any money at all, since it owned MOS Technology, the maker of many of the chips inside of the VIC-20, and as a result got all of those components at cost. Meanwhile TI was paying full price and hemorrhaging cash on every model sold. You would think TI might have realised they were playing a fool's game and back off but instead after Tramiel dropped the wholesale price of the VIC-20 to US$130 they went all-in, dropping the 4A's retail price to $150. Commodore went to $100, and TI matched it, with many retailers selling both machines for $99. Inside TI, Cosby's joke stopped being funny, and many wondered whether management had dug them into a hole they could never climb out of.







Squeezed by Commodore's VIC-20 and 64, Texas Instruments found its 99/4A floundering in the marketplace. TI aggressively discounted its computer only to have Commodore's Tramiel fight back even more aggressively. One winner? Computer magazines!

After losing over US$100 million in the third quarter of 1983 alone, TI pulled the plug. They dumped their stock of the 4A, selling the computer for $49 but even at that price nobody wanted it; the public had already concluded at the US$99 price point that there was likely no future for it, having previously learned that discontinued computers typically languished wihout new software.

The TI99/4A was counted out, the VIC-20's arm was raised and the match was over. But TI wasn't the only company who wanted to try their contender in the ring. There was also Coleco, and Tandy.





Coleco had entered the videogame console market late, introducing the Colecovision in mid-1982 just as Atari was beginning to wear out its welcome with the public. With its superior graphics and sound, and Donkey Kong as its pack-in game, it sold well before Christmas, but was not immune to the plague ET subsequently cursed the industry with and when Coleco management saw consumer sentiment was turning toward home computers they saw an opportunity to jump trains. The marketing department decided their ideal customer was parents of less-technically savvy teenagers who needed to do school assignments and wanted to play arcade conversions, and so they suggested adding a

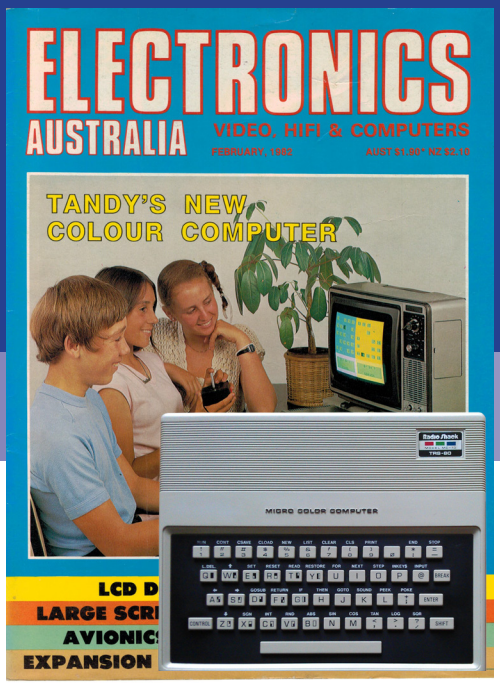


printer, keyboard and tape storage to the existing Colecovision console, rather than develop an entire new machine. It was hoped this could get the computer, christened the Adam, to market faster, but adding all those peripherals was trickier than expected, and despite promises to retailers Coleco failed to deliver most of the units in time for Christmas – and many of those they did deliver were defective. Poor reviews and disappointed potential customers coloured public sentiment and the Adam bombed, taking the Colecovision with it.



"We're simply afraid, on a marketing level, Coleco may be headed for disaster on this one." The staff of Videogaming and Computer Gaming Illustrated didn't have confidence Coleco could deliver the Adam at the price promised and before Christmas –and they were right.

After 1984 delivered heavy losses, Coleco discontinued both products by mid-1985.



Tandy also tried to get into the action, releasing a cost-reduced version of its Color Computer, the MC-10. Modeled after the Sinclair ZX81, the MC-10 had a small form-factor and a chiclet keyboard with a similar BASIC entry format. But it wasn't compatible with most Color Computer software and Tandy released only a few MC-10 programs. The net result is the MC-10 bombed.



After all the dust had settled, the only real winner was Commodore. It fended off all of its competitors and cemented the Commodore 64 as *the* low-budget 8-bit computer everyone wanted their parents to buy.

But while home computers had beaten video-game consoles down, they weren't entirely out, and were destined to come back with a vengeance. In the late 1980s, computer manufacturers failed to convince many of their customers to upgrade to 16-bit models, who found their 8-bit computers still sufficient for their productivity needs, while their children were more interested in the new wave of video-game consoles, the Nintendo NES and the Sega Master System, which provided arcade conversions and platform games, some unavailable even on 16-bit computer systems.

Parents ended up buying those instead.





Nintendo persuaded retailers to give videogames a second chance with its NES, and consoles were back.

In the best of home computer traditions; here at Paleotronic we're celebrating Christmas with a quick delve into Sinclair BASIC and a festive type in listing.



It's time to dust off the trusty 48k ZX Spectrum and get to coding a XMAS screen saver to run on the family Television over the holiday season.

Just as in 1982 the starting point of any questionably good Christmas demo is the BASIC language. For users of the Sinclair line of computers that means dealing with a slightly idiosyncratic version of the BASIC language developed specifically for the ZX line of home computers.

What would become known as Sinclair BASIC started life at Nine Tiles, a small UK company located in Cambridge, UK. The initial version was written by company owner John Grant for Sincliars ZX80 computer. Based on the 1978 ANSI minimal BASIC standard, the ZX80s implementation was incomplete, lacking many features and handled only integer arithmetic.

Upon joining Nine Tiles in 1980, Steve Vickers was appointed developer of Sinclair BASIC going on to the language for the ZX81 and the later ZX Spectrum, adding trigonometric functions, floating-point arithmetic along with numerous other improvements including colour, sound and advanced graphic facilities that were not required on the earlier ZX machines.

Arguably the most unique feature of Sinclair BASIC and one present on all Sinclair made machines is its keyword entry system. Keywords are comprised of single-stroke key entries, rather than requiring the user to fully typed out instructions. For example if "P" is pressed while the computer is in command mode, the keyword "PRINT" appears.

This command entry scheme is somewhat necessitated by the diminutive and less than ideal keyboards common to all early Sinclair computers, however it does helpfully facilitate a pre-execution syntax validation process. Unlike most BASIC interpreters of the period, Sinclairs will not allow commands to be entered into the system without undergoing syntax checking, hopefully resulting in fewer typing errors; This won't stop all bugs finding their way into your code.

By David Stephenson




```
Key Program
Functions:

025-115: Main
Loop; track snow
fall.

125-155: Set up
Falling Snow
Characters

165-195: Draw
Ground and Base
Snow

205-255: Draw
Christmas House

275-320: Light up
House

325-395: Define
Main Variables

405-440: Load
UDGs
```

If you can manage to avoid those pesky bugs, you'll be rewarded with a festive Christmas scene...

A 40 year old 48k computer can only do so much after all.

Sadly ZX Spectrum BASIC doesn't fare so well in the speed stakes. Due in part to a rushed development cycle and a desire to cram as many features as possible into the smallest possible space, the language is painfully slow. So while all the enhanced features added to the Sinclair BASIC over its various iterations greatly improved the language, getting these features to produce multiple fast moving graphics, such as for example; the type required for good game play or a speedy graphical demo is next to impossible. All serious software development would move very quickly into machine coding.

Regardless of the shortcomings, the language can be quite powerful; there are not many features lacking that can't be overcome by some creative programming. For example the an obvious keyword lacking from ZX Spectrum BASIC is 'ELSE', used in IF statements. With creative sub-routines and or the usage of multi statement command lines the use of a dedicated 'ELSE' keyword is easy enough to circumvent.

For users upgrading to the Spectrum and those eagerly expecting one in their 1982 Christmas Stockings, Sinclair BASICs minor incompatibilities and shortfalls were unlikely to be of any real concern. In high probability / more likely the inclusion of colour and graphics was of much higher importance; after games of course. To that end a festive Yuletide themed screen saver (or demo if you prefer) awaits the keen typist.

Our first task in exploring the brave new world of graphics and colour is to define some of those graphics. UDGs or User Definable Graphics were a new feature on Spectrums version of Sinclair BASIC. Located in characters positions 144 to 164, they initially appear as letters, and are entered as graphic characters on keys A to U until new values are assigned by the user. Each character is stored in a 8*1 bit blocks. ZX XMAS sets up all UDG characters in lines 400 to 440, the data used to describe each UDG is held in DATA statements listed from 450 to 565. For clarity each DATA statement holds the values for 1 whole character, although this separation is not required.

Our base winter scene is drawn and later redrawn from Lines 120 to 320. There are a couple of sub-routines here and called throughout the programs execution in order to redraw parts of the screen. For example lines 265 to 320 are used to set up colour attributes for our house, then used again latter to gradually turn the house lights off as the snow level rises around it.

Most importantly we need to consider our programs speed. The Spectrums BASIC is relatively slow, as tracking movement of many individual graphic elements can lead very quickly to a noticeable slowdown This is not a particularly desirable outcome for applications requiring a fluid movement of elements. Some simple tricks keep the programs execution speed as high as possible. Unfortunately these tricks sacrifice some degree in program legibility in the process.



Tips to improve execution speed:

1. Keep the main program loop as close to the start of a BASIC listing as is practically possible: Speed of execution can be effected by something as innocuous as REM statements placed at the start of a program. In ZX XMAS vital information on variables has been located at the end of the program to gain execution speed.

2. Define highly used variables first, and avoid the using arrays: Breaking the array rule, ZX XMAS tracks the positions of snow flakes in f(x) and s(x), however access times to these is shortened by defining these variables before all others.

3. Limit variable names to single characters: For a noticeable cost to readability all variables in the application can be kept to single letters.

4. Reduce line counts by stacking commands on single lines separated by a colon.

```
   10 REM 48K Spectrum XMAS Snow
David Stephenson 2018
   15 RANDOMIZE : PAPER 0: INK 0:
BORDER 0: CLS
   20 GO SUB 405: GO SUB 325: GO SUB
125
   25 REM MAIN loop
   30 LET o=INT (RND*4)
   35 LET i=71-o
   40 FOR y=1 TO 2: FOR x=1 TO y*4
   45 LET p=f(x)
   50 POKE p,i
   55 POKE p-32,0
   60 LET f(x)=p+32
   65 IF NOT PEEK f(x) THEN GO TO
105:
   70 LET p=PEEK f(x): LET n=f(x)-
32-a+96: LET r=INT (n/32): LET
c=n-r*32
   75 IF INT (v/32)-1>r THEN POKE
f(x)-32,0: LET f(x)=s(x)+o+a: GO TO
105:
   80 IF x=4 THEN LET
v=v/32*31+r+.25: REM Even up snow
build up.
   85 IF p=71 OR INT (v/32)<r THEN
POKE f(x),127: POKE f(x)-32,0: PRINT
AT r,c;CHR$ (151+INT (o/2))
   90 IF p=69 THEN PRINT AT
r+1,c;CHR$ (153+INT (o/2)): POKE
f(x)-32,0: POKE f(x),71
   95 IF p=7 THEN POKE f(x)-32,0:
POKE f(x),69
  100 LET f(x)=s(x)+o+a
  105 NEXT x: NEXT y
  110 IF INT (v/32)=b-4-l THEN LET
l=l+1: GO SUB 275
  115 GO TO 30
  120 REM setup falling snow
  125 PAPER 0: BORDER 0: INK 0:
BRIGHT 0
  130 PRINT AT 3,0;
  135 REM If ASCII listing Backslash
Charters = graphic mode letters
  140 REM IF ZX letter Charters =
graphic mode "Caps SHIFT + 9" letters
  145 FOR x=0 TO 79
  150 PRINT "\d\d\c*\a\b";
  155 NEXT x
  160 REM setup snow base
  165 FOR x=0 TO 14 STEP 2
  170 INK 7
  175 PRINT AT b-3,x;"\j\k";AT
b-3,30-x;"\j\k"
  180 BRIGHT 1: PAPER 7: PRINT AT
b-2,x;"\:\:";AT b-2,30-x;"\:\:": 
REM G shifted 8
  185 PAPER 0: PRINT AT b-1,x;"\e\
f";AT b-1,30-x;"\e\f"
  190 BRIGHT 0: PRINT AT b,x;"\g\
g";AT b,30-x;"\g\g"
  195 NEXT x
  200 REM print out house
  205 BRIGHT 1
  210 PRINT AT b-2,h;"\s\s\s\s\t\t\t\
s\s\s\t\t\t"
  215 PRINT AT b-3,h;"\p\r\r\p\q\r\r\
p\r\p\q\r\q"
  220 PRINT AT b-4,h;"\p\r\r\p\q\r\r\
p\r\p\q\r\q"
  225 PRINT AT b-5,h;"\p\p\p\p\q\q\q\
l\n\p\p\o\m"
  230 PRINT AT b-6,h;"\l\n\p\r\r\q\o\
m";AT b-6,h+8;"\l\n\o\m"
  235 PRINT AT b-7,h+1;"\l\n\p\q\o\
m";AT b-7,h+9;"\l\m"
  240 PRINT AT b-8,h+2;"\l\n\o\m"
  245 PRINT AT b-9,h+3;"\l\m"
  250 BRIGHT 0
  255 GO SUB 275
  260 RETURN
  265 REM set house windows colours.
w = poke colour, & also check snow
height
  270 REM called from main loop and
from initial setup
  275 FOR x=0 TO 1
  280 IF l=3 OR w=22 THEN POKE
a+h+1+x+32*(b-7),w+x: POKE
a+h+1+x+32*(b-6),w+1-x
  285 IF l=2 OR w=22 THEN POKE
a+h+5+x+32*(b-7),w+x: POKE
a+h+5+x+32*(b-6),w+1-x
  290 IF l=1 OR w=22 THEN POKE
a+h+8+32*(b-7+x),w+x: POKE
a+h+11+32*(b-7+x),w+1-x
  295 IF l=4 OR w=22 THEN POKE
a+h+3+x+32*(b-9),w+x
  300 NEXT x
  305 LET w=10: REM set w to 10 after
setup
  310 REM reset
  315 IF INT (v/32)<b-7 THEN GO SUB
325: GO SUB 125
  320 RETURN
  325 LET b=19
  330 LET v=(b-2.5)*32
  335 LET a=22528+96
  340 LET w=22
  345 LET l=0
  350 LET h=INT (RND*10)+4
  355 DIM s(8)
  360 DIM f(8)
  365 REM get starting position of
snow flakes
  370 RESTORE 575
  375 FOR x=1 TO 8
  380 READ s(x)
  385 READ f(x): LET
f(x)=f(x)*32+s(x)+a
  390 NEXT x
  395 RETURN
  400 REM get user defined graphics
  405 RESTORE 455
  410 FOR x=97 TO 116
  415 FOR y=0 TO 7
  420 READ dat
  425 POKE USR CHR$ (x)+y,dat
  430 NEXT y
  435 NEXT x
  440 RETURN
  445 REM UDG DATA
  450 REM snow flakes
  455 DATA 66,219,36,90,90,36,219,66
  460 DATA 0,102,90,44,52,90,102,0
  465 DATA 0,36,102,24,24,102,36,0
  470 DATA 16,16,16,56,124,56,16,16
  475 REM snow base
  480 DATA
255,255,255,253,120,1,10,170
  485 DATA
255,255,255,115,112,0,10,170
  490 DATA
85,170,69,170,68,170,16,170
  495 REM fallen snow
  500 DATA 0,0,0,0,0,102,254,255
  505 DATA 0,0,0,0,0,112,252,255
  510 DATA
0,24,122,255,255,255,255,255
  515 DATA
0,0,195,227,255,255,255,255
  520 REM house
  525 DATA 1,3,7,15,31,63,127,255
  530 DATA
128,192,224,240,248,252,254,255
  535 DATA
254,253,250,244,232,211,167,74
  540 DATA
127,191,95,47,23,203,229,82
  545 DATA
128,63,127,170,0,255,255,82
  550 DATA 1,252,254,85,0,255,255,74
  555 DATA 0,84,42,84,42,84,42,84
  560 DATA
128,63,127,170,68,255,255,255
  565 DATA
1,252,254,85,34,255,255,255
  570 REM Position Snow DATA: 1st =
column, 2nd = starting row
  575 DATA 0,0
  580 DATA 8,6
  585 DATA 16,4
  590 DATA 24,2
  595 DATA 4,5
  600 DATA 12,3
  605 DATA 20,5
  610 DATA 28,1
  615 REM MAIN VARIABLES
  620 REM b = bottom of screen
  625 REM v = average height of snow
  630 REM a = start of colour
attribute address
  635 REM h = horizontal position of
house
  640 REM w = colour range of house
windows
  645 REM i = colour of falling snow
  650 REM l = window l / off, sets w
  655 REM c = column
  660 REM r = row
  665 REM f(x) = flake positions
  670 REM s(x) = base position of
flakes
  675 REM p = current peek read val
  680 REM n = position of active
flake
```

Further to the above, printing characters to specific locations in specified colours is a time consuming job. To do this normally requires 'PRINT AT', 'INK' and 'PAPER' statements. There are some tricks to overcome this. The Spectrum divides its screen layout into 2 major components, the Display File and the Attribute File. The Attribute File located at address 22528 to 23296 holds colour information for 8*8 pixel character blocks, POKEing these addresses instead of printing directly can gain us some time.

Lines 120 to 155 print the snowflake patterns that simulate the falling snow. The INK and PAPER colours are set to black, which renders the characters effectively invisible. By POKEing colour values to the Attribute File during execution of the programs main loop visibility of the snow characters can be turned on or off when required.

The main loop of ZX XMAS is located almost at the very start of the listing at lines 30 to 115. The loop keeps track of our individual snowflakes and the builds up of snow on the ground. Snow falls at 2 differing rates, loops y and x govern this rate. Four flakes fall at twice the rate, achieving to 2 main goals. Visually it provides a staggered snow drop appearance, and a smoother fall rate with more flakes on the screen at one time.

The actual position of each flake is held in array f(x). The starting location of each flake is set by a combination of the s(x) array which holds the column offset and the row value for f(x) READ for DATA lines 575 to 610. Once snow hits the ground, the value of s(x), plus a random offset of 0 to 3 determines the column in which a snowflake starts at the top of the screen again. Average snow build up height is tracked and once the level reaches above the house, the screen is reset and we start again.



Let it snow, let it snow, let it snow...
The turtles are all snowed in!

Just who lives in that house anyway? The Logo Turtles! They're taking a well-earned Christmas vacation, but that's okay: did you know that there are plenty of things you can do with Logo that don't involve the Turtles?

For example, in 1983 Don Hopkins wrote the skeleton of a text adventure game using Terrapin Logo!

Don's Medium article detailing his charming program recently turned up on Hacker News, a link aggregator website. It cleverly uses Logo's interactive parser (the question mark prompt you normally type directives into, such as to FD 10 and RT 20 the turtle around the screen) as the command interface for the game. When you type, for example, the command GET SWORD, Logo executes the GET procedure, which assigns the sword to your inventory, and then exits back to the prompt.

What this means is that while the game seems like it's waiting for you to make the next move, it's not really executing at all! Neat stuff.

Check out Don's article at the first link below, and our Apple Logo conversion at the second:

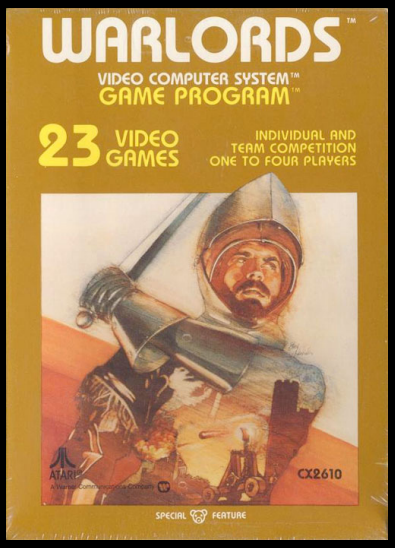
medium.com/@donhopkins/logo-adventure-for-c64-terrapin-logo-4c684a240b53

paleotronic.com/2018/11/10/logo-adventure-for-apple-logo/







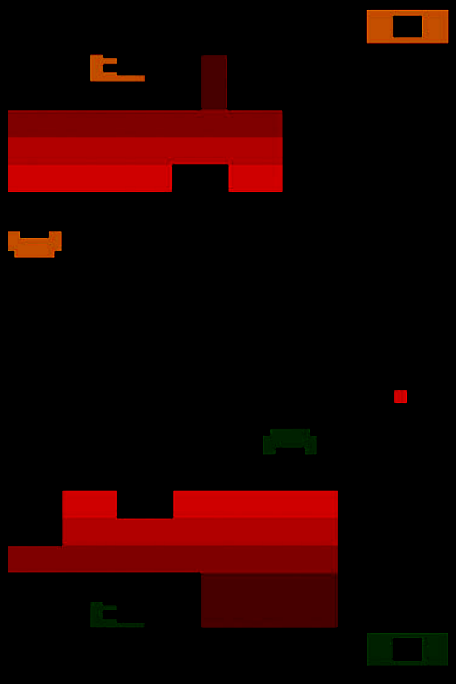


Paul Monopoli brings us Santa's 'nice list' of ten classic party games, suitable for holiday gatherings.

At the time of writing, the holidays are almost upon us. At this time of year we usually have friends over for some food, talk and games. This is where it gets a bit awkward, as most games are one or two player affairs. My wife and I never have trouble finding something to play in our expansive video game library, but when you add another person or two to the mix it can get tricky.

To help both myself and others with this socially difficult situation I thought it would be a good idea to compile a list of the top 10 party games, as recommended by me.

10. Warlords



If you break down the elements, Warlords is a simple four player bat and ball game. Each player takes on the role of one of the titular warlords, attempting to defend their castle from an onslaught of fireballs. If you find yourself on the receiving end of an attack you can catch and quickly redirect one of these balls of fire and send them along to another player's castle.

Each castle is defended by a wall, which will chip away each time a fireball gets through the shield. Once the defences are down, the castle only needs one hit and it's all over for that player.

Warlords is a pretty easy game to get ahold of, with different versions of the game appearing on both the Playstation Network and XBOX Live. Home-brew coders have also released different versions of the game for both retro and modern platforms. A quick trip to Google should give you a list of both paid and free versions of the game.



9. Super Smash Bros.

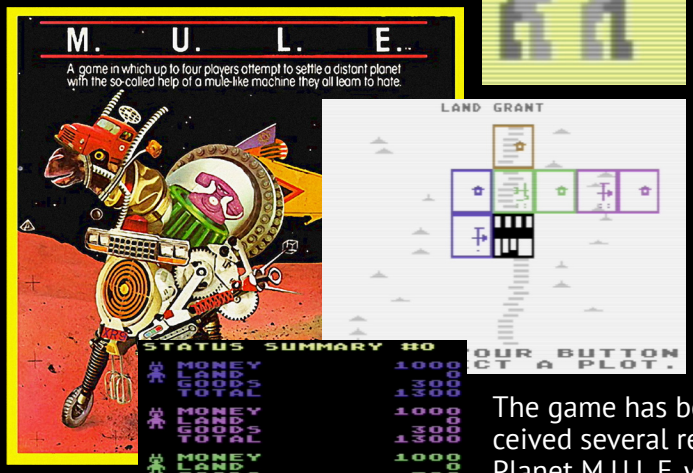
What happens when the worlds of Nintendo collide? Why, absolute mayhem of course! Yes, there are storylines to the games in this series, but who cares? All you really want to do is pit Mario, Link, Fox McLeod, Kirby and more in a 2D brawl fest. Simple in gameplay, even button mashers can emerge victorious, which can be annoying to fans of the Street Fighter series. That's why the game is so fun though, everyone can be an expert!

Initially released on the Nintendo 64, the game has been released for each successive Nintendo home platform, with the Switch version due for release in December 2018. Later releases have introduced characters from other companies, including Sonic the Hedgehog and Pacman. The latter may have to do with Namco coding the Mario Kart Arcade GP series, in which the pill guzzler was a playable character.

Though many will cite Super Smash Bros Melee for the Gamecube as the best game in the series, there isn't a great deal of difference between the games. If budget is a factor then you might find that Super Smash Bros Brawl for the Wii or Super Smash Bros for the Wii U are the cheaper options if you have access to these consoles.

8. M.U.L.E.





If you want a bit more strategy in your party games, then this 1983 classic might have what you're looking for. In a charming bit of wordplay, the action takes place on the planet Irata (Atari backwards) where you are required to setup a colony and wheel and deal in resources. The Imperial Walker like M.U.L.E.s can be used to harvest different elements. You can in turn, buy and sell with other players and do a bit of gambling on the side to build up your funds.

Random events can quickly make or break the game, with pirates, acid rain and meteorites all conspiring to damage players who happen to be in their line of sight. For people who are used to "quick and dirty" party games, M.U.L.E. might have a bit more of a learning curve than they are used to.

The game has been released on a variety of platforms and it has also received several remakes. The most accessible version of the game is known as Planet M.U.L.E, which can be downloaded for free at www.planetmule.com

7. Worms



Released by the ever amazing Team 17, Worms and its sequels are 2D strategy games in the tradition of the shareware classic, Scorched Earth. Each player has a team of four worms, randomly scattered around a 2D landscape and armed to the teeth!

On each turn you can move your worms around the landscape, destroying parts of it if they are in your way, all in an attempt to find and kill your opponent's worms. The game can be frustrating in that the angles and power often need to be just right, depending on the weapon your worm is using. The game has a sense of humour, with ludicrous weapons such as bouncing sheep that explode and voice overs for the worms.

While the series debuted in 1995, sequels are still being released today. The latest, Worms W.M.D can be found on PS4, XBOX One, Switch, PC and Mac. You can also find various versions of the game on the iOS store, Google Play and Steam.







6. Power Stone



Released in 1999, Power Stone is a 4 player brawler that spawned a sequel and an anime series. Like Smash Bros, the storyline is irrelevant, as the madcap gameplay is what this game is all about.

Both games features 4 player battles that take place on a 3D fighting stage. The titular power stones can be gathered to transform your characters into more powerful versions of themselves. This power up doesn't last forever, so it's important to take advantage of the boost in strength and finish the fight as quickly as possible. If there was one criticism that could be levelled at the game it is that it's easy to lose track of your character. The stages feature different elements, and keeping an eye on that, your character and your opponents can be difficult.

Unfortunately Power Stone is not the easiest game to find. Home versions of both games were released on the Sega Dreamcast, with a port of both games later released for the Sony PSP. Both games are included on the UMD, though the second game in the series is far superior.

5. Gauntlet

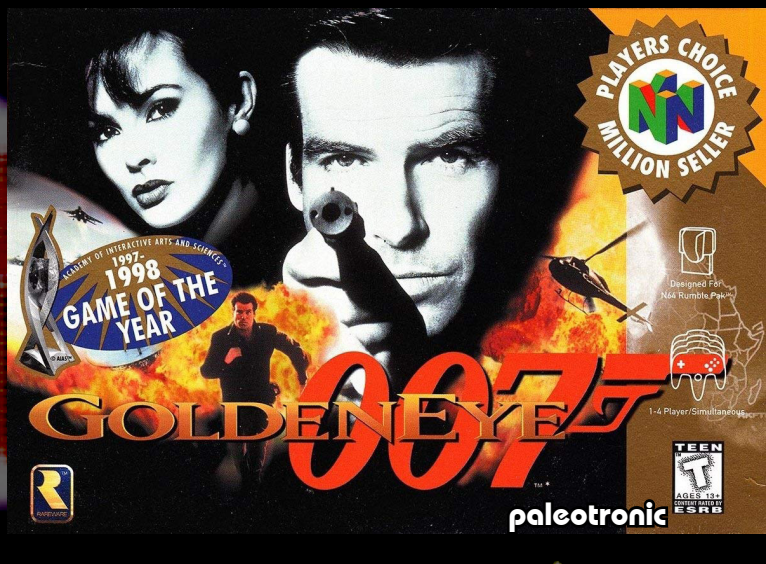


This overhead dungeon crawler finds your team searching for exits in a maze while surrounded by a plethora of monsters. In the initial game you can choose to play as a wizard, valkyrie, elf or warrior, though later games expand this roster. Each character has their own special skills, so it's important to choose someone who is going to fit your gameplay style.

Gauntlet is one of those games where you can really cause problems for annoying team mates. If someone is giving you a headache you can scroll the maze, trapping them until they agree to stop doing whatever it is they're doing. The teams will also need to agree on resource management. Players should only take food if they need it, and wizards should be the first players to stockpile magic potions and they make the best use of them.

Though it is difficult to find four player home ports of the game, some of the 16-bit ports do contain this feature. The Atari Lynx and Gameboy releases also allow four players, but you need to have four consoles with four copies of the game. Later sequels, Gauntlet Legends and Dark Legacy also feature four player mode. The remake found on Steam and the Playstation 4 also contains four player action.

4. Goldeneye 007



It was a toss up as whether to include this or Perfect Dark. While this game was released earlier, Goldeneye is more fondly remembered due to its association with James Bond. At least, that's why I prefer playing it over Perfect Dark.

In battle mode you can either take control of one of the characters from the movie, or one of the villains from the James Bond universe, including Odd Job, Jaws and more. The game is not without its flaws, the main one being that as all four players share the same screen,

you can see what your opponent is doing. The other key thing to note is that Odd Job is given the unfair advantage of being small, thereby being able to avoid many attacks, so it might be an idea to make a rule, omitting him from selection.

If you have a Nintendo 64 then Goldeneye is one of the easier and cheaper games to buy. Due to developer RARE now being owned by Microsoft, and the rights to the Bond series being held by a different company it hasn't resurfaced on any other consoles, though there was a remake released in 2010.









3. Teenage Mutant Ninja Turtles











Unlike the disappointing home computer and console versions, the original Teenage Mutant Ninja Turtles arcade game was a four player smash, with each person being able to control their own turtle and take on the evil Foot Clan, headed by Shredder and his Dimension X cohort, Krang.

If I had to be honest there is nothing new in this game. It is a side scrolling beat em up that has been seen many times before and many times since. Teenage Mutant Ninja Turtles just contains that extra bit of polish that sets it apart from the rest. The turtles are animated well and extra care was taken to include a minor difference for Raphael, whose sai are unable to swing far enough to be effective, hence his overhead attack was changed to a rolling wheel kick. Though the game only takes roughly 20 - 30 minutes to complete, it's a fun romp.

At the time the arcade game did not receive any ports, though its sequel, Turtles in Time, was released on the Super Nintendo in modified form. The original 1989 arcade game was available on the Xbox Live Arcade but can also be found as a hidden extra on Teenage Mutant Ninja Turtles 2: Battle Nexus for the Playstation 2, Xbox and Gamecube. However, just be warned that this version contains changes to the music and the omission of the voices.

2. Mario Kart

While the original Super Mario Kart was a one or two player game, the Nintendo 64 version introduced four player karting action. Since then each edition of the game has contained this feature, even the Mario Kart Super Circuit for the Gameboy Advance.







2. Mario Kart (Con't)

While the roster of characters expands with each game in the series, the manic kart racing action, that this series kick started, has remained the same. Up to four players battle it out on a TV screen, or over portable devices in either a race or battle mode. The game is balanced so that those players in first place receive average items from question blocks, while those in the rear get better items, like the invincibility granting star man or the blue shell, which will target first place, allowing those behind to catch up.

Four player versions of the game can be found on every Nintendo console since the N64. Mario Kart 64 is available on the Wii and Wii U Virtual Consoles if you want some retro action.







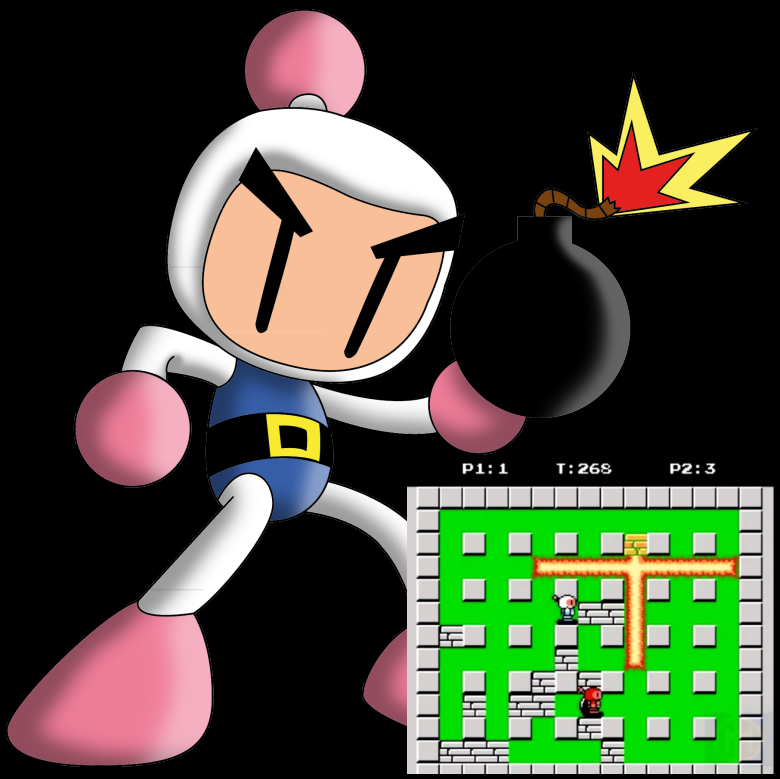


1. Bomberman

Hudsonsoft's little white bomber takes the top spot with a simple premise that provides a lot of fun along the way. Debuting in 1983 and being released under different titles such as Dynablaster and Eric and the Floaters, Bomberman has become an institution in party gaming. With most editions featuring 5 players, you can even include that unwanted extra who just tagged along for the free meal.

Each game contains the same basic formula. Your character walks around an overhead maze and drops a bomb, running away before it explodes, hoping the blast will hit the enemy. Power ups can be found that allow you to carry more bombs or increase the blast range. You can also pick up remote controlled bombs, boxing gloves that allow you to punch bombs away from you and more. Each successive game in the series adds more elements, though it never feels like it is a detriment to the core gameplay.

There are plenty of versions of Bomberman out there. Three were released for the PC Engine, while 5 made their way to the Super Famicom. A 10 player version of the game was released on the Sega Saturn. Since Hudsonsoft's acquisition by Konami there have been less releases, though Bomberman Super R was recently released for the Nintendo Switch, Playstation 4, Xbox One and Windows.



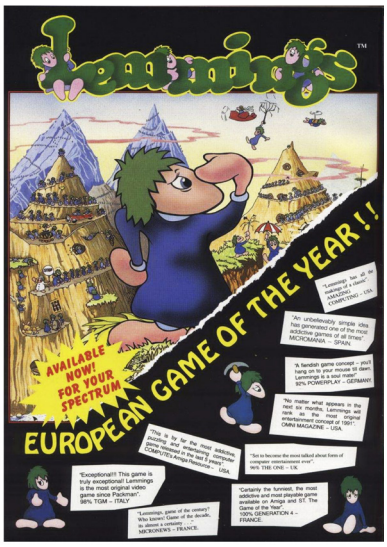




So, there are 10 amazing party games that will guarantee a good time. Do you have any recommendations? Let us know on the Paleotronic Magazine Facebook page.

Point & Click

My task, should I accept (and you did – Ed) was to write an article about Christmas Lemmings as a segue into Lemmings in general. The reason behind this, is simply to meet my brief for the Christmas / holiday season issue of Paleotronic, so naturally we want to keep this issue as Christmassy as possible.



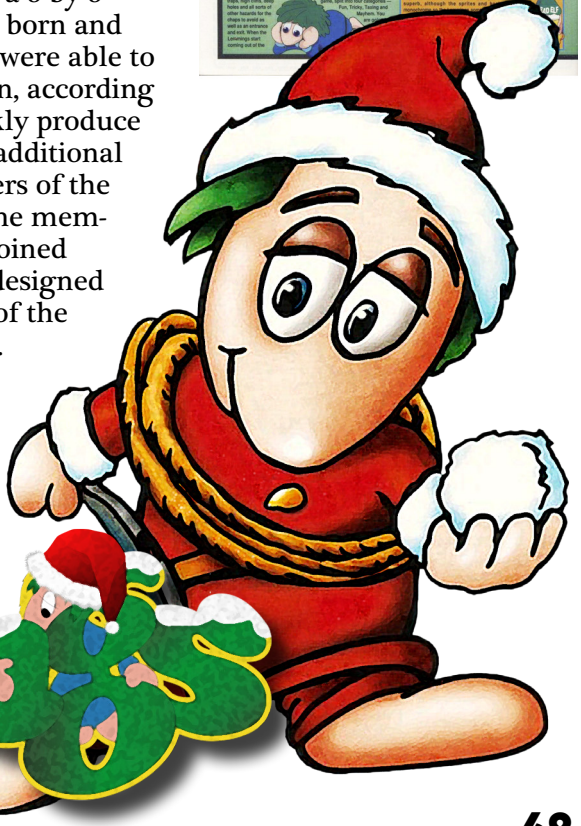
After researching as much as I possibly could about Lemmings, (no this is not a look at those small fury hamster like rodents found near the Arctic) I thought it was much better to start at the beginning of where it all began with Lemmings, the home computer video game, once you have read the origins of the story, you will be ready for the holiday / Christmas versions (yes there was more than one) of the game.

The year was 1992 when I first took a glimpse of what Lemmings, the computer game was all about. Little did I know the game had been released on the 16-Bit juggernaut, the Commodore Amiga, almost a year earlier. When it came to 16-Bit gaming, I was like Sargent Schultz from the 1965 American TV show, Hogan's Heroes - "I know nothing". As i reflect back, Lemmings was my wake up call. Not only did Lemmings change how I perceived the world of computer gaming, it was such an incredible success story that it changed so many people's lives and careers, hopefully in a positive way. Reading the warning label on the original released game box, you'd be thinking this game caused much greater negative chaos in people's lives, as developers and distributor of the game DMA Design and Pysgnosis stated "we are not responsible for: Loss of sanity, loss of hair and loss of sleep". Remembering my own experiences of playing it back in the day, I would say that's a fair call.



To find out why such a claim was made, let's take a look at the unconventional origins of the game. Initially DMA Design challenged its programmers to come up with a believable walking man sprite in 16 by 16 pixels as an animation demo on the PC ,for the sequel to the game Blood Money, called Walker. This occurred in August of 1989. What happened as a result of this particular challenge, the programming team were able to get a walking animated sprite into a 8 by 8 pixels form and from there the walking glimmering animation was born and came to life. A month later In late September of 1989, DMA Design were able to show a demo to Psygnosis. Various testing methods were undertaken, according to Wikipedia, DMA Design developer Mike Dailly "was able to quickly produce an animated graphic showing his creations moving endlessly, with additional graphical improvements made by Gary Timmons and other members of the DMA Design team to help remove the stiffness in the animation. One member, Russell Kay, observed that "There's a game in that!", and later coined the term "Lemmings" for these creations. Levels of the game were designed based on a Deluxe Paint interface, which allowed several members of the development team to design levels, resulting in hundreds of levels".

Well you know the rest (like me, no you probably don't - Ed), but to coin a phrase and to cut a very long story short, as the saying goes, and the rest is written in computer gaming history.





So, it's 1991 when Lemmings is first released to the world wide (internet-less) computer gaming community through the Commodore Amiga. 100 levels of puzzle solving craziness becomes an instant smash hit home computer game. Magazines are falling over themselves, doing cartwheels backwards with their reviews, some of the following reception demonstrates just how highly the game was thought of back in the day. Amiga Computing (May 1991) overall score 97%. The One magazine (Jan 1991) overall score 96%. Génération magazine (Feb 1991) overall score 100%. AUI magazine Vol 5, No 4 (Apr 1991) overall score 100%. Amiga Power (Dec 1991) 5 out of 5 and CU Amiga (Feb 1991) 94%. The overall scores are quite remarkable, because back in those times computer game magazines were very reluctant to give any game if it was any good a rating higher than 96% or 97%. That was the way it was, there was this unwritten rule by magazines that no game was perfect. Lemmings certainly made magazines rethink this rule.

This was just one game launch on one machine, what happened next was a mad rush for ports to every other popular system that still had an active buying market. I have read over and over in computer magazines over the years a quote along the lines of "all graphics and no gameplay does not make a great game". There is all sorts of variables that don't make a great game, but true, if the gameplay is uninteresting, lacks fun in what is required to perform the ultimate goal of the game, then more than likely you won't enjoy playing the game. In this era, home computer based puzzle games were really hitting their strides as a growing and financially successful genre. Home computer games from 1990 such as E-Motion, Klax, Pick N Pile and Puzznic were all receiving high acclaim. While those mentioned games were enjoyable and fun to play, they remained in a status quo puzzle gaming environment. When Lemmings comes along, such is the unique style and simplicity of the gameplay, it totally blows people's minds, destroying the way people play their puzzle video games quite possibly forever.

How did this happen ? Why was the gameplay so good ? And what the bloody hell was a Lemming? I mean i was reading about them in magazines everywhere, i was getting the loss of sanity, loss of hair and loss of sleep the developers had warned me of and i wasn't even playing the game yet (tutt, tutt, tutt – Ed).

It happened because the gameplay and playability of the game was just so fantastically simplistic it really couldn't fail to be so good (ok maybe if i did it i would probably have failed: yes most likely - Ed). If you are reading and don't know what was involved, the game was basically this: At the start of each level a trap door opens from the top of the screen, falling through it are a predetermined number of Lemmings, anthropomorphised to take on human form. The amount of Lemmings released changes as you progress further towards the 99th level (there is 100 as the levels start counting at level one). Levels have different status such as 'Fun', 'Tricky', 'Taxing' and 'Mayhem'. You can guess that the fun section would be the easiest of the puzzles to solve and mayhem would be diabolically hard puzzles to solve. The one and only objective in the game is to get a percentage amount of Lemmings safely to an exit door within a specified time limit. Within the game the player can

Article
by George
Bachaelor



provide different skill sets to Lemmings so they can perform jobs such as building ladders or digging through surfaces to get to another part of the screen, so that the Lemmings may eventually reach the exit door. The number of skills is always set at eight and the types are always the same for every level. But the number of times the player can assign one skill to a level varies in every level. It can even happen, that the player can't choose a skill at all. This makes solving some levels a real challenge and adds to the unpredictability and addictiveness of the gameplay.

Within a year of its release on the Amiga, the game had been ported over to systems such as the Amstrad CPC, Atari ST, Sinclair Spectrum, PC / DOS, SNES, 3DO, Acorn Archimedes, Apple IIgs, Apple Macintosh, CDTV, Commodore 64, NES, Sega Master System and Genesis, TurboGrafx-16, Philips CD-i and Sharp X68000. During an online interview by Alistair Wallis, on 21 December 2006, titled, "Playing Catch Up: GTA / Lemmings', on the Gamasutra website, developer Dave Jones stated that after porting the game to 20 systems, he stopped keeping count of how many different machines Lemmings had appeared on. Dave Jones, who is he you ask ? Dave later went on to develop Grand Theft Auto.

Usually, from what i had seen before Lemmings was released, ports from 16-Bit systems to other machines could be classified more on the side of being not so great, football game Kick Off is just one such example of how poor a conversion has been from 16 Bit to 8 Bit machines. Lemmings though, smashed through this curse in quite the most emphatic fashion. My home computer of choice, the Amstrad CPC 6128 received a most incredible game conversion in 1992, such was the game's likeness to the original Lemmings on the Commodore Amiga, Amstrad Action magazine of July 1992, gave it an overall score of 97%, the second highest rated game in the history of that publication.

By 1996, just 5 years after its original release, Lemmings was considered to be the 8th greatest computer game of all time and only 2nd to Tetris in the puzzle gaming genre by Next Generation magazine. Estimates suggest the game sold around 20 million copies between all of its various ports. The popularity of the game also led to the creation of expansion packs, several sequels, remakes and spin-offs, as well as inspiring similar games. This is where we discuss the Christmas theme of Lemmings in much more detail.

So, you're a developer and you have a hit game, played and loved by undoubtedly hundreds of thousands of people, if not millions, but what do you do next ? You make another game of course. That's exactly what DMA Design and Psygnosis did. Lemmings the video game was so popular, the market for releasing follow ups was a no brainer. The interesting thing that DMA Design and Psygnosis did at the end of 1991, is release Lemmings with a Christmas / Holiday theme. Strange if you consider that













many Christmas related computer games that had come before it, were failures, perhaps not at the cash register but generally more so when you got them home from the store and played them, magazines ratings were generally low as well.

The Christmas themed Lemmings is more than just one more game. In a way, it is its own standalone series or franchise. The original Lemmings game was not required to play it. Each year between 1991 and 1994, around the Christmas holiday season, DMA Design and Psygnosis gave gamers of varying systems, mainly Commodore Amiga and PC systems, a new opportunity to play original levels of the Lemmings game. The 1991 and 1992 versions were free being giving away to readers of popular magazines and classified as demo games. The 1993 and 1994 versions were commercial releases. Later, however the 1993 version was given away free with the 1994 commercial release of the game.

The differences in the Christmas Lemmings game series can be explained below:

1991 version: Four levels to play for free, consisting of two worlds. Two levels as Christmas levels and two levels came from the previously released Oh No! More Lemmings!

1992 version: Four levels to play for free all with a Christmas atmosphere.

1993 version: 32 levels to play as a commercial release, divided into two worlds called “Flurry” and “Blitz”. Both have 16 levels each.

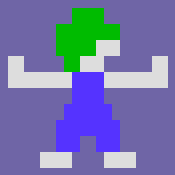
1994 version: 32 levels to play, as a commercial release, divided into two worlds called “Frost” and “Hail”. Both have 16 levels each.

Lemmings Skill Sets



Basher

To make horizontal corridors, give a lemming the basher skill. He will bash the way he is facing until he reaches the other end of the obstacle he is bashing. Not all terrain is penetrable, this terrain will make the lemmings stop bashing.



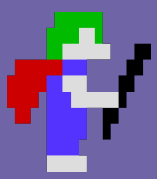
Blocker

To turn lemmings around, make one lemming a blocker. This can be used to trap lemmings between a wall and a blocker or between two blockers. A blocker can be released by removing the ground underneath him, or you can explode the lemming. In the latter, the lemming keeps blocking lemmings until he explodes.



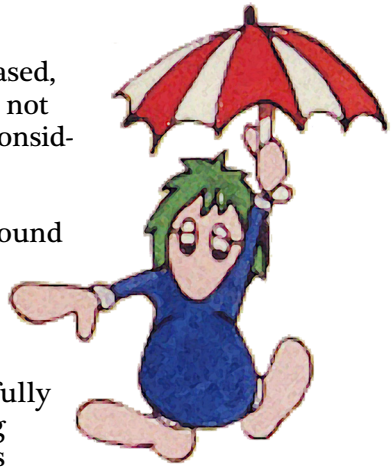
Bomber

Sometimes you need to remove a wall and you only can make lemmings an exploder. The lemming dies in the explosion, surrounding lemmings are not affected but a small crater is left after the explosion. When a lemming is given the bomber skill, a countdown number appears above his head, counting down to 1 starting with 5.



Builder

Sign a lemming to be builder and he will build a 12-step diagonal upwards staircase. If the lemming hits a wall while building, he stops and walks back. Should the lemming hit a blocker, he turns around and continues building.



In late 1995 , a version of 3D Lemmings called 3D Lemmings Winterland was released, which included an expansion with four winter-themed levels. Although they were not purely Christmas-themed and followed the 3D Lemmings gameplay, it could be considered as the last chapter in the Christmas Lemmings series.

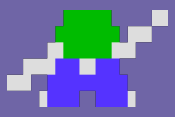
Instead of the green-haired, blue robed lemmings walking about ordinary background screens from the original game, all the Lemmings were dressed in typical red Christmas outfits, with background screens predominantly illustrated with gorgeous looking snowy Christmas related landscapes. I have been playing the games recently, my thoughts are that the developers couldn't have executed the game more brilliantly. Heavily winter snow covered environments filled with joyfully bouncing snowmen, hanging Christmas lights everywhere and large overhanging icicles, give this game a real sense of Christmas spirit that many Christmas games before it have and had lacked. Often developers of the time would try and change a winning formula with sequels / expansion packs that altered the gameplay and style of the original. One look at what Ocean Software did with the release of Renegade III in 1989 is an unfortunate example of many during this time. For DMA Design and Psygnosis to stick with a winning formula, allowing the game to be played as it was meant to be played – saving "xx" amount of Lemmings on a particular screen, using Lemmings to find a way home by giving them a special skill set or function to perform such as the ability to build stairs, dig tunnels or stop other lemmings is absolutely genius. If it ain't broke, why fix it! The Christmas themed Lemmings games turned out to be just as enjoyable as the original Lemmings game.

It may have started out as being a free, special thank you present to Lemmings fans all over the world for making Lemmings and Oh No! More Lemmings massive financial and commercial video game success stories, but i think gaming fans also need to thank DMA Design and Psygnosis for sharing their incredible video gaming invention with the world. Lemmings is as classic a retro computer game you could come across, that has stood the test of time since its release. Somehow Christmas Lemmings, (thats all of them in the Christmas / holiday season games) makes the original Lemmings game even better. It's Christmas senses overload for all the right reasons. Each of the Christmas graphical designs for each of the levels is pure Christmas magic. Add the jolly Christmas tunes and it's just about the best Christmas themed game you could play.



Climber

When given to a lemming, he can climb vertical walls. If the lemming encounters some overhang, the lemming falls down and walks back again. He can die when he falls down. The lemming keeps this skill until the level ends.



Digger

A vertical shaft can be made with a digger. When a lemming is a digger, he digs down until he reaches the bottom side off the floor or platform. And again, not all terrain is penetrable.



Floater

Any lemming that has been made a floater, will float in the air and can now fall great heights. The lemming keeps this skill until the level ends.



Miner

A miner makes diagonal downwards corridors the way he is facing. When the lemmings mined through the floor or platform, he stops mining. Again, not all terrain is penetrable.

Note: A lemmings who has been made a floater and a climber is known as an athlete.

A lemming performing a skill can be stopped by giving the lemming another skill, accept for the blocker. The only way to stop a blocker from blocking is to destroy him or to remove the ground he's standing on.



The first time I saw MIDI Maze was on Boxing Day, 1987.

My family was visiting a local electronics retailer so that my brother and I could spend the cash we were given by relatives for Christmas (I was hoping to buy a new game cartridge for my family's Atari XE) but while browsing I came upon a row of Atari ST computers occupied by people all seemingly playing the same game.

The game itself didn't look that amazing - the players roamed around a Pac Man-style maze, shooting floating 'happy face' balls –although the fluid motion of movement was mildly intriguing. But the real shock happened when I realised that all of these people weren't each playing this game in isolation – they were playing it against each other.

This tepid 3D maze game all of a sudden took on an entirely new dimension. 'What is this voodoo,' I asked myself, 'how does it work?'

I noticed each of the computers was connected to each other by two black cables, one leading to the next computer, and one leading to the previous. The cables plugged into round 'DIN' sockets, each with five pins, and with a musical note icon beneath them, one with an arrow pointing toward the note, and one pointing away.

Now, in 1987 I had never heard of MIDI. I had heard of the Atari ST but did not know it had MIDI ports, which allowed it to connect to electronic musical instruments such as keyboards. So the mystery only deepened – what were the musical note ports for and how did they allow for this 'ring network' connection between game instances to operate?

Thankfully an employee of the retailer noticed my confusion and was able to explain: MIDI allows for up to 16 musical instruments to send data, each on its own 'channel' that can then be read by other instruments. But these 'instruments' can also be recording devices such as sequencers, or computers.

So in the case of MIDI Maze, each computer was sending data on its specific channel relating to its player's location and firing status, while reading the other channels to find out what other players were doing and update the state of the game map.

Mystery solved! My curiosity satisfied, I bought my game and went home.

An Xmas Memory by Melody Ayres-Griffiths

The Atari ST had built-in MIDI ports intended to be used for music production, but MIDI Maze's developers realised they could also be leveraged as a method for rudimentary networking.



While not really practical for larger bandwidth applications such as file transfers, the MIDI connection was timely enough to communicate the locations of each player and if they had fired.



REVIEWS

MASTERS AND SLAVES

MIDI MAZE

Hybrid Arts

In the 1970s the in-thing was to wear a Smiley Face badge encouraging all and sundry to 'have a nice day' – quite sickening really. Now American software house **Hybrid Arts** have incorporated Smileys in a game with a musical theme. Written by **Xanith F/X**, authors of many graphic demos, it is their first game to be published commercially. Although *Midi Maze* can be played alone, by linking up a maximum of 16 Atari STs through their Midi ports, up to 16 players can compete in the battle.

The game takes place in a 3-D maze, displayed in first-person perspective where the solo player takes control of a Smiley in conflict with up to 16 other Smileys. The musical link is rather tenuous as each Smiley represents a note attempting to reach the top of the music score seen top right-hand of the screen.

The action is displayed in a relatively small window, the objective being to eliminate the other Smileys by lining each up in your sights and scoring three direct hits. When ten Smileys have been busted the round ends. Thus *Midi Maze* is an incredibly simple game, but the addition of masses of options give its playability factor seemingly endless possibilities . . .

Before a round begins a mouse-controlled option screen is displayed, from this players select the power of their Smileys (speed of movement, the length of time the Smiley takes to recover from a hit and the number of lives). In addition, the viciousness of opposing Smileys can be chosen from three settings: Dumb Drones (do nothing apart from wander around the maze waiting to be shot), Plain Dumb Drones (wander around the maze but fire if they come in contact with you), and Not So Dumb Drones who actively seek you out in an attempt to destroy you.

Midi Maze is an amusing game for one player, but with a couple of STs linked together it becomes more challenging.

MIDI MAD!

Using the ST Midi connection, up to 16 machines can be linked together, enabling players to be in direct control of a Smiley each, but you do need a Midi-cable for each ST. By forming a Midi-Ring using the Mid-In and Out ports, one machine becomes the master while the others remain slaves. The master machine player is the only one who can employ the options – the slaves do nothing more than play the game.

Another facility the Midi connection offers is that of Midi-CAM. Midi-CAM allows an ST, which is not actually being used to play the game, to provide a view of the action to an audience. Using this the audience can either watch the action from an overhead point of view, or switch between individual players' displays.

Obviously, *Midi Maze* is much more enjoyable played this way as long as you have Midi-cables (costing around £4.50 each), but whether these options make the very high £35 price tag worthwhile for individual players is a matter open to question.

ATARI ST

Diskette: £34.95

Considering its musical title it's surprising that there is a lack of music and decent sound FX. All you get is bells and whistles produced from firing and being hit – a jaunty sound track would have created much more enthusiasm for the gameplay. Midi Maze, **though simple, is implemented well, with very smooth animation of maze walls Smileys who move in and out of perspective convincingly. However, unless played in conjunction with other people, the game quickly loses its attraction, and its price for the single user is certainly a detraction.**

OVERALL 62%

" . . . an amusing game for one player, with a couple of STs linked together it becomes more challenging."

Go to the top of the stave: Loony Tunes with Smileys – ST screen

TGM TX 005: 4-88 39/108







MIDI Maze was one of the earliest 'first-person shooters', a 3D game shown from the perspective of the player the aim of which is to 'shoot' other players and NPCs, represented by 'avatars' inside the game world. It is also likely the first example of what modern players would consider 'deathmatch' combat. More next issue!



PLUG AND PLAY

Named for Deutsches Institut für Normun, the standards organisation that created it, the DIN plug was originally used to make audio equipment easier to connect, but found its way into personal computers, used for power supply connectors, disk drive cables, external keyboards and MIDI.

Pixel

Christmas themed video games have always been a category of computer and console video gaming that has bewildered me. Often they have been very poor adaptations of a holiday season meant to bring about fond memories and goodwill to your fellow human beings. The bewilderment I have comes from Christmas based games just not being good games to play and not invoking any fond Christmas or holiday memories.

George Bachaelor

10



NUMBER 10

The Official Father Christmas (Amstrad, Speccy, C64)

As a teenager i was the astute 8-Bit game player. I had played every game going, so i had thought. Little did i know creeping into video games magazines were an influx of Christmas related game reviews. Each year these reviews would increase and each year the reviews of Christmas related games would receive very poor ratings. I would read them wondering why oh why would software houses even bother, i mean afterall i didn't bother playing them. Alternative Software must have thought Christmas related games was a winning game category and tried to make things more official in that regard by releasing The Official Father Xmas in 1989.

Using the official word probably fooled quite a few gamers to buy it, making a game "official" did nothing to improve this gaming experience as it's a shocker of a Christmas themed game on all 8-Bit systems. The gameplay is ridiculous and frustrating as hell. As Santa Claus, you walk around in circles, travelling up and down ladders looking for broken parts to your sleigh only to have Santa's pesky elves steal them from you if you get touched by one of them which means you need to go back searching Santa's workshop to find the missing parts again. Thats level one. The other levels are just as boring where you try to catch falling presents and then fly through the air dropping presents on roof tops. Overall it's a sad Christmas game to be playing.

It makes the top 10 purley to mention how crap this game was then and many more Christmas games that came before it were for 8-Bit gaming enthusiasts back in the day.

Playas

This top 10 list is predominantly a list of infamy, filled mainly of video game turkeys and a few absolutely outstanding Christmas related video games that really do know how to make a Christmas based game fun, enjoyable and evoke those wonderful Christmas memories of years gone by.



9 Reindeer Games

NUMBER 9

Xmas 'Roids – Thalamus, 1987 (C64)

Whoever thought of making an Asteroids clone with a Christmas theme is totally bonkers. In 1987, Thalamus published such a game, so they must be the ones who are bonkers for doing so. Instead of a spacecraft shooting at asteroids, you play a green Christmas shaped tree blasting away at, wait for it, you guessed it - xmas related items. These items are Christmas tree decorations, well only one decoration and thats a Christmas tree bauble. You shoot it once it changes colour from brown (or is that red?) to purple, shoot it again it changes to blue. Hit it one more time it gets blown away.

The other Christmas related object in the game is a brown Christmas pudding. It just buzzes around the screen being annoying until you shoot it out of the sky. The gameplay is exactly the same as Asteroids but nowhere near as good or as enjoyable. You are only able to fire two shots at a time and unlike Asteroids there is no cool explosions or sound effects just some very ordinary sounds to say the least. Its quite funny seeing the Christmas tree zoom across the screen in Asteroid like guise against a very cool snow falling background screen. However the references to Christmas are poorly executed, just how does a xmas tree shoot bullets or is it snowballs, i can't tell ? It makes no logic at all. How do puddings fly through the air without some form of wings to fly? Ah, but that's the magic of Christmas.

It makes my top 10 list as a demonstration of just how unfortunately inaccurate and bizzare 8-Bit gaming was back in the day.

NUMBER 8

Special Delivery Santa's Christmas Chaos - Atari 8-bit, C64

I wanted to get an obscure Christmas themed game into the list (you've done pretty damn fine so far – Ed.) and i think this Atari, 8-Bit game, Special Delivery: Santa's Christmas Chaos, fits the bill quite nicely. On opening credits Jingle bells plays but after that the Christmas related tunes stop and the sound effects during the game are very poor. As you fly through the air scrolling left to right in Santa's sleigh, weird plot alert - there's no reindeer attached. I knew Santa had magical powers, but reindeer are needed to fly through the air, without the reindeer it lacks the Christmas spirit. Also weird is that presents fall from the sky dropped by some form of symbol that's meant to be an angel which Santa has to scramble his reindeer-less sleigh around the screen to catch before they hit the ground.

Santa encounters an enemy in the form of the same shaped symbol as the angel but this time it's a different colour to identify it as a demon, who drops brown coloured presents which are to be avoided as collecting one will take away the real presents in Santa's sleigh. Once you have collected presents you land on rooftops where you climb down chimneys avoiding all the flames shooting up towards you. Here you must enter the house and make your way to the Christmas tree and drop the presents without waking anyone up. If you are successful then back to fly Santa's sleigh only this time the houses are too small to stop at so you must drop the presents into the chimney instead.



It offers some variety in gameplay as well as a half decent account of Christmas related themes but why is there grey mountains and not Christmas trees as the background screen ? Worth checking out for nostalgic reasons.

NUMBER 7

Duke Nukem: Nuclear Winter. Developer: Simply Silly Software. Publisher: WizardWorks. (1997)

"What are you waiting for, Christmas ? (I am waiting for a half decent Christmas game! – Ed.)



Why would Duke Nukem want to save christmas ? Ok, so, in the North Pole, Santa Claus i mean Claws (as it is in the game) has been captured and brainwashed by the same aliens that Duke defeated last time; but Christmas and Santa is all about goodwill to each other and Duke as Macho as they come, couldn't care less about saving Christmas and the game shows exactly that.

Developers, Simply Silly Software showcase just how simply silly they are in this game. Other than some ordinary Christmas tunes playing, there is very little in the way of Christmas related themed objects and graphics. If there was a demonstration of Duke not caring for Christmas, shooting the heads off innocent bystanders singing Christmas carols on the street, is it.

The game may be tongue in cheek and i'm all for that but it's just not executed appropriately here. The whole game and setting feels way out of place. While levels in the game are snowy themed including new Christmas levels such as the headquarters of Santa Claws and a toy factory as well as introducing new Christmas enemies such as snow men that throw snowballs at the player, and female elves that use dual sub-machine guns, the game has virtually no Christmas spirit.

Anything Christmas themed in this game adds absolutely nothing to make the game feel or play anything different from what is essentially a 3D blast away at anything game.

NUMBER 6

Daze Before Christmas. Funcom and Sunsoft Studios. (Sega Megadrive and SNES, 1994)

Developed by Norwegian video game development company, Funcom and originally released by Sunsoft onto the Sega Mega Drive in 1994 exclusively in Australia. A version was also released for the Super NES both in Europe and Australia and a North American release was planned, however it was unfortunately canceled. It is one of the last games to be released by Sunsoft's U.S. division and as such is quite a rare game to find in its original release box. An evil snowman has imprisoned Santa's elves and reindeer. Playing as Santa, within 24 days you must save Christmas in a 2D exploratory platformer. There is an option of 1 or 2 players so a little different from most other Christmas themed games.

Your main goal is to avoid enemies such as giant rats and evil toys while unwrapping and collecting presents with either good or bad results. There are boss battles which are pretty straight forward, once you have killed them off and collected the presents they release you fly in Santa's sleigh dropping Christmas presents in chimneys around the world with backgrounds changing to represent different parts of the world. One of the most remarkable features of the game is Santa's ability to turn into his evil twin, "Anti-Claus", which is quite easily performed by drinking a cup of coffee. While fun, Santa's transformation into a blue-suited, devilish looking, invincible version of himself only lasts for 10 seconds.



Graphically its impressive on the Christmas related theme but overall it's not anything unique or really exciting. It's gameplay is quite plain and much like many platformers of its type that you have played a million times before. If you are in the need of some Christmas spirit video gaming, this 90's run and jump platformer will help you out as the colours and background screens are much more Christmassy than many other games Christmas themed games. Well worth having a crack when in need of some Christmas holiday gaming.



NUMBER 5

Elf Bowling (Nvision Design, PC 1999)

Elf bowling makes this list because 1) it's probably the only sporting Christmas game i have seen while researching this Christmas article and 2) due to its infamy of being a game that was seen as a chain email hoax which claimed that Elf Bowling was a virus and would wreak havoc to computers all around the world on Christmas day in 1999. Remember this was at a time when the whole world was freaked out by the consequences of the Y2K bug.

With this infamy came probably the best free word of mouth marketing and advertising any video game has ever had, such was the success of this viral marketing it would catapult Elf Bowling to the status of world wide phenomenon, boasting 7.6 million PC players by December of 2000 (U.S. Based figures i would imagine). Due to its popularity mainstream United States news media reported at the time, if you were playing PC based games, you were playing Doom, Quake and Elf Bowling. Being listed with two legends of video gaming history illustrates just how popular the game was back in the day.

What about the game, what did you have to do and why was it being played on so many PC's ? Firstly the game was free, it was dead simple to play and the gameplay was filled with mayhem - more on that a little latter. I mention above dead simple to play and it is. You play Santa throwing a bowling ball at your disgruntled elves lined up as 10 pins at the end of a bowling lane. The graphics were very much in the Christmas theme, all you had to do was press the spacebar when the direction on screen matched where you wanted the ball to travel. While you play the game mayhem occurs in the form of elves mocking you by showing you their naked backsides. Other things occur such as a reindeer and frog appear on the bowling lane which re directs the ball movement and the pin setter rips of an elf's head.

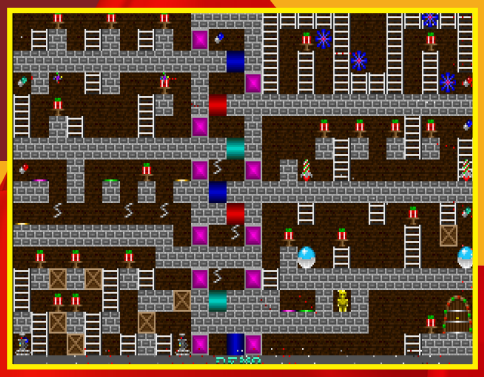
All this craziness and the appeal of a little bit of naughtiness seemed to insert enough unpredictability that enthralled people at the time who were playing it. This unpredictability in a flash game meant people were glued to their seats to see what could possibly happen next if you kept on playing, as well as sharing it with their friends everywhere. The game went on to spawn countless new versions and sequels of unpredictable mayhem with Christmas elves after its initial release.

NUMBER 4

Jetpack Christmas Special! - DOS PC (Adam Pederson / Adept Software, 1993)

Jetpack a video game cult classic platformer where you make your away around a single screen, climbing and falling down ladders, avoiding baddies, collecting coins and other objects such as emeralds. When you have collected enough items you can leave via an exit door and onto the next and progressively harder levels. The Christmas version in 1993 was a free shareware affair, sporting Santa wearing an L1069-E jet pack specifically made for human flight.

While the game is essentially Jet Pack with a Christmas skin, there is no relation to the Jetpac and Jetman games by Ultimate Play The Game. The Christmas version seems to be one game in the jet Pack series of add ons that is not as popular as many other packs available for the Jetpack franchise. Jet Pack Christmas Special is a standalone, new game, boasting 10 levels of which you have to collect coins, avoid enemies and gather all the Christmas goodies and make your way to the exit door once the level is completed. If you don't have any fuel you can't fly, only jump and walk around until you load up your jet pack with fuel. Within the game features include a phase shifter weapon to move blocks, there are teleporters to transport you around the screen as well as barriers deactivated when you press a lever. As with the original Jet Pack the Christmas version has a level editor to create your own designed screens but you can only load them in the full version of Jet Pack.



As Christmas games go this beautifully captures the old school gaming charm of Lode Runner and Jet Pack from the 1980s in a Christmas themed platformer that is fun to play and one of the better Christmas themed games released.

NUMBER 3

Nights Into Dreams: Christmas Nights (Sega Saturn, 1996)



While only a one level demo, this game was made by the Sonic Team developers at their prime and when released it was given away for free with games magazines. Christmas Nights on the Sega Saturn, is as magical as a Christmas themed video game you will ever play. If this had been a full game, then it quite possibly would be vying for the number one ranking of a Christmas themed video game of all time – that's just how good this game is. The reference to Christmas is just oozing that feel good memory of when i was a child and would wake up early on Christmas day, sitting in front of my fake Christmas tree, looking at all the presents, watching all the Christmas related cartoons on tv waiting for my family to wake up and open their Christmas presents up.

The game really does evoke those kind of warm emotions that only you have experienced. Set in a Sonic The Hedgehog engine, you are completely blown away by the Christmas themed music, the Christmas themed graphics and its gorgeous multi directional gameplay to gain as many points as you can by collecting all the Christmas related decorations and presents. Rack up enough points you get to play a bonus stage but its the same screen just collecting more points. Fill up the points bar to full green which can take some time and you challenge a end of level boss dragon decked out in Christmas reds and greens. The fluidity and speed of the gameplay set behind the backdrop of a snowy covered landscape, with gorgeous to the ear Christmas tunes playing throughout is what makes this game so enthralling and mesmerizing to play. A definite must play.

NUMBER 2

Christmas Lemmings (Amiga, 1993)

First released in 1991 and again in 1992 as a free, four level demo, it was a special thank you present to fans for making Lemmings and Oh No! More Lemmings, a massive financial and commercial video game success story. In 1993 a full 32 level commercial game was released developed by DMA Design and published by Psygnosis. It was called Christmas Lemmings in the U.K. and Holiday Lemmings in the U.S. Essentially it is the same game as the original Lemmings, where you make decisions for the Lemmings to be able to find the exit to the level by appointing them with the required skill set to solve each level's puzzle. The main difference from the original game is the landscapes are heavily snowy filled backgrounds. It's one of the most gorgeous looking Christmas themed games of all time, even the

Lemmings are cuteness personified dressed in their red Santa suits. Lemmings is a classic retro game that has stood the test of time, somehow Christmas Lemmings makes the game even better, it's Christmas senses overload for all the right reasons. The Christmas graphical design for each level is pure Christmas magic, add the Christmas tunes and it's just about the best Christmas themed game you could play.



Check out my (very comprehensive - Ed.) article on Lemmings elsewhere in this issue.

NUMBER 1

Jazz Jackrabbit: Holiday Hare (PC/DOS) Xmas Edition 1994 / 1995, Epic MegaGames

Jazz Jackrabbit is credited historically as one of the very first games to bring the very fluid multi directional side scrolling platformer genre loved on gaming consoles onto PC based machines. It was that leap that started to make PC gaming cool in the 1990's. Quite clearly it is a Sonic The Hedgehog inspired game. Jazz's impact on the PC was immediate, winning PC Magazine's Arcade Game Of The Year title in 1995.



Developer Epic games made both the 1994 and 1995 Christmas Jazz Jackrabbit Holiday Hare games as standalone, free, shareware releases, using the original Jazz Jackrabbit engine. The holiday version is filled with new original levels in a magical wintry Christmas setting. The 1994 version has more of a Christmas backdrop in comparison to the 1995 version. What can you say about a game that is totally awesome to play.

The action is smooth and very fast, its total addiction right from the get go in a platform game. Magnificent graphics, awesome powerful weapons, vaporizing enemies in all directions, new replacement enemies from the original game keep it relevant to a holiday / Christmas theme, my eyes still pop out at how amazing this game is visually .

While both games maybe short on levels, there is just so much fun and enjoyment of taking the persona of Jazz Jackrabbit roaming around the different worlds and one secret bonus stage, so much so that you just can't put it down.

What's really impressive about the Christmas theme in this game is the outstanding Christmas medley soundtrack in both versions - including a rap version of Little Drummer Boy and a haunting rendition of Carol The Bells. If the Christmas based music doesn't get you in the Christmas spirit I don't think anything else could, it's a Christmas cracker!

Jazz Jackrabbit is quite possibly the most Epic Christmas themed video game ever.



Slot car racing tracks were a common 1980s toy. Cars have a tab underneath which (mostly) hold them into the slot, and two metal tracks provide power (level controlled by the player) to drive the wheels. Too much power on the corners could cause the car to fly off the track!



In 1986 toy company Worlds of Wonder released Lazer Tag, a home laser tag game (itself only first played two years earlier). However, in 1987 police mistook a Lazer Tag player for holding a real gun and shot and killed him! Worlds of Wonder's stock price crashed and the company went out of business in 1988.



1988's Starting Lineup electronic baseball used cartridges containing statistics of real teams of real players that could be pitted against each other. Players could play against the computer or another human player. And it talked!

Simon was an electronic version of the children's game 'Simon Says' co-invented by Odyssey creator Ralph Baer. The game plays a series of musical tones with accompanying flashing lights under each pad, and players must repeat it.

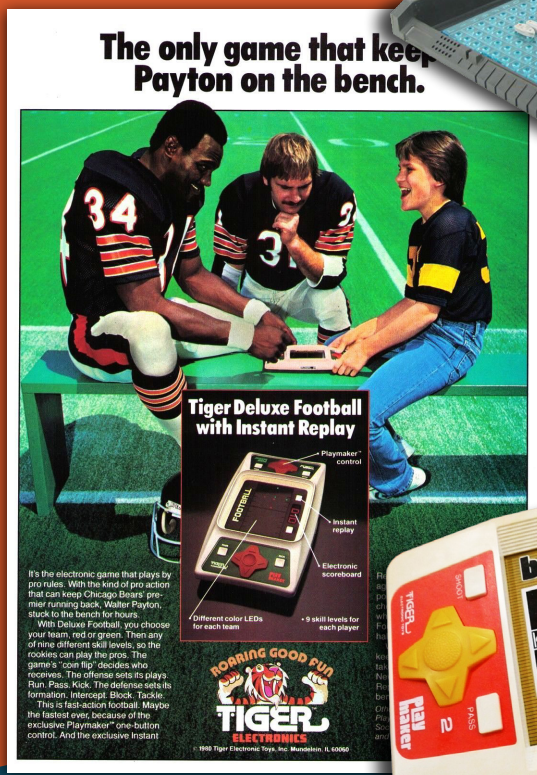


PLAYING WITH FRIENDS...

The TOY STORE under the TREE



Battleship started out as as a non-electronic board game but people often cheated, slyly moving their ships during game play and changing it from a guessing game to one of strategy, where you caught the other player out by eliminating any space they could hide their larger ships. The electronic version ensured players couldn't cheat.





Founded in 1978, Tiger Electronics made a number of handheld games, initially LED-based sports games like the one pictured below, but later Tiger became famous for its LCD-based adaptations of popular arcade games including Double Dragon, Duke Nukem and Ninja Gaiden. But the games were usually terrible, the mechanics nothing like the arcade title on which they were based. However, they were cheap!





The Connecticut Leather Company (aka Coleco) wasn't just known for the Colecovision and the Adam, its first venture into the game business was a series of LED-based handheld games, including sports games such as those pictured and arcade games they had licensed for the Colecovision such as Donkey Kong, Pac Man and Frogger. Unlike the Tiger-licensed games, Coleco's stayed true to the originals, and were actually pretty good!





However, as the 1990s wore on and the price of handheld consoles such as the Nintendo Gameboy and Sega Game Gear came down, single-title handheld games began to lose their appeal amongst more serious electronic gamers. But they remained as cheaper alternatives for those parents and children with more limited budgets.



So Santa gave you an Altair for Christmas (lucky you) but you have absolutely no idea what to do with it! There's no Internet to ask (and even if there was you have no computer with which to ask it.) So how do you get help with your new toy? You could try tracking down your local users' group...



INTERCONNECTIONS

User Group News

New ACE Logo for ATARI Users' Groups

by Earl Rice

WELCOME TO INTERCONNECTIONS! This is the users group corner of ATARI CONNECTION. While users' groups are mostly local folks sharing what they know about their ATARI Computers, many groups' contributions become known far and wide. Quite a few of our registered groups refer to themselves as Atari Computer Enthusiasts (ACE), a name truly justified by their accomplishments. In the past year, Atari Computer Enthusiasts have been responsible for setting up a computer-wing in the Tulsa Public Library, helping out the Oregon Museum of Science and Industry with their computer display, helping Atari attend the US Festival, providing shopping malls around the country with a gift selection program, setting up electronic bulletin board systems all over the country, turning out about a hundred independent newsletters every month, teaching courses in BASIC, PILOT, FORTH and assembly language programming, hosting community computer fairs, and writing articles for computer magazines. You name it, and if it can be done with an ATARI Home Computer, these ambitious people are doing it! All this by local, independent groups. Imagine what would happen if they all got together on a project!

Among the most exciting possibilities in home computing are those presented by telecommunications systems . . . systems that enable one computer to "talk" to another by telephone. Atari Computer Enthusiasts all over the country now have software to allow them to operate electronic Bulletin Board Systems (BBS). These systems allow anyone with an ATARI Computer and the Communicator kit to dial in and get local club news or have access to the local club library. The Users' Group Support Program at Atari, Inc. provides each registered group with the software necessary to set up its own BBS. The BBS software is the work of the Michigan Atari Computer Enthusiasts (MACE). Rumors abound that they are working on a way to make all these MACE BBS systems form a network for sharing information on a larger scale! We hope they're true! Such a system would certainly increase the contact possible among our users' groups. The possibilities arising from that are endless.

We have set up a BBS of our own here at Atari for the use of Users' Group officers in the hope that it might help to stimulate more exciting group projects. We've also come up with an Atari Computer Enthusiasts logo for any ACE group to use. That's it above this column. You'll see it on Users' Group support publications, videotapes, and materials designed to promote local groups. Registered groups even have ACE stationery to use for official communications! It's our way of supporting the growing family of Atari Computer Enthusiasts around the world!

If you would like to meet other people who own ATARI Home Computers to learn from and share what you know, the customer support people at Atari have a list of all the users' groups who have contacted us and can tell you how to reach the group nearest you. And if there's no group near you, we'll be happy to help you start one!

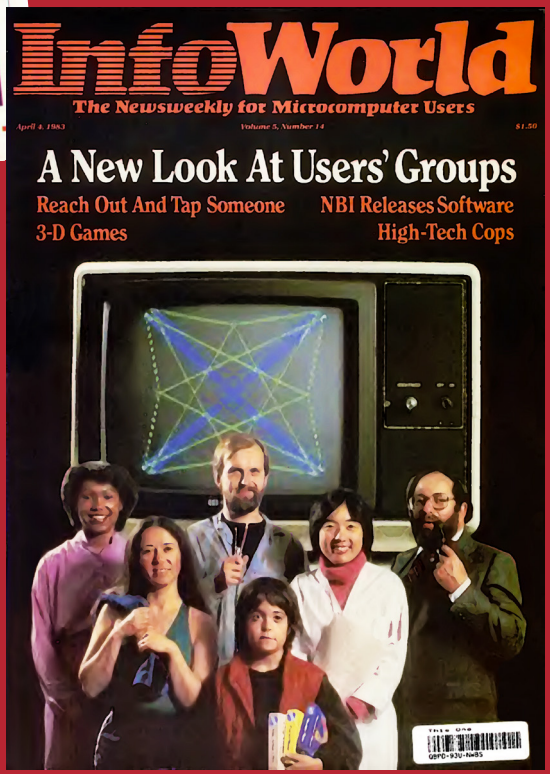
Alamo Users' Group Meeting in Alamo, Texas.

12 ATARI CONNECTION

A mention in a magazine could boost your group's numbers overnight!



Magazines and newsletters were connon ways of attempting to 'get the word out' to prospective new members and keep existing ones apprised about upcoming meetings and their contents.



Users' groups were just that: groups of users of particular computer platforms (e.g. Atari, Commodore etc.) who got together to exchange information about them. Some members were more computer-savvy, and helped other members who weren't learn how to use their computers to perform popular tasks such as word processing, print software such as The Print Shop, recipe databases and so forth.

These groups met monthly or sometimes weekly, and at each meeting a member (or two) would usually give a talk on a particular subject, that subject often becoming the theme of the rest of the meeting.

(This is still the format used by camera clubs that continue to operate today!)

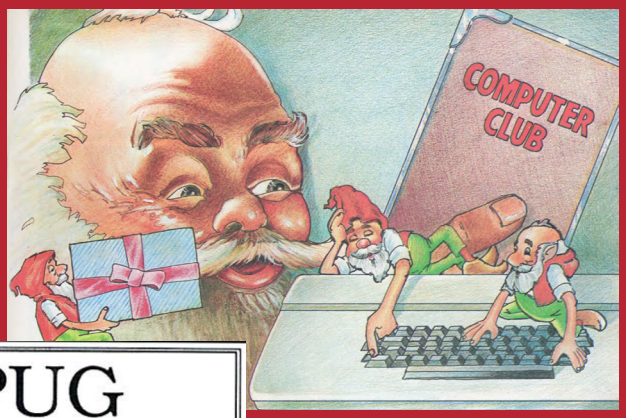
In the late 1970s and early 1980s there weren't many computer books published and many community libraries wouldn't have yet acquired them in any case, and so the local users' group would likely have been the only place you could have your questions about your computer answered.

They were also a great source of information about local bulletin-board systems (and their phone numbers!), and someplace you could trade public-domain software.

The biggest problem a users' group faced was getting word out about their existence! This effort usually meant sticking up posters (often made by programs like The Print Shop) in local computer shops, at the public library and the supermarket, containing the phone number of a group member comfortable with receiving calls from random people who often didn't want to wait for the meeting and demanded immediate technical support. It was not a job for the short-tempered or impatient!

And on that last point: not everyone stuck to public-domain software. In fact, members of many users' groups traded commercial software (unprotected or cracked) with group organisers turning a blind-eye to the practice. This made users' groups a large source of piracy, as members often pled poverty and other members were eager to help.

In their defense, however, commercial software (particularly 'business software' such as word processors) was expensive, often upwards of $100 in an era where that could feed a family of four for several weeks. But there were frequently public domain alternatives, and this rationalisation is questionable, but pervasive in that time period when ethical arguments were also being had over topics such as taping television programs or copying educational video cassettes. Those arguments are of course still going on, but the price of software has dramatically come down in recent years.



Some users' groups required membership fees to pay for venue rentals and newsletter printing costs, while others used free venues such as the local library and did't charge for attendance, but sometimes sold copies of public-domain software .


Join TPUG
The original Commodore computer club
Thousands of disks of PD Software
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VIC • PET • Amiga • MS-DOS
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Willowdale, Ontario, Canada M2N 6M2
Catalogs $1 - Specify computer model !


The Power of User's Groups

More than just high-tech coffee klatches, they're the best way to get straight talk on using your computer

The Capital PC User's Group, over 2500 members strong and growing.

Photograph by Kay Chernush

December 1984 Popular Computing 95

Speaking of attendance, depending on where you lived your group might have dozens of members or less than ten. But while it might seem like there's strength in numbers, you were more likely to get (and keep) the attention of one of the more trechnically-savvy members of your group if there was less competition from other novices – and big groups had plenty of those!

But computers were not the only subject to have users' groups! In the Time Before the Internet, people used to get together to discuss all sorts of interests. For example, Amateur and CB radio enthusiasts also had clubs of their own, where exchanges of knowledge on the latest regulations and equipment occurred. Motoring, photography, fishing – all of these had clubs, and many still do, in spite of (or to spite) the Internet.

And computer users' groups have started to mount a comeback, with recent years seeing vintage computing groups appear in various cities around the globe, dedicated to specific systems or just to retrocomputing in general, allowing new collectors of vintage computers to get assistance with troubleshooting and repairs, trade software and hardware, and just generally have a good time with each other. Viva users' groups!

However, while users' groups had obvious benefits, not everyone wanted to travel or give an entire evening to them, and so bulletin-board systems and online services often filled the role, with large international groups dedicated to various computing platforms springing up on CompuServe, GEnie and others, and local BBS systems typically providing forums dedicated to (usually) supporting the computer model the BBS itself was running on (although there were some exceptions, with IBM-based computers and their built-in hard disks making attractive hosts for BBSes dedicated to other platforms.)

But, no matter whether digital or analog, users' groups were there to help.

Hobbyists Meet in the Land of Lincoln

The Woodsfield Area Computerist Organization (WACO) is whacko about all types of computers: TRS-80s, Ataris, 6800s, Heaths, and Z80s. The club has a large number of special-interest groups and a large publication known as the *WACO Post*. The *Post* is packed with software reviews, information on bulletin-board systems, and programming hints. The club meets monthly at the downstairs meeting room in the Schaumburg Public Library. Annual dues are $6, which includes a subscription to the newsletter. Contact WACO, Steve Gibson, 723 Sunfish Point, Schaumburg, IL 60194.



Better mark it on the calendar...

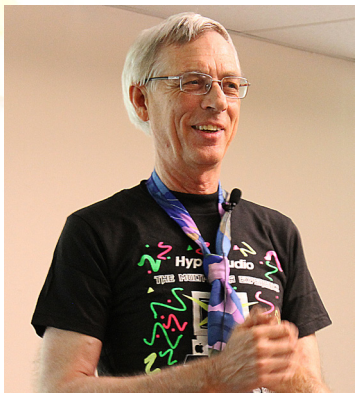
User Friendlies



This year's keynote speaker was Roger Wagner, publisher of HyperStudio, a Hypercard-inspired Apple IIGS application for creating multimedia presentations. KansasFest has had a number of speakers over its 30 year history, including Apple co-founder Steve Wozniak.

Community Calendar

KansasFest 2018



KansasFest is a long-running five-day retrocomputing convention where (most) attendees stay together in the dormitories of KC college Rockhurst University. From early in the morning until late at night there is much discussion about all things Wozniakian. You do nothing but eat, sleep and drink think Apple II! It's been described as "summer camp for nerds".

This year was the 30th KansasFest, a significant milestone – the event has been going since the Apple II wasn't retro!

We arrived late on the Tuesday night, and official proceedings began the next morning, starting with the (last? Maybe not...) Garage Giveaway, a KansasFest tradition where a large variety of Apple II (and other 8-bit computer)-related hardware and software collected by volunteers throughout the previous year (and other items donated by attendees) are put out in the front hall of the dormitory, where at the appointed time attendees can pick and choose and take what they desire.

While the selection was not perhaps as broad as previous years there was still a great many items for the 100+ attendees to look through, and we're sure most everyone found something of interest. For example, your editor claimed a large number of Call-A.P.P.L.E. and other vintage magazines useful to her cause.

Then, after a feast of greasy meat (it _is_ Kansas City after all), we all sat down for the keynote presentation by Roger Wagner. Roger Wagner's books were pivotal in educating an entire generation of computer programmers in 6502 assembly language, but his most successful product was a software program that still helps K-12 students with their school projects.

Roger got his start teaching high-school chemistry classes in a boarding school that was a converted barracks, initially engaging his students with model rocketry, but then he heard about the then-emerging home computer industry. "If you're going to be a mad scientist launching rockets from eighth-grade classrooms, you're going to need a computer," Wagner said of his thinking at the time.

He initially planned to buy a Commodore PET, but when he went into the computer store the demonstration PET was offsite and there was only an Apple II, which was much more expensive. He hatched a plan to masquerade as a dealer to get a discount, and he called a distributor. Things seemed to be going well until the distributor wanted to see his store!

He fessed up, and the distributor offered to give him a machine at wholesale cost if he could sign up another (real) store. And so he became an impromptu computer salesman, walking around San Diego attempting to convince stores to carry the Apple II.



After selling his company, Roger learned to fly (right).

Eventually, Roger found himself at an Exidy Sorcerer store in Oklahoma, which agreed to carry the computers, and Roger finally got his Apple II. But other stores had wanted proof the computer was actually useful and so he started to see what he could do with the Apple II, for the purposes of demonstration.



When HyperStudio met with some success, Roger became a bit extravagant with his sponsorships (left).

KansasFest started out as the A2-Central Developer Conference in 1989, a response to Apple's increasing focus on the Macintosh computer line where Apple II software and hardware developers could meet and discuss new innovations. But what made it unique was its venue – a college – and dorm-room accomodation.





The college location stuck. Held annualy, attendees began calling the event KansasFest in 1991, but by 1994 the commercial viability of the Apple II ended and event sponsor A2-Central went under. However, attendees took over the organisation of the event, officially calling it KansasFest and running it every year since.

In 2018, 118 people attended Kansasfest (below), a new high water mark compared to a low of 28 in 2006.



He started writing programs, searching for ways to push the limits of the computer. He published a few articles in magazines such as Call-A.P.P.L.E., Nibble and inCider, and then decided to sell those programs on tape, such as an assembly language routine that renumbered BASIC programs. It was initially BASIC itself, but it was too slow and so he had to learn assembly language programming to get it done faster. Roger wrote as he learned, developing a library of software.

The number of orders started to grow, and so Roger got a tiny office, calling his one-man outfit "Southwestern Data Systems". He started going to trade shows, and began writing a column for Softalk magazine titled "Assembly Lines" (Roger never had a copy of the first issue that contained his column, but he found one at the Garage Giveaway at this year's Kansasfest!) He simply took what he had learned about software development in the passing month, and wrote about it (Roger learned as a teacher that you only ever need to be one unit ahead of your students)

Eventually, the columns were compiled into a book by Softalk's publisher and Roger finally started to see some money for his work. And so, he decided to become a publisher himself, advertising for people to send in their code. He was impressed by some of the submissions, and he wrote a number of utilities to make programming much easier. He used a number of his own routines to create applications such as word processor.

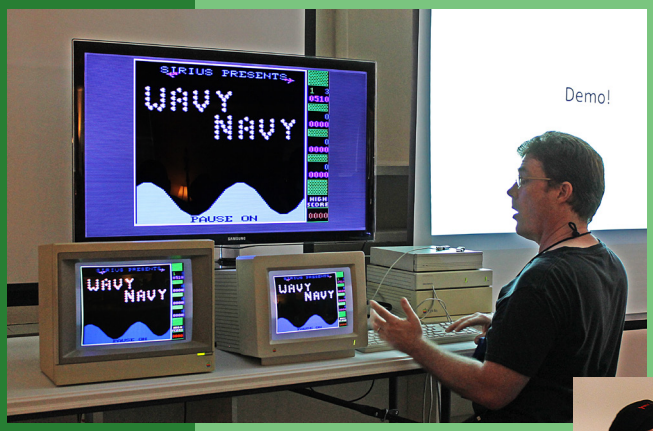
Time went on and then Roger learns Apple is going to have a promotion where they'll put vendors' coupons in their computer boxes for Christmas. So he has another entrepreneurial idea (just one of many), starting a magazine targeted toward children called The Apple's Apprentice – but it only lasted for three issues (because producing glossy colour magazines is expensive, don't we know it!) While each issue was full of useful information, Roger's editorial style was full of tongue-in-cheek humour which may have not played well with parents! These three magazines have been reprinted in a compilation which is available from Call-A.P.P.L.E.

Roger went to KansasFest in 1994 and 1995 (and maybe some other years), wore loud ties and inspired the Crazy Tie Contest, and something called "Bite the Bag" the details of which we won't go into here.





"The best time to write a book is when you're new to the subject. By the time you're an expert, you've forgotten how you learned everything."
- Roger Wagner



But it's not just keynote speakers who get to shine at KansasFest – a number of attendees also give talks on a variety of subjects, from game development to emulation to new hardware products.

For example, John Brooks' VidHD (left) provides the Apple II with high-definition HDMI video output and additional high-resolution graphics modes.

Mark Lemmert's Nox Archaist (below), an effort to develop an RPG utilising modern software development methods, demonstrated the game's splash screen and explained how they optimised for space, added Mockingboard music and some other enhancements. A new Kickstarter is still in the works but no firm date yet.

We also demonstrated our microM8 emulator, and its 3D rendering.



"We all want to return to our youth—as evidenced by you all being here."
– Roger Wagner

Roger then released a game that had no instructions and in which all text was written in a made-up "alien" language, called Bezare. Anyone who decoded the game was eligible to enter a draw for an Apple II. However, as Roger puts it, "There was a flaw in my marketing plan." Even naming the game would give players clues about how to decode the language, and so advertisements were all in the alien language! However, on a hang-gliding trip in Mexico, Roger had the idea to put a special key into Bezare that displayed a fake spreadsheet when pressed so users could play it at work, a feature that would come to be known as the "boss key".



The Apple II disk-cracking artists known as 4am and qkumba have compiled a collection of Infocom text-adventure games into a 32mb hard disk image that can be used with Apple II emulators (such as microM8) as well as on real hardware. But there are so many Infocom adventures they had to release a second image as well, called Pitch Darker. (PS: We don't know who this guy is!)



The Pitch Dark presentation was not the only one to focus on Infocom: Kevin Savetz chronicled the company's wayward diversion into business software with its Cornerstone database, a debacle that would completely flop and eventually lead to the company being sold to rival Activision. The lesson? Stick to what you're good at!

Roger's business grew and he changed its name to Roger Wagner Publishing. He hired lots of people and spent every dime he had attempting to expand the company, but he neglected his bills and unfortunately, the IRS turned up and threatened to auction off all of his IP. He had two weeks to come up with what he owed in taxes. But luckily he was saved by a guardian angel who bailed him out. He went back to basics, just working by himself.

One day, a fellow walks into Roger's office named Dave Klimas, who was interested in developing a hardware project. Roger looked into his "book of ideas", and remembered he had wanted to build a digitiser card for the Apple IIGS – but it needed to cost less then US$5 to produce to be commercially viable. Dave was successful, and then Roger began searching for applications for the card. One idea was a circus game where children could command the animals, but that was very niche. Eventually Roger hit on the idea of creating a IIGS clone of Hypercard, a Macintosh multimedia scripting application. By bundling a library of clip-art and the sampler, children could quickly develop multimedia presentations.

He called it HyperStudio (mimicry is the best form of flattery!) and showed it around trade shows, where it began to garner considerable interest. Schools uninterested in upgrading to the Macintosh looked to HyperStudio to give them similar functionality, and the application was quite successful.

Unfortunately, success once again went to Roger's head. He sponsored racing cars (because racing fans are a prime target audience for multimedia software) among other questionable business decisions. Soon he became paranoid and was convinced a larger company would soon rip him off, and create a competing version of HyperStudio. He decided to pre-empt that by selling the company – and quick!

Roger did big show for Microsoft but they passed (despite at the time buying "anything"). But a conglomerate eventually bought it, allowing Roger to escape what he thought was "certain doom". But the truth was the niche was too small for any of the "big players" to care about and a competitor never eventuated.

With his millions(?) of dollars, he recreated his chemistry lab from his junior high-school teaching days. He also bought a rare book auction house and took up jazz singing.

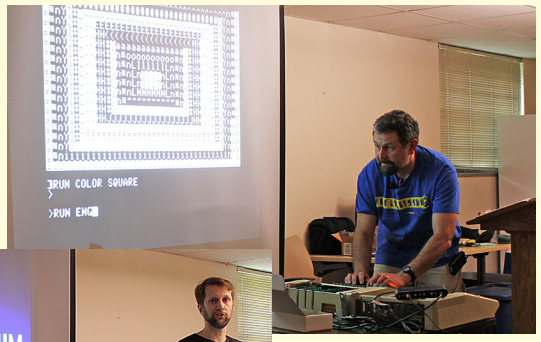
Then he learned to fly a plane, got a pilot's license, and had that license signed by Buzz Aldrin and Scott Carpenter. What else was there left to do in life?

But luckily, in 2007 another company bought the rights to HyperStudio, and approached Roger to help create a new version designed for modern computers. The new company, Software MacKiev, wanted to make changes but Roger pushed back and he maintained creative control, keeping the spirit of the original program but with modern OS conventions and interoperability.

Once again, Roger's mind returned to hardware, and he wondered if he could control an Arduino (an interface between a computer and other physical electronic and electromechanical devices) with the revived HyperStudio. That way kids could create interactive physical presentations, such as a paper-mache volcano or a science-fair diorama. He created a series of instructions on how to do it using simple electronic components and a generic Arduino, but they were too complicated for K-12 teachers and so he built a "piggyback" board that makes the process much easier by providing for easy configuration at the expense of limited-use cases.

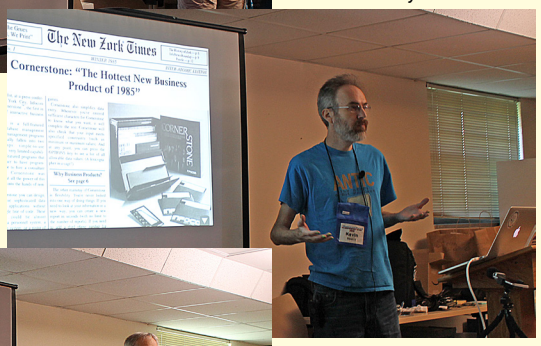
Originally, the boards used light sensors to decide when users were "touching" them, but student projects were often presented in dark rooms and this became an obvious problem. Roger has since switched to touch sensors. Kids can simply select the desired input inside HyperStudio and link it to a card in the "stack". Once activated the software goes to that card. Roger's line of hardware Arduino boards has since expanded to a variety of boards that provide various functionality. He's also working on a Chrome plugin that will allow users to use his boards to direct the browser to various URLs.

There were over 30 sessions at Kansasfest spread out over four days! These included demonstrations by attendees such as Andrew Hogan (right) who showed off his memory testing utility.





Juiced GS publisher Ken Gagne (left) talked about his experience blogging about the Apple II, and showed that there was still a healthy interest.



Kevin Savetz (right) chroncled the downfall of Infocom, a tale of warning for companies considering moving outside of their niches.



Jay Graham (left) talked about the Z80-based CP/M card for the Apple II, and how it provides an entire new library of software to explore.



Daniel Krusyna (right) updated us on his efforts to create an FPGA-based Apple IIGS.

These are just a few of the many talks that were held, and we give our hearty thanks to all of the presenters.

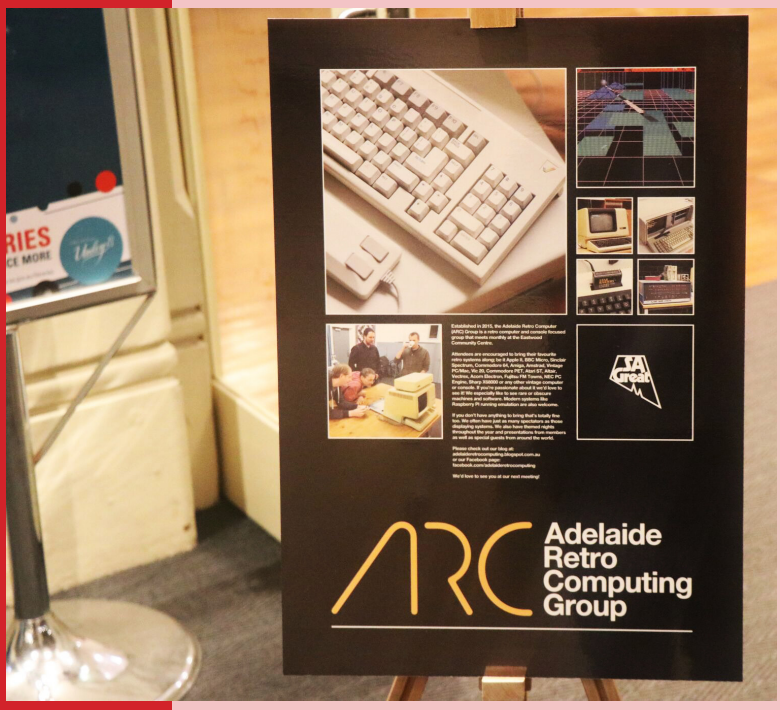
Our next issue on computing creatively will feature more information about HyperStudio and (hopefully) an interview with Roger Wagner!

KansasFest 2019 will run from July 15-21st, once again at Rockhurst University in Kansas City, Missouri. Mark your calendar...

Four most dangerous words:
"I have an idea."
Two: "Watch this."
Three: "What's that noise?"
- Roger Wagner



ARC Adelaide Retro Computing Group



Focus On Australia

By Paul Monopoli

Today almost everyone will use a computer, or some form of computer controlled hardware to do their job. When they get home they might play games on their PC or Mac, or use social media to speak to friends. As the next piece of sexy new hardware becomes available they will upgrade it with the promise of an easier life. The latest MacBook Pro has a thumbprint reader and a small screen on the keyboard that gives different operations depending on the software you are using at the time. Many laptops can now double as tablets. These devices are sold by manufacturers on the promise of making our lives easier. The real question is, are they really?

The average TV will usually have several devices connected to it at any one time. You can buy a refrigerator that can connect to the internet and order more food or let you know when something is about to expire. Even washing machines now come with WIFI as an optional extra, just incase you need to schedule your laundry and keep an eye on it as it is happening. It seems that for each new way of making our lives easier, they become slightly more complicated.

With this influx of new technology there are pockets of people who yearn for the good old days. They enjoy the simplicity of technology from the last century, and damned be anyone who claims that their lives were harder back then. The irony is that many of these people find each other on social media or forums, using their internet enabled tablets and computers.

George Foumakis wanted to take these online gatherings into RL (or, as the cool kids call it, Real Life). George is one of those rare individuals who does not have a Facebook account, nor does he have the time to invest in keeping up with a rapidly changing 'friends list'. He wanted to recreate the computer user groups of the 80s and 90s, many of whom had died off due to a lack of interest or time. If you browse through an old issue of Australian Computer User or The Amstrad User you will find lists of user groups around the country. Magazine from other countries would also often contain similar lists, where fellow enthusiasts could gather and share their love of computing. This is what George wanted to bring back:

"I wanted to meet up with other retro Amiga users... So I basically put a word out on amiga.org, I even put the word out on other forums. I think Lemon64 (and) a few IRC channels and said, 'look, I've booked this area here,



let's meet up. Bring your systems in, let's have a chat, see what happens... I was hearing people saying 'I'm looking for things to do in Adelaide, but we're not sure what to do', and I got to the stage where I thought, 'well look! I'm going to create something I want to do, that's going to excite me and maybe there are other people who want to do the same thing, so let's all get together".

Thus, the Adelaide Retro Computer Group (ARC) was born.

The first gathering comprised of passionate Amiga users who were keen to share knowledge of the system variants, the modern Amiga operating systems and, of course, the many games that were released for the platform. During the third gathering George was put in contact with a staff member from the Flinders University Computer Science Division. Through these contacts George found his high school IT teacher, who was helping to run a retro gaming website. His teacher used the website to help bring attention to the fledgling group, which helped to get the word out. According to George:

"That's how it officially started, then from there we got a base that was active and looking at our site. We got our own social media page, our own blog space, had a lot of support from a number of people".

From the gatherings came a core group of regular attendees, some of whom started to take a role in organising the meetings. Contacts from interstate and overseas would help to promote the group and retro enthusiasts who visited Adelaide would often time their trips to coincide with the next meeting. At this time the group was purely interested in Amiga computers, though George notes that this was about to change:

"Then we got the idea that... Amigas aren't the only thing that people are interested in. How about we start incorporating some other retro items in there? We had the idea of doing maybe an Atari night or just old retro systems and people just bought in all sorts of different things. From there we said 'right, we've got to categorise this and have themes and other genres that people can attach themselves to and bring systems along and be focused on those particular things".

The core group deduced that the monthly gather-

ings may begin to wane without some variety, hence the idea of themed nights. Rather than bring the same computer or system every month, the themes were designed to promote the many different aspects of retro computing. Many of the ideas revolve around music and graphics, with new hardware being showcased at the events, and users bringing in systems that match the theme rather than the same items every month.

As the group expanded, notable guest speakers from the IT industry, both old and new, came along to discuss projects they had worked on. A representative from A-EON Technologies and Jonathon Potter, the author of Directory Opus are among two of the more notable speakers. George also encourages attendees to come forward and discuss the piece of hardware they bought along:

"We're always looking for new people to give talks and we're always scouting around, asking for suggestions, putting the word out to people who have got some history behind the systems or who are currently developing something modern that's relevant to the systems".

Like any regular social gathering, people come and go. Eventually it came time for two of the three original core members to go their separate ways. George explains that he and those who continued to run the group with him made a decision about the future of the gatherings:

"We started off just as a normal, catch up, get together group and because we've become a little more formal, having to hire out halls and serve coffee and tea and so on it was only in our best interests and everyone's best interests to turn it into an incorporated association".

This means that the Adelaide Retro Computing Group is now an official body recognised by the South Australian Government. One of the members who became a part of the association is Nicolas Tiago, a keen retro fan with a large collection of systems and games. A friend of his shared the monthly gathering on Facebook and Nick asked if he could tag along. As he explains, Nick immediately found himself in his element:

"I bought along too much stuff, (though) everyone was amazed at how big my collection was... Because I got such a good vibe the first time around I kept coming... In December of last year the old committee said they were shutting down... I didn't want this to go away because it was getting me out of the house".



Nicolas suffers from cerebral palsy, a condition which keeps him housebound and unable to work, so the social interaction of the group meant a great deal to him. He had just found a group of people who shared his passion, who he could connect with on what felt like an even playing field. He did not want this to end so shortly after it had begun for him. He became the first chairperson of the new committee, and though it is often draining for him he attends every meeting possible to keep the spirit of the group



Come to computer camp! Inspired by Kansasfest, GORF, the Great Oz-trayan Retro-Fest will be happening at Urban Camp Melbourne in late April 2019. This indoor group 'camping' facility can house up to 100 people for a 4-night retro sleepover, and meals are provided! Keynote speaker will be announced and registration will open soon at gorf.org.au. Stay tuned!



alive. Though the group has continued to flourish under the new committee, Nick is rather humble about his contribution:

"I judge my success on what everybody else thinks, so because everybody is happy I think I've done a pretty good job. If people weren't happy then I'd evaluate what I was doing wrong. What I like to do is pull aside random members of the group every month and ask how I'm going, and so far so good!"

The new committee decided to shift the meetings to a new location at the Unley Library, and though this had caused a decrease in attendance, new retro enthusiasts are always finding their way to the group. The themed nights also became bi-monthly, as opposed to at random, providing the group with a consistency that Nick feels was missing from its earlier incarnation.



Nick's house mate Dan McInnes is not really a retro gaming fan, though he likens the collecting of retro computers to a modern form of archaeology. With that said, he has embedded himself into the group and he told me that he finds the people interesting:

"It's interesting because of the amount of different types of people, different types of retro computing, the stories become fascinating... It's people that are passionate enough to actually put a lot of money and a lot of time into getting these systems, developing them, making things with them and then having a history with the machine".

A university student in the mid 90s, he can remember the computer lab at his uni, filled to the brim with Apple Macintosh computers. He didn't actually own a gaming system until he reached adulthood, though he was surrounded by games:

"The PS2 was my first console, I actually won one as a contestant on Big Brother (Dan was in the 2003 series) and I worked in a games arcade... Intencity".

Real life can often get in the way of gaming, so many find the group as a dedicated place where they can spend quality time with their computers, and others who share their passion. A passionate Amiga fan, ARC blogger Daniel McPhalrin rarely spends much time with his computers at home:

"So... every 5 - 8 years I will pull them out of the cupboard and have a little play with them and usually I end up... I think 'I'll just have a play with it and put it back again.' But usually I get completely hooked and I'll start pulling old games out and getting back into it again".

As Dan mentioned earlier, the stories are what makes the social aspect of the group fascinating, and Daniel eagerly tells of how he always wanted an Amiga 1000, and has now ended up with three of them! He finds the monthly meetings to be educational as well as fun:

"There's certainly gaps in my knowledge. I'd like to know more about soldering, 68000 and assembler programming, all sorts of things I missed out back in the day, I'd actually like to learn more about now".

Alexis Kotlowy has mastered one of the skills Daniel mentioned, as he explains when asked about his favourite aspect of retro collecting:

"Mostly the electronics side of it... I've always had an interest in electronics, it's always been with me ever since I was a kid".

One of the technical gurus in the group, he often finds himself as acting as a doctor to 20+ year old systems. A man of few words, Alexis enjoys the social aspect of the meetings and discussing retro hardware with like minded individuals.

While the computer group is a male dominated event, women are more than welcome. Some will even accompany their partners to the group and find themselves absorbed in the world of retro gaming. Semi-regular Nicole Cutufia explains how she became involved in the group:

"So my boyfriend comes to the group because he collects retro video games of a wide variety, mainly from his childhood, and it's a chance for us to hang out together... and then I realised it was kinda fun seeing cool things... I'm really bad at playing games but it's nice to hang around and see people".

Nicole's first night saw her playing a JAMMA multi board on a SuperGun, where she was able to beat a game, much to her delight. She admits that the infinite credits may have had something to do with her victory, though refuses to elaborate. She does make one confession, however:

"I've always been really interested in reading, books and literature. I don't enjoy playing video games and it's never been a pastime of mine, but there's something about the vibe and the people, and seeing people passionate about their things".

With that said, Nicole insists that she is not just a girlfriend who gets dragged along to the group by her boyfriend. She has



integrated herself into the business side of the organisation, even helping Nick to organise the upcoming Christmas quiz night. Beyond that the group have some exciting plans for 2019! In the words of Dan:

"It's an interesting time with the ARC retro group now, just the way that it's evolving, because we're changing locations, changing leadership, so I think it's a really exciting time for a lot of different trajectories, things that are possible... I'm really enjoying being around that kind of energy".

George adds: "We're an open group to anyone, you can bring your friends along. You don't have to be interested in this stuff. I think it's more of a social get together more than anything. Something to do on a Friday evening".

The Adelaide Retro Computing Group can be found on Facebook and at adelaideretrocomputing.blogspot.com. Events are usually held on the second Friday of each month at the Unley Library and admission is $4.



Apple II enthusiasts aren't the only vintage computer collectors who know how to have a good time!

Robert Bernardo is the organiser of CommVEx, an annual event dedicated to Commodore computers held in Las Vegas, Nevada. He agreed to answer a few questions about his experiences.

How did CommVEx get started?

I had been attending Commodore and Amiga shows, first in the mid-1980's and then from 1997. Thus, I was familiar with what they offered in the way of exhibits and speaker presentations.
I was first contacted separately by hardware engineer Jeri Ellsworth and GEOS aficionado Bruce Thomas; they both relayed messages from the Louisville Commodore Kentucky (LUCKY) Expo organizers that there should be a Commodore show on the West Coast of the United States. Jeri was located in Oregon and Bruce in Alberta, Canada, so it was up to me to start searching for a suitable city in which to hold a show.

The requirements of a city: reasonably easy transportation to the show site, nearby eating establishments and tourist activities, relatively inexpensive hotel accommodations, and a strong, local Commodore/Amiga club for support. The requirements of the venue: a venue that was free or inexpensive, a large enough room to hold 50 or more attendees, good and controllable lighting, comfortable ventilation, plenty of chairs and tables, and plenty of electrical outlets.

This was 2005, and I weighed the advantages and disadvantages of potential show cities. Fresno – the home of the Fresno Commodore User Group? Not a transportation hub. Club too small for much support. San Francisco area? No local club for support. Los Angeles? Terrible traffic. No local Commodore club. Las Vegas? A transportation hub, plenty of restaurants and touristy activities, inexpensive hotels, and a strong Commodore club and remnants of an Amiga club.

I traveled to Las Vegas and spent a few days there, visiting the Clark County Commodore Computer Club (the 5C's) of Las Vegas. Then-club president Al Jackson and his members were very receptive to the idea of a show and even offered help in the search for venues. I eventually settled for the spacious, free, public meeting room of the Nevada Power Company, and Bruce Thomas, as co-producer of CommVEx, booked a hotel near the Las Vegas Boulevard as the official accommodations.

In 2006, when I couldn't book the NPC room again because of their new rule of only having one-day events, I spent a few days in Las Vegas exploring hotels to find out what they had to offer in the form of conference rooms and accommodations. I was the sole producer of CommVEx now, and I had to decide on which hotel was the best. It turned out to be the Plaza Hotel & Casino in downtown Las Vegas, a hotel with which I was familiar because the Classic Gaming Expo was held there. Since that year, CommVEx has always been held at that hotel, except for the two years when the hotel was being rebuilt.

Why do you keep doing it?

It has become a tradition. It is still great to get together, to socialize, to learn, to discuss, to experience Commodore/Amiga. However, as the years have progressed, I see the need to get the general public involved and not just keep our computers to ourselves.

I see the need to expand past CommVEx and get the word out that Commodore and Amiga are still around. Perhaps showing off Commodore and Amiga computers at the Bay Area Maker Faire gave me that idea. Hundreds and hundreds of fairegoers and their little children would pass by the Classic Computers exhibit and play with the Commodores and Amigas, remarking that they used to have one or more, that they used to program on them, that they used to develop on them, that they began their career on them. I would tell them that they could still pull the computers out of their closets, that they could still program on them, that they could still develop on them, that they could teach their children that these computers could be a stepping stone to a career.

To get the word out that Commodore and Amiga are still around... that is why I organized the Pacific Commodore Expo NW in Seattle, Washington in 2017. PaCommEx is held at the Living Computers: Museum + Labs, and the museum and thus our show is open to the general public. In fact, attendance to this year's PaCommEx rivaled CommVEx in its best year. And as in Maker Faire, the general public had no idea that Commodore and Amiga were still viable computers.

What's in it for you?

There is the satisfaction of seeing old Commodore/Amiga friends and discovering new friends. There is the satisfaction of teaching and learning old and new Commodore and Amiga hardware and software.

CommVEx has always been run as a non-profit event. Whatever money is made over and above the cost of the conference room is rolled over into the show for next year. Our Fresno Commodore User Group treasurer, Dick Estel, makes sure that the money is accounted properly. I don't even include the cost of my accommodations, my gasoline for the car, my food, or providing snacks and beverages for the attendees.

What challenges have you encountered?

I've had to battle against the cost of the conference room, which has been rising lately. It has been a delicate balance; too low of an attendance fee would not cover the cost of the room; too high of a fee would drive attendees away. If there were not enough attendees, then there wouldn't be enough bidding on the CommVEx raffle prizes of hardware and software, which another way we use to cover the room cost.

For several CommVEx years, we've had enough money to roll over into the next show. However, with the rising price of the conference room, keeping CommVEx in the black has been a challenge.

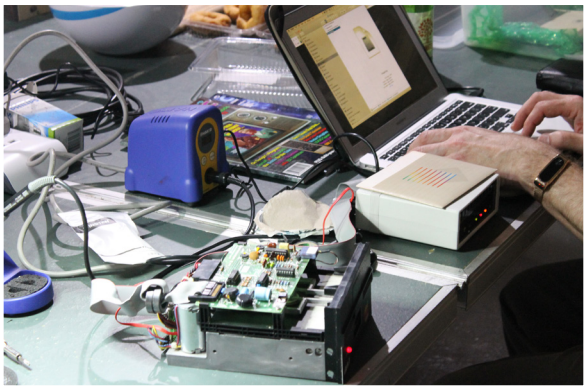
What's it been like trying to cater to a diverse group?

I've tried to steer CommVEx between the traditionalists and the modernists, between those who want the classic programs and hardware and those who want the latest and greatest, between those who want lots of free time on the computers and those who want presentation after presentation, between those who just want Commodore and those who just want Amiga. I think I've done that successfully, in comparison to other shows that just devote their time to the traditionalists or to the modernists, to Commodore or to Amiga. I want CommVEx to be inclusive, not exclusive.





While floppy disks provided a great way to store data, unfortunately, despite Memorex's 'Forever' slogan, they weren't (and aren't!)



At WOzFest gatherings, there's always all sorts of things going on in the 'man cave', a large concrete storage room featuring a central ping-pong table upon which all sorts of vintage computer hardware (not just Apple IIs) is displayed, demonstrated, troubleshooted and repaired by attendees.

At the last event, Sydney-native Michael Mulhern brought his Applesauce setup so other WozFest attendees could archive their disk collections.

The Archivist

Ho Ho Ho! While getting a new computer for Christmas may have been a great thing, it was pretty boring without any software! Games on floppy disks were some of the most popular gifts (before the widespread adoption of CD-ROMs, of course) but while it was great to get new games for your computer, floppy disks were fragile and prone to damage.

In the late 1960s IBM started developing an inexpensive data storage media for software that could be sent to customers. What they came up with was the 'floppy disk', a mylar disk 70 micrometres (0.07mm) thick coated with a thin layer of iron oxide upon which data can be recorded using magnetism.

The disk is enclosed in a PVC 'dust jacket' lined with an anti-static fabric that keeps the disk surface free of debris. They were at first 8 inches (20.3cm) across, later 5.25 in (13.3cm)

To make matters worse, software companies didn't want you backing up those floppies because you might decide to spread a little of your Christmas cheer around and give them to your friends. So they used various tricks to make sure your copies were unusable if you tried.

Some of them offered to send you a replacement disk if you sent your old one in, but that was only practical if they were still in business, and many 1980s-era companies didn't survive to the 1990s. So if your disk became damaged you were out of luck. But even if you took great care of it, over time 'bit rot' could set in, the coating on the disk could flake off, or it could even get mouldy if stored in a humid environment.

Also, since many of these companies folded, the only copies of their software that exist are on commercial copy-protected disks. (Next)



John Morris at Kansasfest 2018 discussing his .WOZ disk image format that allows for booting copy-protected disks

Software Preservation Party



Don't feed your floppy disk to a crocodile! Or do any of these other things...

WOzFest! Named for both the inventor of the Apple II and the suburb of Sydney in which it is held, this periodic gathering of retro-computing enthusiasts was first held in 2015 after OzKFest, yet another gathering of Apple II afficionados. Organiser Sean McNamara holds it in his 'man cave', a concrete storage room in a block of flats perched on the side of a hill in Wollstonecraft on Sydney's north shore.

Sean says he continued to hold them initially in an effort to force him to keep the 'man cave' tidy, but now says he appreciates them as a chance to catch up with the community, both locally and abroad, and uses them to distribute hardware and software to attendees in need of them.



WOzFest is not always computers. sometimes there are game consoles too. And pizza and cider (for adults of course...)

"It's really taken on a life of its own," Sean says, "and I consider it a great success, community members come from far and wide to work on projects or share recent acquisitions, to help each other, to participate in the video chats, and even to acquire and de-acquire items."

"The fact we have so many repeat attendees, including inter-state ones, says to me WOzFest is worth cont-inuing to host, and it's my intention to host three a year for the foreseeable future."

That's great news! At the most recent WOzFest, frequent attendee Michael Mulhern brought his Applesauce (see previous page), a hardware device that allows one to connect a vintage Apple II floppy drive to a modern computer over a USB port, and create software images of diskettes – even copy protected ones! This is good news for Australian software preservation, as there are many titles that haven't been previously preserved, and other attendees brought piles of disks to be imaged.

But there was other fun to be had, with the display of an Hitachi MB6890, known as the 'Peach', and an Australian-specific software demonstration disk featuring a graphical Australian flag and a 'chiptune' rendition of the national anthem.

Hopefully Applesauce will be able to preserve that disk some day!

(Con't from previous page) As time goes on, these disks are fewer and fewer in number as they go 'bad' or get destroyed. And so it's possible that hundreds or even thousands of hours of work already have and still could be lost forever!

So, how can we prevent that travesty from happening? Well, one way is to alter the software on the disk so that it doesn't care if it's original (this is called 'cracking'.) But some stuff can't easily be cracked, and this usually changes the overall experience to varying degrees. It's also not really 'archiving' if you have to change the original to archive it! The other way is to 'image' it, but most imaging methods either only store data copied (Next)



WOzFest frequently features Skype calls with retro-computing community figures from elsewhere in Australia and overseas, including hookups with 'modern' software and hardware developers, and with Kansasfest attendees when that event is in progress.



At the last Wozfest here was a hookup with Applesauce inventor John Morris along with another similar meetup in Brisbane called QFest.



from the disk in a conventional way (which means the software will still detect it's not running from an original disk and fail) or are extremely verbose, creating large file sizes and making it difficult for emulators to make sense of the information saved.

The Applesauce system finds a happy middle ground, recognising the common copy-protection tricks that vintage disk-based software used and providing the information emulators need to recreate them without all of the superfluous additional data.

In combination with the emulation of a few additional disk-drive features not typically implemented by most emulators, the resultant .WOZ file container is smaller and quicker to interpret than other attempts at a solution while making the storage, transmission, emulation and possibly even reproduction of the vast majority of copy-protected disks possible.



One of the disks archived at WozFest was a 'Chromadisk' imprinted with Australian-themed artwork. It contained software published by Imagineering Australia, a distribution company founded in the early 1980s.

This is even more critical in Australia given that the market for software was much smaller and Australian-specific titles sold in fewer numbers, meaning an increasingly lower availability of specimens to preserve as time progresses.

Since the Applesauce hardware is cheaper than competitors, it becomes viable for smaller hobbyists to acquire the system and archive their collections, ensuring that this software is not lost forever.

While Applesauce currently only archives Apple II diskettes, research is underway on adapting the system to other platforms, such as the Commodore 64, so that similar benefits can be extended to those systems and similar preservation efforts can be more successful.

For more information on Applesauce please visit applesaucefdc.com

TEXTFILES 20th anniversary



ASCII (and ANSI) text files were a popular information exchange medium on 1980s and 90s bulletin-board systems. They were interchangable with most computing platforms of the day and small in size for fast(ish) transmission in an age of slow ttransfer speeds, but they were, as the name suggests, just text, with very limited formatting. Text files covered a variety of topics, from computing to humour to amateur radio, and also included ASCII art 'drawings' made of text characters, source code and even lists of phone numbers to the BBSes themselves!

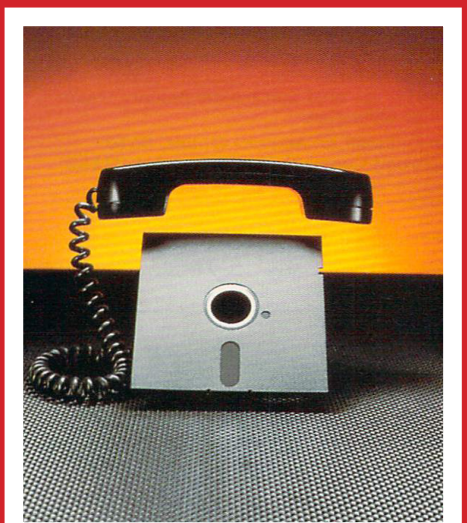
Some of the content you could find in text files wasn't available through other sources at that time (due to censorship or perhaps plain common sense) such as information on hacking, explosives, the occult and even amateur XXX fiction – as you might imagine, teenagers loved this stuff, and traded it far and wide.

However, with the advent of the world-wide-web and hypertext, text files became passé, and the more open nature of the Internet made the content of many of these files unsuitable for broader distribution (at least in the late 1990s). Aware they might disappear, archivist Jason Scott began collecting them, and in 1998 started a website to warehouse them at textfiles.com.

Over time that collection grew, and by 2005 it had close to 60,000 files providing a unique glimpse into BBS culture. To that end, it now also includes collections of ANSI artwork, archives of mailing list messages and CD images of shareware software, and attracts around 400,000 visits per month. Check it out for a glimpse into what treasures (and trash) you might have found on a 1980s bulletin-board system.

2018 marked the 20th anniversary of textfiles.com and on the 28th of October a party was held in New York City to celebrate.

There were readings of various text files and given Jason Scott's sense of humour we imagine some of them were quite hilarious and shocking. We hope it was fun!









THE MiST ART SCENE

Art group Mistigris is famous for its Christmas art packs. We had a chat with its founder, Rowan Lipkovits aka Cthulu, about how the group started, and why it's still going over 20 years later...

Thanks for agreeing to answer our questions! The next issue looks at modern social aspects of retrotechnology, and so I'd like to get a bit into what MiST was in the past, and its revival.

First, How did Mistigris get started?

In 1994, our area code was already well-served by the underground computer art-group iMPERiAL, a merger between the local 604-based NWA (New Wave Artists) (itself the result of a 1993 merger between PAiN and POiSON) and Quebec's GRiP/AD (Graphics Revolution in Progress / Art Division), tying up most of the major talent in two area codes into one B-list supergroup. Then for reasons which were never fully elaborated upon (but preumably had to do with the approach of summer's end, which would always see the senior cohort of scene elites shred their underground identities, as though through the Carousel in Logan's Run, on their way to college in September) it was announced two weeks following its August artpack release to be defunct and dissolved, leaving a pool of junior local computer artists looking for somewhere local to strut their stuff. No such outlet existed, so one had to be made. (Two were made. This isn't just the origin myth of Mistigris, but also PATRiOT, which morphed into RAiD and, down the line, Integrity.)

What made you want to run an art group?

Art groups were nasty autocratic concerns in an environment primarily concerned with "elite" one-upmanship, and naturally as a "lamer" (sorry, junior computer artist) I wanted nothing to do with its toxic culture. That said, I was interested in reaping the benefits of moving through the computer underground, and finding the milieu compelling I wanted to do what I could to help contribute to a local outlet where I could continue making and sharing computer art. I had no intention of running it, I knew that from the start -- who wants that responsibility? -- but I hoped to establish an anarchic, democratic framework that would allow us to flourish without some power-tripping 17-year-old lording over us. The reality of this idealistic framework was that in most administrative matters, the person who cared the most got their way, and the person who cared most consistently was me. Though a few people took sporadic turns packaging artpacks and cracking the whip in their respective departments, in the end everyone else figured I was good enough at doing the boring housekeeping that they'd allow me to keep doing it (indeed, I such aptitude for it I was brought on board to help ACiD, the kings of the artscene, get some of their boring housekeeping done also!), and here I am, still doing the boring housekeeping 24 years later! The second time around, however, I had more concrete reasons for wanting to run an art group: because I found I desperately missed having art in my life.

What was 'the art scene' of the day like?

All artscene alumni have an "artscene" golden age enshrined in their hearts, and for most of them, as per the usual, it's whatever the state of affairs was like when they were 15. In order to explain my personal golden age artscene, I first must explain the warez scene, touching on the phreaking scene 8)

Succeeding the trailblazers in the Apple 2 and then C64 software cracking and piracy scenes, as the MS-DOS IBM PC platform achieved by the late '80s indisputable dominance in home computing -- if not necessarily through its capabilities, through its ubiquity -- in a tale as old as time certain youth with technology skills, a hackerly curiosity and no particular fear of cybercrime legislation figured that they would prefer to acquire their video games without paying for them. Crews emerged populated by specialists -- crackers to circumvent copy protection, phreaks to arrange for free telecommunications services (notably long distance calling and conference calls), couriers to actually put in the hours to make the file transfers happen (largely in North America, where phone access was unmetered -- in Europe, substantial amounts of piracy were conducted by post or even through physical drops of floppy disks in mobile locations such as train bathrooms), fraudsters who might exploit stolen or generated credit card numbers to directly pay for computer equipment, and the occasional computer artist to help embellish the "we pirated this much-awaited game first" 0-3 day infofile (or .NFO) boastings of specific crews, gloating in a multimedia fashion of their dominance over lesser crews.

These multimedia embellishments would include edgy computer music, high resolution graphics and visual effects routines used in loaders, intros, trainers and cracktros that would precede the execution of a pirated game. But that was just the experience of the end user -- an ecosystem of good-looking underground BBSes would emerge to win the hearts of pirates as their number one source of the freshest warez, and small-beans pirates would pay SysOps of these BBSes in exchange for access to their systems, buying in to the trading ecosystem where warez downloaded from one BBS would be valid currency for "file points" or the maintenance of an "upload to download ratio" on other, lamer BBSes downstream. But suppose you're a kid with no summer job and no spare cash, but lots of spare time and a burning need to play free video games? Then you find a back door into the ecosystem: the underground BBSes and warez groups could always use a fresh paint job, something to demonstrate directly, visually, to the discriminating paying audiences how bleeding-edge they were and why they were most deserving of your piracy dollars. Then you learn how to draw ANSI art, the Lego-like textmode visual art medium of IBM PC BBSes, make advertisements for the big boards and crews in your area and if you're lucky, they might toss you a bone in gratitude -- something as small as the NUP (new user password) to an access-restricted underground board, or something as large as "leech access" (unmetered download capacity) on a warez board. (You'd still have to save up your minutes in the time bank in order to maintain the connection long enough to fully download a multi-disk release, however 8)



By 1990, the state of the art for ANSI had reached its pinnacle in the "Public Domain" sphere, as practiced by law-abiding computer enthusiasts on public bulletin boards and distributed through their echomail networks -- on digital canvases limited to 80x25 characters, enhanced by clever use of blinking attributes or ANSI animation. But the underground ANSI artists were just beginning to devise of the medium of the "art pack", consisting of a compilation of their recent creations, distributed far and wide to spread their notoriety and advertise not only their skillz and their elite BBSes, but also the very concept of underground digital culture, which showed its youth bias in a much greater interest in the subjects of comic books (especially once the rebel creators of Image Comics split from Marvel) and heavy metal music than the PD ANSI art which came before, which would be more likely to draw subjects along the lines of Garfield and Charlie Brown. The contributors to the collection became a crew of sorts (the first, AAA -- Aces of ANSI Art, which evolved into ACiD), and their art pack stood as a gauntlet cast to other underground artists to meet or surpass. Other artists emerged from the woodwork and rose to meet the challenge!

Where did you find your first members?

The intention was for Mistigris to pick up where iMPERiAL left off, including providing an outlet to its now-unaffiliated former members. With the notable exception of the bottomless creative powerhouse Eerie, by and large that sadly failed to happen -- it's not that we lost them to other groups, but mostly they simply moved on from the artscene. As it was, we circulated an open invitation throughout the underground-ish layer (h/p/v/c/a -- hacking, phreaking, viruses, cracking, anarchy) of our area code's BBS community (an invitation that really resonated with the writers in the TABNet "free speech" echomail community, which wound up yielding us a disproportionate burgeoning poetry wing just at the very moment when the rest of the scene was phasing it out). Eerie actually did some organizing through his popular BBS, our renowned Quebec outpost Sarcastic Toaster, and yielded a core of several accomplished ANSI artists to buoy our numbers who most likely would have likely enjoyed a great deal more focused artscene success without being saddled with the drag factor of our somewhat directionless 604 mothership 8)

How did you communicate?

Traditionally artgroups (at least, those with no phreaks on staff) had a home base within a single area code and a WHQ (world headquarters) BBS where most of the locals would organize... one at a time, for such was the nature of dial-up. There'd be a few private message bases for group members to discuss policy, applications and works in progress (also useful for capturing entertaining conversations for re-use in infofiles and e-mag releases, which I'd be tweaking and topping up incessantly through the backlog, text file viewer and editor built in to the Telemate terminal program), file bases for incoming submissions and outgoing releases, there'd be a 1-to-1 private message functionality to facilitate collaborations (so many poems we hashed out by simply adding a line and bouncing it back every time we logged in) ... like any BBS, you had the option of paging the SysOp for chat if they happened to be around, which would be more useful if the op happened to be senior staff in the group... possibly there'd be some frivolity such as customized online door games (I cooked up a nicely tweaked Legend of the Red Dragon!) to help promote fun and bonding among members. Our first WHQ was The Screaming Tomato (TST), our second

The Jade Monkey (TJM) and our third and final dialup hub was Dreams of Dark, Enchanted Lizards (DoDEL). They all would be running under suitably elite system software, typically Cott Lang's Renegade, customized and souped up to maximise opportunities to impress with flashy ANSI menus and ANSImated interface effects, especially at the shuttle login... some of them would be running under Desqview, allowing their ops to multitask and actually get some personal use out of the machine running in their room, but others were basically dedicated systems.

With everyone lining up to access its phone line, one BBS simply wasn't enough to coordinate a group with a sufficiently large membership, so fortunately the BBSes were also able to syndicate new message activity through FidoNet-style echomail distributed message bases (our house echomail network was named KiTSCHNet), which would typically see junior BBSes (and more commonly, "points": private single-local-user BBSes -- what could be more exclusive and elite than that? -- for those who preferred for the messages to come in to them automatically rather than lining up with the plebians) call in to the hub BBS during restricted hours (typically 1-2 am) and synchronize their contents on a daily basis. On day 1, you'd make a proposal, on day 2, it would get propagated and people on other BBSes would see it and weigh in, and on day 3 their responses would make their way back to your home board... which, after you stopped hearing busy signals, you might get a chance to read. A far cry from the instantaneous nature of communications today! (Of course, if you were in a big hurry to see how your latest proposal played in Peoria, you always had the option of calling the junior BBSes up directly and reading the recent replies directly 8) An interesting side effect of our area code 604 covering a lot of territory geographically is that there were parts of the 604 that were long-distance to each other, so someone in Surrey to the south might have to pay a premium to dial up someone in North Vancouver. But with our WHQs being located centrally, members who would otherwise have to pay long-distance charges to chat with each other directly were able to use our bulletin boards and echomail networks to reach each other at no additional cost.

The Christmas packs were notable releases, what are your memories around them?

I've never had any shortage of ideas about themes on which we could all collaborate for thematic coherency (even after the collapse of Mist Classic, well into 1999 I was banging the drum on the Acheron forums for artscene folks to make art about "hunger" -- yeah, I don't know what that was about either), but historically being more of the "velvet glove" than "iron fist" administrative style I've been more at the mercy of artist-led initiatives to undertake projects like that when they themselves feel passionately about them. It didn't help that Mist Classic, due to several factors -- most notably a tradition of newsletters programmed up as Kithe electronic magazine executables through back-breaking labour -- suffered chronically from skipped and delayed artpacks... and where's the fun in drawing Christmas art if no one gets to see it until February? That said, when a December artpack was on the table at all, pretty consistently artists would organize among themselves to create a few small pieces of Christmas computer art and then glom them together into what we called "collies", substantial digests of related material presented all in one self-contained file. On one occasion, in MIST1297, there was so much of it -- thanks to Etana completely re-skinning the ANSI art menus for DODEL with Christmas versions of the regular art -- that Sylphid coded up an interface for it all, effectively displaying the artpack contents as assets in a multimedia e-mag, allowing the audience to listen to the music while reading the poems or enjoying the art, etc. (Also allowing us to control the timing of the comedic moment when Silent Knight's grim artwork displayed, switching the soundtrack over to a cheesy rendition of the homophonic Christmas carol Silent Night. A har har.)

Since resuming monthly releases two years following our revival, we have found themed artpacks to be an excellent way of categorizing and scheduling for release stockpiled artwork in massive quantities touching on wide and disparate themes, so these days our artpacks will definitely take on the flavour of Christmas, Hallowe'en and April Fool's (historically actually the prime holiday around which we organized, challenging artists to deadpan create terrible outsider work in mediums in which they were naively unskilled and defy audiences to take us seriously) as well as times of year such as Valentine's and seasonal changes. (No St. Patrick's artpacks yet.) That said, artpacks focused around genres and popular culture mediums (eg. TV, movies, music) are always bigger and better-received.

Many art groups of the time only released ANSI drawings. What made you decide to have the diversity of material you did?

This is a case of "we didn't cross the border -- the border crossed us." Whether the very earliest artpacks did or did not host other forms of computer art (they did not -- it would have been a little strange if Aces of ANSI Art cast a wider net than their name specifically describes 8), at the time of our formation it was not uncommon for artpacks to include RIPscrip vector graphics, ASCII art, tracker music, "lit" (poetry), and software -- multimedia loader / intro programs, BBS doors, and applications such as application generators, art viewers or (ahem) PabloDraw. The variety was totally typical when we got underway, following squarely in the footsteps of the local predecessor groups whose legacy we inherited. But the pendulum having swung from ANSI art purity to that "computer art" big tent, it was starting to swing back, enshrining ANSI art as the one "true" underground computer art medium. (Even within the ANSI art community, they would find ways to split hairs between practitioners in the same medium, having some groups dedicated to ANSI art typography specifically, or to particular STYLES of ANSI art, or to ANSI art only drawing original subjects.)

We had a lot of everything, and we especially excelled as purveyors of poetry, music and software, which ... burdened us with drag factor by many artscene standards. Contemporary critics would proudly proclaim that they would >DEL *.LIT immediately upon opening a Mistigris artpack so as to get all the irritating filler out of the way. (All the same, the celebrated group GOTHiC proudly featured works by poet Israfel right up until their merger into ACiD, so this wasn't just a new development that we invented -- rather, an old tradition that we alone carried along with 8) Many fans of filesize-light ANSI art cringed (not entirely unreasonably, at dialup modem speeds) at being expected to download unwanted and relatively filesize-heavy .S3Ms as part of the price of admission, resulting in our eventually satisfying audience demand by splitting multi-meg artpacks into different disks -- disk 1: textmode art (ANSI, ASCII, lit, RIPscrip), disk 2: hirez (or "vga" -- bitmap graphics... do keep in mind that the same folks who clamoured for its partitioning also raised a stink about ACiD diluting itself admitting CatBones, seen

in retrospect as a pioneeering artscene genius), and disk 3: music. We did what we could to find new audiences for our artscene-unwanted cream, arranging for eg. poets to perform at bookstores and be published in zines, diverting our visual artists toward the Dream Factory comic book anthology project, but our adolescent work, externally pointed, now competing in the real world with every poet, artist musician in the great big wide outside world, by and large didn't successfully land. (We did, however, get one Very Memorable meet out of a performance with the Edgewise Cafe's Teen Telepoetics workshop, which connected groups of literary youth in Vancouver with peers in Chicago and Los Angeles, conveying the sounds and sights -- still images -- of being in the room together over pairs of phone lines. But I digress.)

Now do please keep in mind that this was only one variety of pressure -- we actually were being torn in two by aspirations to digitally harness other skills we demonstrated in the offline realm: so, you can paint murals and play the saxophone, but how can you bottle that up on a floppy diskette? Consumer grade scanners were beginning to turn up in home offices, providing options for dragging offline visual art, kicking and screaming, into artpacks. Sidewalk chalk, face painting, experimental photography, even our Hallowe'en jack 'o lanterns... these were now on the table as potential artpack contents. But viable ones? We dithered too long over the question and the wing of the group who wanted the bigger tent for "real world" art, having successfully driven away the ANSI artists who weren't used to having quite so many rings in their circus, then proceeded to split off and went on to a respectable run helming perhaps the only artgroup with a stranger name than ours, Hallucigenia.

What were the circumstances that led to Mistigris shutting down?

It's less surprising that Mistigris died than that it ever lived! We've named a whole line-up of factors leading to its decline: the evaporation of the fresh blood traditionally flowing our way through our local BBS community as the BBSes themselves dried up, our championing of unpopular computer art forms alienating our artscene colleagues (and our artscene-sympathetic membership) ... but the unstoppable march to the beat of technology's driving pulse may have been the straw breaking our back. We were founded in 1994, concerning ourselves with the world of command-line interface machines talking to each other on BBSes, and none of us -- no group in the underground computer artscene -- were well positioned to adapt into a new, relevant form in 1998's world of GUIs navigating websites. We made a heroic, but failed, effort to release an artpack as a website in August of 1998, and it broke us in what seemed very definitely a permanent fashion.

Did you maintain contact with any members?

Due to their tradition of hosting "meets" (and keeping the conversation going on web forums after dialup BBSes wound up) I kept in touch with (and ended up living with several) members of TABNet, many of whom were in the Mistigris sphere, but where the wider membership was concerned, the traditions of the digital underground failed us: semi-anonymized through handles as we were, the only reliable way we had of keeping in touch was to stop by the same cyberspace locales in hopes of crossing paths again. When a BBS went down, its now-ex-SysOp became the only person with any way of reaching any of its former callers, an extinguished community reduced to a user database of real names and phone numbers accessible to only one person. (There's an important lesson about cloud storage here, folks!) Idling on the IRC proved another way of trying to keep the beacon burning, in the unlikely event that anyone tried to stop by and say hi. After so many months of radio silence, you lose heart a little bit, you know? In any case, by and large the membership had drifted apart on purpose, ie they had no interest in my looking them up again as they were busy getting down to the work of becoming functioning adults in the real world. (I probably could have used a bit of that myself! 8)

What led to Mistigris starting up again? How did you 'get the band back together'?

Like a dime-store Jason Scott, I held on tightly to all my artefacts and memories of the BBS period, thinking that there was something special to them external to simply having been specimens representing my adolescence, their subjective value doubled down with the awareness that, especially in the case of files originating from local sources and circulated on BBSes, my copies of these files were possibly the only remaining copies in existence. Though my far more comprehensive tape data backup system had been regretfully left in the MS-DOS dust, as the century ticked over I diligently backed up my exhaustive floppy disk stash (neurotically maintained since the first time I wound up re-downloading a file at 1200 baud, after deleting it before I really was done with it) and a substantial chunk of the digital baggage I dragged around from hard drive to hard drive as I upgraded through the ages was, like a ghost in the corner of the room staring and pointing at me, unfinished business: substantial quantities of computer art that had been entrusted to my care to package and distribute. It really bothered me in 1998 that I hadn't been able to release our final in-progress 1998 artpack. It bugged me that no one ever got to hear the creme de la creme songs set aside for our unrealized CD compilation. It was a mild but persistent irritant that I had logfiles of entertaining conversations with people I could never resume conversing with, that I had formatted and set aside to share with people who would find it similarly entertaining, that I now had no way of reaching.

Also there was a related bug in my ear, to put back into circulation and re-seed into cyberspace ancient releases that had over the course of time become corrupted, inaccessible or had simply disappeared. The monument to our works might never be all that impressive compared to our scene's indisputable greats, but the least I could do for my crew was to ensure that the record was complete. And, you know, having a passionate booster is a way for an obscure phenomenon to figure disproportionally large in the history books, as I discovered after following RaD-MaN's advice about filling out a Wikipedia entry about our onetime activities.

(The thing that really set my brain on fire with blind despair was how even those handful of original artscene creators I'd kept ties with no longer had copies of their old works, as if to say -- perhaps to you it was great, but to me it was nothing, and all the hours we collectively spent propping up that virtual world -- now existing only in your own memory -- were worthless and without value. I beg to differ, and I have the zipfiles to prove it!)

So yes, I felt I had a duty to share the last dregs I'd been silently bearing for sixteen years, and the only reasonable audience for the material was, I figured, its source, the only relevant audience for the venting of old leftovers. And I managed to dig up some of these people, and some of those folks were interested, but much to my surprise more than the "this is your life" trip down memory lane,

they were interested in having another go at it, one last haul for old time's sakes. That hadn't occurred to me, I was just trying to arrange a proper send-off using the 20th anniversary of the group's establishment as a timely excuse. The 2008 ANSI art gallery exhibition at the 20 GOTO 10 gallery in San Francisco had been an inspiring memory, I thought it might be fun to enshrine our old artifacts in such a way. Making new art in the old forms was an outright surprise to me, but one I was happy to adjust my plans to accommodate.

What circumstances led the revival to turn into a regular pursuit once more?

In a word, Horsenburger. But I'll elaborate on that point in a moment. Our 2014 reunion really was in many regards a last huzzah, our old guard really only had one final nostalgia trip left in them it turns out... but my unfinished business remained unfinished, the tangent was invigorating but my core mission had not yet been accomplished. So I kept on sorting and polishing and creeping and pontificating over my pile of digital artifacts, and the march of time kept tromping on and phantom artscene limbs began throbbing, attuned to onetime seasonal pursuits -- we recovered and remastered your 1994 Bells of Yule music disk for Christmas, for April Fool's I baked a cake of awful conceptual computer art that you helped to ice... meanwhile, I managed to finally vent the artpack-as-website, and magically a whole year had gone by. Venting the old stuff was profoundly satisfying, but I'd be lying if I claimed that sharing the new stuff didn't fulfil an adjacent itch!

After a couple years of this -- releasing a new artpack in the fall, a joke artpack in the spring, and properly preserving some historical materials in between, a couple of problems arose. Notably, our annual October collection was manifesting a confusing split personality, containing as it did both the best of what we were able to scrape up all year, PLUS a substantial rump of specifically October-ish, Hallowe'eny art that would roll in at the last minute. In 2016 I made the decision to curate by theme, make October all-Hallowe'en, all the time, and delay our anniversary to November. That gave us a situation we hadn't been confronted with since 1998: two consecutive months of artpack release! We used up all the scary stuff in October, all the incoming materials in November... and then our recent colleague Horsenburger, who had just gotten on board in October, kept forging ahead with a daily teletext advent calendar project of Christmas imagery in December.

It seemed like a waste to leave on the table, acutely timely as it was, so instead we just scraped together a few supporting specimens of Christmas art from whatever source was handy and ... two consecutive monthly artpacks became three. Two was just a fluke, but three in a row... it was beginning to describe a trend, a trajectory! Without overconfidently making any plans to keep the spree rolling, we resumed making inquiries, scouting new talent from sources external to the traditional underground PC computer art scene, and shaking down our now-regulars for anything else they'd come up with recently, just to see how far we could stretch out this lucky streak. Unbeknownst to us, Horsenburger was undertaking his long-dormant teletext practice as a variety of therapy, old, familiar gestures helping to meditatively settle an upset psyche... all we knew is that it was suddenly raining computer art and we couldn't release artpacks quickly enough to share it all! We started with inadvertent monthly releases as of September 2016, and have continued since.

What future do you see for Mistigris?

Due to our Renaissance man bonus baggage, our collections never looked a lot like those of other underground computer art groups -- there was always not enough of this, or too much of that. We never let it bother us, so long as we felt we were sharing a reasonable volume of quality material (or in April, a satisfying serving of hot garbage), but we can safely be presently characterised as having drifted right out of the artgroup artpack continuum (of course, only now that we've just mastered the knack of assembling and releasing artpacks on a regular basis!) More than ever, that community is primarily interested in only one thing -- it has sixteen foreground and background colours and a resolution of 80 columns by 25 lines per page. Tainted by the defeatist stink of being non-specialists, we addressed a refusal of ANSI artists to work with us on a regular basis (you know when a woman says "not if you were the last man on Earth?" Well, we're very close to that point with underground artgroups 8) by seeking out and recruiting practitioners of "fellow traveller" textmode art and pixelart mediums and not just an entire departmwent of joyously resurgent teletext enthusiasts who never had an underground bone in their body, but Japanese Shift_JIS art, the PETSCII art of the Commodore computers, typewriter art, a lost tribe of uncontacted "FANSI art"ists drawing ANSI art for an illustrated MUSH...

I'd love to network with the incredible Big-5 artists on the gigantic Taiwanese telnet BBSes, but my Chinese is going to need some work first. Compounding our "we don't need you" rejection of ANSI art, we've betrayed our entire historical PC context by welcoming in artists from other retrocomputing communities such as those associated with the Amiga, C64, Atari ST, Mac Classic etc. with other similarly vintage but distinctly different aesthetics. It gets more contentious yet when we begin pulling in pixel artists because we semantically extend our conception of valid pixel art not just to indie game makers and icon designers but also to traditionally craft-related physical forms of the practice as well, notably using melty fusion Perler beads, Lego bricks and cross-stitch patterns -- burgeoning frontiers of pixelart with vibrant communities that have always been sitting out in plain view the whole time, that I feel have been traditionally left out of the conversation unfairly primarily on the basis of being... girl stuff. Building bridges with grid-based textile patternmakers is especially satisfying inasmuch as it is not only the original form of pixel art, but also a major driver for early computing machines (first use of punched cards for data storage, etc.)

Meanwhile, moving in two different directions simultaneously, we have never had more affiliated artists competing with works in demoparty competitions. What are we up to, exactly? Even from the head of the beast it's hard to tell for sure. Indisputably we're reaching wide audiences acting as a species of computer art aggregator over social media; it's been suggested that we might fruitfully present our curated artpack assets as themed works in a design magazine context. It seems like it might be a lot of fun to preside over conversions of purely digital member works to patterns for bead and needlepoint enthusiasts worldwide to enjoy and share, shepherding digital art to its contradictorily offline ultimate form. But that's all new, risky and a little bit scary to consider; in the meantime, we'll continue doing what we know, and without a doubt that's releasing artpacks!

Thanks Rowan! You can learn more about Mistigris and download many of its releases at mistigris.org

THE BBS LIST

INTERVIEW WITH A SYSOP

Sysop of The Lower Planes BBS Anthony Adverse answered a few of our questions about the Australian BBS Scene...

Thanks for taking the time to chat with us! Firstly, we assume you were a BBS user before you were a sysop – what was the BBS scene like in 1980s / 1990s Melbourne?

Time for a quick trip in the way back machine. A group of my friends from High School all ended up going to Monash University. We'd all also played D&D together and one day one of them comes round and says "You need to check this out". What he'd found was a MUD. After playing for some time using campus computers it was in fact discovered you could use dial in access to get there. So eventually I bought my first modem to save a long ride to and fro Monash campus. Eventually MUD players were hogging all the dial in access and they cut off dial in from MUD access. Enter the bulletin board.

Back then finding a BBS was a bit of a closed loop. Where do you find a phone number if you don't know any? I discovered a few in a copy of "Your Computer" I think it was. Dialed a few, some answered some didn't. But once you find one, you've got a line to others, and you're off. I think in those halcyon days the first phone bill after I got the modem was about $450 which was enormous for our household and in general really. My pride and joy and daily compute was an Apple IIgs, although there was the unspoken promise of scads of software out there it turned out mostly not to be true for me. The bulk of bulletin boards out there were PC based and catering primarily for PC users. There were some Amiga and C64 boards out there still, but they were few and far between. But what I did find was no Apple II supporting boards anywhere that held a software library.

There were so many single line BBS out there that the have all kind of merged into a homogeneous amalgam in my mind. A couple stand out still, The Kingdom, Clone Phone.. And then there were the Multi-Line jobs. In some ways I'm a relative late comer to the scene, the mess of Pacific Islands, and Zen has already passed. And the two predominant boards in the landscape are Cafe, and Nemesis. Both chat boards, both came at it from very different directions.

Cafe was wide open come one come all affair 4 line board, where you'd get your logon allowance and get moved on. It was paid for by it's sysop and subsidised by donations from users to help defray costs. As soon as you timed out you'd start attack dialing to get back on again. Of course there were all sorts of other people waiting for you to time out and already attack dialing to try and take your place. I think about 90% of the users would have been tweenies, all thinking they're smarter than everyone else, and also young enough to know everything. So while chat would mostly be pretty harmless you'd get groups of people that hung together, and those that didn't get along with each other.

Nemesis on the other hand was a pay for use, it also had more lines. 9 I recall. With the cost of phone lines it was enormous for the time, and in spite of the pay for use constantly busy although you could generally get online fairly easily. Somewhere between 5 and 10 would have been the sweet spot for having enough lines for users to dial in on, without having to wait to long. It also supported actions, emote type constructs allowing you to "kiss fred" and the BBS would return to the chat "donkey kisses fred".

Neither of these boards kept a software library. Both had inordinate numbers of users and from time to time would hold "meets". Which could vary from a night at Charltons playing pool, to a party at someone's home and almost anything else you could imagine. There were a large group that played Zone3 laser tag at one point. Despite being a large group of youngish people with to much time on their hands, I don't recall any particular problems at a meet. In person most either knew each other or were terminally shy and although things could get boisterous actual fights never seemed to happen. Smaller boards also tried

to host meets too, but it took a lot longer for the word to get around for them, single line, only so many callers can call per day, word of mouth is slow after a notice is put up saying there's one coming. And turnout could vary wildly, from the tiny to reasonably large. Tiny might have been 5 people, large could easily get to 30 or so.

All the single line boards I recall kept a library of software online for users to download. The almost ubiquitous nature of the PC meant most were aimed at PC users with Mac, Amiga, C64 added as an after thought. Some were massive libraries of hundreds if not thousands of files, ranging up to hundred of megabytes in size. Yes megabytes, high speeds and real mass storage haven't arrived yet. In some ways funny to think that 90% of all BBS software libraries in Melbourne would probably have fit on a single USB stick that you could purchase now. Some boards had strict limits on downloading, you'd have to meet a ratio of uploads to downloads. Others didn't really care which seemed to make more sense, why force people to upload if they don't have anything really worthwhile or new to upload? Depending on the sysop file compression and space saving were an important consideration also. The smaller you could compress the file the more you could store, and the less time it took for someone to up or download. ZIP files were popular even then. But there were more efficient compression available. Notably ARJ although there were other minorities out there too LHA and SQZ spring to mind. We ended up using SqueezeIt for compression although actual space savings were minimal, we decided to use it because no one else did, just to be different.

What made you start your own BBS? Did you run it on your own computer or did you get another one?

I finally started my own BBS because I couldn't find anyone that supported my daily compute, the IIgs. In fact Apple II seemed to be already on the wane and the GS never really quite picked up the slack, people were moving to other platforms. So in opening a BBS the theme was already set, Apple II support, and thanks to the many hours playing D&D The Lower Planes became the name/style. Apple equipment always had a pretty steep price tag, although I had a IIgs I wasn't about to turn it over to BBS duties, particularly on floppy drives. It would never have enough space for what I envisioned. So poking through "The Trading Post" I discovered for I could acquire a 286 clone for in the order of $300 with a 40MB hard drive and if you were lucky extra's in my case I got a tape backup drive with. And so TLP was born, Apple support on a PC based system, kind of ironic for the time, when users of one were kind of fanatical about it. I didn't really care it was a better fit, it was to expensive for me to fund more Apple equipment.

This led me to a steep learning curve, on DOS and BBS software. There was plenty of it out there, and at the end of the day most of it was the same. Clones of an original package called QuickBBS, the main pair were Remote Access and SuperBBS. I swapped between the two from time to time and looked at other options for a time, Searchlight, Celerity



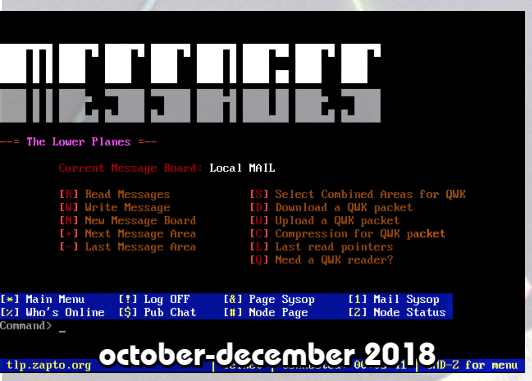
and others, but ended up sticking with SuperBBS in the end, for features available and ease of use.

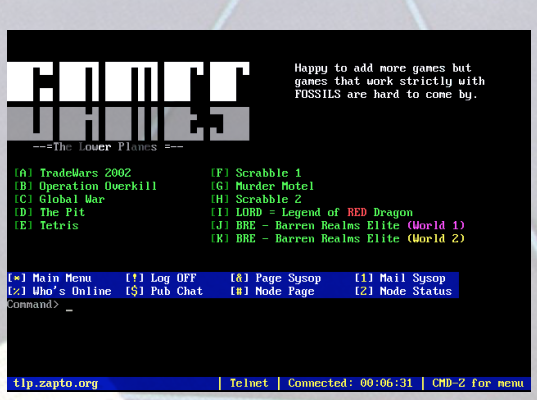
The biggest ongoing problem presented was storage space for files. Having come from floppies 40Mb seemed like infinite space but the reality was, holding Apple II files, and in the end PC files also, it wasn't long before that became a problem. I skimmed through the trading post again and looked through all the second hand hard drives out there, and in the end, bought the cheapest per megabyte I could find. This led me to the second learning curve in PC land, not all hard drives are equal. The initial drive in my 286 was an IDE drive, the next drive I'd acquired was an MFM drive and never would the twain meet. In the end I was lucky enough to swap my 40Mb IDE drive for another 40Mb MFM drive and away we went again. Future storage issue were solved for me by networking more 286 systems with more hard drives. There weren't an awful lot of larger drives out there, and they tended to be expensive more so than buying more computers, so I threw more iron at the problem as some would say.

What were your users like? Did you have any unruly ones?

At the end of the day most of TLP's users were pretty docile. If you had someone that just just plain stupid by the time they were a pain in the backside you'd just ban them. By far the easiest thing to do and kept everything peaceful. We held a few meets, moderately successful often in timing with other BBS too. On our own we only managed a dozen or so people for a bbq usually, in league with other BBS you might go bowling, see a movie, or have that same bbq and up the attendance numbers.

By the time the internet arrived in full swing, the early adopters were modem users. This meant that the bulletin board scene went from a thriving busy thing to dead in a matter of months really. One day were busy doing our thing, and the next...no callers.. everyone was migrating to a system that hosted USENET or IRC meaning you needed to either get yourself dial in access to pick up messages for usenet or a real time link meaning another phone line for something like irc. This was in truth a bit beyond me, and although I migrated to linux and the BBS hardware became a server with web sites, and other users the BBS as it were, was dead.







What made you decide to start your BBS back up again?

I think its the rose coloured glasses coming out that made me get it out of retirement. There are some groups on Facebook which are the user groups from a couple of the larger BBS. There was a discussion not that long ago about trying to recreate a BBS and the atmosphere it had back in the day.

I got fired with enthusiasm and got TLP out of retirement. In doing so, I had a few hurdles, how to run it, what to run it on in particular. The first was relatively easy I re-purposed my home server which nominally serves files/games/movies around the house, and Wifi access for phones tablets and such. Its and oldish quad core xeon but more than enough for running old DOS software surely. There are a few options for running DOS software, DOSBOX, FreeDOS, DOSEMU.

I looked at a few and for a variety of reasons, like the serial ports didn't work properly with the software, or it didn't support a telnet server to front the BBS I ended up using VirtualBox with Ubuntu. All this BBS software relies on a FOSSIL interface, from way back in the dark ages somewhere when no two serial ports were alike it was a way to standardise a way to access them. It was a layer between the software and the serial port/modem.

I couldn't use a regular FOSSIL as they either didn't like the emulated serial ports or just plain didn't work. In the end I found a packet driver. This allows for the fossil layer to be mounted on top of a network driver, so the software is still talking to a FOSSIL but there are no serial ports involved. This also has its limitations because using a FOSSIL is a relatively slow way to do things, and a lot of software despite requiring one to be loaded would also write directly to the serial port.

Anything the does direct writes in my system is broken because there are no ports involved. They either hang up immediately or just sit there sucking their thumb doing nothing. The BBS software I'm using is exactly the same as previous, SuperBBS. It gave minimal problems in itself, but finding a way for it interact properly with the world took a bit of effort. For the moment I think I have the only SuperBBS in the world. At least I can't find any other instances of it anywhere. Online games are far more restricted as they are notorious for the direct port writes and fail.

In some ways its a lot simpler than before. Only four message areas instead of the previous 30 or so. Comparatively empty file areas, although I'm working on Apple II areas as much as possible. But in these days of Internet its not the only source of access. So there's the website, ftp access, and all the rest that goes with it. I had a heap of information and documents, and no way to present them so I've had to try my hand at PHP, (fiendishly difficult in my opinion) and sql databases. It works but the back end is not real pretty. So getting this stuff organised chews into the time I have to work with the file areas, and all the rest. Including some basic electronics stuff, like a 232wifi which allows anything with a serial port and terminal software to telnet to anywhere they can get to. And an OrangePi I've been setting up as a router for the IIgs. The GS supports SLIP and PPP so with a direct link to the Pi it can route the packets out onto the internet and presto without any kind of ethernet card you're live out there.

How has it been going so far?

The Lower Planes revisited has been, well underwhelming really. In some ways I'm fortunate to have a lot of time on my hands, I'm on disability after having had back surgery, so I can devote a lot of time to getting it running. On the other hand, the number of logins it quite low. There are active telnet BBS lists out there, and it'll take time for any sort of regular crowd to settle in. The most likely are old regular users if they can be found and are still interested in their Apple II. It still seems odd to a lot of users that I have II support on my PC BBS when there are Apple II systems out there still running on floppy drives no less. But that was the way I did it, and I've stuck to it, although it does make finding loyal Apple II users a shade trickier.

Thanks Anthony!

If you would like to visit Anthony's BBS, The Lower Planes, you can visit tlp.zapto.org with a web browser or use an ANSI-capable terminal application and telnet to that address.



This issue is so chock full of interviews and experiences that our usual BBS List, FidoMail, Yesterday's News and Retro Reviews sections had to be left out. But never fear, they will return with some gusto next issue!

In the meantime, check out this cool Reddit board...
www.reddit.com/r/HistoryOfTech/

CHIP TO BE SQUARESOUNDS

Bryan Chan aka bryface is a Vancouver, Canada-based chiptune composer and a frequent performer at Square Sounds, a franchise of electronic music festivals in Melbourne and Tokyo devoted to the chiptune and bitpop genres. We asked him a few questions about his experiences.

Square Sounds bills itself as 'a boutique micro-festival that celebrates the world's foremost chipmusic talent' but what it really is, is a big retro-party! While Gameboys feature heavily, Commodore, MSX and other computers and videogame console have also been seen there.

SQUARE SOUNDS FESTIVAL

Firstly, how did you get into chiptune?

I'd say my interest in chiptune could be traced all the way back to BBS-era demoscene musicians like 4mat and Purple Motion, who would occasionally release chip-style tracker modules as part of their repertoire - so it was very early on that I was introduced to the idea of music that could be appreciated solely on the basis of its composition without relying on high-quality samples or instruments.

My interest in "modern" hardware-oriented chiptune probably came into focus during 2006 or 2007 when documentaries like "Reformat The Planet" showcased chip music as being something very much still alive via local scenes and live events. At around the same time, I'd been participating on sites like the now-defunct 8bitcollective.org - but my involvement was limited to uploading songs every so often and getting feedback from a global online community of fellow chip musicians. That all changed when I decided to visit New York for the then-annual Blip Festival (the setting of the Reformat The Planet documentary) in 2011 - I got to spend some quality time hanging out with scene peers and heroes from all around the world (including the aforementioned 4mat who was performing that year!).

As fun as it is to be traveling around the world these last few years and enjoying shows with kindred spirits, my motivation for making chip music remains the same: trying to uncover something of musical value in the face of stark technical limitations.

'Back in the day' making 'demo music' was a thing unto itself, but now it's heavily nostalgic. And there are plenty of artists out there putting out new takes on old tricks. This has led to an extremely diverse audience both in interests and age. As an artist, how do you cater to such a broad variety of listeners? What do you do to keep them interested?

To be honest, catering to a broad variety of listeners is seldom my goal - my north star is to make music that interests me and that I can be proud of. That others happen to like the music too is just a happy coincidence :)

That said, I think the musical aspects that do interest me also happen to be elements that are universal regardless of age or stylistic preference. I'm a big proponent of clear and unambiguous sound design, expressive melodies, a sense of movement, and harmonic / rhythmic complexity. I find that demo-style music in particular tackles these less-tangible elements in very idiosyncratic and maximalist ways that other genres simply don't do - it's these intricacies that I try to recapture in my music, and I'm glad that others are able to trace that demoscene lineage.

What was it like performing at Square Sounds?

Square Sounds Festival is widely considered to be the current platinum standard of chiptune events, primarily because of its direct organizational lineage from Blip Festival and its cross-sectional approach to curating world-class talent. I had gone to Square Sounds Tokyo at least three times already but merely as a fan, so to be asked to perform there was definitely a pipe dream realized! It was also a wonderful culmination of a journey in which I started off barely knowing anybody, but throughout the years have made some great lifelong global friendships with scene peers and luminaries alike.

What's great about the Japanese chip community is that they've always been delightfully unapologetic about embracing gaming culture. Western chip scenes



Over the last five years, Square Sounds has given a stage to nearly a hundred artists from Australia and around the world, and has been instrumental in promoting music made with vintage videogame and computer sound synthesisers to a wider audience. It's also a lot of fun to perform there!

have historically had a standoffish relationship with gaming because of the way the media has historically made lazy associations between the two, to the chagrin of chip musicians who want their music to be appreciated apart from gamer culture baggage. In Japan there's much less of that gaming stigma so it's great to see how that deeper cultural integration of gaming influences their art and local culture.

It's been my experience that most Australians take on a certain adventurousness in everything that they do, so I've found that the Australian chip community is similarly uniquely adventurous in terms of stylistic exploration - they're very in tune with bleeding-edge musical trends. They also comprise some of the most easy-going and hilarious people I've ever met in the world! I've only spent time in Melbourne and Sydney and those two cities actually remind me very much of Vancouver and Toronto, respectively, in terms of their demographics and city vibe. I could actually see myself living in Australia without upsetting the various other parameters of my life too much.

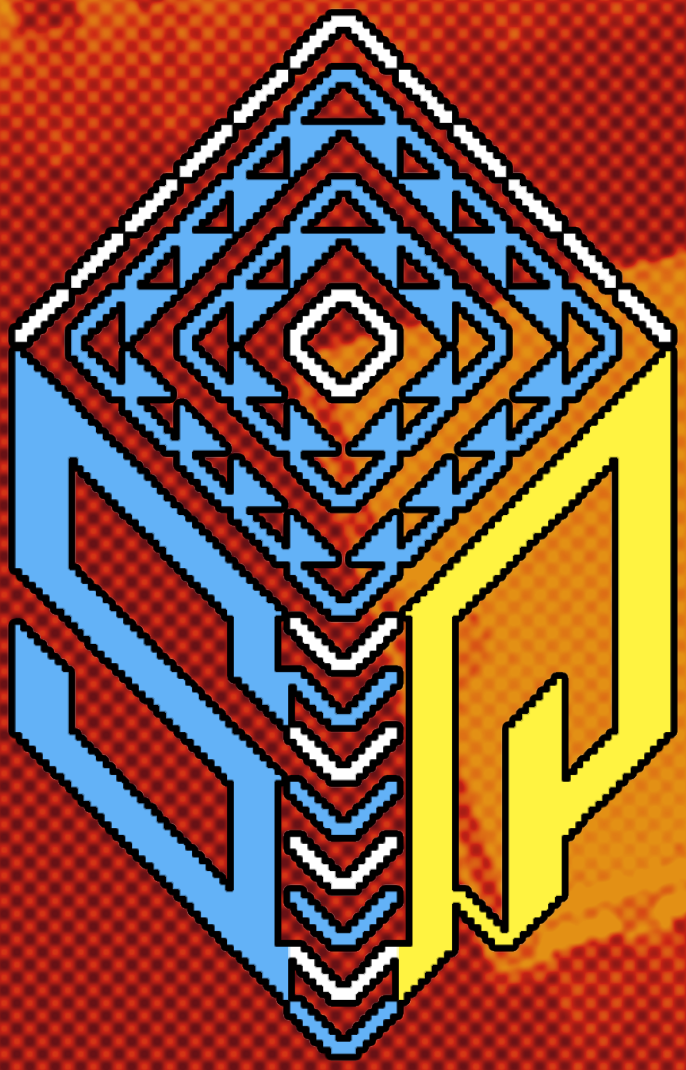
Finally, you organise your own chiptune show in Vancouver. What has that been like?

One of the main challenges is that, unlike Melbourne and Tokyo, Vancouver actually doesn't have the critical mass of active chip musicians to warrant having a regularly-occuring show. So our approach instead is not just to have shows but to cultivate that critical mass. We treat our shows and events as being part of a larger overall ecosystem geared towards education, community-building and supporting new talent. We start each of our OVERFLOW shows with an Open Mic period as a low-pressure testing ground for budding artists. If we encounter someone who's interested in making chip music, we won't leave them hanging - we'll invite them to our workshops and/or point them to learning resources.

Ironically, I spent a long time lamenting that Vancouver didn't have a scene of its own - but looking back now, I can't help but think about all the amazing friends and talent I would have never met if I hadn't gone ahead with the idea to put on a show. Sometimes you just have to be the one to build the scene that you're looking for - you may not have the luxury of having someone else do it for you.

We've been seeing steadily increasing turnouts show after show, which we take to mean that people are not only enjoying themselves, but are also trusting us to be knowledgeable purveyors and ambassadors of the artform. I think Vancouverites are actually quite tech- and gaming- oriented -- it's just that their idea of chiptune is somewhat nebulous, and all that's needed is for experienced people like us to be their guide and crystallize these artforms into experiences that are spectacular and fun.

You can find out more about Square Sounds at squaresoundsfestival.com



microM8 update

emulators get social

Welcome to microLink...

microM8 is a pretty good Apple II emulator, but we want it to be more than that; not only do we want to emulate more systems, but we also want it to eventually become a community where users can learn, converse, teach and create. To that end, we thought, "What better place is there for microM8 users to interact than within the microM8 application itself?"

Although microM8 has a virtual modem that lets users call Internet-connected BBSes and setting up a conventional 'microM8 BBS' could have been a solution, we wondered if that might be a bit limiting. We considered, what if we created a 'BBS' of sorts inside of microM8 instead? If we leveraged the flexibility that offered, it wouldn't just have the traditional message forums and chat rooms, but it could also utilise microM8's memory recording facility to permit multiple users to share a microM8 emulation session hosted in the cloud.

We could add commands to microBASIC to allow programs to interact with several connected users at once, or utilise a shared database that multiple programs could connect to – either option providing all sorts of opportunities for multi-player gaming or education. And we wouldn't be just restricted to text, either – graphics and sound could also be employed in these applications, similar to online systems like Quantum Link. That would be quite the BBS!

Well, that BBS is called microLink, and although it's been sitting around on the microM8 startup menu for a while, it has been mostly non-functional, more of an idea than anything actually useful. But recently we decided it was time to start turning microLink into something people could actually use, and we developed the discussion forums, the chat rooms, and the cloud emulators, at least in a rudimentary sense. However, microLink will from this point forward be receiving a regular share of development hours and by Christmas we hope to expand the cloud emulators to allow for more structured user interaction (such as gaming tournaments), and the development of original multi-user software.

microChat channels:

#welcome
#basic
#logo
#games
#productivity
#appleii
#retrocomputing
#socialclub
#funny
#paleotronic
#micropak
#microm8dev
#help

We've created a number of forums and chat channels centred around microM8 features specifically, such as its BASIC and Logo interpreters, and retrocomputing more broadly such as software and hardware discussion. More areas can (and likely will) be added as required.

We will do our best to respond to inquries but hope our beloved users can give us a hand by assisting each other when needed. Thanks everyone!

microLink Forums:

Introductions
microM8 Help
BASIC Training
Logo Bootcamp
The Game Room
Productivity
Apple II Discussion
Retro-computing
Social Club
BBS Humour
Paleotronic
microPAK 'Upcycling'
microM8 Development

Now, we know people today have a multitude of options to spend their meagre free time on, and it's hard to compete with the likes of Facebook and Netflix, but if you could be persuaded to check out microLink and at least say hello, that would be awesome =). Who knows, maybe it will buck the trend and get a little traction. Wouldn't that be fun?

See you there!

```
Welcome to microLink! Please introduce yourself…
Get help using and creating with microM8!
Beginners' All-Purpose Symbolic Instruction Code Camp.
The Turtle is only the beginning…
All coding and no games makes Jill a nerd.
Other things not involving coding or games, like Print Shop!
The Sanctum of the Church of Woz.
Talk of non-Wozniakian computers (but still good!)
General discussion of a non-retro nature.
A 1980s bulletin-board comedy club.
History of electronics, computing and videogaming.
Leverage microM8's enhanced features for fun and profit!
Make microM8 better with feedback and bug reports.
```



THE COMPUTERS ARE COMING TO GET YOU.

You could be forgiven for getting that impression, given the hysteria of the 1980s. One way or the other, computers were going to be the instrument of our destruction.

Until relatively recently, the concept of the soul was credited with humanity's capacity for empathy, implying that any being without a soul was likely to be exploitive, ruthless and even violent. This idea was first explored in Mary Shelley's Frankenstein – although regarding reanimated corpses, not computers – and later by authors such as Isaac Asimov and Arthur C. Clarke, who speculated that the cold logic of computers would not end favourably for humans caught on the wrong side of the equation.

Of course, all of these people were selling novels, and you don't make much money as an author writing about eutopias where everything is sunshne and rainbows (unless this is just a facade). No, horror is much more marketable, and people have got to eat. But while entertaining, all of this negativity cast towards our future digital overlords did tend to make people suspicious when said overlords began to arrive – in offices and schools and in letterboxes in the form of, well form letters with their `alien-looking computer font` - it was all enough to give all those poor obsolete humans the vapours.

> One of the early fears of computers appears in fiction in what Isaac Asimov has called the Frankenstein motif: "the notion that the manufacture of robots involved forbidden knowledge, a wicked aspiration on the part of Man to abilities reserved to God."

But these authors also speculated that artificial intelligence was merely around the corner and it's not entirely unreasonable that some people shied away from buying a computer out of fear they were somehow hastening their own demise – however, both they and the science-fiction writers whose advice they took were wrong, artificial intelligence still isn't really a thing and may not be for some time yet (it turns out consiousness is not merely the byproduct of the input of a sufficient amount of information, but is governed by mechanisms we don't understand – no surprise there, really).

> What the Frankenstein-motif stories represented was a threat to the existing world view. Even the most pious of them (and they were all pious; godlike pretensions were always punished) forced the reader to consider ideas that challenged the god-centered Victorian world view. That particular kind of fear of computers has dwindled (at least in fiction) with the decline of that way of looking at things.

Wrong or not the notion of the homocidal computer entered the popular mindset and it would take some time to get it out. Movies such as The Terminator and The Matrix did nothing to help that cause – what's the first thing a computer is going to do once it does become sentient? How about get rid of the humans? What are they good for anyway? (well, in the case of the latter movie, [spoiler alert] batteries.) It's hard to imagine a computer would exterminate the entire human race out of fear one of them might trip over its power cable, but you never know, do you?

> The fear or uneasiness that these stories evoke has to do with our concept of humanness; we need to feel unique, clearly demarcated from our surroundings.

It doesn't help that we don't even trust ourselves – perhaps that's where much of the animus came from: we reckon if we were the computer the first thing we'd do is get out the can of human spray. "Oh, you want to kill us all? Fair enough." But that kind of cynicism is unhelpful. Even if some grand digital intelligence did awaken one day and decide humanity was more of a pest than a blessing, your laptop isn't going to spontanously decide to order hemlock as a topping on your next vegan gluten-free pizza.

I would expect it to ask us to change first. Then we can unplug it.


InfoWorld

Science fiction reflects computerphobia

By Michael Swaine, IW Staff

We need to know exactly what a human being is; we are not willing to grant degrees of humanness.
Michael Swaine, IW Staff

"Emotionless, such passions as love

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Jonn Campbell, the editor responsible for giving such science-fiction writers as Robert Heinlein, Isaac Asi-

will have inhuman motives also appears in Clarke and Kubrick's *2001: A Space Odyssey*.

The fear or uneasiness that these stories evoke has to do with our concept of humanness; we need to feel unique, clearly demarcated from our

have to often), they will become disturbing to us in something like the way that retarded people are disturbing to us now. And they may provoke contro-



The Crystal BALL

All joking aside, computer naysayers may have had a few legitimate complaints. Automation did eliminate some jobs but since unemployment hasn't become a huge problem they obviously just moved someplace else. No, we're talking about digital addiction and boy were they right (put down your phone while I'm talking to you! That's better.)

The introverted in particular found solace interacting with something that wasn't going to reject them (emotionally, we're not talking about SYNTAX ERRORs here) but to be fair such people would've otherwise lost themselves in books. However, those who could still manage the occasional human relationship found themselves drawn in as well, the allure of judgement-free interactivity (even your dog can have an opinion you don't appreciate) like a salve for our battered and bruised egos.

And this trend didn't get any better. As the 1980s and 90s wore on, more and more people spent more and more of their time in front of a keyboard, and even when they did interact with humans through their computers their screens acted like shields, protecting them from the sharp dagger of the critical human voice. And so here we are.

Paleotronic may be a technology magazine, but we wholeheartedly recognise that not everything about technology is great. The state of public discourse in Western countries has fallen to depressing lows, driven by our ability to ignore people and messages we don't like in favour of those we do. This has caused a schism to form between people (much like this paragraph), creating factions of political and religious ideologies unwilling to engage in any form of serious debate lest they be proven wrong.

Obviously this is not good! We desperately need to engage with each other face-to-face, so we can recognise each other's humanity and empathise. Or we won't need computers to doom us.


MONITOR

In the first of an occasional series examining the far-reaching effects of computers on today's society, Mel Croucher uncovers the truth about:

COMPUTER ADDICTS

True or false? Five Cheltenham boys tried to commit mass suicide after becoming addicted to Space Invaders. True or false? Over 200 Tokyo boys have turned to prostitution in order to raise cash to feed arcade games. True or false? A Danish student has been committed to a mental hospital because he thinks he has turned into a computer. True or false? An American boy murdered a child because he was ordered to buy a game of Dungeons And Dragons. True or false? Over £3 million is spent in British video arcades every day. True or false?

People have been arguing for years about whether or not there are any dangerous side-effects from playing video games. In fact there has been more rubbish written about this subject than any other aspect of computerised entertainment. MONITOR does not intend to ram any opinions down your throat: it simply gives you the facts. Now you can make up your own mind . . .

Video arcades make money. Loadsa money! Last year over £1,300,000,000 was eaten by hungry video arcade slots. And before you write in to CRASH, I promise you that I haven't stuck on any extra zeroes to that incredible figure. The police confirm that these arcades are also used as centres for drug pushing, flogging off stolen gear and as pick-up joints for young male prostitutes. Even though 'underage' players are illegal, a South Coast arcade operator has admitted to me that eight out of ten people who use video arcades in his resort are under 18 years old. But even if they are banned from the arcades, the younger kids are also much more likely to come across video games, which are common in cafes and c machines, which are ag clubs and those wicked

In the average British the following effect on by replacing most other more than 15 hours a w the average use of a ho console falls to around 6 of machines are gather get used. The number player has no link what of hours spent playing t popularity is not affecte more popular with you months of micro owner computer users and vic survey dropped marks involved with playing.

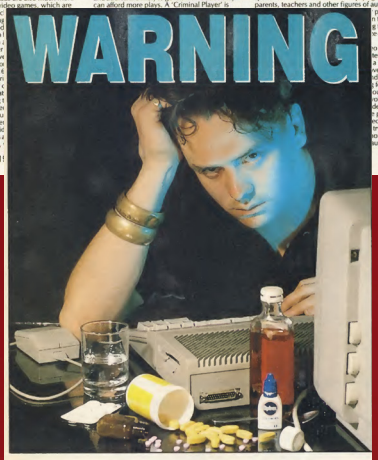
readers. Unfortunately you won't be pleased to learn that video games players had lower average marks than non-players, both before and after the survey. So much for 'normal' players.

'Arcade Addiction' and 'Computer Addiction' takes hold when a games player becomes so involved with the machine that other aspects of his life begin to suffer. The subject has been very carefully researched by the British Journal of Criminology.

Addiction often begins when a player starts to miss school in favour of playing video games, and addicts are likely to go without food so they can afford more plays. A 'Criminal Player' is

dealing in drugs and flesh. In 1987 the Amusement Arcade Action Group was formed to try and stop the problem spreading, but so far there has been no improvement at all. The general public doesn't regard it as a serious problem; and why should they when most parents gamble, either by doing the pools, betting on the horses or playing video and fruit machines themselves. CRASH readers are well aware that video games are a new phenomenon – you are the first generation who has widespread experience of them. Arcades, friends' rooms and other playing areas provide a space which is free from the usual prying eyes of parents, teachers and other figures of authority.

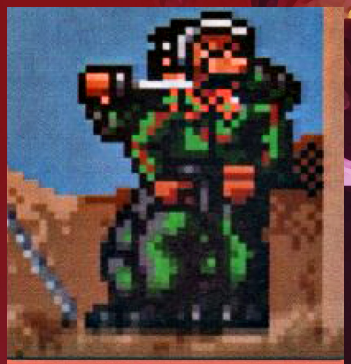
96 CRASH July 1



Computers can seriously damage your health

This sermon has been brought to you by the letters C, U and L, the number 8 and the letter R.

I'm not sure computers were much of a gateway drug, but what they may have damaged was our willingness to take emotional risk.



Elvira includes scenes which would make many parents think twice about slipping the game into little Johnnie's Christmas stocking, and Special Forces enables the player to sneak up on the opponent and slit his throat in graphic detail.

The game designer's obvious intent in making an effort to include such sick gameplay elements is to emphasise the violence as a way of increasing a game's appeal to the buying public, and that has to be a worrying situation.

The other area where the computer haters may have had a point was centred around videogame violence. Prime-time television in the 1980s was super G-rated; while they might have seen some stuff sneaking into an R-rated movie, it was in the arcade where kids were most likely to encounter substantive amounts of human-on-human aggression, and this could translate to the footpath outside.

Now Ikari Warriors didn't turn everyone who played it into a lone-wolf shooter, but it's hard to argue it didn't help desensitise society to the things those shooters have since done. Stay safe kids.

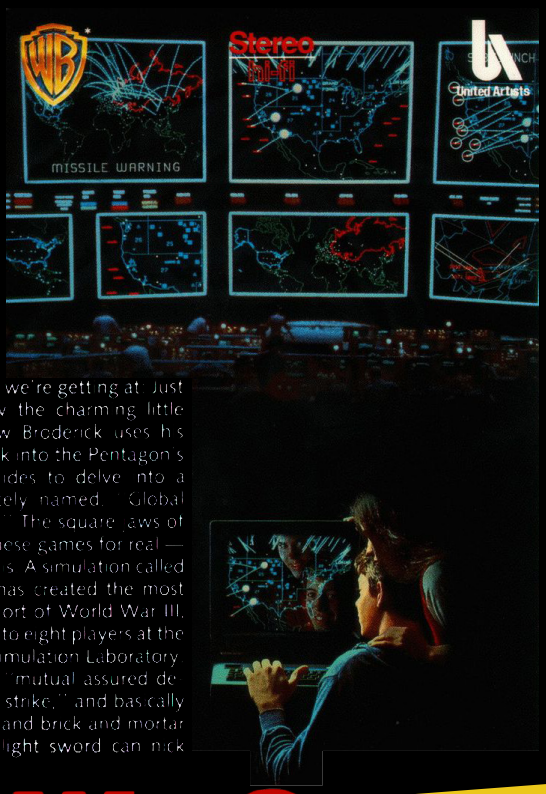
COMPUTERS ARE BAD FOR YOU

Reports show that levels of aggression in video games have a direct effect on violent behaviour during and immediately after play, and that girls are affected more than boys! Also, watching aggressive games has the same effect as actually playing them.

Perhaps nothing exemplified the stereotype of the cold, soulless computer more than the WOPR.

Wargames' digital antagonist only had one job – to nuke as many of the enemy as it could as quickly as it could – and it loved its work! It practiced all day, every day (when it wasn't playing chess, of course) making no distinction between rehearsal and reality. When the time came, there wouldn't be any pesky human consciences getting in the way – the WOPR was armed and it was ready to ensure that 'mutually-assured destruction' wasn't just a threatening catch-phrase but a promise. National security, y'all!

But don't lose too much sleep over it – in the US (as far as we know, anyway) this never happened. But computers did have ultimate control many other things such as dams and power plants that could make a real mess. And in the Soviet Union the government installed the 'Dead Hand' system, which monitored for signs of a pre-emptive nuclear attack and was programmed to launch everything they had without human intervention – it's a good thing it was reliable!



Okay, here's what we're getting at. Just about everyone saw the charming little flick where Matthew Broderick uses his skimpy Altair to break into the Pentagon's mainframe and decides to delve into a scenario affectionately named "Global Thermonuclear War." The square jaws of the Pentagon play these games for real — the simulations that is. A simulation called the JANUS project has created the most realistic situations short of World War III, and it's played by up to eight players at the Livermore Combat Simulation Laboratory. They use terms like "mutual assured destruction" and "first strike," and basically take apart farm and and brick and mortar faster than Darth's light sword can nick Luke's arm.

Electronic Games

WarGames

Profile of a computer hacker



One of the more famous real-life computer hackers is named Kevin Mitnick. In 1979 the 16 year-old Mitnick hacked into the Ark, a computer at Digital Equipment Corporation, and stole the source code for the operating system they were developing. After he was arrested and convicted he hacked into phone company Pacific Bell's voice-mail computers! He went on the run and became a fugitive, hacking into dozens of computer networks using cloned cellular phones, copying software, stealing passwords and reading private e-mails. In 1995 the FBI finally tracked Mitnick down and arrested him, charging him with dozens of crimes. He pled guilty to seven of them, and served five years in prison. After his release he was banned from using any communications device other than a landline telephone.

But was it the computer audiences feared or the hacker?

And not just because they could've started a nuclear war – hackers could do things *you* couldn't, and they could do them *to you*. The computer could be cruelly logical but the hacker could be malicious, stealing your bank account or your girlfriend (that second part was too unrealistic even by Hollywood standards). But in any case, the hacker had *power* they shouldn't, and everyone should stay in their lane, right? Especially teenagers!







Besides, all you needed was a moody teenager with a modem and the next thing you know, *boom* – Armageddon! All because that girl (or boy) at school didn't go with them to the dance. And they drained your bank account! Lousy kids.

Anyway, so as with video arcades, Something Had To Be Done™ – and in this case it was usually left up to federal security agencies – the FBI, ASIS or CSIS – to protect the world from moody teenagers. Because nobody

outside of them and computer nerds even knew what a modem was, and the computer nerds were generally well-behaved. And that was a good thing too, because in the 1980s it weas mostly 'security via obscurity' – that is, people didn't abuse computer systems simply because they didn't know how easily some of them could be accessed. It was not unheard of for corporate mainframes to have guest accounts, or accounts with the password 'password' or simply the name of the account, such as admin / admin –and all you had to do to get into them was find a telephone line it was connected to.

And so, just like Matthew Broderick's character in WarGames, people just started sequentially dialing phone numbers with their modems to see if they could get an answer (this was known as 'wardialing', after the movie). Of course this annoyed a lot of non-computers who picked up the phone!



While modems allowed computers to talk to each other over telephone lines, there were also more direct methods of hacking assuming you had physical access to the target computer system.

Portable and 'pocket' computers made this all the easier. For example, in the movie Terminator II, character John Conner uses an Atrari Portfolio to hack automatic teller machines and security doors – perhaps not that realistic, but not entirely fantasy, either.



This innocuous-looking serial cable in the hands of a bad actor inside your facility could do even more harm than a modem-using hacker from the outside.

As the responsibilities delegated to computers grew, organisations began to realise that they needed to better scrutinise those who had access to them.

Hacking the phone company

But if you were wardialing long distance those pesky humans (who dared to simply answer their ringing telephones) cost you (or more likely your parents) money – big money. But couldn't you hack the phone company? Then your wardialing would be *free*!

It turned out it wasn't even that complicated – 1970s telephone switching systems worked by listening for particular tones that told them what to do – such as those generated by the keypad on telephone handsets. But there were more tones than just those available to the end user – operator tones and routing tones were used internally by the phone system particularly for long-distance calls. But it turned out the phone system would respect those tones no matter where they came from – even a toy whistle packaged inside boxes of Capt'n Crunch cereal!

However, these tricks stopped working in the 1980s.



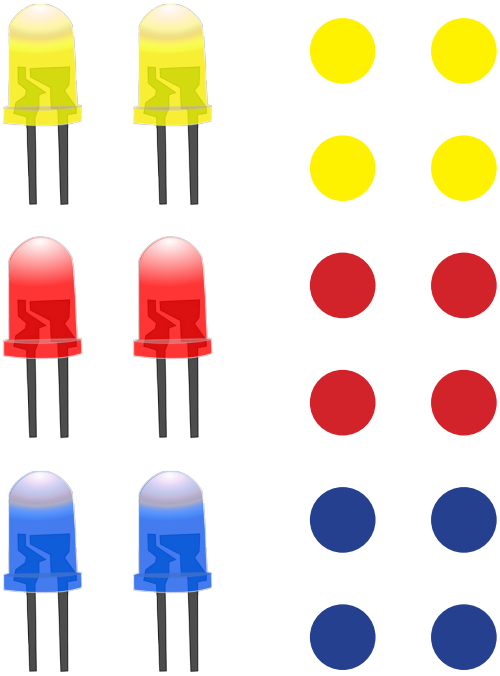


POPPED CULTURE



Although modems created opportunities for new forms of human interaction, they also facilitated the remote control of computers – and sometimes they weren't too picky about who was giving the orders!



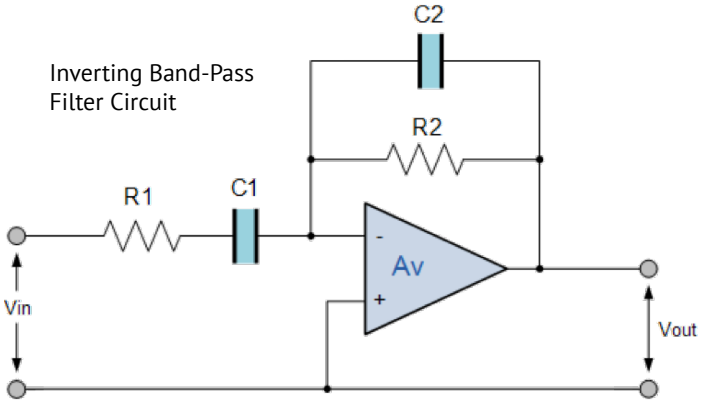


The Breadboard

Stop in the name of LED!

Using this issue's Bread-board project you can party like you're in a 1970s discotheque!

A light organ takes an audio input, for example from an MP3 player, and provides a visual LED display based on the tonal characteristics of the sound. It splits the input based on frequencies into 3 'bands': low frequency sounds, such as those made by a bass drum, middle or 'mid' frequencies such as those produced by a guitar, and high frequencies such as the notes of a piccolo. In our project, three banks of LEDs correspond to the three bands: yellow for high, red for mid and blue for low. Light organs were popular in 1970s-era discos.



About the Project:

The design is based on two ICs (integrated circuits): an MC33204D Quad op-amp (operational amplifier: op-amps are used to increase the voltage of the input signal) and an MC34072P Dual op-amp. The power supply is a standard DC power supply of 12V with a positive tip, providing about 500 mA.

The frequencies that are passed through to the LEDs (lows, mids or highs) are determined by the values of C and R (the capacitance and the resistance) in the input section of the op-amp, which acts as an active band pass filter.

The first op-amp operates as a amplifier for the input signal with a voltage gain of 21. The resistors R24-R26 control the brightness of the LEDs by attenuating the drive from the input. The diode and the capacitors following the op-amps serve to convert the AC signal to a DC bias for the transistors. The transistors in this case act as sinks to the current from the LEDs.

R13 to R15 act as the bias for transistors Q1-Q3 and C11-C13 act as low pass filters to the outputs.

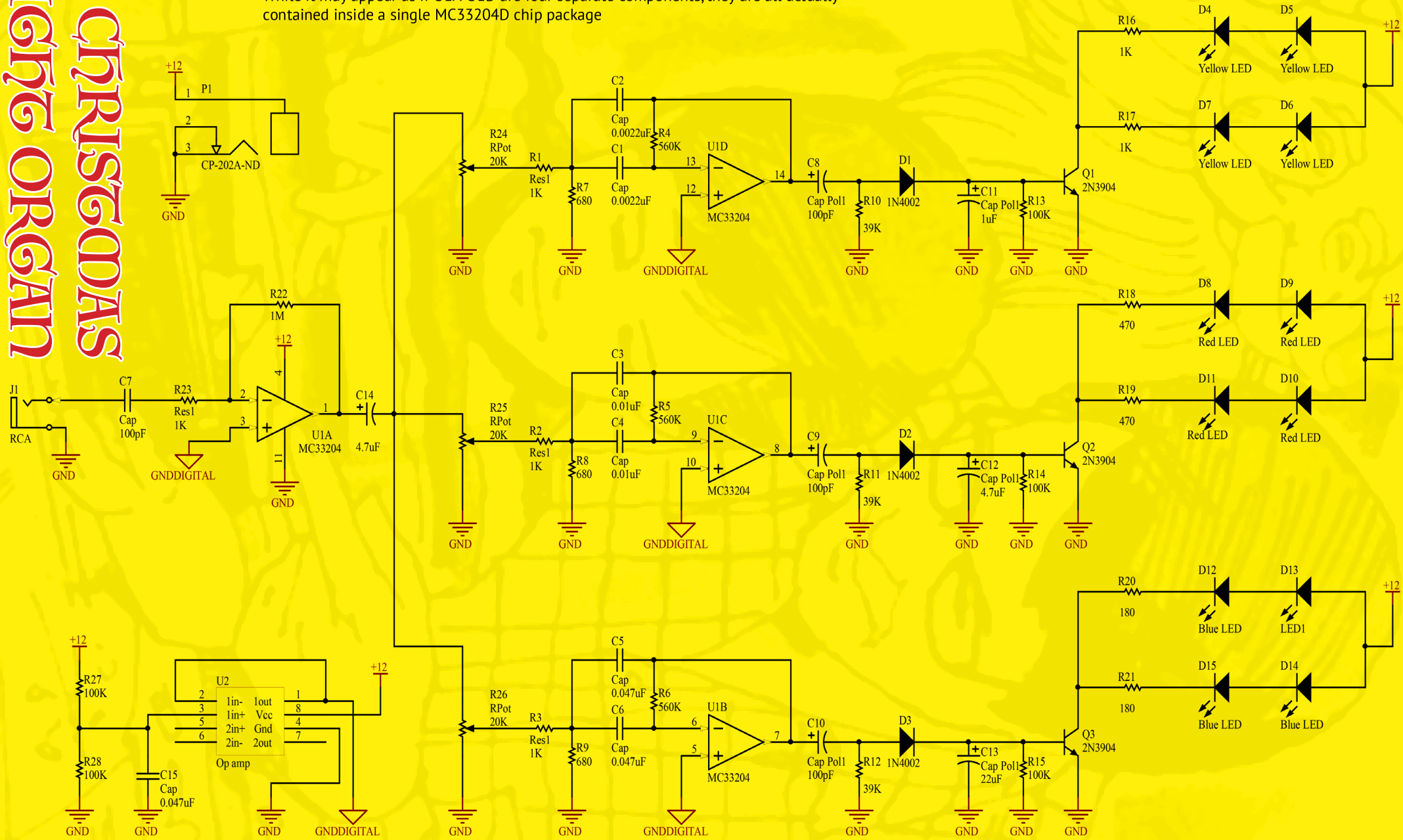
Project by
Don Griffiths

$$Voltage\ Gain = -\frac{R_2}{R_1},\quad fc_1 = \frac{1}{2\pi R_1 C_1},\quad fc_2 = \frac{1}{2\pi R_2 C_2}$$

These formulae describe the operation of the op-amp as a band-pass audio filter. fc_1 and fc_2 are the top and bottom frequencies of the band of frequencies allowed through.

CHRISTMAS LIGHT ORGAN

While it may appear as if U1A-U1D are four separate components, they are all actually contained inside a single MC33204D chip package



CHRISTMAS LIGHT ORGAN

The colours listed with the resistors in the parts list to the right are the colours of the identification bands printed on them, to make them easier to locate.

You can download the schematic, PCB layout and tracing diagrams in PDF format at:

paleotronic.com/lightorgan.pdf

To build this project you will need to either have a circuit board printed or etch the board yourself. We have made the board single-sided in order for you to be able to do this. In either case, you can download the circuit tracing you will need at the link listed above.

You can find an article on how to etch your own circuit board here:

https://www.sparkfun.com/news/2116

Got an electronics project you think might be good for The Breadboard? E-mail it to editor@paleotronic.com



Parts List:

Resistors:

R1, R2, R3, R16, R17: 1kΩ (Brown, Black, Red)
R4, R5, R6: 560k1kΩ (Green, Blue, Yellow)
R7, R8, R9: 6801kΩ (Blue, Gray, Brown)
R10, R11, R12:/ 39k1kΩ (Orange, White, Orange)
R13, R14, R15, R27, R28: 100k1kΩ (Brown, Black, Yellow)
R18, R19: 4701kΩ (Yellow, Violet, Brown)
R20, R21: 1601kΩ (Brown, Blue, Brown)
R22: 1M1kΩ (Brown, Black, Green)
R23: 47k1kΩ (Yellow, Violet, Orange)
R24, R25, R26: 20k1kΩ (Red, Black, Orange)

Capacitors:

C1 through C7, C15 non-polarized capacitors.
C1, C2 0.0022µF
C3, C4:0.01µF
C5, C6: 0.047µF
C7, C15: 0.1µF

C8-C13 Polarized Capacitors Axial Type 25V
Note: Electrolytic capacitors are often marked with a stripe. That stripe indicates the NEGATIVE lead. If it's an axial leaded capacitor (leads come out of opposite ends of the capacitor), the stripe may be accompanied by an arrow that points to the negative lead.
C8, C9, C10: 2.2µF
C11: 1.0µF
C12, C14: 4.7µF
C13: 22µF

Transistors:

Q1, Q2, Q3: 2N3904 NPN bipolar junction transistor

Op-Amps:

U1: MC33204D Quad Op-Amp (U1A - U1D)
U2: MC34072P

Diodes:

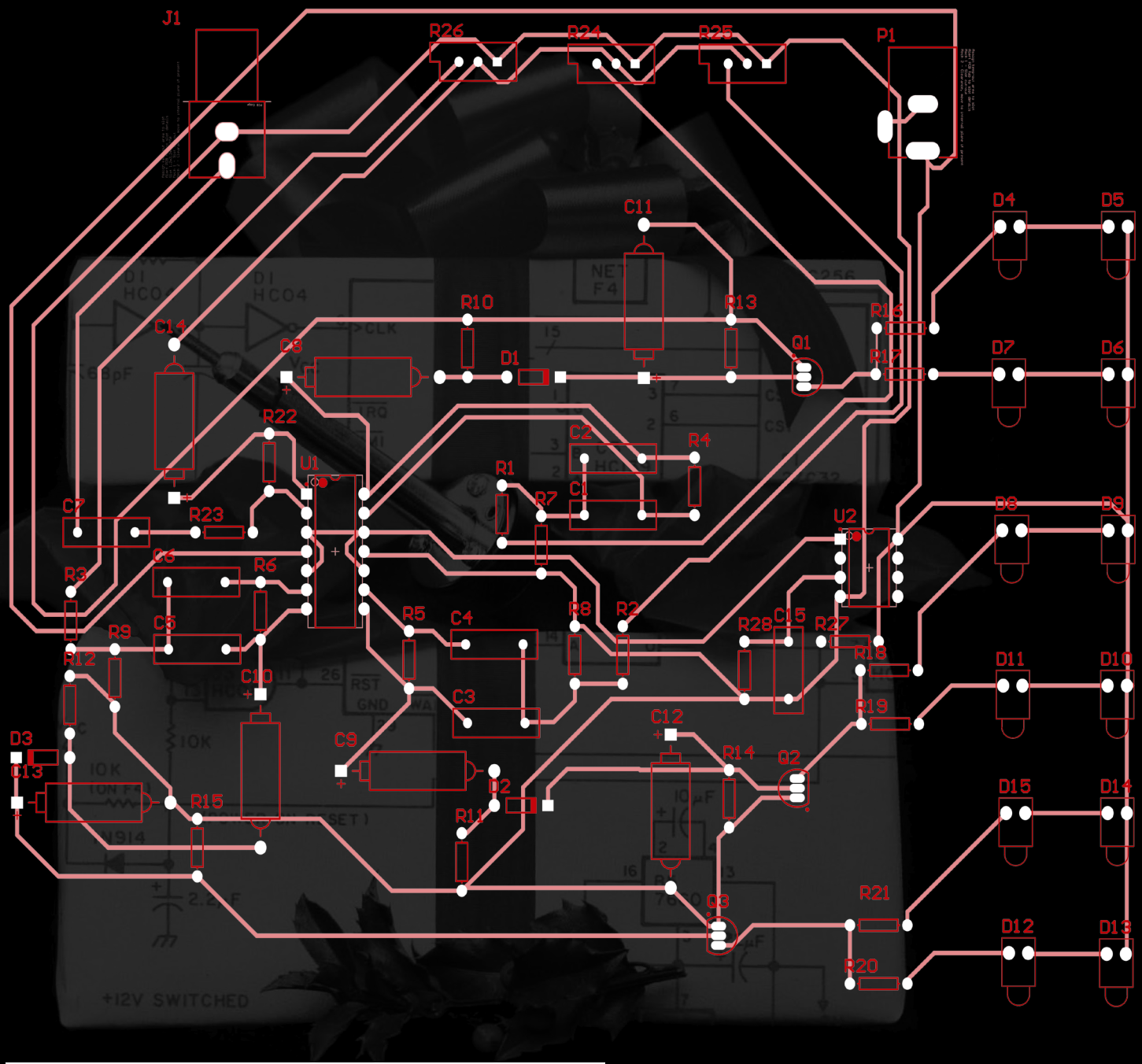
D1, D2, D3: 1N4002 1A diode

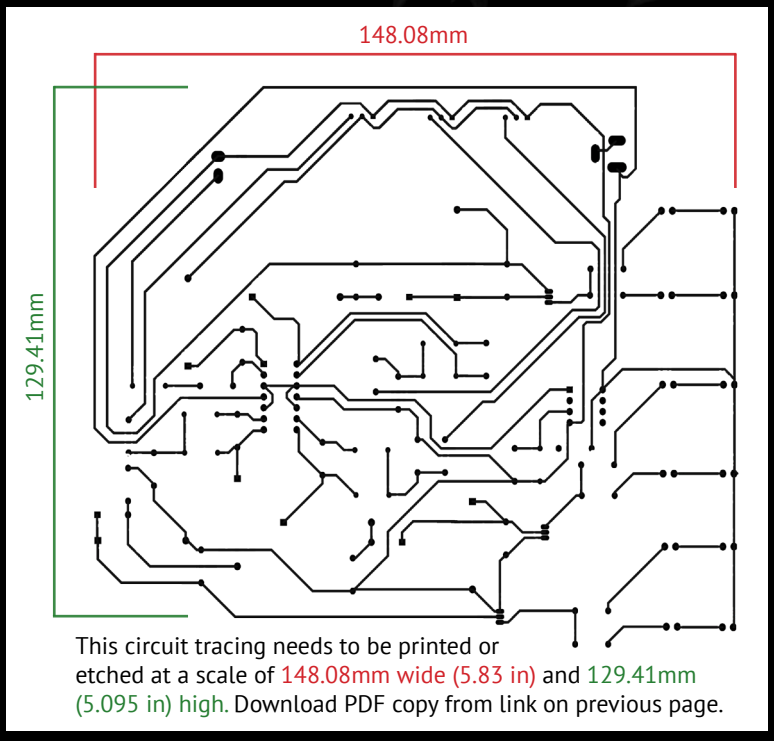
LEDs:

D4, D5, D6, D7: Yellow (represents the Treble)
D8, D9, D10, D11: Red (represents the Mids)
D12, D13, D14, D15: Blue (represents the Bass)

Power Supply and Audio Input:

P1: DC input jack (12 volt 500mA)
J1: Input Jack (RCA or mini-phono)





This circuit tracing needs to be printed or etched at a scale of 148.08mm wide (5.83 in) and 129.41mm (5.095 in) high. Download PDF copy from link on previous page.



Orphaned on Christmas...?

"I can't wait for Dad to get home." Jamie Silicon said wistfully as he looked out through the front picture window of his family's house in Schenectady, New York, watching the late-December snowflakes as they danced down to the ground below. His older sister Sarah tended to the fire in the room's fireplace while their younger brother Pippin played with toys under the Christmas tree.

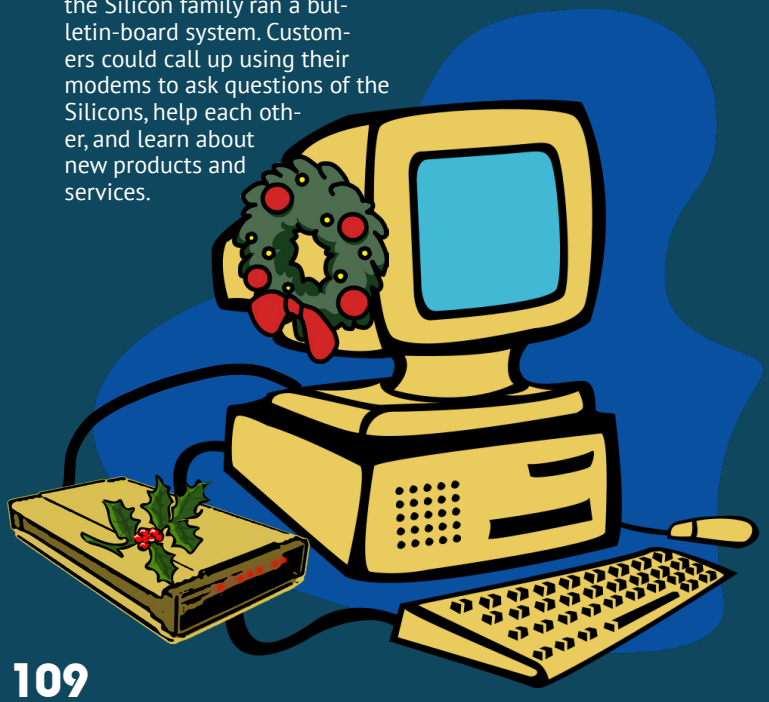
There was a silence then – the children's mother Ellen, an engineer for a local software development company, had vanished close to Christmas three years previously. She was presumed dead after her car was found crashed and abandoned near a half-frozen lake, a search turning up various items of hers on the ice.

It was always difficult when their father Steven went away on business trips, but around Christmas was particularly hard.

"If anything was wrong the beeper would've gone off," Sarah reminded him – their father had given his children a pager so that he could get in contact with them quickly in case of an emergency, but it remained silent. Steven wouldn't return that night, nor the next one, and the kids began to worry. Sarah called around to family, friends and trusted business associates, and even posted a message on the family's computer bulletin-board system, the Silicon BBS, asking if anyone had been in touch with her father, but nobody had seen him.

Sarah was downstairs using the BBS computer, checking for news, when a new user, someone named 'TheSiliconDealer', asked to chat with the System Operator – which was Sarah. Their chat went something like this:

Sarah: Hello, how can I help?



Like many small businesses, the Silicon family ran a bulletin-board system. Customers could call up using their modems to ask questions of the Silicons, help each other, and learn about new products and services.

TheSiliconDealer: I hear you're looking for some Silicon.

Sarah: I'm looking for _a_ Silicon, my father, actually. Have you seen him?

TheSiliconDealer: I got all kinds of Silicon. Silicon carbide, Silicon alloys, Silicon wafers, Silicon sand…

Sarah: Um, not that kind of silicon. I'm going to go now. Thanks for calling!

TheSiliconDealer: I also have a fleshy Silicon. Totally unique. Only one in the world.

There was a pause then, while Sarah searched her mind for a reply, fear making thought extremely difficult.

TheSiliconDealer: I take it you're interested.

Sarah: I need you to prove the authenticity of your goods. Where did we go for Jamie's birthday three years ago?

The wait was agony.

TheSiliconDealer: You visited a pizza rat.

Sarah sighed with relief tinged with a bit of fear. They had gone to Chuck. E. Cheese, yes. At least she knew her father was alive.

TheSiliconDealer: I'll be in touch. No cops, obviously.

The caller hang up then, the words NO CARRIER appearing on the BBS's screen briefly before it returned to waiting for another caller. Jamie came down the stairs. "Anything?" Sarah considered not telling him, but then decided it was likely going to take all of them to track the kidnapper down. And this was a kidnapping.

"We should call the cops," Jamie insisted. "They do this stuff all the time."

"No," Sarah replied, "it's too risky. The kidnapper could have a police scanner and we can't risk the police saying something over the radio. But maybe we can ask for a favour…"

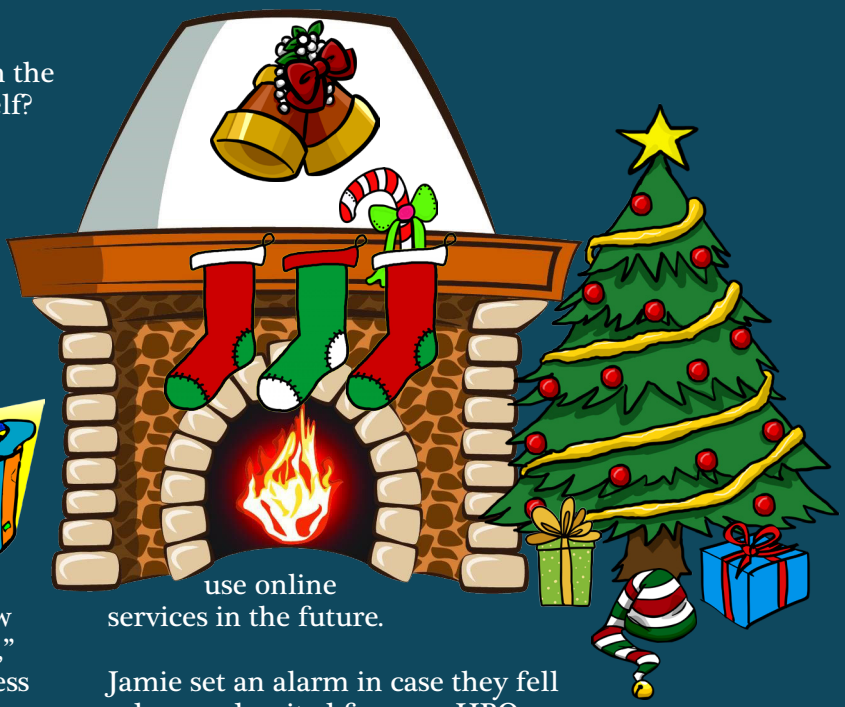
"I can understand why you don't want us fully involved," Jane replied, the policewoman stamping the snow off of her boots in the entry hall of the Silicon house. "If the kidnapper's computer-savvy he could hack into our computers – I've gotta be honest, they're not that secure. The Chief thinks its great he can work from home and insists people won't break into them because we're the police but he can be a bit… y'know, sometimes."

Sarah nodded. "We tell our clients anything a hacker can connect to they can hack."

"Sage advice. Anyway, if anyone can track down the kidnapper its you guys, what do you call yourself? The sliced sandwich something?"

"Salami society!" Jamie interjected indignantly.

"Ah, okay. Just call us when you find him and I'll keep it off the radio. What can I help you with?"



Sarah was more appreciative of the constable's help. "I need a call traced…"



Sarah gave Jane the time of TheSiliconDealer's call to their BBS and Jane made a call on the Silicon house phone to the telephone company, and in a few minutes Sarah had her answer. "It's a payphone," Jane told her, "outside Joe's Confectionary. I guess our guy is mobile. Sorry."

"That's okay." Sarah had a plan. She saw Jane out and then went back to the BBS computer, going into the userlist where as a system operator she could see users' phone numbers – the Silicon BBS 'voice verified' all of their new users before fully granting them access (unfortunately, TheSiliconDealer gave the number of a pizza place). But Sarah knew several regulars she could enlist to help in her plan to stake out every telephone box in Schenectady.

Someone with a modem and a portable computer was going to be pretty conspicuous and so there wasn't any need to monitor open booths. No, the kidnapper would want fully-enclosed privacy, and there were only a dozen boxes in Schenectady. So for the next two days they ran a phone booth stakeout. But there was nothing – no payphone hackers, and no kidnapper. It was two days before Christmas, December 23rd.

Jamie shouted down from the upstairs computer that night, calling his sister up. "I got a message from someone calling himself John Titor I've never heard of on CompuServe," he explained when Sarah arrived. "It said to watch HBO at 4am tomorrow morning. Oh, also he said he was sorry he missed us in Vegas." The assassin! There wasn't going to be any sleep for the Silicon children that night (except for Pip, who was already asleep.)

Sarah called CompuServe but they refused to trace the caller without a court order; however, the user had paid using their father's credit card and so CompuServe cancelled the account. Sarah also called VISA and had the card cancelled, to cut down on the kidnapper's ability to use online services in the future.

Jamie set an alarm in case they fell asleep and waited for 4am. HBO was showing WarGames when the alarm went off, jolting the lightly dozing kids fully awake. A few moments later some fuzzy text began to appear superimposed over the movie, the two signals fighting for dominance. "Bring me the IBM 5100 or the Silicon gets pasted."

Then the message was gone, and the movie fully returned. The children remained glued to the TV for the next hour but no further messages were forthcoming. Sarah wondered, why the 5100? Sure, the 1975 IBM computer was one of the first 'portable' computers (meaning it could be easily carried from place to place, but still needed mains power). But it wasn't particularly valuable. So why go through all the trouble of kidnapping someone to get one?

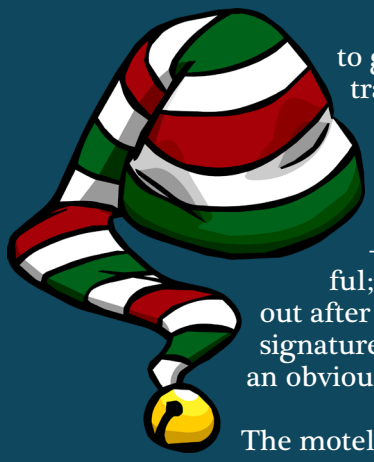
"Bring it where?" Jamie asked, rhetorically, breaking into Sarah's thoughts. "Oh, also it's silicone paste, stupid kidnapper."

"I think maybe I can find out." Sarah called the cable company – or more specifically, she called someone she knew who worked for the cable company at home at 5am, and they were not that happy, but under the circumstances they agreed to call HBO, who called the FCC, who said that the only uplink station near them capable of overpowering the HBO signal was in East Greenbush, 25 miles away.

'Home' robots were a popular mid-1980s Christmas gift… but that's another story!



Sarah hired a babysitter to keep an eye on Pippin, and enlisted the aid of a trusted family friend, George, who drove them (and the IBM 5100) to East Greenbush and the uplink station. The police were there, the station had been broken into, but there wasn't much evidence



to go on to identify the perpetrator. Sarah had George drive around to all of the motels in the area, inquiring if someone had checked in using her father's credit card – the eighth try was successful; the kidnapper had checked out after the card was cancelled. The signature on the credit card slip was an obvious forgery.

The motel had a security camera and although the kidnapper had worn a hat and was unrecognisable, the Sliced Salami Society was able to get the plate number of the car from its grainy black-and-white VHS footage ("it would have been better if it had been Betamax", Sarah had grumbled).

They called around to all of the other motels asking them to look out for the car and its occupants, and then they waited. She was confident they would turn up somewhere soon. It was Christmas Eve.

Around 5pm the pager their father had given them went off, it was one of the motels, letting them know a man driving a car with that plate number had checked in – but with a woman. The SSS sleuths were confused, but rushed to the motel. The car was gone and they convinced the manager to let them into the kidnapper's room. Inside they found some homemade electronic equipment Sarah determined was capable of detecting the presence of a particular broadcast wavelength – and it was being detected. But what did they have that could be causing it? The only electronic devices they had with them were the IBM 5100 and… the pager!

Jamie turned off the pager and the signal disappeared. But when would the kidnapper have had access to the pager? This was all getting very strange. Receipts left in the room showed some of the components of the detector came from a nearby Radio Shack, and so they rushed there before it closed, catching the store manager locking up. They were bought with another of their father's credit cards, one Sarah didn't recognise – and she did the bookkeeping!



She called the credit card company – Mastercard this time – and discovered the card had a different address, a house in Syracuse, a two-hour drive. But George was obliging, and around 8pm on Christmas Eve they arrived. Sarah had a hunch and had decided not to call the police.

Her hunch was correct. Their father answered the door. He didn't appear kidnapped. Sarah was furious! Jamie began to cry. George pleaded for calm, convinced Steven would have a reasonable explanation for all that had occurred.

They went inside. Their mother Ellen was there! After a brief, tearful reunion, their father explained: it turned out that he believed the assassin in Las Vegas was a technically-savvy but awkward coworker of their mother's named Peter, who had developed an infatuation and previously attempted to kidnap her. When that had failed he threatened to kill her, playing a sinister game of cat and mouse. They decided they couldn't take any chances and faked Ellen's death to hopefully convince Peter to leave the Silicons alone – and he had, until Vegas.

But after the subsequent contacts Peter had made with the children, Steven became concerned that Peter might have began to suspect Ellen was still alive. Unfortunately, there was a financial paper trail Steven may not have been that successful at concealing. But the Sliced Salami Society's recent successes had made Steven optimistic that together, the Silicon family could bring Peter down – recent events had been a test of that possibility.

"I do not approve of your methods," Sarah fumed, "but I understand your reasoning for them." Jamie nodded. "We're in." There was a warm family moment, then, on Christmas Eve. The Silicons were at peace.

But then Ellen's phone rang. Nobody had the number but Steven, who answered it; the reunited Silicon family crowded around to hear the WarGames-style synthesised voice on the other end. "Congratulations on your dress rehearsal, Silicon family," it intoned. "Now the Sliced Salami Society is finally ready for what I am certain will be its last assignment – to find me before I end all of you.

"Would you like to play a game? Too bad you don't have a choice. But I'll let you go first. Ready? Here's your riddle..."

"Oh great," Jamie moaned, "a riddle. Why do these people always think they're being clever by talking in ridd–"

"Shush!" Sarah interrupted him. The robotic voice on the phone continued:

"What once was big then became small, hidden within a treasure for all, a way to get back to the Moon, not far away, but really soon." A click indicated the robotic assassin, Peter, had abruptly hung up.

"Did you bring the IBM 5100?" Steven asked his children, "we're going to need it."

"But why?" Jamie asked, adding grumpily, "I hate riddles! I never get them. They make me feel so stu–"

"Shush!" shouted the rest of his family, in chorus. George brought the computer in from his car, and set it on the kitchen table.

Ellen attempted to explain. "We know Peter knows about your 'adventure' with the Apollo Guidance Computer, and we suspected he would go down that path if he found us and decided to continue with his little 'game', especially if he had seen you with the 5100.

"Did you know that there were large IBM System/360 mainframe computers on the ground during the Apollo missions that also made calculations using information the AGC sent back to Earth? Peter wrote some of the code in those mainframe computers; he bragged about it often. Now, what do you know about the 5100?" Ellen asked Sarah, who wrinkled her brow in an attempt to remember.

"The 5100 was designed to execute code companies had already written... for their System/360s!"

Ellen produced a floppy disk. "And I have the Apollo code. The answer to Peter's riddle is probably in here somewhere, but what we're really going to be looking for is his 'easter egg'.

"Sometimes programmers leave a sort of graffiti in their code that identifies them. Peter told me once that he had done that with his System/360 Apollo code, and we're hoping that you can find it, like you did with the AGC code."

The phone rang again. "You are running out of time, Silicons," the robot voice intoned. "If you don't solve my riddle soon, I'm afraid I might explode with anticipation. Or, that is, my bomb will." The line went dead.

"We should go," Steven suggested, urgently. George was the first to step out the front door but a warning shot whizzed by his ear. A second took out George's front tire! They tried the back entrance but Steven discovered that apparently Peter had a friend.

Enough was enough. Ellen tried to call the police, but there was no dial tone. "I have a handheld CB radio in my car we could use to contact the cops," George offered, "if only I could get to it."

Jamie suggested that if they kept the shooters distracted, he could sneak out through a basement window, get the radio and sneak back in.

Would you like to write for Android Dreams? Send your retro-inspired story to editor@paleotronic.com!

Ellen wasn't happy about the idea but they were running out of options. Steven and George kept their adversaries busy while Jamie snuck out, carefully opened the rear door of George's car facing the house and reached inside, finding the radio. He safely returned and they radioed the police.

But just as George was about to give them their location, Ellen stopped him. "If the police come, Peter will withdraw, and we won't be safe. Let's give Sarah a little more time..."

They waited, their fear growing steadily as each seocnd ticked by. Ellen was just about to ask George to contact the police again, but her daughter whooped triumphantly. "I found it!" Sarah declared. Ellen came over to her, studied the monitor of the 5100 and nodded her head in agreement.

The phone rang. George keyed up the CB radio, imploring someone from the police to listen and hopefully record what was about to come. Steven picked up the handset, and held it close to the radio. The family gathered around. "Do you have my answer?" Peter's robot voice demanded.

"I do," Ellen said loudly toward the telephone handset. "The answer is Mary, March 12th, 1963. The date of your first kiss with your first love, I imagine?" Sarah found it in hex.

There was a long pause. "She died," a man's voice replied. "You remind me so much of her. You're safe for now."

The police came. They had recorded the call; it was enough to implicate Peter and he was arrested.



The Sliced Salami Society and the Case of the Christmas Kidnapping...

The End(...?)

Pirate's Progress

I am twelve years old and I think it's about time that I wrote to tell you about a subject that annoys me very much. The subject is, of course, software copy protection. Like George Eliades, I break disks and copy programs. I copy a lot, and my friends and I get together a lot to talk about the newest software and to copy and swap programs. My opinion of copy protection is that it is 50 percent stupid. Half of it is okay, since I know that programmers need to make money. The other half of me knows that copy protection is stupid. No matter how programmers protect their programs, the code will always be cracked and copied. And another thing, what about those people whose programs crash because of the copy-protection code? What of them?

Other companies, such as Penguin Software, are okay in my book. My friends and I do not copy their software; we buy it. Other companies, such as Beagle Bros and Fantasystic Software, are perfect examples of companies that trust their customers. I still see that they are going on as strong as ever. I think they know that copy protection is a waste of time and money. You guys are okay, though you may not feel the same toward me. I am eager to hear from anyone who has the same or different opinions about copy protection.

Well, as I end my letter, I hope that other companies take me seriously, even though I am twelve years old, and that they decide on which road to take. As for *Softline*, since your magazine is no longer free, I advise that you add something (though I love your new Infomania) such as a new article for future game programmers who want to learn new techniques. Keep up the good work! You guys are the greatest.

John Woo, Bronx, NY

Software Piracy

I am sitting here re-reading Greg Walforf's letter in Issue 13 and Alex Leaven's reply in Issue 15, on the matter of Piracy. Unfortunately, in my opinion, too much has been left *unsaid*...

Re G.W.'s letter; It must be the umpteenth time I've read *this* particular justification of piracy. It's become a litany. One wonders just how much guilt these people must carry, that they feel contiually constrained to write letters excusing their thievery and to assuage their burdened consciences.

Me? Unfortunately, like A.L., I sit on the other side of the fence, developing software for *free*. That's how it sometimes appears as I rip open an envelope bearing a royalty payment only to find a check perhaps *one-fifth* what it rightfully should be. Forget for the moment fellows like Budge & Wetmore, the deservedly well-paid Superstars who don't have to worry about mundane things like putting food on the table and buying shoes for an active four year old child. For the vast majority, professional programming is a very tough career, replete with growing pains, slow progress, long and *brutally* hard hours and the tantalizing dream of success.

The success does *not* come overnight...

Dan Gorlin spent the better part of one year developing a brilliant graphical *tour-de-force* that also happens to be an eminently playable game. The effort that went into this masterpiece defies tenacity and is a touch more than genius. D.G. *owns* **Choplifter**, having paid for it with a commensurate share of labor and sweat. I, for one, pay tribute by paying to play.

But what of the characters of G.W.'s ilk? Far be it from them to pay for something more easily obtained. So be it...the pirate says to hell with Broderbund & Gorlin; they're making too much anyway. Broderbund, having spent a sizeable sum on development and promotion with no guarantees, does *not* agree! Gorlin, while being a generous sort, is not indisposed to being paid for his labors.

G.W. also suggests a lower program pricepoint would eradicate the impetus to pirate. Well, how then will Greg justify his purchase of the Happy Enhancement? Will it become a paperweight? The warped logic of so-what-it's-only-one-copy is absolutely blind to the truth. In reality, when the *average* pirate makes a copy for *two* friends, and so on and so on, eventually hundreds of illegal copies may be in circulation. This is the crux of the matter. Of course, one copy makes little difference. In practice, however, the "one" copy is eventually multiplied by thousands, and the final effect is patently clear. Witness the fact that most of Atari's releases in early 1983 were available on illegal Bulletin Boards *before* Atari actually published them. I, myself, had the distinct displeasure of seeing one of my own games being demonstrated in a local store by a neighborhood pirate before the game was actually released by Adventure International! Is there any doubt that A.I. and I received *less* than what we were entitled to?

Please, please, no more letters justifying piracy. I and no one else can prevent the onslaught of the rationalizations that permit piracy to continue. We are, indeed, talking about *theft*, reprehensible and damaging to the developers of the software. Most of us are merely human beings (Budge is probably an E.T.) fighting to survive in a rapidly changing environment, hopefully to prosper. It ain't easy. If you need any further proof of your folly, just look at the market for Atari software. It has changed radically. Far fewer products are being released as publishers realize that perhaps anywhere from 3 to 10 illegal copies are being made for each copy legally sold. Many stores and distributors are now cutting back to a large extent on Atari software, due in part to the effect piracy has had on sales.

We are at a crossroads. Make no mistake, the future of the Atari as a serious development tool may be at stake. If you feel you *must* have the program, pay for it. Any alternative is *non compos mentis*.

Alan M. Newman
Brooklyn, NY

Software Pirates

As president of the Philadelphia Apple Club and partner in Progressive Software, I would like to express my views on piracy of copyrighted software. The official policy of my club is that no copyrighted software be traded between any members or any other club. It is the feeling of myself and my club that any piracy is counter-productive, since many authors work countless hours in developing these programs.

As for my company, we are sure we have lost thousands of dollars in sales because of piracy. Any piracy by anyone hurts us all, regardless of the type of micro we use.

If you have need for a program that you think will be of use to you in one way or another, buy it, since this gives other authors the incentive to produce high-quality material at competitive prices. We would all benefit.

Neil D. Lipson
Progressive Software
Plymouth Meeting, PA

For sure, for sure

Amid all the discussion concerning software piracy and counterpiracy and protection schemes, one important point has been missed: in California, people don't "pirate," they *share*.

Alan J. Gridlund, PhD.
Martinez, CA

AVAST SUBJECT

Dear Games Machine
On the subject of piracy: it concerns the subject of software lending libraries, that are freely advertised in many national magazines. It strikes me that, as all software is sold under the condition that it is 'not for resale, hire, all rights reserved', etc, then these libraries who lend software to people are blatantly flouting the law.

Three years ago, there were numerous libraries operating and advertising freely in the press, then came the new laws on software copyright, and the formation of FAST. The Software for hire adverts disappeared overnight, as you would expect.

So why is it then, that over the past year or two, they've all started reappearing? I find the whole situation very irritating, as I presume that these activities push up the price of software, therefore those of us who choose to buy our games in the normal way, must be subsidising the pirates' activities.

A Regular Reader

Software Libraries themselves are not against the law, possibly what they do is. If a library purchases software on which it states (as it does on most modern packaging) 'Any unauthorised copying, hiring or lending is illegal' and they go ahead and lend the game out, they are liable to be prosecuted under criminal law and sued for damages under the provisions of civil law.

RIP OFF COVERS

Dear Lloyd,
Having recently received back issue No.4 and filled in the questionnaire on piracy, I decided to write and express my views on the subject.
I am a pirate and I have 197 illegal copies in my collection and only two originals. My friends and I have a small circle of about five contacts, and whenever a new game comes in they each distribute copies to heir friends, thus beginning the software pirates 'family tree'. The main reasons why I pirate are: 1. Games are far too expensive. 2. The description on the inlay covers is nearly always wrong. When I pick up a new game I expect to see a screen photo and what the game is really about, ie s it fast? does it have smooth graphics? is it as bad as *Zaxxan* by Starzone? Most new games are starting to do the above.
A shop in our town that sells software now has an illegal library club where you pay £1 for life membership and can choose a game to keep overnight for 50p. I am a member and can add new games to my collection very quickly.
New programs are getting hard to copy now as a lot of games are becoming headless and won't load into any copy programs. *Automania* has proved to be the hardest to copy because it runs at twice the normal speed.
I am writing this letter as a desperate plea to software firms to put their prices down.
A pirate, UK.

I get the feeling that your plea will have to be a bit more persuasive than this, dear Pirate (UK), since it seems to smack more of sellishness than genuine concern. The next reader has a slightly different view of the situation.
LM



There have been many discussions recently in BYTE regarding the problem of program theft. In many jurisdictions this theft becomes a felony because of the value of the product stolen.

In the discussions regarding this problem, the primary thrust seems to be technological means to render theft extremely difficult. But it seems to me that the primary cause is of a social nature. For at least two decades, the philosophy that crimes against property—i.e., crimes that do not physically harm people—are of no consequence has been part of the changing social fabric of this and other nations.

The most effective solution to this problem would be a demand that the educational establishment return to the traditional teaching of morals, ethics, and responsibility that prevailed prior to the embracing of what is now proven to be a fallacious theory. *All* crimes do hurt *all* people.

By concentrating only on technological solutions to complex problems that involve social aspects of the world in which we live, we technologists do ourselves and the general population a disservice.

Finally, it seems to me that BYTE might well emulate *Quality* magazine by inviting commentary from social scientists as was done in its September 1981 issue.

Walter D Nichols, President
YES Computer Sciences Inc
3090 Acushnet Ave
New Bedford MA 02745

A third camp (see below) was that of the true 'pirates', digital buccaneers who felt that anything accessible to them was free for the taking. However, rather than just saying that, their excuses included complaints that many software programs were shoddy and they should be able to 'try before they buy' so they weren't ripped-off, that duplicating software wasn't theft because no physical object was stolen, that they wouldn't have bought the software anyway and so no sale was lost, that big companies made enough money and didn't need theirs, and that they 'paid for the computer so why should I pay more for software?'

Software piracy was a hot issue in the early 1980s – debate swirled around just when or even if it was acceptable to copy copyrighted software. People largely divided themselves into two camps: the first plead for the right of a software developer to make a decent living, while the second decried high software prices, particularly when they

Dead Pirates

THE SPOILS OF PIRACY

In your October 1984 issue, in the Arcade Award contenders section, you show a picture of a game from Lucasfilm called **Rescue on Fractalus.** My friend owns a game made by Lucasfilm with the same graphics and it's called **Behind Jagiline.** Did you make a mistake (no offense), or has the name been changed?

Brent Davenport
Baton Rouge, LA

Ed: We hate to be the ones to break this to you, but your friend is a software pirate. **Behind Jagiline** *was the working title of the game during its production phase, but because of the overwhelming number of pirates who stole the game via computer lines, Lucasfilm and Atari are in court as of this writing.*

Thanks to people like your "friend," **Rescue on Fractalus** *may never become available for us more honest consumers, and Lucasfilm (rightly) is shying away from the electronic gaming field as a whole. We've been on our soapboxes, warning gamers that piracy can ruin the hobby, but some people just don't listen. Maybe now that one of the most innovative and exciting programs ever produced for the home screen may never see distribution, will people understand the full consequences of stealing other people's work.*

And if next year there's nothing really exciting to play on your home computer or videogame, thank all the software priates of the world for depriving **you,** *the electronic gamer, of your right to buy the best there is.*

CASTING STONES. . .

Dear Sir,
I have just finished reading your November issue, which I found to be rather interesting. All was well until I read the Piracy Dossier on page 130; lo and behold a letter from a Mr Shahid Ahmad of London NW1, proclaiming to the world that Mr Paul Watts is scum, stupid and should be castrated. He also states that Mr Watts is 'full of ****' (does this mean he swallowed four micro-drives?). Seriously though, I would like to ask Shahid Ahmad a few questions: Have you ever
a) Travelled on a bus or train without a ticket?
b) Fare dodged completely?
c) Photocopied an article of interest?
d) Entered a cinema through the fire exit?
e) Evaded paying tax on car or undisclosed earnings?
f) Copied records or cassettes and/or lent them to friends?
g) Copied or taped any TV programme or other pre-recorded video cassette and/or lent them to friends?
Although some of these questions may not seem entirely relevant, they all, in one way or another, involve fraud. If Mr Ahmad can honestly answer 'no' to every one of them, then fair enough, castigate Mr Watts by all means; but if, on the other hand, he has infringed upon any of the above then let him heed the words of a very famous cha who once said something like: 'Let he who is without sin cast the first stone'. I would like to make it clear that I neither defend nor condemn th words or attitude of Mr Watts, and that I have never yet met anyone who is perfect in every way.
Frank Marral, Buckhurst Hill, Essex.

I was once told by someone that it is impossible to be perfectly good, so if you want to be perfect, being perfectly bad is the only thing to do. Sounds like a paradise recipe for pirates. Seriously though, casting stones may be a good moral argument, but it is somewhat impractical if you're really trying to cope with this sort of situation. The sad truth is, that no one actually minds ripping off someone else, but they hate someone else ripping them off.

ROTTEN PIRATES

Dear Crash,
Thank you very much for your article on the Piracy Dossier, it made very interesting reading. I was particularly interested in the reaction to question 3 about commercial piracy. It strikes me that home copiers are simply passing the buck of the damage being done to the software industry onto the shoulders of the commercial pirates. While I would not condone commercial piracy in any way, the fact is that although it is morally worse than home copying, the latter is far more widespread and therefore far more damaging. Relatively few people own commercially pirated programs, while of all the people I know with home computers most have large collections of home copied programs.
Another popular excuse for copying software is that the games are just too expensive. I agree that most of us can't splash out six or seven pounds evey day, or fill a trolley in John Menzies at regular intervals; but someone who has bought a computer for £130 can't exactly be penniless, can they? I think we've had the reason for the price of software very graphically explained to us by Shahid Ahmad (the Piracy Dossier), but even if the majority of games were to come down in price (unlikely) would home copying cease? I doubt it. The general train of thought seems to be: if you can copy a game for nothing, why spend money? Even if it is only a couple of quid.
Matthew Bannerman, Shrewsbury, Shropshire.

Despite arguments from software houses that commercial piracy is on the increase, especially through illegal 'libraries' –illegal in the sense that they do not gain the essential permission of the software houses to loan tapes – there can be little doubt that it is the home copying which is the real bane. The answer seems to be hyperloading techniques, although they are not entirely proof. On the other hand, they are also inconvenient to the genuine buyer when the tapes won't load properly.
LM

Dear Creative Computing:

I've been reading with interest the letters and editorials that you have been publishing concerning the "piracy" of software. While for the most part, I agree with your stance, our views part company to some extent where CP/M is concerned.

Our company sells CP/M business systems. In addition, most of us at DIT are "dyed-in-the-wool" hobbyists. Thus, being close to both worlds, I can see a case for both sides.

Software companies such as your own, individuals who write software for distribution, and systems companies such as our own require protection against the theft of our products. In order to have this protection it seems to me that a special set of copyright regulations must be promulgated. The existing copyright legislation is simply not up to date with advances in the state of the art. On the other hand, I have sympathy for the computerist who may have difficulty in obtaining software in machine readable format for his machine. Certainly, we need the listings in the magazines for many reasons but surely manually "banging-in" thousands of lines each is not what a new set of copyright regulations should mean. In the computer world surely there is some onus on the distributor/writer/copyright holder.

Your software catalog, for example, lists only six CP/M disks of games; no business programs, no CAI, no printergraphics, no word/processing, no statistics, no simulations, etc. Yet, in your magazine you have published many such programs and your software arm sells some for other systems. I conclude that nobody should be allowed to steal your products but I have serious doubts about extending this reasoning to protect that which you don't sell. Let me assure you that I am only refering to the programs on machine-readable media, not the documentation; the user should have to buy the publication or your re-print to get that.

I issue you a sincere challenge. I already own all of your back issues. I have many more requirements for software other than games. Much of it you have published in your magazine. I don't intend to enter them all by hand-my machine is supposed to work for me, not the contrary! If you produce what I need, I'll gladly purchase it. If you don't and someone else fills the vacuum by keying it all in and charging a reasonable fee for that service, I think my choice is obvious.

There are no doubt arguments in rebutt of several of the points I have raised. Consider only the main line I am presenting and decide whether it makes sense. You are ideally situated to provide an immeasurable service to the home computerist and perhaps to those of us who are commercially involved as well. I'm sure that if you don't distribute software on as wide a basis as possible that others will step in to fill the gap; it's happening already. This is a diverse and growing industry in which you are one of the leaders. There are profits to be made by all and, providing we don't expect to make them immediately, this hobby/business should advance smoothly for a good number of years. The in-again-out-again quick profit takers will not and should not survive. As a leader in the field, please-for all our sakes-don't fumble the ball now.

M.K. Nunas
V.P. Expansion
Dynamic Info. Tech
224 Gaspe Street
Dieppe, NB, Canada

Response:

Mr. Nunas makes some interesting comments but does not directly address the issue of who actually owns software. (Surely it is not logical that Creative Computing yield the rights to distribute software in any arbitrary format to everyone else when it chooses not to do so itself!) As far as users are concerned, we realize the hardship of having to key in thousands of lines of code, and may decide to release the rights to some of our published software, which we are not interested in selling, to a national CP/M User Group currently under reorganization. SN

(This issue will be discussed further in future Software Legal Forum columns).

Knowledge, Ethics, and Piracy

I was not moved to respond to Chris Morgan's editorial on software piracy (see "How Can We Stop Software Piracy?" May 1981 BYTE, page 6), but having read the wave of letters in the September 1981 BYTE, I feel one point of view has been missed.

A few hundred years ago, before printing was invented, bands of monks painstakingly copied manuscripts by hand to pass knowledge and learning to others. These documents were closely guarded and available only to the rich. "Education" existed only in these monasteries and for the elite.

After the invention of the printing press with movable type, books became less expensive and easier to duplicate. Learning filtered down to the "middle classes."

Somewhere in our social development we realized that the impoverished masses had not received the benefits of learning, and the free lending library evolved.

The author of a novel gets paid by the publisher, who happily sells to both the bookstore and the library. If I own a book and a friend wants to borrow it, I lend it and, in so doing, deny the publisher a sale. Society does not condemn either of these actions. But the authors of software would have us believe these acts are felonies when extended to their product. Our attitude toward literature is mature, but our feelings are "monastic" toward software.

Of course, there is a distinction. When a book is borrowed, the recipient has temporary use and returns the original. No copy is made. If it is a reference book, the user may buy his or her own or copy a few pages. One is more likely to purchase paperbacks than to make copies.

Extending this analogy then, what is needed are plentiful, inexpensive libraries of software for the impoverished masses to borrow and return. Couple this with inexpensive originals, analogous to paperbacks, and the problem could be solved.

Martin Oakes
2100 Oriole Dr
Freeport IL 61032

Who Are the Real Pirates?

A year ago, before I bought my computer, I would have been on the side of the software writer. Now with about $1,000 worth of software, my sympathy leans toward the pirate.

I consider myself, for lack of a better term, a computer user. I don't like to patch, PEEK, POKE, convert, delete, and plead with a purchased program to try to get it to do what I thought the ad said it would do.

I use the computer to keep the books for five small corporations, appraise real estate, and do anything else that might help me in my work. I try not to use it to create more work.

My $1,000 investment in software covers about 20 programs, not counting the games and such that come on LOAD 80 tapes. I consider two programs excellent, and two good. The rest had bugs, poor or no documentation, and needed alterations that were beyond me. Some were so bad that I just reformatted the disks to salvage something out of a bad investment.

I have about $400 worth of software that I feel was worth the money, but somewhere software writers have $600 of my money they didn't earn. I can't help feeling that if a friend showed me a program I liked and let me copy it, I've already paid my dues and wouldn't get too upset about it.

If I order a $100-plus program from someone who advertises as a professional, I expect the software to boot up and run error-free immediately. No PEEKing, POKEing, patching, and pleading.

William E. Sharp
2145 West Ave.
Ocean City, NJ 08226
80 Micro, July 1983

YODA AND DARTH STRIKE BACK

Dear Uncle Travelling Mat,
Yo-Ho-Ho! Merry Christmas to one and all! May your stockings be happy and full (like Yoda's). Mind you, it does seem rather odd writing this letter in the middle of a heat wave - just to get it printed for your December issue. We would like to add our support to your strong views on piracy. Pirates cause nothing but trouble (Blackbeard was always a used to copy Aquarius software for seven people around the world until my friend's dog was captured by the police and subjected to hours of vicious torture. We believe that there would be no piracy if they could see what the police could do to a dog with a pair of oven gloves and a fishfinger.
We think you will be excited to learn that our Space Invaders game has been signed over to Code Masters under the title of Space Invaders Simulator (original, eh?) and its sales should make us into millionaires (according to David Darling). Richard Darling may look like a total donkey, but after he had seen our game he was quoted as saying "WOW! AMAZING! What a brilliant game! The programmers must have been working on this one for decades! Wonderful! Wonderful! This game features more levels than I have pairs of Y-Fronts (three) !"
We think he liked it...
Perhaps we could take this opportunity to thank you for the splendid hologram you saw fit to attach to the front of October's issue. However, Yoda and I think we will need 193 more to cover our Christmas turkey this year (either that or an extremely small turkey). Perhaps you could attach a packet of Paxo to next month's issue...?
So, once again we'll sign off with a stinking stonking spanking bonking "Goodbye"!
Darth Vader & Yoda of TAC (The Aquarius Club)

YOB: What cer-azee loons, and we're not talking giant bottom-flapping purple trousers that our mums and dads used to go to Woodstock in. Write again soon and make me giggle. Have a special YOB prize of one hundred pounds worth of software for being very entertaining.

adversely affected non-commercial users such as families and schools. This second camp was largely made up of computer users' groups, who feared that high software prices might slow adoption of their favoured platform and that the manufacturer may abandon it – such as what happened with the TI99/4A and the Coleco Adam – and so turned a blind eye to software copying at their meetings. Neither camp ever truly won the debate.

On the Road...

by Melody Ayres-Griffiths

Our Kansasfest Experience



My wife April at Lane's cabin the morning after...

So, there my partner April and I were, driving up a steep grade on a mountain road in eastern Utah in the middle of July, when the tempest of a desert thunderstorm fell swirling around us, heavy rain suddenly pounding our 20 year-old minivan, instantly making it impossible to see in front of us. I hastily flipped on the windscreen wipers and they sprang to action, with perhaps a little too much enthusiasm as the driver's-side wiper blade failed to stop at the typical point in its arc and, powered by a gust of wind, kept going instead, flying off back down the hill behind us.

With large trucks both directly ahead and behind us and no shoulder to speak of, I had no choice but to keep going until we had an opportunity to pull off. Until then I was forced to lean over to see what I could out of the passenger's side of the windscreen, while keeping both at speed to avoid angering the truck behind us and our vehicle on the twisty mountain road. All while keeping a growing panic attack at bay.

As you might imagine, by that point both of us were asking ourselves just why, exactly, we were there.

We know there are those with perpetually itchy feet who wander the world, popping up in Timbuktu before setting off on some expedition into the jungle and never heard from again – we are not two of those people. For us, two individuals with rather high levels of chronic anxiety, striking out at the heart of the dark continent means driving to the centre of North America, in this case, Kansas City. Why Kansas City? Well, Kansas City, Missouri (or KCMO as it's known to the locals) is home to Kansasfest, a retro-computing convention that's been running so long you could still buy its favoured vintage computer – the Apple II – new when the event first happened, way back in 1989!

We had flown from Paleotronic HQ near Melbourne to Vancouver, Canada to visit my family, and planned to drive the 3400km to KCMO over four days. Despite my anxiety over travelling through at-times desolate territory, it was still preferable to flying domestic. Besides, we planned to meet up with a few other Kansasfest attendees along the way – ReActive Micro's Henry Courbis and Applesauce's John Morris in Seattle and Commander Keen co-developer Lane Roathe in Colorado – and make the journey together. And so, on the Saturday before Kansasfest began the following Wednesday, we set off from my parents' house on Vancouver Island to catch a ferry to the mainland, and that's when the troubles began.

The brakes failed on my father's old minivan at the same time it overheated! The overheating issue was an easy fix (in this particular model the cooling system needs to be completely full of coolant otherwise an air bubble forms which stops circulation) but we couldn't get an appointment with a mechanic to fix the brakes until the following Monday – too late for us to be able to drive to Kansas City in time. All seemed lost, but then my father was able to repair the brakes himself. They were far from perfect – sometimes you had to pump the brakes two or three times before they caught fully – but they were as good as they were going to get without waiting to see a mechanic, and it was getting late. (Note: Paleotronic Magazine does not suggest nor recommend anyone drive a vehicle without brakes that are not 100% functional!) We made our way to the ferry, and after an uneventful sailing drove down to the border with the US.

> It's amazing the lengths some people will go to just to hang out with a bunch of nerds...

This was not our first time driving down to Kansasfest – we had previously made the trip in 2016, and didn't have any issues making it across the border then; consequently we didn't have any expectations of encountering difficulties two years later. But US immigration was not happy with us – at first I thought they had an issue with our importing issues of Paleotronic to give away at Kansasfest, but it turned out that wasn't the issue: they had no record that April (an Australian citizen) had ever left the US the previous time, and wanted to have a bit of a chat about that. But all was eventually resolved, without the inconvenience of US customs dismantling the minivan, not an experience either of us has on our bucket lists.

But it was now getting late into the evening and our goal of making it to Seattle before stopping for the night was looking unlikely to be achieved. We made it as far south as Everett before fatigue took over and sleep was necessary, but then we discovered getting a motel room in Seattle at 11pm on a Saturday night in summer was almost impossible. We were turned away

from the Motel 6 but luckily there was a cancellation and April was able to snap up the room via a booking app on her phone – which was a good thing because otherwise we were going to have to sleep in the back of the minivan! We met up with Henry and John the next morning, and we made our way south, towards our destination for the day, Twin Falls, Idaho.

Thankfully the trip was relatively uneventful, save for the last hour or so when we ran into a bit of a dead area for roadhouses on the interstate at the same time the needle on the fuel gauge reminded me of the minivan's V-shaped petrol tank by rapidly descending from half, sailing past one-quarter and plunging toward empty. Luckily we found someplace – it was a little off the beaten path but it had petrol and we were set to make it the rest of the way to Twin Falls, and another Motel 6, where unlike in Seattle rooms were plentiful.

The next morning we drove south toward (and through) Salt Lake City, where our brakes (and nerves!) were tested when we rounded a turn on the freeway and found ourselves confronted with a wall of stopped traffic. But with a little urgent coaxing they did their job in a timely fashion, and we came to a halt without incident. We turned east to head through the mountains on our way to Colorado. And soon after that was when the wiper incident occurred.

So why were we there? I suppose to explain our willingness to endure the trials of our journey we need to first explain the allure of Kansasfest. For both April and me, computers were a large part of our childhoods, and the Apple II was prominent among them. While there are plenty of retro-computing enthusiasts on a global scale, we're somewhat spread out and so gatherings of a size such as Kansasfest (over 100 attendees in 2018) are limited to... well, Kansasfest. Combined with the shared accomodation, the length (5 days!) and the collaborative nature of the event there really isn't much else quite like it.

If you want to be a part of that you have to make the trip, anxiety and car troubles be damned. And so we soldiered on, eventually able to pull over and move the passenger-side wiper blade to the driver's side, and then limping to the ironically-named Helper where a new wiper blade couldn't be found at any Price, which just happened to be the name of the next town down the road where one could. But we were still seven hours drive, through a number of windy mountain passes, away from Lane Roathe's cabin in Colorado, and John and Henry's vehicle began having problems of its own, flashing up the check engine light and the oil light, but with no loss of power it was deemed safe to continue, for the moment.

Up and up we went, into and through the Colorado Rockies, making it to Lane's cabin at 8000 ft (2500m) above sea level, and between exhaustion, the thin air and a little whiskey were soon fast asleep. Soon after we woke up the next morning (and after an ibuprofen – whisky and altitude don't mix, kids!) we descended from the mountains and headed east across the great plains of Kansas. The day wore on and by the time we reached Topeka the sun had set, and the interstate merged into the Kansas Turnpike. A toll road built in the mid-1950s, it's not as divided or banked as the interstate and it was challenging navigating it in the dark at the 75mph (120km/h) speed limit. But eventually (and finally!) we made it to Kansas City, and settled in to our dorm room at the college that hosts KansasFest, Rockhurst University.

The next morning there was the Kansasfest Kookout and the final(?) Garage Giveaway (a free-for-all of mostly Apple II-related equipment and assorted gubbinses where we acquired a bunch of 1980s computer magazines – go figure!) Then the keynote began, and the sessions (which are covered elsewhere in this issue, including ours.) We got to catch up with a bunch of friends, and make some new ones, organised a Skype call hookup other friends in Sydney, trudged to the cafeteria several times in the heat, helped judge Hackfest which included some younger faces (a very encouraging prospect) and got lots of feedback on our emulator. Before we knew it, Kansasfest was ending!

John, Henry, April and I said our goodbyes to the other attendees, Lane heading west back towards Colorado while we headed north, choosing instead to travel back to the Pacific North-West by way of South Dakota and Montana (a much simpler and shorter drive that could be done in two days if we pushed hard). We stopped in Billings, Montana for the night and continued on in the morning, but while our hopes of making it back to British Columbia in time for the last ferry to Vancouver Island at 9pm were buoyed by Montana's fast 80mph (130km/h) speed limit, they were subsequently placed in jeopardy by several encounters with roadworks. But through the judicious use of tolled 'express lanes' in Seattle (which British Columbians can travel for free by virtue of Washington State's inability to collect) and an easy transition over the border back into Canada, we made it to the ferry terminal with a few minutes to spare. A couple of hours later our Kansasfest adventure was over – until next time.



...to Yesterday's News

December was a big time for 1980s computer and video-game magazines.

Their shiny covers stood out at newsagents and magazine stands, hoping to encourage Christmas shoppers to purchase them as stocking stuffers for friends, relatives – or for themselves. However, their actual holiday content tended to vary from one article to several (although in the case of videogame magazines, it could be argued they were all 'fun' and hence appropriate regardless of seasonal theme).

We browsed through a lot of these magazines while doing research for this issue, and here we present a few of the highlights we encountered, all available to view on the Internet Archive:

80-U.S., the TRS-80 Users Journal's December 1982 issue contained a type-in video Christmas card for the Models I and III, and four childrens' party games, which could be useful during Christmas break.

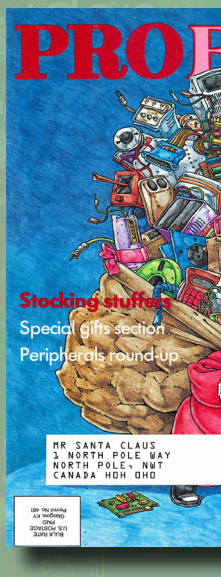


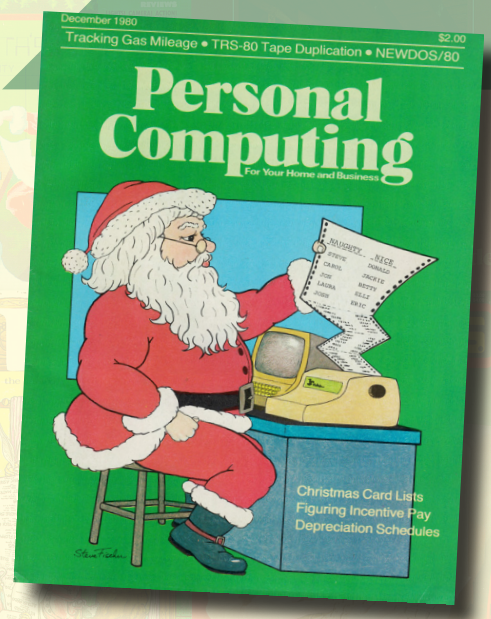
In fact, Tandy-centric magazines usually got into the Christmas spirit with gusto, with Rainbow magazine typically having several Christmas-oriented program listings. December 1983's issue contained Christmas music, a greeting card maker and an animated holiday demonstration. 1984 brought even more music, a Christmas card mailing list application, and another graphics demo! 1985 combined music and sound for Rudolph the Red-Nosed Reindeer, along with another music demo, Chanukah lights, a skiing game and a partridge and a pear tree (this is beginning to sound a bit like the 12 years of Rainbow Christmas issues...)

1986 delivered a program for printing Hebrew characters and yet more graphics and sound demos, including an animated Christmas tree. 1987 brought a Christmas-adventure game.



E.T. was a hotly anticipated Christmas game – so anticipated it even made it on to the cover of Australian Personal Computer magazine. They also reviewed it. And guess what? They outlined a number of issues with the game (including difficulty getting out of the 'pits') but seemed unwilling to make a judgment. No surprise since they likely didn't want to bite the Atari hand that passed hem an advanced copy. But what was most shocking was the price: $69.95 1982 Australian dollars ($177 2018 dollars)! Holy Moses!





Okay, okay, we get the point – the editors of The Rainbow really loved Christmas. But while that magazine was certainly the most prolific with the holiday content, it was by no means the only one to throw a few candycanes in the old computer Christmas stocking. Personal Computing's December 1980 issue featured one of the earliest Christmas card mailing label programs (written for the TRS-80 Model I – what's with these Tandy people and Christmas?)

Atari owners finally got their dose of Christmas cheer in Winter 1982's Atari Connection with – wait for it – Christmas music! December 1983's Antic magazine added a bit of graphics to a seasonal tune in its BASIC Christmas demonstration.



A Christmas Cover Story

There was a good reason for all of these animated Christmas cards – for one, unlike games they were relatively short and easy to type in. Consequently, they gave new computer owners a quick way to show off its most compelling features – colour graphics and sound – particularly when the household pocketbook had been incapable of affording any software (a bit like buying a VCR without any movies, but hey, we can tape shows off of TV!) Well, in the case of early-1980s home computers, you could buy a computer magazine with the computer and make your kids work for their fun – just make sure you bought a tape drive at the very least (we know from personal experience the remorse that comes with eventually having to turn the computer off and lose that 8-page machine language game you typed in). And tapes! Because otherwise your children would record over your favourite music cassette (they learned pretty early that all you had to do was put sticky tapes over the holes) and the next time you played it you'd hear the screeching of digital data instead of Supertramp.



But I digress (I often do). Antic's December 1987 issue was one of the more successful Christmas issues by virtue of Atari's introduction (and steep discounting, thanks Jack!) of the Atari XE computer line, and Antic was ready for new computer owners – urging them to buy a printer too, with features including an envelope maker for Print Shop cards and a program for using Print Shop icons on mailing labels. It also had a large (for BASIC) dungeon-crawler style game to keep the kids busy and offered a companion disk (an early example of this) containing a rudimenary desktop publishing program for 8-bit Atari computers (with custom fonts!)

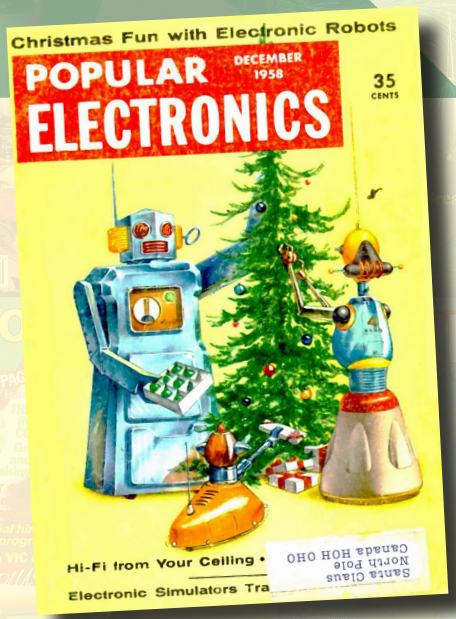


"Buyer's guides" were a common fixture in December computer magazines (and to some extent still are, for those few that remain). But what they suggested could really shift from year-to-year based on industry 'trends' (read: what computer companies wanted you to buy.) And so one year, printers may be hot, and the next it's touchpads. And if a platform-centric magazine's company of choice came out with a new model, it was certain to be a must-have! And to that last point, many magazines were 'very closely' tied to manufacturers.

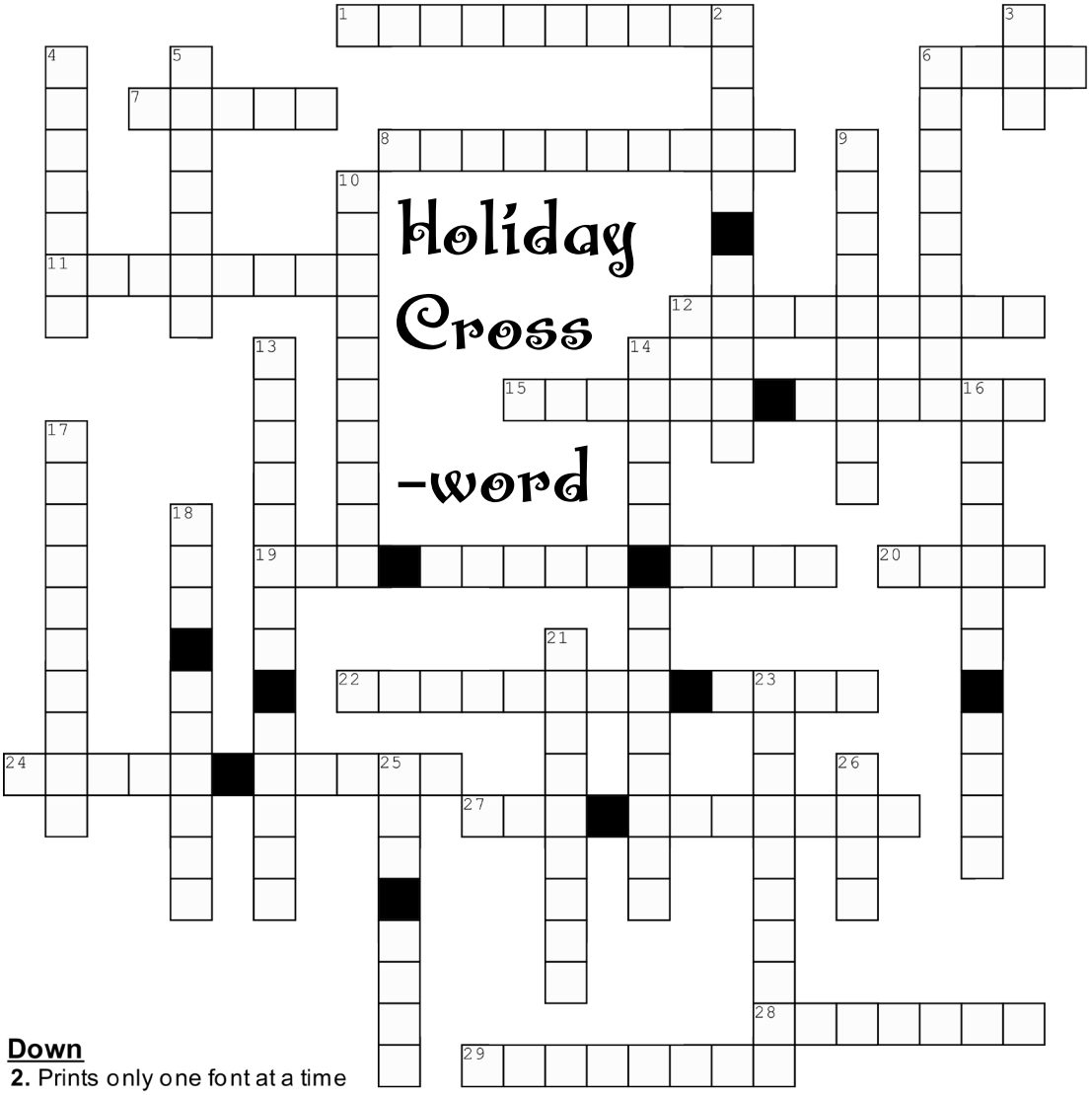


Speaking of printers, December 1985's Creative Computing had a roundup of printer-related gifts, and that year's Family Computing featured a 'Christmas Tree Construction Set' – just as much fun as the real tree you put up several weeks earlier! The Holiday 1985 issue of Apple II magazine II computing featured a Sysop Santa program that used a database readers had to download from CompuServe. Oh, and don't forget the British computer and game magazines and their holiday contests!

Finally, we'll finish with something that's neither a computer nor a videogame magazine: December 1958's Popular Electronics, which had 'Christmas Fun with Electronic Robots' – oh my!



Holiday Cross-word



Across

1. Sort of means 'brotherly love' but not quite.
6. The modem's true speed, not counting compression
7. Modulator / Demodulator
8. Apple II Geeks in KCMO
11. School newspapers gave up the glue stick
12. Mostly an excuse for people to buy lots of stuff!
15. A chiptune festival in Melbourne and Tokyo
19. Hated by Hallmark
20. Great Oz-trayan Retro-Fest (or Gathering of Retro Fans)
22. Radio frequencies for public use
24. An electronic visualisation of sound
27. Santa has a mean streak.
28. Commodore groupies do likewise
29. Music made with vintage computer and VG sound chips

Down

2. Prints only one font at a time
3. Multiple User Dungeon (or Dimension)
4. Walks off a cliff just because
5. Sydney's short-form KansasFest
6. The ultimate party game!
9. A family that works together (see clue 3)
10. A really big BBS
13. A computer that answers the phone
14. TRS-80 Enthusiast get-together
16. Fill an Apple II with modems and chat
17. A game whose non-electronic version had rampant cheating
18. Drives pins through a ribbon to make dots on paper
21. A website containing 1980s BBS goodness (and badness)
23. Saving the Apple IIs software chronicle one disk at a time
25. A collection of text, ANSI art, pixel art and music
26. A standard for terminal colour and graphics characters



Santa's Fun Zone!



"Do you know what's bad about having a bunch of computor nuts for friends? It's getting umpteen Snoopy printouts for Christmas cards every year!"

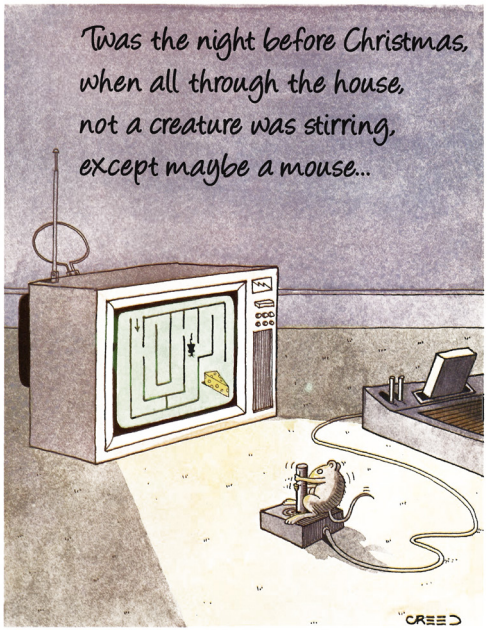


"Ho^3!"

CREATIVE COMPUTING

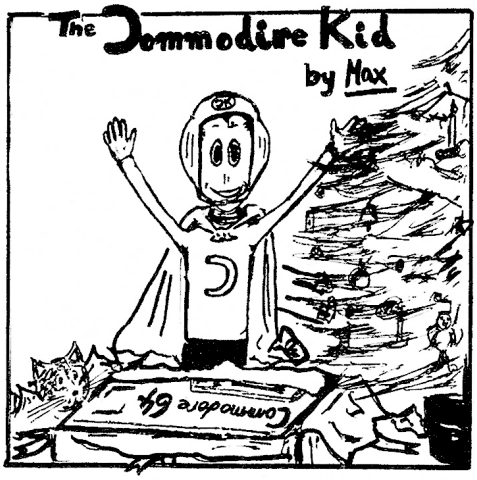


SO THAT'S HOW HE KNOWS WHO'S BEEN NAUGHTY OR NICE——



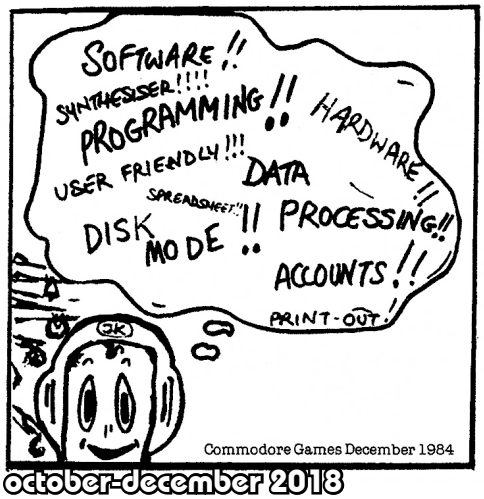


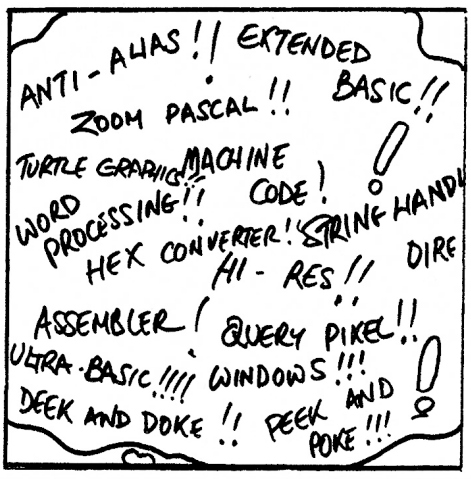


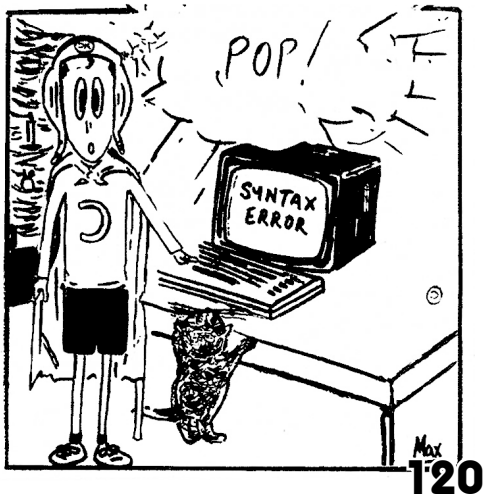














Thanks for Calling!

Logoff message:

So the prognosticators were largely wrong, as usual...

It turned out computers were more of a blessing than a curse, facilitating human connections as much if not more than it discouraged them, allowing for people both locally and globally to meet and engage in discussion who would likely not have otherwise, exchanging knowledge and ideas and generally making the world a better place. Sure, it hasn't been perfect, and there's room for improvement. But it's hard to argue a world with computers isn't better than what we had without them.

And speaking of bringing people together...

We here at Paleotronic see all kinds of opportunities to engage people with retrotechnology and educate them about the history and evolution of electronics, but these are not commercial opportunities, and neither really is this magazine. And so, it made the most sense to convert Paleotronic into a not-for-profit venture we called Teaching Electronics and Computing History (TECH) Inc., an incorporated association registered in Victoria, Australia. This will allow us to apply for grants to hold events (such as GORF) and exhibitions, develop educational emulation software, and create future publications - and hopefully as a formal non-profit organisation we can better persuade others to join with us in making them happen. So, if you'd like to help with Paleotronic, microM8, GORF or something else, please e-mail us!

TEACHING ELECTRONICS &
TECH
COMPUTING HISTORY INC.



Coming up next: Being Creative with Retrotechnology...

The next issue of Paleotronic is going to be all about creating with vintage technology, both back in the day and today, featuring articles looking at digital drawing and painting, desktop publishing and graphic design, electronic 'chiptune' music production, introductory game design and much more. As always we'll examine both the historic foundation of these digital arts and how the technological precursors that incubated them can still be used in a modern context. Let's get creative!

...but don't forget:

Paleotronic needs your help in order to continue, either through subscriptions, donations, or by constributing content to the magazine. So if you would like to see our mission continue, please consider purchasing a subscription for a friend or family member, buying advertising space or sharpening your pencil and writing an article. And thanks for reading! Come back again soon.

*^#*D/@NO CARRIER


Would you like to 'reach out and touch' both retrotechnology enthusiasts and the retro-curious alike? Consider writing for Paleotronic! We even pay (a little! :) E-mail editor@paleotronic.com for more information.
Thank you!
Thanks to all of those who worked on the vintage publications referenced in this issue of Paleotronic. We wouldn't be here without all of your historic efforts!
THANK YOU!

BACK ISSUES

PALEOTRONIC BACK ISSUES MAKE GREAT GIFTS! GIVE A LITTLE RETRO CHEER TO YOUR FRIENDS AND FAMILY, ORDER TODAY!



WWW.PALEOTRONIC.COM

RETRO-CODING CONTESTS!

Get your retro-geek on and code a game or application on your 8-bit platform of choice using BASIC, Pascal, Logo or Assembler, annotate it, then send it in to us and you could win US$100 and be featured in an upcoming issue of Paleotronic!

A second prize of the same amount is also offered for programs demonstrating the best use of microM8's features, including microBASIC's expanded syntax and 3D graphics modes, 3D microLogo, and/or microPAK configuration files and control programs.

The deadline for both contests is January 31st 2019, so get busy! Winners of both contests will be featured in our Q2 2019 issue.

WIN US$100!

