

# Inter-Office Memorandum

To	BCPL Users	Date	July 3, 1973
From	Gene McDaniel	Location	Palo Alto
Subject	Bringing NOVA BCPL Programs to ALTO	Organization	PARC/CSL

XEROX

Within a restricted context, BCPL programs which run on the NOVA can run on ALTO with no source level modifications. The user need only compile and load his programs using a particular version of the BCPL compiler and loader. The details of accomplishing this are described below.

The necessary binary and save files are available on DPl on the MAXD NOVA. File names in quotes will refer to these files. Keyboard display I/O is performed through external procedures defined in the binary file "ALTOIO.BR". They are used in the same fashion that BCPLIO procedures written by Ben Laws are used. (ALTOIO is a modified version of BCPLIO.)

Suppose you have a main program on the file named MAINPROG, and a subroutine file, SUBR1. The following procedure would create a save file which would run on ALTO:

```
"BCPL" MAINPROG
"BCPL" SUBR1
"ALDR"/T/R "ADBM"/I MAINPROG SUBR1 "ALTOIO" "ABOARD"
```

This creates the save file, MAINPROG.SV which can be loaded into ALTO using the ALTO debugger, DEBAL. How to use DEBAL will not be described here. See ALTO documentation on use of DEBAL.

### Comments:

- 1) Due to a horrible kludge, you must initialize teletype IO at the beginning of your program, e.g., 'LET TTY = OPEN("")'. Failure to do this will leave you confused and unhappy at run time.
- 2) "ADBM" is a machine language save file which has Diana Merry's display driver and Bill Duvall's structures implementation. Your own machine language subroutines, if any, must be loaded along with these other routines.
- 3) "ABOARD" is the BCPL binary (ABOARD.BR) which decodes the keyboard.

- 4) Structures are available.
- 5) The starting address can be found in any of three ways:
  - i) Examine your load map, "MAINPROG.LT". The address for "START" is your starting address.

The other two methods utilize the fact that ALDR leaves the starting address in word 405B of the core image in the save file.
  - ii) Use OEDIT to examine word 367 in your save file. This is really word 405B offset by 16B, if that helps.
  - iii) Examine core location 405B once your program is loaded into ALTO (by using DEBAL).
- 6) All DOS calls within the BCPL resident code have been replaced by IO instructions which will cause a break to the ALTO debugger (as long as there is a breakpoint set at IOVEC in the ALTO microcode).
- 7) Attempts to use channel IO other than keyboard/display IO will cause a break -- if ALTOIO routines are used.
- 8) On the table near the ALTO there is a binder of relevant listings, i.e., ADEM, ABOARD, the structure code, etc.

Distribution

Jim Curry	Butler Lampson	Dick Shoup
Moses Boseman	Howard Sturgis	Bob Sproull
Patrick Baudelaire	Allen Brown	Gene McDaniel
Bill Duvall	Ed McCreight	Willie Sue Haugeland

GMCD:amp