BITS,BYTES&PIXELS

LIMA 99/4A USERS GROUP

April 1993 Volume 9, #4

NEVER RELEASED OFFICIAL TI PERIPHERALS: THE HEXBUS INTERFACE; A KEY TO WHAT MIGHT HAVE BEEN

a hands on description by Charles Good
Lima Ohio User Group

The Hexbus Interface (PHP1300) allows you to control all the neat little hexbus peripherals directly from the 99/4A console. With this interface and a side car 32K (or 32K installed inside the console) you can create a fully expanded system with a very small footprint (occupying little surface area). If you paid full list 1983 TI prices, the cost of your expanded system would be much less than an expanded system based on the peripheral expansion box.

If you have a box that contained a beige console you can see what a TI Hexbus interface looks like. There is a picture of one on the bottom of the box attached to the side of a console. TI listed this device in its last price list (dated June 1, 1983) for $59.95, but it was never officially released. Only a handful of original TI hexbus interfaces are known to exist. I have such a 1983 TI hexbus interface on loan from Gary Taylor for this report, and I now also have my very own BRAND NEW cloned hexbus interface. For years people have been trying to clone TI's original interface and now it has been done. As of right now I am one of two people to own one of these cloned interfaces. More on this later.

Gary's official TI interface measures 8 x 3.5 x 2.25 inches. It connects to the side of the console and has a connection on its right side for other standard 99/4A peripherals or the peripheral expansion box cable. On the back is an on/off switch, a power supply jack for the required model AC9201 6v 300ma external power supply, and one hexbus connector. There is no serial number or date code (ATA or LTA number) on Gary's interface, indicating that it is a preproduction prototype. There is, however, an FCC identification number (A929JWPHP1300), and a statement that the device has been approved by the FCC for "Class B" use in the home.

The following hexbus peripherals have been tested by me using a 99/4A console and the hexbus interface with no problems. These are all very small peripherals, and all of them except the RS232 can be run on batteries as well as AC current. With the exception of the Printer 80 they all stack neatly on top of each other. You can place the whole stack of peripherals on top of the hexbus interface where it is connected to the side of the console. The entire footprint of all these peripherals when stacked on top of the interface OCCUPIES LESS TABLE SPACE than fire hose PE Box connector when connected to the console. The PE Box connector sticks out frather from the right side of the console than does the hexbus interface and stack of hex bus peripherals!

--Hexbus RS232 with parallel option: can be used to run any printer.

--Hexbus modem, doesn't require an RS232, 300 baud.

--Wafertape drive. This is a "never released peripheral" that I own. Up to 8 of these can be cabled together in a single system.

--Hexbus 4 color printer/plotter. This tiny printer can be addressed directly and does not need an RS232.

--The Hexbus "Printer 80" 80 column thermal printer also works flawlessly with the hexbus interface, but you can't stack it with the other peripherals. Like the printer/plotter, the Printer 80 can be addressed directly and doesn't require an RS232 interface. It uses fax paper or plain paper and a thermal ribbon cartridge.

TI was developing a hexbus 5.25 inch floppy drive controller. I know of two working examples of this controller in private hands, and one of these has been tested successfully with a 99/4A hexbus interface.

Unfortunately, the Hexbus interface does not work properly with the Mechatronic quickdisk drive, the one that uses 2.8 inch disks. You can save programs to quickdisk, but you can't load them back off the disk into the 99/4A.

WHAT YOU CAN DO WITH THE HEXBUS INTERFACE:

According to TI's documentation that comes with the TI interface, the device can be addressed in TI BASIC, TI EXTENDED BASIC, Assembly language, and from the P-code peripheral. The usual syntax is "HEXBUS.DEVICE_NUMBER.FILE_NAME". For example, to save a BASIC program to a wafertape set up as device 2 (wafertape drives can be designated any number from 1-8) you would type SAVE HEXBUS.2.PROGRAM and press <enter>. To list a basic program to a printer attached to the hexbus RS232 you would enter LIST "HEXBUS.50." where device 50 is the parallel output of the RS232. To list a program to the printer plotter the syntax is LIST "HEXBUS.10."

I have used the interface with WORDWRITER, a cartridge version of TI Writer. LF and then the file name HEXBUS.2.TEXTFILE will load TEXTFILE into the edit buffer from wafertape device 2. PF and then HEXBUS.16. will print the file directly to the Printer 80 (which is device 16).

The TI Hexbus Interface user guide was never officially published. It would have been designated as document 1049000-1, and was last revised sometime after March 1, 1983. (I have the March 1 revision. Errors in this revision have been corrected in my copy of 104900-1.) This user guide

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suggests that you can get a CC40 and 99/4A to talk to each other over the hexbus interface, allowing the CC40 to store data on the 99/4A's drives and display information on the 99/4A monitor. There is only limited truth to this. The documentation includes a skeleton 99/4A BASIC program that is supposed to put the /4A in "slave mode" so that it and its peripherals can can be controlled by a CC40 connected to the hexbus interface. The key word here is "skeleton". Big parts are left out of this BASIC program, and nobody that I know who has a TI hexbus interface can make this program work. Nobody has been able to SAVE or OLD a CC40 program onto a 99/4A floppy drive or display CC40 text via a 99/4A onto a monitor. You are supposed to be able to do this, but nobody can figure our how.

You can use a CC40 (or TI74) to save data to a data file on wafertape and then use the 99/4A to open the file and read the data into the 99/4A. Wafertape drives are rare and not very reliable. It is really too bad that you can't use the Mechatronic quickdisk drive with the hexbus interface.

THE KEY TO WHAT MIGHT HAVE BEEN:

Back in 1983 the hexbus interface would have been the key to a low cost compact expanded 99/4A system. Lets compare costs, based on the ridiculus full list prices from TI's last official price list.

EXPANSION VIA THE PE BOX:

--PHP1200 Peripheral Expansion box.....$249.95
--PHP1220 RS232 Card.....$174.95
--PHP1240 Disk Controller Card.....$249.95
--PHP1250 Floppy drive for PE box.....$399.95
--PHP1260 32K card.....$299.95
--PHP1800 Telephone coupler (modem).....$199.95
----------TOTAL EXPANSION COST..$1574.70

EXPANSION WITH HEXBUS PERIPHERALS:

--You need a side car 32K and there is no such hexbus product. Doryt Systems advertises one in the June 1983 99er.....$175.00

--PHP1300 Hexbus Interface.....$ 59.95
--HX2000 Wafertape Drive.....$139.95
--HX3000P RS232 with parallel interface.....$124.95
--HX3100 Hexbus modem.....$ 99.95
----------TOTAL EXPANSION COST...$599.80

This would leave you with enough extra money to purchase additional hexbus peripherals such as

--Additional wafertape drives. Up to 8 drives can be cabled together in one system and you don't need any kind of "controller" interface.

--HX1000 4 color printer/plotter.....$199.95
--HX1010 Printer 80, released in 1984 at.....$249.95 (the TI impact printer listed in 1983 for $750.)

So after listing it in their official price list, obtaining FCC certification, and providing a color picture of the thing on each beige console box, why didn't TI offer the Hexbus Interface to 99/4A users? I suspect the answer is the failure of the wafertape drive to live up to expectations. My wafertape drive, and those owned by a few other lucky collectors, are not very reliable, particularly when operated on battery power. The key to system expansion is reliable mass storage that is better than a cassette tape recorder. Failure of the wafertape drive left the hexbus in 1983 with no mass storage peripheral. But this may soon change!

DONE

NEW 1993 HEXBUS PERIPHERALS:

reported by Charles Good
Lima Ohio User Group

A hobbyist in Germany named Michael Becker is making clones of TI's never released Hexbus peripherals in limited quantities. (Michael Becker also makes a quad density disk controller and a "speech in the PE box" card that includes TEII speech in ROM usable from extended basic without occupying normal XB program memory space. This card was shown at the Feb 1993 Fest West.)

--99/4A hexbus interface. I own one of these clones. It is built like a tank in a solid metal enclosure resembling the enclosure of the Mechatronic 80 column peripheral. Like the original TI product, the clone plugs into the side of the console and has a connector for the PE Box cable. Unlike the TI original my clone has an LED which flickers to tell me that my interface is funtioning, and it does not require a spearate power supply.

--5.25 inch DSDD hexbus disk controller. This can be used for mass storage with the CC40, TI74, 99/2, 99/8, and with the hexbus interface can also be used with the 99/4A. Michael Becker has a TI original (a very very rare device, even rarer than a wafertape drive) and has dumped all the code in the PAL chips so that he can produce duplicates. I expect delivery of my controller in a few months.

--Hexbus Video interface. This allows the CC40 and TI74 to display text in 40 columns on a composite color monitor. One of my correspondants has seen Michael's working prototype. It is better than the TI original in that it will display in 16 colors, not just in black and white.

Another hobbyist, Lee Bendick, has cloned the CC40 EA cartridge and is making this cartridge available to interested CC40 owners. This allows users to program the CC40 in assembly language, storing assembly routines in battery backed RAM cartridges or in the RAM of the CC40. I know of only 4 TI original CC40 EA cartridges. I own one of Lee's cloned EA cartridges and it works as described in my two massive CC40 assembly language manuals. You need either a 5.25 hexbus disk drive or a wafertape drive to make the EA cartridge work.

Anyone interested in any of these CC40/Hexbus peripherals can write me at P.O. Box 647, Venedocia OH 45894. I will put you in touch with Michael Becker or Lee Bendick.

DONE

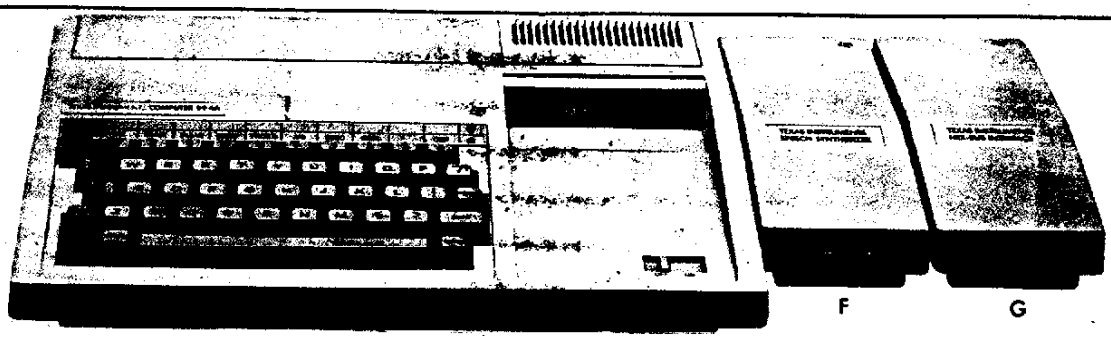

Photo from the bottom of a beige console's box. F is a cosmetically redesigned speech synthesizer. G is the Hexbus interface.

MAY 14/15 LIMA MUG CONFERENCE UPDATE:

As of March 15 the following have scheduled videotaped seminars and/or display tables. We expect many additions to this list as Conference time approaches. For motel information or to schedule seminars or tables phone Dave Szippl evenings at 513-498-9713.

SEMINARS:

Tim Bodenmiller "The current status of game programming for the TI"
Mike Wright "The PC-99 emulator"
S & T software title unknown
Mike Maksimik "MIDI update"
Don Walden "New hardware for the Geneve"
Jack Sughrue "The Teaching TI: Our Computer as an Educational Tool"
Bud Mills "The SCSI card and other hardware from BMS"
Barry Traver title unknown

TABLES:

PC eculator- 1 table
S&T software 1 table
Crystal Software 1 table
Cecure Electronics 1 table
D. Wright Stuff
L. L. Conner Enterprise
Competition Computer
MUNCH (self help video tape on console maintenance)
Bud Mills Services
Harrison Software (debuting "The Ultimate ACCEPT AT")
Ramcharged Computers

****DONE****

MORE ABOUT CONVERTING "WORD PERFECT 5.1" FILES TO TI DV80 FORMAT

by Charles Good
Lima Ohio User Group

In my March 1993 review of Mike Wright's TI CYC I described a method of converting the MS-DOS CYC disk files to TI DV80 format usable by those who do not have access to Word Perfect 5.1. If you DO HAVE WP5.1 there are several ways to save a file from Wordperfect 5.1 to ASCII format so that the file can be converted with PC TRANSFER to DV80 on a TI disk.

--Use F5, save file, and select "Generic".

--Use F5, and select DOS to save the file.

--Format the file to your particular printer (the Cyc is formatted for laser printer output). Then change the printer name to a disk file and PRINT the file to this disk file. Use the MS-DOS 5.0 text editor to remove the control code junk from the file and resave. The resulting file will be in ASCII format and when you use PC TRANSFER to convert the file to a TI disk the file will print very nicely exactly as it was formatted (in columns for example). This [illegible] was subnitted by Harold Hoyt.

****DONE****

THE TI74 "PC INTERFACE" WORKS AS AN ALTERNATIVE MASS STORAGE DEVICE FOR THE CC40

From a letter to the BB&P editor by Harry Nilsson
Pl. 367 Lillsjoberg
910 31 Tavelsjo SWEDEN

I have the TI74 with some cartridges and the PC-Interface and some homemade adapters so I can use the CC40 with my PC (saving programs on the PC diskettes or harddisk. .... I prefer the CC40 because it has more "feel of quality" then the TI74 and also more statements like CALL DEBUG.

I haven't been able to save text from Memo Processor to the PC via the PC interface because the PC interface doesn't work with the "internal data" file format that MP's SAVE uses. .... But of course it is possible to save text from MP with "Send Doc" to the PC via the PC interface or the RS232 interface (even at 19200 baud with [FN]Q).

There is a diskette ("Driver software and utilities" for the PC) with assembler programs (CALL PEEK, CALL POKE, CALL NCAR, CALL LOAD and so on) for the TI74. I have version 1.01 that comes with the TI74 PC interface.

[Charles Good's note: As of March 1993, the TI74 PC Interface can be purchased directly from TI for $60 plus shipping and sales tax. To order, call 800-TI-CARES. This cable plugs into the PARALLEL port of an MS-DOS PC. The above mentioned software is on a 360K 5.25 inch MS-DOS disk.]

****DONE****

LIMA MULTI USER GROUP CONFERENCE

May 14/15 Ohio State University
Lima Campus, Lima Ohio

This all TI event is TOTALLY FREE
No admission charge, no charge
for tables

For Motel information,
or to schedule a free
exhibit room table,
or to schedule a video
taped seminar: phone

Dave Szippl 513-498-9713
or
Charles Good 419-667-3131

To arrange free airport
pickup and delivery, phone
COLUMBUS OHIO
John Parkins 614-891-4965
DAYTON OHIO
Rick Kellogg 513-773-5941
FORT WAYNE INDIANA
Homer Kipling219-483-8886
(Please make airport
arrangements with these
individuals as far in
advance as possible)

***** TI-101 *****

OUR 4/A UNIVERSITY

by Jack Sughrue
Box 459
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#9 AFTERWORD

The eight-session course on the educational aspects of our TI-99/4A was harder work for me than I first realized when Charlie Good asked me to write it.

I thought then that it would be fun, and it was. The problems, however, were a shortage and a surfeit of materials. In my computer room at home there is probably the largest collection of TI printed materials in existence. (Yes, Barry Traver, even more than you.) I also have a few thousand disks and tapes at home and in my third-grade classroom at the Stapleton School in Framingham, Massachusetts. Couple that with the developmental learning books and materials I've gathered up in my 30-plus years of teaching in college and secondary, as well as elementary, public schools, and you can imagine the solid-packed storage areas of materials relating to education and to computing. That's the surfeit. (Or "junk," as my patient wife refers to it.)

The shortage is what kinds of educational materials presently are available to the average or new TI consumer.

So a dilemma was trying to write about available materials and explain how those materials could be gotten. And, at the same time, discuss what ways all these and other materials could be used to provide the best education for the new and experienced learner, old or young. Education was the main concern.

So I went through newsletters - eleven filled boxes, alphabetized by group and then by chronology. Most of these newsletters no longer publish. (Just this week another great - and the only Connecticut - newsletter died: Janet Ryan's NUTMEG 99.) Next, I went through all the magazines (MINI, ENTHUSIAST, REFLECTIONS, 99er, and many others that were devoted solely to the TI). Then the cartridges and their manuals, the disks and their manuals, the tapes and their manuals.

Then all the books.

I was astounded to discover all the stuff out there devoted to the educational aspect of our computer.

So, I figured the best way to approach the whole thing was to give a bit of the history leading to present-day developmental learning methodologies and explain how the TI can readily plug into that structure at home and at school.

I used the TI at home with my four kids as they were growing up, and I still use the TI with my present third-grade tykes. My new third-grade compatriot in the next room was so intrigued, she went to the Boston 1992 Fayuh and bought three consoles for herself, along with a PBox, tape recorder, piles of cartridges, and so on. Now the two of us have six TI's running practically all the time during the school day with very specific tasks for each of the children. Every third-grader gets at least an hour a week on one of the machines, and they become computer operating pros in a very short time.

But, more importantly, their academic skills continue to improve steadily, as the TI's not only serve as stimulant, but they enhance much of the classroom learning.

The excitement has not gone out of the machine, nor the good learning experience; it's just a new clientele is now ready to proceed with reckless abandon. (Including learning how to spell "potato" without an "e").

It's a real shame that more people aren't aware how wonderful (and wonderfully easy) our computer is for children or for any learners.

Once I saw how much material I had and started perusing it, I realized that I needed to get back to using lots of great stuff that somehow slipped away from me over the years, even though I have never stopped using the TI in well over a decade (things like "Name That Bone" and "Telling Time" and "Square Pairs" and "The Everything Teacher" and "Cosmopoly" and and and and ....

But then I had to write some articles which were practical for grandparents (which, in a few months, I'm about to become for the first time and second time, as both my daughters are mothers-to-be) and teachers and uncles and friends to use with new learners.

So more selection.

There are so many programmers and other educational TI enthusiasts who have done and are doing so much for the next generation (people like Jim Peterson and Eunice Spooner and Don Shorock) that it would have been impossible to even mention everyone. That's why I chose specific examples to represent all.

(Don Shorock, by the way, recently sent me two *brand new* disks full of his excellent educational materials in his remarkable, unique programming manner.)

Before I leave this series, though (even in this parting note), I must take a few minutes (inches?) to tell about one of the great programmers for early childhood and elementary schools: Tony Falco. Tony wrote a pile of wonderful, commercial programs (including some teriffic ones for 99er MAGAZINE). He did WORDWIZARD, NUMBER NIBBLER, the BEAMER math series, WORD-WORLD, THE CRAYON BOX, SUPER-CITY, and a pile of classics too long to print out here. He also scrunched better than almost anyone. His tinies are still being reprinted in newsletters all over the world, years after their original publication in M.U.N.C.H.

His specific learning programs (like the subtraction series on borrowing) are the best there are for our computer.

All his commercial and early magazine programs and a fascinating batch of others have been gathered together by Tony at my urging and are released as a fundraiser for the M.U.N.C.H. Computer Group (c/o Jim Cox, 905 Edgebrook Drive, Boylston, MA 01505) on five disks (about 70 programs) for $8.95, including shipping and handling. A super educational

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package. I learned more about programming from studying Tony's programs than I did from any other programmer. I would never have been able to do PLUS! if it weren't for Tony.

My kids at school love his programs, many with extraordinary graphics.

What does all this educational exploration really lead to?

Hopefully, a self-networking source for all the great educational uses and materials. An open learning network for everybody!

If people writing programs or finding programs or materials relating to the TI as an educational tool wish to assist me as a clearing house, I'd be happy to do it. I'll not only be sure stuff gets out to the kids, but I'll distribute any materials through TIGERCUB, as well as the Lima and M.U.N.C.H. groups.

That way, any adults needing any educational materials could get their hands on the stuff quickly and inexpensively. John Kolean, editor of MICROpendium, recently wrote that he has had a console hard at work for many years. I, too, have had consoles (two) that have seen great battles for over a decade and are still operating trouble free. These two consoles run the entire school year, all day every day. They have been banged on by elementary children all this time and have been used all summers by my family. They have been lugged on vacations to Cape Cod and to workshops in libraries and other schools throughout New England. And have operated flawlessly. I've cleaned them (because school chalk dust and sticky little hands are the worst things that can happen to computers), but I've never had them in for repair to TI or even to our user group. I see no reason why they won't still be operating on all four cylinders well into the 21st Century (at least until 2003, when I retire).

The advice I gave about joining and participating in user groups (and using their text and software libraries, as well as receiving an informative monthly newsletter) is still the best advice I can give any potential user of the 4A for educational purposes (or for any other purposes). From there, you can branch out beyond your wildest dreams.

Sorry, I have to get back to my LOGO II. There are all kinds of things I'm just discovering. Maybe I might even let the kids use it. Someday.

So, on behalf of Mr. Shakespeare, Ms. Bronte, Mr. Bell, The Old Professor, and all the other members of the TI-101 Class, good fortune!

There's always TIme for TIing for educaTIon, enterTainment, and InTellectual sTImulaTIon.

DONE

FOR SALE: AN ANTIQUE TI COMPUTER SYSTEM

Joseph Cohen has a complete working 99/4 system with side car peripherals for sale. Included are:

--99/4 console (not the 4/A)

--1979 joystick set (not the joysticks most of us are familiar with)

--Thermal Printer (device "TP")

--Side Car RS232 (two serial ports, no parallel port)

--Side Car 32K

--Side Car SSSD disk controller --Three stand alone Sugart drives (original TI drives with the BIG flip open door).

Joseph wants to sell or trade the entire system if possible, but you may be able to talk him into selling parts. He doesn't specify a price. Call or write with your offer. He also still has several basic PE Box expansion systems (32K, TI controller, DSSD drive) for sale for $85.

Joseph Cohen
144 Mimosa Dr.
Charlottsville VA 22903
804-293-8973

DONE

FUNNELWEB V5 ALL CHARS MODE IS NOT COMPATIBLE WITH MOST OTHER VERSIONS OF TI WRITER!

by Charles Good

When you are wrong you are wrong! I was wrong when I said All Chars mode can be loaded into other versions of TI Writer or Funnelweb. The All Chars tab line is incompatible. If you use All Chars mode with Funnelweb v5 (as I usually do) and you want others to read your text file off of disk, you should save your file to disk with PF. The tab line is not saved with PF, and the resulting file will successfully load into all versions of TI Writer.

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JOHN PHILLIPS
by Bill Gaskill

I would venture a guess that most people who have owned a TI-99 for more than a couple of years have run across the name John Phillips before. He is a near legend in the TI-99/4A cartridge and assembly language programming community and can claim authorship, co-authorship or significant involvement in over a dozen cartridge programs produced for the 99/4A, not to mention numerous articles written about the inner workings of the 4A's architecture.

Phillips will be 32 years old this year (1993) but he was only 21 when he was hired by Texas Instruments in 1982 right after graduating from Illinois State University. He started his career with TI in Dallas doing COBAL programming for business applications but it took him only 6 months to get a requested transfer to Lubbock where the "real" action was. John had purchased a 99/4 during his senior year in college and was already familiar with the Home Computer's architecture and he had wanted to program video games since purchasing his first cartridge, which was Munchman. Phillips didn't know TMS9900 assembly language but it didn't take him long to learn it.

His first project at Lubbock was Moonmine, followed by Hopper, which he co-authored with Michael Archulata. Hopper was followed by Word Radar, which he wrote in 2 weeks, for Developmental Learning Materials (DLM), the firm started by Bill Maxwell and Jerry Chaffin.

After completing Word Radar TI sent Phillips to Japan where he met with several companies who were being recruited to write software for the 99/4A. Following his return from Japan he became involved in almost every piece of software that was slated for production or that was actually produced for the 99/4A. When TI announced the end of the Home Computer Division Phillips was offered several incentives to stay at TI but turned them all down because none involved work with the 99/4A. Instead, he and fellow employee Michael Archuleta went to work for DLM, which had continued to work on products for the TI-99/4A even though it was no longer being produced.

In December 1983 John Phillips announced to the TI Community that he was available to any User Group for seminars, demonstrations and question and answer sessions related to the TI-99/4A. He would travel to virtually any location if the User Group would pay round trip airfare from Dallas, Texas plus lodging? While he could only make himself available on weekends, it was a pretty generous offer.

Both Phillips and Archuleta eventually left DLM (probably because the work there dried up too) and started their own firm in February 1984 called Video Magic. Video Magic also came to an end in too short a time, I suspect because it was becoming painfully obvious that one could not make a living trying to write software for the 99/4A.

At Texas Instruments Michael Archuleta was responsible for the 99/4A Technical Hotline and for 99/4A software quality assurance. Phillips was a third-party software development consultant and programmer in the education/entertainment section of the Consumer Products Division. Both men would get together again in 1986 to collaborate on the 4A FLYER game cartridge that was commissioned by Triton Products. To date, that is the last time we've heard from the John Phillips/Michael Archulata team.

Archuleta and Phillips were involved in, or responsible for such TI-99 favorites as:

ANGLER DANGLER - Phillips worked on this project as the debugger of the final code, but the project never reached completion before the bailout so Angler Dangler was never officially released. It does exist in GRAM file format however, so it probably was not too far from being a real product when someone at TI made the decision to pull the plug. If you look at the October 23, 1983 IUG price list you will see Angler Dangler listed as being available.

BEYOND PARSEC - This cartridge, which Bill Moseid's DataBiotics firm released for the 99/4A during the third quarter of 1988, started life in early 1984 as one of two game cartridges John Phillips was writing for CorComp's new CCI-99/64 (aka Phoenix) computer. The other game was Star Wars. Both efforts came to a screaching halt however, when TI objected to the use of the Parsec name, and George Lucas' company apparently objected to the use of the trademarked Star Wars name. The Star Wars code must have actually been finished at the time though, because I have the game on disk as a GPL file. It was ultimately renamed Star Trap and released in cartridge form by Exceltec in 1985 and then by DataBiotics during the third quarter of 1988.

BEYOND SPACE - This is a John Phillips creation that was completed in May 1984, but not released until the first quarter of 1985 when Exceltec/Sunware marketed it. It was picked up by Unisource Electronics for their catalog/encyclopedia but pretty much floundered and then just disappeared. It has never resurfaced since both Unisource and Sunware went out of business in 1986.

The game involved two players with each having a ship of equal firing power. The area in space where the two ships confront each other is littered with asteroids which may be moved by firing the ship's laser. The object of the game was to push asteriods into your opponent's space ship to crush and destroy it. The only review I've ever seen written on the program claimed that its speed was too fast to play the game very long, so that may be why it has slipped into oblivion?

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BURGERTIME - Phillips provided the final debugging for Burgertime.

D STATION - This John Phillips creation has the distinction of being the only program ever released by the International 99/4 User Group on the Romox ECPC cartridge. You may recall that during the fourth quarter of 1983, Charles LaFara promised "a library" of programs from the IUG on the Romox ECPC (Edge Connector Programmable Cartridge). D Station was just the first, but it also turned out to be the last.

When the IUG ECPC library failed Exceltec (aka Sunware) picked up the program and marketed it for a short time in 1985. Triton finally introduced D Station in their Fall 1988 catalog along with a brand new D Station II game, also written by John Phillips.

D STATION II - See D Station.

FACEMAKER - Phillips collaborated with Intersoft's Jerry Spacek on this project. Spacek you may recall wrote Defend the Cities, which was the first commercial Mini-Memory assembly language game ever written. In the Facemaker project Spacek translated Spinnaker's source code to TMS9900 assembly language and Phillips ported it to cartridge format.

HOPPER - Michael Archuleta and John Phillips co-wrote Hopper, which was the only cartridge developed entirely on the TI-99/4A Home Computer, using the Editor/Assembler cartridge for all of the programming. All of the other TI-99 cartridge software programs were developed on a TI Mini, not the 99/4 or 4A.

JAWBREAKER II - Phillips converted the original Sierra On-Line source code to TI-99/4A code.

MINI MEMORY'S LINE-BY-LINE ASSEMBLER - Phillips claims responsibility for its development, but I am not sure exactly what that means.

MOONMINE - Programmed by John Phillips from a design by Bob Hendren. You may remember that Hendren was also the project engineer behind Parsec and the person who recruited Aubree Anderson to do the voice for the Parsec game.

PETER PAN'S SPACE ODYSSEY - Phillips and Archuleta collaborated on this program while employed at DLM. It was never officially released but is available as a GRAM file that can be run from P-Gram, Gramulator or the GramKracker.

SLYMOIDS - Slymoids was written by James R. Von Ehr II. The cartridge conversion was accomplished by John Phillips.

STAR TRAP - See Beyond Parsec.

SUPER DEMON ATTACK - Phillips worked on this project, but I have no information on the specific contributions he made to its completion other than possible debugging of the final code. I do know that he actually worked on Demon Attack, not Super Demon Attack, but they are probably the same project with the actual marketed product just having a slightly different name.

THE GREAT WORD RACE- John Phillips authored.

TREASURE ISLAND - Phillips provided the final debugging for this game cartridge, which had apparently become stalled by a bug that no one could find.

WORD RADAR - John Phillips authored.

DONE

LETTER TO THE EDITOR FROM ALEXANDER HULPKE

The real reason for this letter is concerning a major change in my life for the next few months: As I already mentioned, I finished my diploma thesis. Since I also have had the oral exams from October to January, this means, that I will get the diploma in mathematics in the next few weeks. I'm planning to graduate also with a PhD. This will take place in Aachen again starting this Autumn. For the meantime, I got an Invitation from Concordia University, to spend about half a year of learning/research in Montreal, Canada. Thus I will spend about the time from April to September in Canada.

This implies, that my adress in Aachen will not be valid from the beginning of April on. I will move to another adress in autumn, but I'm still searching. I will send a letter, when this change has taken place. Up to this point, mail should be directed to my adress in Wuppertal [Sadowastrasse 68, 5600 Wuppertal 1, GERMANY].

I don't yet have an adress in Montreal (and since I'm not taking my Geneve with me, there would be little use in sending disks to that adress).

I can be reached via InterNet eMail (I'm setting up a forward file at my account) as AHULPKE@EBERT.MATH.RWTH-AACHEN.DE if someone absolutely wants to reach me during this time.

Again, thanks for your support,

Alexander Hulpke

DONE

NO MORE SMALL PRINT BB&P

Because of very polite objections from some of the user groups on our newsletter exchange list we have decided to abandon our money saving but difficult to read "small print" edition.

DONE