

# **VIEW & FIND**

## **(V&F)**

Viewing and Searching  
Program for  
TLG CD-ROMs "C" and "D"  
and  
PHI CD-ROMs #1 #2 #5.3 #6

by  
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Halle (³1995)

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# I Legal Conditions

The terms set forth in part I of this document form the entire agreement into which the author of the V&F software, Burkhard Meißner (henceforth: author), and any user of that software enter. The right to use this software forms an individual non-transferable right that is bestowed upon the user unilaterally by the author of the V&F software. By using the VIEW & FIND software, the user of this software accepts these terms and agrees to the following conditions.

## 1 Conditions of Use

VIEW & FIND is a program that its author, Burkhard Meißner, has written privately for his own purposes. However, the author of the VIEW & FIND software (henceforth: V&F) grants the right to use that software to any legitimate user of V&F, under the following terms and conditions:

A legitimate user is defined as any natural or legal person that has payed to the author a fee of 1000 DM (institutions) or 800 DM (individuals) to cover his costs for development and distribution. The legitimate user acquires the right to use the software on any single machine at a time and to make as many backup copies for his own purposes as he thinks appropriate. Therefore, the right to use the V&F software is transferred under the condition that the aforementioned fee is paid to the author, and the right to use the V&F software is transferred only to the person that has paid the fee. Using V&F in an networking environment or on different machines within one physically coherent institution does conform to these conditions of legitimate use of V&F; copying and distributing V&F to more than one separate machine to use the software on more than one machine by different persons at the same time does not.

The author of the V&F software, Burkhard Meißner holds and will hold the copyright of the software, and he is its material, intellectual and spiritual owner. This entails that users have to give due credit to the author and his V&F software when they publish results produced from the use of V&F. Therefore, the right to use V&F is transferred under the explicit condition that the user mentions the V&F software and its author as its author in any publication that results from serious use of the V&F software.

## 2 Warranty Conditions

### a) Limited Warranty

The V&F software is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to the implied warranties of merchantability and fitness for a particular purpose. The entire risk as to the quality and performance of the program is with the user. Should the program prove defective, the user assumes the entire cost of all necessary servicing, repair or correction.

The author, Burkhard Meißner, does not warrant that the functions contained in the program will meet the user's requirements or that the operation of the program will be uninterrupted or error-free. However, he warrants the discette(s) on which the program is furnished, to be free from defects in materials and workmanship under normal use for a period of ninety (90) days from the date of delivery to the user.

### b) Limitations of Remedies

The author's entire liability and the users exclusive remedy shall be:

- 1) The replacement of any discette not meeting our "Limited Warranty" and which is returned to the author together with a copy of the user's receipt, or
- 2) if the author is unable to deliver a replacement discette which is free of defects in materials or workmanship, the user may terminate the Agreement between author and user by returning the software, upon which his money shall be refunded.

In no event will the author be liable to the user for any damages, including any lost profits, lost savings or other incidental or consequential damages arising out of the use or inability to use the program even if the author has been advised of the possibility of such damages, or for any claim by any other party.

## **II View & Find Overview**

### **1 Program Characteristics**

#### **a) Purpose and Features of V&F**

V&F has been written to access Latin and Greek texts on the TLG and PHI CD-ROM discs. In addition, it comes with converter programs to be used with texts from the Oxford Text Archive and the texts of J.Malitz' epigraphical data base IGEYST.

It provides full support of PHI CD-ROMs #1, #2, #5.3 and #6 with the extended reference level information on PHI discs.

We have included an extended version of the SNOBOL4 pattern language in our search engine.

Re-configuration: Many options can be reset by the user either with profile settings or by changing them manually.

Powerful browsing (VIEW) option: Correct display of sublinear dots and many of the more uncommon editorial symbols and special signs that are used in classical texts.

Variable positioning commands: V&F gives the user full control over the cursor position on a file-wide basis. Movements may be by line, by screen, by work, by papyrus/inscription, by block and to either of the ends-of-file. Horizontal scrolling for long text lines.

Searches can be run globally on all files on a disc, on multiple files, single files (authors) or works.

Indexing and concordance-production engine included in the program.

Help system: A programmable Help system displays information on the use of V&F at runtime.

#### **b) Limitations**

V&F does not contain an index search facility for TLG CD-ROM discs, since all PHI discs do not contain index files. We have refrained from implementing a sophisticated windowing package for screen access, given such systems' aptness for errors and the additional chaos that they produce on the screen. V&F is powerful at resolving hyphenations, even if they do not conform to beta code standards. To enable the program to handle hyphens flexibly, its indexing, locate and find subroutines count words that split over lines as part of the line where its end can be found. After locating such a word, the cursor will be positioned in the last line, leaving you with the rest of the word to be read at the beginning of that line.

#### **c) Error Messages**

V&F has been used and tested continuously for nearly four years. All recurrent errors should have been found and corrected during this period. If you encounter any error of the



V&F system, please, note the conditions carefully so that we can reproduce the error and eventually fix it. The V&F system produces different error messages. Not all of them signal an internal error of the V&F system; most that occur will probably be due to erroneous user input.

If, in the last line of the screen, a message of the following type occurs, V&F has encountered an error, either from user input, from errors in its initialization file or from wrong, incoherent or missing information presented to the program:

```
ERROR: Author table cannot be read - Press any key ...
```

If you encounter one of these errors, correct your faulty input. If this does not help, carefully review your PROFILE.V&F file if it matches your configuration. All errors that are handled in this manner by V&F are due to user errors, not to internal system errors. V&F is smart enough to detect a memory overflow condition during indexing operations. If it occurs, it displays an error message and aborts the indexing operation.

If, however, the following memory overflow message occurs, your system has not enough free memory to run the V&F system; if you consistently run out of memory space, re-configure the system to get more free space, and, if this proves to be impossible, try to buy more RAM for your machine:

```
TEST.spt(1) : Error 204 -- Memory overflow
```

```
In file TEST.spt
In line 1
In statement 1
Run time-MSec 50
Stmts executed 1
MCSec / Stmt 50000
Regenerations 1
```

If, however, an error message of the following kind occurs, something has gone very wrong:

```
TEST.spt(2) : Error 120 -- LEN argument is not integer or
expression
```

```
In file TEST.spt
In line 2
In statement 2
Run time-MSec 50
Stmts executed 2
MCSec / Stmt 25000
Regenerations 0
```

Such a message should never occur. If, however, it does, please note the details given and the conditions under which it occurred and notify us accordingly, so that we can reproduce

the error and eventually fix it. If you are running V&F in a multitasking environment once the message occurs, try to run it again independently and see, if it gets better. If it does not, please drop us a note. Do not be irritated by the file names in the error message: The system records file names and source lines for analytical purposes. The actual V&F consists of many such source modules, and one of the names of these might occur.

If a message like

```
Abnormal program termination: Divide overflow
CS:EIP = 0054:00000044.
```

occurs repeatedly, one of the program's routines crashes the system. Of course, this must not happen. If it does, please give us full details of the conditions under which it happens, including the message that occurs. If such an error occurs only spuriously and cannot be reproduced, V&F has encountered a memory allocation error in your host system, notably if it is controlled by a multi-tasker.

One reason, why unexpected error messages of this kind might occur is the presence of resident software drivers that do not collaborate properly with the program. If out-of-memory error messages or `Abnormal program termination` occur frequently, try to remove as many resident programs as you can. Carefully review your `AUTOEXEC.BAT` and `CONFIG.SYS` files for resident drivers<sup>1</sup>. If an error message like `Heap phase error - Reloading file` or `Code phase error - Reloading file` occurs, try to check out if some resident software might be the cause. If the error persists, please tell us.

To prevent the user from citing erroneous references in the texts, the V&F invokes a few consistency checks to detect if a given reference string is understood correctly. If found incorrect, a reference is marked by a single question mark (?) immediately following upon the last normal reference (Z) level. It looks like `1.1.1.1.1.1.1.1?` and should not occur. If it does, please let us know<sup>2</sup>.

---

<sup>1</sup> Some versions of DOS will also have a `CONFIG.BAT` file for the more basic bootstrap processes to be invoked; if your system has, check this file as well.

<sup>2</sup> Do not confound this use of the question mark with question marks as parts of the references themselves (which are present in the files). Some papyri use ? or ?? as the z-level reference (`1.1.1.1.1.1.1.??`), while others give an unknown provenance of the papyrus as a question mark (`1.1.1.1.1.1.1 ?`). These do not signify an erroneous reference. You can distinguish the different usages most easily by looking at the dots and spaces: If a dot, question mark or space immediately precedes the question mark, the question mark is part of the reference itself; if a number or string immediately precedes the question mark, it signifies an error, and in this case we are asking you to report this error to us immediately and with all necessary information for us to reproduce the error. Only question marks that are part of the ordinary references as opposed to the extended references (present only on PHI discs) signal an error.

#### d) Using older texts

Although PHI have changed some of the coding conventions, V&F still reads and processes the old PHI #1 and #2 discs. Set the `br_` system variable to zero with old #2 papyri files.

## 2 Basic Concepts

The texts are encoded in a compact coding known as *beta code*. The texts are divided in blocks of 8 KBytes. Each block consists of textual material, coded as ASCII bytes 0 to 127 and reference material, coded as 128 through 255. Each file has a file name and normally contains the works of one single author. Therefore, we refer to the file as an *author*. The main subsections of one author are called *works*, although in some cases the work sections refer to something more comprehensive than a single work (a set of inscriptions, for instance). All subroutines of the system operate upon blocks which are cutted into lines, if appropriate. Block numbers are cross-referenced to works by means of a work list, which is a file with the same name as the text file, but bearing the extension `.IDT` instead of `.TXT`. Text file names are connected with the entire set of texts present of one CD-ROM by a file that lists all files on the CD (`AUTHTAB.DIR`). This file is referred to as the *author table file*. The V&F system cannot access the files on a CD without having read the author table file. Therefore, after changing your text file CD-ROM or switching to a new sub directory, you must issue a special command ("Re-read author table") from the main menu of V&F to make its files known to the V&F system.

## 3 Coding Schemes

We have included many accents, diacritics and special signs to be displayed correctly. *Beta code* provides for many more very uncommon symbols that are hard to remember and therefore hard to identify, if displayed as graphics. These more uncommon symbols (e.d.: #1020 =  $\angle$  = 1/2 foot) are not resolved but displayed as such (#1020). To decode the meaning of these signs, you should refer to the *TLG and PHI BETA CODES* document issued by the Packard Humanities Institute. Some of these uncommon symbols that V&F does not resolve are explained by its HELP system.

To look for umlauts and accents (äöüÄÖÜéà) in some texts (bibliography files and canon data bases) presents additional complications, since the beta coding scheme uses a 7 bit code, leaving no room for extended ASCII characters. To specify search patterns, leave the umlauts out and specify the search string as if no umlaut was used. Thus, 'ARGER', 'Arger', 'arger' are all equivalent to the following strings: 'ÄRGER', 'ARGER', 'Arger', 'Ärger', 'ärger', 'arger'.

Θωϑ 8 ἰνδικτίονος [ ]  
 {10m5}10 † κυρίῳ μου ἀδελφῷ Παπνουθί(ω) ναύτη  
 Αφουλ  
 ἐδεξάμην παρὰ σου ἀπόδ[ειξι]ν σίτου  
 κανόνος (ἄρταβας) τριακοσίας [δέκα τρι]εῖς ἡμικυ {8 313 ½}8  
 πρὸ τελείας ἕκτη[ς] ἰνδικτίονος δι(α) Φοιβάμμωνος υἱοῦ  
 καὶ εἰς εὐχὴν ἀσφάλειαν ἐξεδόμην [σοι τ]αύτην  
 τὴν χειρὰ ὡς πρόκ(ε)ται) Τυβι 10 5 [ἰνδικτίονος)  
 λογῶ βουκελλᾶτων [ c ?]  
 Ϻ ἐδεξάμην [ὁ]μοίως [ 8] ναύτου  
 Ἰωάννου Νεχθώτο(υ) πρ[ὸ] τελείας  
 ἕκτης ἰνδικτίονος ἀπόδ[ειξι]ν ἄρτων διςχι-  
 λίων {4δισχιλειων}4 τριακοσίων ἐβδ<ομή>κοντα {4εβδκοντα}4  
 ἑννέα ἡμικυ {8 2379 ½}8 Αθῦρ [ 4]ως συμφ(ωνει)  
 {10m6}10 κ[υρίῳ ἀ]δελφῷ Πα[πνο]υθίῳ να[ύτη]  
 [Ταυρινο]ς χ(αίρειν)· ἐδε[ξά]μην παρὰ σο[υ]  
 0041.001.81.1.1.3.g.49 64 VI spc ? <7:136>  
 PErI 001

V&F displays many special signs; more uncommon symbols are represented as beta codes

**Digamma, Stigma, Koppa and Sampi**

Stigma, koppa and sampi have been encoded as TLG escape sequences (#2, #3, #5). To search for one of these characters, you have to use "remap characters". This means: To look for the letter Ϙ, you will have to search for "@".

Letter	Remap Character	TLG Code
Ϛ	?	#2
Ϙ	@	#3
ϙ	>	#5
Ϟ	V	V

For instance, the following pattern looks for all occurrences of koppa, sampi and stigma:  
 ANY( '>@?' )

In View mode (graphics display), Ϛ Ϙ ϙ Ϟ are displayed as such. V&F displays many non-alphabetic signs (Herodian numerals, paragraphoi etc.). However, it is not possible to search and index these, because V&F preprocesses the texts before searching and indexing to remove all non-alphabetic signs. This is done to ensure that editorial symbols do not split words.

**V&F and Coptic Script**

V&F does neither produce Hebrew, Arabic, Armenian nor Sanskrit. These scripts can therefore be read only by those who adapt themselves to reading it directly from the Latin

representation of the consonant/vowel codes<sup>3</sup>. Coptic, however, can be read with some caution: Some of the files (New Testament, Nag Hammadi) on the new PHI CD-ROMs 5.3 and 6 follow a certain coding standard<sup>4</sup>. If necessary, set display options FO\_ FC\_ DO\_ BR\_ to 1 manually<sup>5</sup>. All Coptic Greek letters (Α to Ω) should be displayed correctly.

The six Egyptian letters are mapped to lower case h s t f g j. These are displayed in their Latin form to retain compatibility with older Greek inscription files that contained undeclared Latin portions in lower case letters. They should nevertheless be intelligible:

h	s	t	f	g	j
2	ω	†	ϣ	ϛ	ϡ

Pointed brackets indicate a continuous superlinear stroke that is not dissolved by V&F<sup>6</sup>. Pointed brackets with following numeric 3 signal a continuous sling over the letters so enclosed; this, too is not dissolved<sup>7</sup>. Square brackets, followed by 12 signify single quotes, also not dissolved<sup>8</sup>. Single-letter superlinear strokes and hooks appended to single letters have been encoded with little consequence and are therefore hard to identify: A back slash preceding a letter signals a superlinear stroke on top of it<sup>9</sup>; hooks that are to be appended to the letters are appended as slashes<sup>10</sup>. In indexing, all lower case Egyptian letters (h s t f g j) are mapped to their uppercase Greek counterparts. Therefore, they sort as if written in Greek, according to Greek sorting conventions. Locate and Find work with little or no restrictions on these Coptic files.

---

<sup>3</sup> See the document R.Kraft & R.Hotchkiss, *PHI/CCAT CD-ROM 1*, December 1987, Documentation and Coding, Appendix 1-5.

<sup>4</sup> The coding is described in PHI document *Coptic Beta Code*, March 11, 1992.

<sup>5</sup> See below p. 59.

<sup>6</sup> <PNA> will be displayed as <ΠNa> and means ΠNa.

<sup>7</sup> <3εt>3 marks a sling over the letters so enclosed (εt).

<sup>8</sup> [12D]12 is displayed as [12Δ]12 and signifies 'Δ'.

<sup>9</sup> E\N will be displayed as εv and means εN: V&F uses the normal Greek coding conventions, which treat the back slash as a gravis on top of the preceding letter.

<sup>10</sup> K/ will be displayed as κ and should be read as a κ with a hook (κ̣). V&F expects Greek coding which uses / for the accent.

## III Using the View & Find Program

### 1 Starting V&F

To use V&F, you need a 32-bit IBM-compatible computer (processor: 80386SX or above), a hard disc and beta code Greek or Latin texts. These are normally distributed on CD-ROM by the Packard Humanities Institute and the Thesaurus Linguae Graecae, Irvine Ca. This means: Normally you will need a CD-ROM drive to access the texts. Under MS/PC-DOS, the CD-ROM drive is integrated into the operating system environment with the help of two programs: A device driver that the drive manufacturer has specially designed for a specific drive and the program MSCDEX.EXE, a network redirector that is distributed by Microsoft. This program MSCDEX is normally installed in your AUTOEXEC.BAT file. It provides some CD-caching for rapid access. The size of this cache can be changed with the /M: parameter. With V&F, this cache should not be larger than 16 KBytes; check your AUTOEXEC.BAT file to make sure the parameter matches. In case it doesn't, edit the file to make sure MSCDEX /M:16 is called with the appropriate /M parameter.

Before starting V&F, read the READ.ME file on the distribution disc to learn about last-minute changes that have not found their way into this documentation. Then copy all files on the distribution discs #1 and #2 in one sub directory on your hard disc. We recommend you create a sub directory \V&F and use this:

```
C:  
cd C:\  
md V&F  
cd V&F
```

Put the first distribution disc (#1) in drive A and enter

```
xcopy A:\*.* /S
```

Put the second distribution disc (#2) in drive A and enter

```
xcopy A:\*.* /S
```

This assumes that drive A: of your system matches the size of your distribution discs. If not, use drive B: instead and write XCOPY B:\\*.\* /S.

Next, get the runtime module disc off its envelope (the CATSPAW, Inc. disc) and put it into your disc drive. Enter the following commands:

```
xcopy A:\SPITRUN.EXE  
xcopy A:\CFI386.EXE
```

Two different modifications of the program for any one of the four supported graphics standards are distributed. One is the V&F.SPX program that has to be executed by the runtime module SPITRUN.EXE. The other, V&FRUN.EXE, is a stand-alone-module that can be run independently of a runtime module. This program version V&FRUN.EXE does not work with 386<sup>max</sup>® or other VCPI-compatible memory managers, but it can be executed in DOS shells under Windows® in extended mode and OS/2, and it runs under native DOS.

As a rule, we prefer SPITRUN.EXE+V&F.SPX, especially with all kinds of memory managers.

#### a) **Determining the Graphics System**

Copy the appropriate files for use with *VGA*<sup>®</sup> (colour), *VGA*<sup>®</sup> (monochrome), *Hercules*<sup>®</sup> or *CGA*<sup>®</sup> cards from the distribution discs. Put the disc that contains the sub directory that suits your graphics system into your disc drive; the discs are labelled appropriately.

```
xcopy A:\COMPAQ\*.*          for VGA or EGA cards11
xcopy A:\EGAVGA\*.*          for VGA or EGA monochrome mode
xcopy A:\HERC\V&F.SPX        for HERCULES cards
xcopy A:\CGA\V&F.SPX        for all other graphics cards
```

Be sure to copy only the version for your graphics card: \HERC for the Hercules graphics card, \CGA for other non-EGA/VGA cards).

If you are in doubt which of the four display versions of V&F you should use, run the VTEST program that comes with V&F. It detects your display configuration and recommends a version of V&F to be used. After copying the files from the first two distribution discs, enter VTEST (in your C:\V&F directory). VTEST detects your primary and secondary display systems and displays a recommendation as to which version of V&F should be used with your system. In some cases it recommends that you try out one version and use another, if problems occur. In any case: If you are not sure, what kind of display you have, run VTEST to decide which versions of V&F to use. The program returns a DOS exit code for the primary display. This allows for batch files which decide automatically which version to use, if you have a graphics card that can be configured in different ways. The codes returned may be questioned from batch files using DOS' errorlevel construction (IF ERRORLEVEL *n* GOTO *l*)<sup>12</sup>. The codes are:

---

<sup>11</sup> There are some older VGA cards whose BIOS mode changing routine (the routine to change from text to graphics mode and vice versa) works better (i.e.: faster and with less flickering) when the card is in EGA (and not in true VGA) mode. Such cards display a strange flash when changing to graphics mode if they are configured as VGA cards. To avoid this, configure your card as an EGA card before running V&F.

<sup>12</sup> In batch files the error levels must be tested from the highest to the lowest (i.e. in reverse order). 255 is the first to be tested, 1 the last.

0	Graphics card not installed	V&F cannot be run
1	Monochrome display adaptor	V&F cannot be run
2	Colour graphics adaptor	Use CGA version
3	Reserved code	Try different versions (not HERC)
4	Enhanced graphics adaptor Colour mode	Try COMPAQ, use CGA if problems
5	Enhanced graphics adaptor Monochrome mode	Try EGAVGA, use CGA if problems
6	Professional graphics controller	Try different versions (not HERC)
7	Video graphics array Monochrome display	Use EGAVGA or COMPAQ
8	Video graphics array Colour display	Use COMPAQ
9	Reserved code	Try different versions (not HERC)
10	Multi-colour graphics array Digital colour display	Try COMPAQ, use CGA if problems
11	Multi-colour graphics array Analog monochrome display	Try EGAVGA, use CGA if problems
12	Multi-colour graphics array Analog colour display	Try COMPAQ, use CGA if problems
64	Hercules graphics card	Use HERCules version
255	Unknown graphics card	Try different versions (not HERC)

With VGA cards, the program normally signals "graphics adaptor not installed" for the primary display system and assigns the VGA card to the secondary display system. This has no effect upon the function of V&F: Simply start the program with the version that is recommended for the secondary display.

V&F has been used on many LapTop computers. Except for DESQView/X<sup>®</sup> which requires that the \COMPAQ (colour) version be used, we recommend you use the \EGAVGA (monochrome) version on LapTop computers with a monochrome LCD screen, since its display will come up with better contrast. Given most modern LapTops' facility to invert the display, you can even switch to black-on-white, if you wish to. You will notice a slight distortion of the letters in View mode (graphics display), however. Most LapTops nowadays, as opposed to about two years ago, provide full-fledged VGA support with up to 640x480 pixels, whereas earlier they had been restricted to EGA resolution (640x350 pixels). Since we wanted V&F to run on all 32-bit i80x86 platforms, we decided to stick with the EGA resolution, providing a similar graphics model for all platforms, except CGA displays. Contrary to cathode beam displays, LCD displays "emulate" the lower resolutions by doubling some of the graphics lines. This leads to the aforementioned distortion which to our opinion is bearable.

#### **b) Determining DOS Extender Type**

The two program files are V&F.SPX and V&FRUN.EXE. Either version may be used if you are running native DOS (no expanded memory manager, no multi-tasking operating system shell). Both are compatible with DOS 5.0/6.0 when portions of DOS are loaded into the High Memory Area. In addition to operation with native DOS, the Intel version of V&F (V&FRUN.EXE) is compatible with programs that use Int 15h to allocate extended memory (such as VDISK.SYS RAM discs), or that use HIMEM.SYS to provide XMS



extended memory services. All V&FRUN versions are slightly faster than their SPITRUN.EXE+V&F.SPX counterparts (by 14.2%).

### c) **SPITRUN.EXE+V&F.SPX**

SPITRUN.EXE+V&F.SPX use the PharLap 3.0 DOS extender. This version should be used when operating with a VCPI-compliant expanded memory manager such as QEMM-386 and 386Max. It will also operate with DESQview<sup>®</sup>-386 and in a Windows 3.0 DOS window when Windows is started in standard mode (call: WIN /s). SPITRUN.EXE+V&F.SPX can be multitasked under control of VCPI-compliant hosts such as DESQview<sup>®</sup>, but not in DPMI environments such as Windows<sup>®</sup> and OS/2. Therefore, SPITRUN.EXE+V&F.SPX can be run in Windows<sup>®</sup> standard mode only, without the multitasking capabilities of extended mode Windows<sup>®</sup>.

To start V&F.SPX, you need the runtime module SPITRUN.EXE that comes with V&F (on the CATSPAW, Inc. disc). V&FRUN.EXE contains the PharLap DOS extender. For licensing reasons, this DOS extender cannot be included in the program file itself, and there has to be one copy of the DOS runtime module SPITRUN.EXE present on every machine on which V&F is to run<sup>13</sup>. If you haven't done this already, copy the SPITRUN.EXE and CFG386.EXE files from the CATSPAW disc into your V&F sub directory. If you haven't done this either, copy the contents of the V&F discs #1 and #2 into the same directory. Select any one disc with the appropriate sub directory from the discs #3 and #4 (\HERC if you have a HERCULES graphics system, \COMPAQ if you have a VGA colour system, \EGAVGA if you have a VGA monochrome system and \CGA otherwise) and copy the files from this directory into the V&F sub directory on your hard disc. Create or modify the PROFILE.V&F file<sup>14</sup> using PROFILE.BAT. To automate this, we have included START.BAT. Afterwards, use V&F.BAT to start the system. To run V&F, you can enter:

```
SPITRUN V&F
```

To configure the amount of DOS shell memory that SPITRUN.EXE+V&F.SPX provides you have to use the CFG386 utility<sup>15</sup> that comes together with SPITRUN.EXE on the Catspaw, Inc. disc. Catspaw have documented its use sufficiently on the printed pages which accompany this disc.

### d) **Runtime-independent V&F (for DOS, Windows, OS/2)**

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<sup>13</sup> One copy of the extender is included with the program, others can be bought from the author of V&F, Burkhard Meißner, or else from CATSPAW, Inc., P.O. Box 1123, Salida, CO 81201, USA (specify the version number 1.20 and V&F as the target program).

<sup>14</sup> See p. 28.

<sup>15</sup> See p. 64.

The Intel version of V&F (V&FRUN.EXE) should be used with DPMI-compliant hosts, such as a DOS window when Windows 3.n is started in enhanced mode (call: WIN /3). OS/2 2.0 also provides a DPMI host in a DOS window.

This version of V&F, together with a different DOS extender, is contained in the modules called V&FRUN.EXE. There are different modules for different graphics cards in different sub directories on the distribution discs together with the V&F.SPX modules. Be sure you have copied the appropriate V&FRUN.EXE module to your \V&F directory. E.d., for VGA cards normally:

```
XCOPY a:\compaq\*.*
```

The Intel version of V&F (V&FRUN.EXE) offers the following features:

1. Embedded virtual memory manager. V&FRUN.EXE's memory region may grow larger than physical memory, and will page to disc as needed. However, virtual memory can slow execution to an unacceptable degree.
2. It operates under Windows 3.n enhanced mode, with or without Windows-compatible versions of 386Max or QEMM-386 present.
3. True multitasking under Windows (extended mode) and OS/2: V&FRUN.EXE can be multitasked, as far as Windows multitasking goes, and it can be run in a DOS window under the OS/2 multitasking operating system. In turn, V&FRUN cannot be run under DESQview<sup>16</sup>.
4. We have programmed V&FRUN to be slightly faster than SPITRUN.EXE+V&F.SPX; the latter has been optimized for memory usage instead of speed. V&FRUN is very greedy in terms of memory; we have seen Windows<sup>®</sup> allocating nearly 5 MBytes for a single V&FRUN process.
5. The INTEL DOS-extended V&FRUN needs only about 320 KBytes (or slightly more) of precious low DOS (real) memory. All the rest resides in extended memory where it rises if it needs to. This means that V&FRUN cannot be run on machines with less than 2 MBytes of RAM.

V&FRUN.EXE can execute with the following memory managers and configurations active:

- Qualitas' 386MAX<sup>®</sup> or BlueMAX<sup>®</sup> V6.0 or higher
- DOS 5.0 or DOS 6.0 EMM386
- DOS 5.0 or DOS 6.0 DOS=HIGH
- Quarterdeck's QEMM-386<sup>®</sup> V6.00 and higher
- Helix Software's NETROOM<sup>®</sup> V2.2

V&FRUN does not operate with QuarterDeck Office Systems' DESQview<sup>®</sup> multitasking system. It also will not operate in a DOS shell under Windows Standard mode (Windows Enhanced mode is fine)<sup>17</sup>.

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<sup>16</sup> We strongly recommend SPITRUN.EXE+V&F.SPX and DESQview/X for serious multitasking use, while WINDOWS may do only for the casual multitasker.

<sup>17</sup> Use SPITRUN.EXE+V&F.SPX if you need to run in either of these environments.

- 386MAX and BlueMAX: If you use the EMS=n option, set n to a value greater than 0 to enable services required by V&FRUN.EXE.
- EXT=n option: Set n to a value greater than 0 because extended memory is required to run V&FRUN.EXE.
- QEMM-386: Because extended memory is required to run V&FRUN.EXE, do not use the NOXMS option.
- DOS=HIGH: Do not use the QEMM-386 OFF option: this option disables services necessary for proper handling of the A20 address line. Note that the QEMM-386 RAM option overrides the OFF option.
- EMM386: Any expanded memory created by EMM386 will not be available to V&FRUN. If you are not using expanded memory, are using DOS 5.0 or 6.0 and DOS=HIGH, and are not running any other memory manager, Intel recommends running EMM386 with the NOEMS option. This does not create expanded memory, but does seem to help the DOS Extender in some hardware configurations. A typical line to add to your CONFIG.SYS file is<sup>18</sup>:  
`DEVICE=C:\DOS\EMM386.EXE NOEMS`
- HIMEM.SYS: Some systems (mostly 80486-based) can exhibit problems relating to proper handling of the A20 address line when executing under DOS 5.0 with DOS=HIGH and the HIMEM.SYS memory manager. To work around these problems, use the /machine:2 option in the DEVICE=HIMEM.SYS command in your config.sys file; see the HIMEM.SYS section of your DOS 5.0 manual for other possible values for the /machine:n option. If problems persist, try adding the EMM386 line shown previously to CONFIG.SYS, or remove the DOS=HIGH configuration.
- DOS 5.0 or 6.0: You can run under the DOSSHELL without the Task Swapper enabled. If you attempt to execute when the Task Swapper is enabled, you will receive the following message:  
 DOS Extender: Error X0116: Cannot execute with DOSSHELL's task swapper enabled

If you use the DOS=HIGH configuration, be sure to use a memory manager, such as EMM386, QEMM-386, NETROOM, Windows, or 386MAX, to ensure proper handling of the A20 address line. See the EMM386 description above.

If you receive the message DOS Stack Overflow, note the following: Certain combinations of device drivers and network cards can cause a cascading of interrupts, using a lot

---

<sup>18</sup> Warning: We have reports that IBM engineers have confirmed a bug in MS-DOS 5.0's EMM386 that doubles processing time. We have not been able to duplicate it on our systems, but mention it in case you discover unexpectedly slow performance of V&FRUN.

of space on the DOS stack. Coupled with the DOS extender's 32-bit operations on the same stack, your system can halt with the following message:

```
INTERNAL STACK OVERFLOW - SYSTEM HALTED
```

If you receive this message or get into trouble when working with less stack space, insert the following line in your config.sys file and reboot (see your DOS manual for more information on the STACKS command):

```
STACKS=9,384
```

Rarely, we have observed abnormal V&FRUN.EXE aborts when reading the author table from the CD-ROM. Such erroneous aborts can be identified by a table occurring on the screen which informs you of the layout of the machine's extended registers. They won't tell you very much if you are not a programmer well versed in assembly language. You can, however, easily recognize this table. It reads like this (values right of the equals signs may be different):

```
INT 0E FLG=0000 3246 NV NRI=3 NO UP EI PL ZR NA PE NC NM=V&FRUN
EAX=0201 29FC EBX=0203 7F7C ECX=3D89 F903 EDX=0203 7F87
ESI=3D89 F903 EDI=0201 5F93 EBP=0206 5B20 LP=0201 2000
CS=0043 SS=004B DS=004B ES=004B
EIP=0201 6317 ESP=0203 7F78
FS=004B GS=004B
```

If you get such a message, please let us know.

Typing Control-C when running the V&FRUN program in a DOS Shell under Windows or OS/2 2.0 *may* cause the entire session to be aborted. This can be avoided under Windows by making sure you have a PIF file for your DOS Command Shell (or V&FRUN, if you start it directly from the "desktop"). Presently, there is no work-around when operating in a DOS Shell under OS/2. Therefore, use ALT-Q to unconditionally kill a running V&FRUN process.

As far as experiments can show, Intel-extended V&F is compatible with the following disc-caching programs:

- HyperWare's HyperDisk®
- Microsoft's SMARTDrive
- Multisoft's Super PC-KWIK
- Qualitas' QCache
- Norton's NCACHE (write-cache not tested)

#### e) **Virtual Memory**

Virtual memory is used if V&FRUN.EXE's workspace must be expanded to accommodate your program and data, and insufficient physical RAM remains. The virtual memory is obtained by swapping portions of your program and data from RAM to the hard disc. If running under a DPMI host such as Windows 3.0 or OS/2 2.0, the host provides the virtual memory management. Absent a DPMI host, the Intel DOS Extender manages virtual memory itself. V&FRUN.EXE is configured with a particular "region size." The region

size determines the maximum amount of memory (physical and virtual) that can be used when running under a DPMI host. By default, the Intel version of V&F sets the region size to 3 megabytes.

**f) MODXCONF: Modifying V&FRUN.EXE Memory**

To configure the INTEL DOS extender that is contained in MC.EXE, SHELL.EXE, OUT2BETA.EXE and V&FRUN.EXE you should use the MODXCONF utility. MODXCONF allows two things to be configured:

- Adjust the "region size" of the DOS extender
- Create a permanent swap file for use without DPMI host

The aforementioned programs execute in extended memory, except for a small loader that resides in DOS memory below 640 KBytes. The amount of extended memory that the system controls directly is called its "region size". This may be physical RAM or virtual memory, created by a swap file. Like the programs which contain the INTEL DOS extender, MODXCONF itself cannot be executed under DESQview or Windows® in standard mode. Like these, it may be used under Windows® in extended mode. From the DOS prompt, invoke the program with the file to be modified as its argument:

```
MODXCONF MC.EXE
MODXCONF OUT2BETA.EXE
MODXCONF SHELL.EXE
MODXCONF V&FRUN.EXE
```

The program presents a simple menu. Its options can be chosen by pressing their initial letters. After invoking, the program tells you, if there is a permanent swap file, the current region size, the amount of free extended memory and the maximum region size under these circumstances. Press C to create or resize a swap file and M to modify the region size. You will then be asked to press options (for example, E to enter a new region size etc.), and all instructions will be explained by the program itself.

There are three circumstances under which you might use the program:

- 1) The default swap file - if any - is called C:\XMSWAP.TMP. If you have not enough free memory on your C: drive to accommodate a swap file large enough for a specific memory region size, you can either use DOS's SET command to direct the programs to use another drive (SET SWAP=D:\SWAP.TMP) or alter the default swap file association altogether.
- 2) We have set the memory manager of all INTEL-extended programs<sup>19</sup> to a region size of 3 MBytes. If, for instance, you want to index large amounts of text using V&FRUN.EXE, these 3 MBytes may prove inadequate. In this case you should increase the memory region. If you have more than 4 MBytes of memory installed in your computer, and if much of this additional memory is not in use by other programs, you can

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<sup>19</sup> Except for SHELL.EXE which receives only 256 KBytes.

increase the region size to make this memory available to V&FRUN, SHELL, MC and OUT2BETA in case you need it. Though set to a region size of 3 MBytes, we have successfully used V&FRUN on a machine with only 2 MBytes of RAM and thus with only 1 MByte of extended memory.

3) If your computer has very limited extended memory and/or you are running INTEL-extended programs under Windows<sup>®</sup> in extended mode, much swapping may occur. Swapping generally reduces system efficiency. To avoid unnecessary swapping, you may reduce the region size, provided you do not need more memory.

Directions:

DO NOT SPECIFY A REGION SIZE SMALLER THAN 2 MBYTES<sup>20</sup>.

DO NOT USE A RAM DISC AS SWAP FILE.

Avoid swapping and virtual memory as much as possible, since it slows down the programs. To be sure, set the region size a few hundred KBytes smaller than the size of free extended memory which the MODXCONF utility specifies. If you make use of a large swap file (e.d.: to index very large texts), be aware of heavy hard disc activity and low performance.

#### **g) Running with DPMI (Windows 3.n, OS/2 2.0, etc.)**

Virtual memory is maintained by use of a hard disc "swap file." For speed of access, the swap file should occupy contiguous blocks on the disc. The chapter on optimizing Windows in the Windows User's Guide provides information on setting up a swap file. Briefly, there are two types of swap files: Permanent and Temporary. If you attempt to start V&FRUN and receive the message `Insufficient extended memory during program load` it means that the DPMI-host's swap file could not accommodate the default 3 megabyte region size: Increase the size of the swap file.

#### **h) Running without DPMI Host (Native DOS)**

Under these circumstances, the Intel DOS Extender will manage its own swap file. By default, the swap file is XMSWAP.TMP in the root directory of drive C, but the name and location may be altered by setting the DOS environment variable SWAP:

```
SET SWAP=D:\TEMP\V&FSWAP.TMP
```

We recommend you always use the environment variable when running V&FRUN under plain DOS on machines with less than 4 MBytes. Because the region size used by an executing program is comprised of both physical RAM and virtual memory from the swap file, the swap file does not need to be the full size of the region. It only needs to be large enough to accomodate the additional memory desired beyond the physical extended memory of the machine. If there is no swap file, the DOS Extender will attempt to allocate

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<sup>20</sup> Except for SHELL.EXE.

one. The file must be created large enough so that combined with the physical memory on the machine, the region size is available to V&FRUN. If the disc does not have enough space, the message `Insufficient extended memory` is displayed. Otherwise, the file is created and execution begins. If a swap file already exists, the DOS Extender examines its size. If the swap file plus extended memory is greater than the region size, the region size is enlarged to match. If the swap file plus extended memory is smaller than the region size, additional disc space will be allocated if possible. If space is not available, the `Insufficient extended memory` message is displayed.

### **i) Installing Runtime-Independent V&F DOS**

Under control of MS-DOS, installing the system is straightforward: Copy the appropriate V&FRUN.EXE file into your V&F directory, after you have followed the usual installation procedure (copying the files, setting up PROFILE.V&F). The appropriate V&FRUN.EXE file will be found in the following sub directories:

COMPAQ\	for most VGA/EGA cards and colour displays (recommended)
EGAVGA\	for EGA/VGA cards with monochrome display (not for COMPAQ-compatible computers)
HERC\	for Hercules graphics cards
CGA\	for all others (low resolution)

The file is named V&FRUN.EXE. For example, to copy the COMPAQ version, enter:

```
c:  
cd c:\  
md c:\v&f (if this does not exist)  
cd c:\v&f  
copy a:\COMPAQ\V&FRUN.EXE
```

To start the program, change to your V&F directory and enter V&FRUN (instead of SPITRUN V&F). You may set up a batch file to do the necessary operations (recommended).

### **Windows 3.n**

Follow the same copying procedure as described for DOS. In addition, copy the V&F.PIF program information file from disc #1 to the location where you keep .PIF files under Windows (e.d.: `copy a:\*.pif c:\windows`).

Then start Windows:

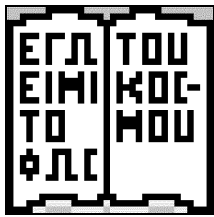
```
WIN /3
```

Execute Windows' PIF Editor program. Open the V&F.PIF file in the Windows directory. Change the program file name line to include the disc drive and full path of the directory where you copied the file V&FRUN.EXE. For example, the line might read:

```
C:\V&F\V&FRUN.EXE
```

The other options may be changed, but should be correct as is. Note that it is important to specify 600 (or better: 900) KBytes or more for the XMS Memory Required entry. This forces Windows to permit V&FRUN to access extended memory. A -1 for XMS Memory Limit allows V&FRUN to use as much memory as it needs, up to the system maximum. You may wish to place a specific number here, such as 4000 KB if other programs will need to access extended memory simultaneously. Normally this is not necessary, because V&FRUN acquires additional memory only when necessary. Save the SPITBOL.PIF file, and close the PIF Editor. Select the Program Manager group in which you wish to install V&F, and select New/Neu from the File/Datei menu, and Program Item from the dialog box (File/Datei - New/Neu - Program/Programm). As Description, enter V&F, and for the Command Line enter V&F.PIF<sup>21</sup>. Press the Change Icon/Anderes Symbol button, to associate a different icon with the program. Windows will complain about the absence of icon templates in the program file and will offer the program manager's own icons. I suggest you either use the program manager's CD symbol as the V&F icon or else specify the V&F.ICO file as icon source as follows.

### Windows Icon



To use the V&F icon (an open book displaying John 8,12) to bring up V&FRUN.EXE under Windows 3.nm in extended mode, create or change the program object, click File/Datei - Properties/Eigenschaften and select Other Symbol/Anderes Symbol. Now enter the name of the icon file V&F.ICO (including pathname, normally: C:\V&F\V&F.ICO) and click OK - that's it. V&F should present

itself as a book on the Windows desktop.

### Windows Group File

There is a group file, too (V&F.GRP). If you want an easy installation of V&F under Windows, make sure all the files of the V&F system are present in the V&F directory of your active drive (C:\V&F) - at least: V&FRUN.EXE, HELP.V&F, PROFILE.V&F, V&F.PIF, V&F.ICO. Now start Windows (WIN /3). Click File/Datei, select New/Neu. Press the Program Group/Programmgruppe button and select OK. Windows will open an editing window with two fields. Move to the second field (Group File/-Gruppendatei), using the mouse or the TAB key. Enter \V&F\V&F.GRP. The other

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<sup>21</sup> Or C:\V&F\V&F.PIF. For a V&F screenshot under Windows® see p. 69.



field should be left empty. Now press OK. V&F should install itself with all program files, icon and program information as a separate program group<sup>22</sup>.

### **Easy WINDOWS 3.n Installation**

Besides installing the V&F group file, you can do this "by hand" - which is much easier, of course. After copying all the stuff into a C:\V&F sub directory, enter your WINDOWS sub directory (e.d.: CD C:\WIN). Make a backup copy of your PROGMAN.INI file:

```
COPY PROGMAN.INI PROGMAN.BAK
```

Edit the file:

```
EDIT PROGMAN.INI
```

Locate the [Groups] section. Add a new line to the end of this section with a unique group number; refer to the V&F.GRP file in your V&F sub directory. The following two examples may show you, how:

```
Group9=C:\V&F\V&F.GRP
```

or:

```
GROUP230859=C:\V&F\V&F.GRP
```

The next time you start WINDOWS, the V&F group should have installed itself as a small window. It should contain two V&F icons, one for the V&F program and one for the utilities shell. These two programs can be started by doubly clicking on either of the icons. The icons can be moved to other groups, of course.

The utilities shell's .PIF file has been set to a very low priority. If the program's execution and response are too slow, load the file in your .PIF editor and increase the priority values.

### **V&F in a small Window under Windows<sup>®</sup>**

Under Windows, you should normally use the \COMPAQ version of V&F which will run in full screen mode. The V&F.PIF file has been set up accordingly. If you want to use V&F in a small window, you must use the CGA version (under OS/2 there is no such restriction). The CGA version offers low resolution, but does not need to be run full screen. We provide a sample .PIF file for this, assuming you have copied the \CGA version of V&FRUN to your \V&F directory. The file is called V&FC.PIF. If you have copied your \CGA version of V&FRUN.EXE to a file with a different name (e.d.: V&FC.EXE), you should modify the V&FC.PIF file accordingly.

### **OS/2<sup>®</sup>**

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<sup>22</sup> We provide a SHELL.PIF file to integrate the program SHELL.EXE into your WINDOWS environment. The installation of the program group should install this, too. If you prefer to install the program independently, click the Datei/File option, select New, Program and enter the full path and name of the SHELL.PIF file (normally: C:\V&F\SHELL.PIF). If you want, install the same icon for the shell that V&F uses (V&F.ICO).

V&F must be started from a DOS window with DPMI enabled. To enable DPMI, use the right mouse button to click on the DOS icon, command prompts (an arrow mark). Select: Open - Settings - Session - DOS Settings - DPMI\_DOS\_API - and select Enabled. Now you can call V&FRUN from inside an OS/2® DOS window.



V&F in the OS/2 Workplace Shell

You should then write a batch file or configure OS/2 accordingly to start V&F automatically as an ICON (consult your OS/2® manual as to how insert program objects into the working environment - copy the DOS icon to a V&F icon).

OS/2® seems to keep track of video mode switching only for graphics modes; a return to text mode is apparently not detected by the system. Therefore, if you are in DOS full screen (as opposed to DOS window) mode and in text mode (i.e. V&F main menu etc.) do not switch to another process, unless you have switched to DOS windows mode (this should be done with Alt-Home/Pos1). Start V&F from a DOS session in DOS window mode. Switching does not cause problems in graphics (View) mode. You will notice that V&F may be run entirely in a DOS window.

VAF.ICO contains an icon for the OS/2® desktop. To use it, load it into the icon editor, save it to the OS/2® desktop sub directory and select this icon for V&F: Click the DOS window of V&F with the right mouse button, select settings, general and "find"

the icon under the name that you have given it. This works if and only if you have moved the icon to the desktop folder first.

**j) V&F and ChiWriter® 3.nn**

The \CW directory contains fonts that ChiWriter® users may use in connection with the TLG2CW conversion routine. The .HFT fonts are of an older type. See CW.DOC for details. Call CW to uncompress the fonts, copy them to your ChiWriter® directory and load them as described in CW.DOC (F2=BGREEK, F3=DIACR, F13=GRNUM).

**k) V&F and DOS Codepages**

If you install a DOS codepage for you display which is different from codepage 437 (English/International), the TLG code table may come out different, and setting the V&F display variable `lf_` (ListFont) to non-zero<sup>23</sup> does not result in a significant improvement of legibility. You should either activate codepage 437 (the standard codepage = no codepage) before starting V&F or else leave the display variable untouched. Many computer users select the 850 codepage, which occupies much of their valuable memory uselessly. We recommend you de-activate the codepage facility completely with your machine unless your mother language requires the special codes (e.d.: Denmark, Israel, French Canada, countries of the Middle East, Norway, Portugal, Russia, Greece). In these cases select the default code page 437 before running V&F.

---

<sup>23</sup> See p. 59.

## 1) Starting the Program

To start the V&F program, enter from the DOS prompt (assuming you are in the \V&F sub directory):

V&FRUN                   to start the DPPI-compatible version

or

SPITRUN V&F           to start the VCPI-compatible version

or

V&F                   to start the VCPI-compatible version

If your computer has got 4 MBytes of memory or more, you can add the /S parameter for higher speed; this parameter causes the system to directly allocate larger chunks of memory, saving on later memory re-organization:

V&FRUN /S           to start the DPPI-compatible version

or

SPITRUN V&F /S   to start the VCPI-compatible version

or

V&F /S               to start the VCPI-compatible version

## 2 System Initialization

### a) The Profile

Upon start up, V&F reads the profile file PROFILE.V&F. This file is a simple ASCII file that contains valid SNOBOL4 assignment statements. It can be created and edited, using an ordinary ASCII editor (EDIT or EDLIN, if more powerful editing programs are not available). Simple assignments may be made to reconfigure the system. The following system variables should be set (note the blanks):

cddrive:   text file drive (logical drive letter of your your CD-ROM drive, that is the drive, where your .TXT and .IDT files will be found). It must be followed by : and a back slash. You can specify any drive or directory where beta-coded text will be found, as long as your directory specification includes the back slash and quotation marks are given as follows:

          CDDRIVE = 'F:\MYTEXTS\CICERO\'

or:

          CDDRIVE = 'g:\'

cdind:   drive where AUTHTAB.DIR will be found. e.d.:

          CDIND = 'G:\'

fc\_:   font changes allowed (0: not allowed, non-0: allowed)

fo\_:   initial font (0: Latin, non-0: Greek)

do\_:   usage of ? and ! as editorial symbols (0: no)

fr\_:   handling of inter-line font changes:

br\_:   handling of two-letter symbols and '+'

If\_: handling of Find result display; ed.:  
FC\_ = FO\_ = DO\_ = BR\_ = 1  
FR\_ = LF\_ = 0

dos\_: command string to be passed to command processor, ed.:  
DOS\_ = 'MYMENU.BAT'

tfiles\_: drive and path for temporary files used by the indexing routines of the program, ed.:  
TFILES\_ = 'E:\TEMP\  
A very simple profile can be created automatically using the batch file PROFILE.BAT. It asks you for your CD-ROM drive letter and writes a profile that should work with your system. Read the remainder of this document for how to fine-tune the settings in this profile file.

group This variable can be set at a string value to be converted to a wildcard pattern according to DOS conventions. This pattern is applied to the names and synonyms of all the files and authors in the author list to pick those that are of interest to the user. It works like the search string that you enter to find a specific author in the list. However, its effect is selecting certain authors for inclusion in the list. For instance, the following specification selects only the medical authors that are marked as Med.:  
GROUP = '\* MED.'

Note that the wildcard specification, as all string specifications (CDind, CDdrive) must be enclosed in quotes in the profile file. If you change their values through the OPTIONS menu (see below), the quotes must not be entered.

**b) Example Profile:**

The following example file is largely identical to that which comes with the V&F program package. Note the comment lines starting with an asterisk.

```

*
* drives, directories and system variables
*
* (c) Burkhard Meißner, 1991
*
* CDDRIVE = CDIND = 'g:\'
* FC_ = FO_ = DO_ = BR_ = 1
* FR_ = LF_ = 0
* GROUP = DOS_ =
* TFILES_ =
*
* We define SP. as the space between words:
*
* SP. = SPAN(' ')
*
* A few pre-defined keyboard macros:
*
* KB 8448 = 27,70,13,
* KB 10752 = 13,27,86,
* KB 6400 = 27,27,115,97,
* KB 3072 = 27,27,115,119,
* KB 7680 = 27,27,104,99,

```

The initialization file PROFILE.V&F may be used for another purpose. If you have to search or locate one and the same item repeatedly with the same patterns, instead of formulating these patterns for each search anew, you can pre-assign the pattern specifications to variables whose names end upon a dot. For instance, you might specify the pattern:

```
M. = 'MEROE'
```

M. becomes a "regular" pattern variable that may be used in pattern formulations as any of the built-in pattern variables of the SPITBOL system. All SPITBOL constructs, including our new ORX() pattern generation function, may be used to formulate the pattern. Case folding is in effect in the usual V&F manner. If the pattern in the PROFILE.V&F file is not well-formed according to SPITBOL conventions, the program aborts with an ERROR:-message with the offending line displayed in reverse video.

After completing its initialization process, the system reads the file AUTHTAB.DIR from the actual CDdrive. A start up screen informs the user that the process of reading the initialization profile has been completed and the author table is read from the actual object drive CDdrive. Once both initialization and reading the author table file have been completed, the user is presented with the main menu:

```

MAIN MENU:
Select
Re-read author list
View
Find
Locate
Options
Export
DOS Shell
Index
Help
Quit

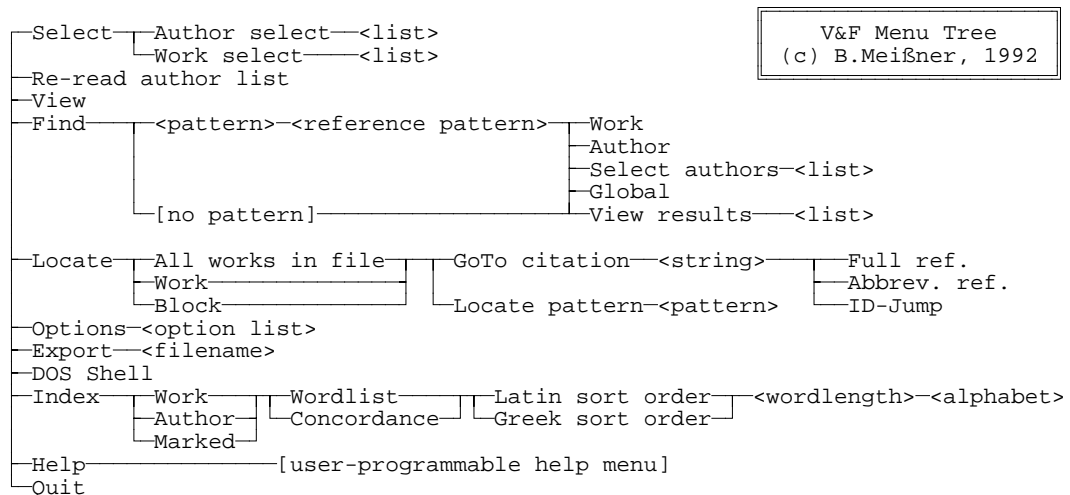
```

### 3 User Interaction with V&F

#### a) V&F Menu Tree

V&F is controlled by a simple menu system at most stages of command entry. The menus have a header line (upper case script) that refer to their position within the menu tree. Menu items (lower case script with upper case initials) can be selected at will. Move upward and downward through the menu items by the Curs Up and Curs Dn keys to highlight a particular option. Pg Up/Pg Dn move to the top or bottom option. Press <RETURN> to select one option. Instead of moving through the menu and selecting the option with the <RETURN> key, you can also press the initial capital letter of that option. Press ESC if you want to return to the higher-order menu level without selecting any of the options.

Menu tree of the V&F program:



Explanations:

<list> A list of alternatives is displayed. You can choose one or more of the alternatives with the <RETURN> key and move through the list using the Curs Up, Curs Dn, Pg Up, Pg Dn, HOME and END keys. Space bar

opens a string input field where you can specify and edit a string to be matched against the list; the program will search the next item that matches the string. The string must not be quoted. Movement through the result list is by Curs Up, Curs Dn, HOME and END keys, use ESC to backup from the list and <RETURN> to select an item (DEL to delete it).

<pattern> A long pattern-input field is opened where you can input and edit a SNOBOL4 pattern to be used for searching. All constructs of the SNOBOL4 pattern language are allowed, including all of the SPITBOL extensions and the efficient ORX() pattern function to specify alternatives. Strings must be quoted. The pattern is checked by the program; if it is erroneous or matches only the null string, an error message is displayed to re-edit the pattern.

[no pattern] If, instead of specifying a pattern, you press the <RETURN> key, a shortcut is used from the FIND menu directly to VIEW RESULTS. Two levels of user input are jumped over for ergonomic reasons.

<option list> This denotes the options screen, described below. Press one of the numbers to alter the display options or the directories for text files and the author table file.

<string>,<wordlength>,<alphabet>

A string input field is opened to enter a string (not enclosed in quotes). The program checks the characters that are input for correctness. Press <RETURN> to enter the string. Edit keys are: INS (toggles between insert and overwrite), Curs Left, Curs Right, BACKSPACE, DEL, Ctrl Curs Right, Ctrl Curs Left, Curs Dn, Curs Up, HOME, END. ESC restores the string edited to the form it had before editing began. Ctrl HOME erases the string to its left end, Ctrl END to its right end and CTRL-BACKSPACE erases it entirely.

## b) Selecting Authors and Works

First, always select a file (AUTHOR) and a WORK. To enter the SELECT menu section, move the bar to SELECT or press the S key (regardless of capitalization). The select menu will be opened:

```
SELECT MENU:  
Author select  
Work select
```

First, select an author from the author list. Press SPACE BAR to enter a string to search for an author in the list (you can use \* and ? wildcards). To move through the lists, use the cursor keys to move one line up and down, Pg Up and Pg Dn to move 20 lines up or down and HOME/END to move to the beginning or end of the list. Press <RETURN> to select an item, **ESC** to not select and return to the menu. With DEL, you can delete single



authors from the author list. This may be useful to prevent their inclusion in global Find operations.

In the author list, the file name as used on the disc is followed by the author's name and optional alternatives in nomenclature (marked by an =):

```
TLG0559 Heron Alexandrinus
TLG0020 Hesiodus Epic.=Hesiod
TLG2240 Hicetas Phil.
TLG0745 Hierophilus Soph. et Phil.
TLG2051 Himerius Soph. [incomplete]
TLG0468 Hipparchus Comic.
TLG2260 Hippasus Phil.
TLG1434 Hippias Soph. [incomplete]
TLG0738 Hippiatrica
TLG2235 Hippocrates Math.
TLG0627 Hippocrates Med. et Corpus Hippocraticum
TLG0751 Pseudo-Hippocrates Med.
TLG1436 <Hippodamus> Phil.
TLG1437 Hippon Phil.
TLG0233 Hipponax Iamb.
TLG0351 [Hippothoon] Trag.
TLG1386 Historia Alexandri Magni [no fragments]
TLG2744 Historia Monachorum in Aegypto
TLG0013 Homeric Hymns=Hymni Homerici
TLG0012 Homerus Epic.=Homer
```

In the author list, you can delete single authors (using the DEL/Entf key); authors which have been deleted will neither be present in the author list any more, nor will they be searched. To get deleted authors back, issue the Re-Read Author List command.

To select a single work, press the SELECT option again and choose the Work select option. In the work list, the work number is followed by the title and the 8 KByte block-number in the file. The works of some of the authors are partially non-consecutive (there are lacunas in the list)<sup>24</sup>. Space bar may be used to open an input field for a search string; \* and ? wildcards may be used.

---

<sup>24</sup> In this case, we mark the missing items with an asterisk at the right side. These reserved entries do not correspond to any textual material. If you select a text number that is marked with an \* in the right margin, the program will issue a warning message; you cannot select such a non-item. In work lists, DEL has no effect.

017	Coa praesagia	133
018	De arte	147
019	De natura hominis	149
020	De diaeta salubri	153
021	De flatibus	154
022	De humidorum usu	157
023	De morbis i-iii	158
024	De semine, de natura pueri, de morbis iv	182
025	De affectionibus	199
026	De locis in homine	206
027	De morbo sacro	214
028	De ulceribus	218
029	De haemorrhoidibus	222
030	De fistulis	223
031	De diaeta i-iv	224
032	De affectionibus interioribus	243
033	De natura muliebri	258
034	De septimestri partu	270
035	De octimestri partu	272
036	De mulierum affectibus i-iii	272

After an author and a work have been selected, the program will display a status section at the bottom of the text screen:

```
[Author].Work....Section.Line
0627.23.1.1.1.1.t.1
Hippocrates Med. et Corpus Hippocraticum 023 De morbis i-iii
```

The last of these lines gives the author, the work number and the title of the work. The second line lists the reference of the present text line (initially the beginning of the work). The reference entries are separated by '.' Generally, the structure of this reference notation is:

```
file.work_number.n_level.v_level.w_level.x_level.y_level.z_level
```

For Latin texts, papyri and inscriptions on the PHI discs, additional information is present in the file that is appended to the reference levels after a blank (see below for layout details). The uppermost line maps this notation to the reference that is normally cited with the author chosen: In the above example, the first two levels refer to author and work respectively, level Y refers to the section and level Z to the line within the work, whereas levels N to X are meaningless. Such meaningless levels are given the value 1 throughout. The two last lines of this status information can be panned horizontally using `Curs Right`, `Curs Left`, `TAB` and `Shift-TAB` keys, if the information does not fit on the screen.

### c) **Keyboard Macro Recorder**

Repetitive key operations can be recorded and replayed. Routine key sequences may thus be invoked by a single keystroke.

#### **Start Recording Macro**

Before typing a key sequence that you want to be recorded press ALT-F1<sup>25</sup>. A long A4-A3 octave jump will be heard. The system expects that you press an ALT-key-combination by which you want to invoke the macro in future. If you press an improper key in this situation<sup>26</sup>, an error message beep will be heard and the recording operation will be cancelled. ALT-F1, ALT-F2 and ALT-Q cannot be re-defined; all other ALT-combinations are available. To press this ALT-key-combination, hold down the ALT key and any of the alphabetic, numeric or function keys on your keyboard. After the ALT-key-combination has been pressed, enter the keys in sequence which are to be recorded. After each single macro keystroke a short A3 beep will be heard to signal that macro recording is active.

#### **End Recording Macro**

Once your key sequence is complete, press ALT-F2 (or Ctrl-F2, see below). A long A3-A4 octave interval will be issued. The system writes the macro at the end of PROFILE.V&F in the current working directory as a key definition. These definitions can be edited in ASCII mode.

#### **Replay Macro**

To replay a sequence of recorded keystrokes, press the ALT-key-combination that you had pressed when defining the macro. The keys will be re-run automatically.

#### **Undefine Macro**

To remove a macro from memory and to undefine the macro in PROFILE.V&F, press ALT-F1 and the macro key (the ALT-key-combination). Immediately after that, press ALT-F2. Thus you enter a macro without a single keystroke. Such a macro will no longer be accessible.

---

<sup>25</sup> An ALT-key-combination is generated by pressing and holding down the "Alt" key of your keyboard while pushing a particular key. E.d.: Holding down "Alt" and pressing F1 will generate the ALT-F1 key-combination etc.

<sup>26</sup> Ctrl must not be pressed simultaneously; only ALT-combinations are allowed.

## Edit Macro Record

Macros are appended to the file PROFILE.V&F in ASCII mode. The last macro definition supersedes any previous definition. The format of each record is as follows:

8 spaces (ASCII 32)  
KB  
space (ASCII 32)  
V&F key number of the ALT-key-combination  
space, equals sign, space  
internal V&F numbers of keys in sequence separated by commas

e.d.:

KB 10752 = 13,27,86,

In the key list, values from 0 to 255 denote the corresponding ASCII keys (13: <RETURN>, 27=ESC, 86=V, 81=Q). Values lower than 0 and above 255 denote the various function keys (e.d.: cursor keys, CTRL-key-combinations). If right of the equals sign there are no numeric values, the corresponding key sequence is undefined. Only the last definition of an ALT-key-combination in the file is valid. There is no intrinsic memory penalty upon defining and later undefining a key sequence, except for longer PROFILE.V&F reading and initialization times.

Note that in in V&F menus and pattern specifications bytes above 126 are not used and lower and upper case letters are treated as equal (e.d.: both 81 and 113 denote the letter Q which quits the program from the main menu). To edit or create a macro, you must enter the V&F number of the keys. The numbers of non-letter (function) keys are:

Curs Up	17152	<RETURN>	13
Curs Dn	19200	Ctrl N	14
Curs Left	17920	Ctrl P	16
Curs Right	18432	Ctrl BREAK	64256
Ctrl Curs Left	28160	Alt-Q	64256
Ctrl Curs Right	28416	INS/Einf	19712
HOME	16896	DEL/Entf	19968
END	18944		
Ctrl HOME	29184		
Ctrl END	28672		
Pg Up	17408		
Pg Dn	19456		
Ctrl Pg Up	32512		
Ctrl Pg Dn	28928		
F1	13824		
F2	14080		
F8	15616		
F9	15872		
F10	16128		
TAB	9		
Shift TAB	2560		

The numbers of ALT-key combinations, which can be defined, are:

ALT-function keys:	X	10240
F3 25856	C	10496
F4 26112	V	10752
F5 26368	B	11008
F6 26624	N	11264
F7 26880	M	11520
F8 27136		
F9 27392		
F10 27648		

ALT-numeric keys:

1	29440
2	29696
3	29952
4	30208
5	30464
6	30720
7	30976
8	31232
9	31488
0	31744

additional ALT-keys (at the right side of the zero key):

ß	32000 (Amer. keyboard: -)
‘	32256 (Amer. keyboard: =)

ALT-alphabetic keys:

W	3072
E	3328
R	3584
T	3840
Z	9984
U	4352
I	4608
O	4864
P	5120
A	6400
S	6656
D	6912
F	7168
G	7424
H	7680
J	7936
K	8192
L	8448
Y	4096

### **Automatic Start Up Key Sequence (AUTOEXEC)**

You can define a key sequence to be executed automatically whenever V&F is started. This is analogous to the DOS AUTOEXEC process at system start up. To define such a key sequence, start recording the key sequence with ALT-F1 as described above. To end the recording process, press CTRL-F2 instead of ALT-F2. This will cause the system to add the following line after your key sequence definition in PROFILE.V&F:

```
KB AUTOEXEC = number
```

where "number" represents the ALT-key-combination number of the key sequence. This key sequence for automatic execution at start up is also available as an ordinary key sequence. To undefine the AUTOEXEC key sequence, press ALT-F1, the ALT-key-combination and CTRL-F2. If overdefined via ALT-F1 ... CTRL-F2, the new key sequence is started automatically the next time V&F is started anew. If re-defined underhand (ALT-F1 ... ALT-F2), the new keys in the AUTOEXEC key sequence are started automatically on system startup. AUTOEXEC key sequences can setup your system, select specific texts automatically or display information screens.

### **Limitations of the Macro Recorder**

The macro recorder is a simple recorder, not a macro processor. This means: It does not re-feed macros to the macro parser. Macros can therefore neither call other macros nor can they call themselves recursively<sup>27</sup>.

The length of the key sequences is limited by the maximum length of a PROFILE.V&F line. This is some 10 KBytes: As long as the ASCII representation of a key sequence does not exceed 10 KBytes, the key sequence can be recorded and replaid. Note, however, that many ASCII editors are not able to edit lines with more than 255 characters<sup>28</sup>.

Macros require large amounts of memory. Few long key sequences occupy more memory than many short key sequences; the number of bytes per keystrokes is proportional to the number of keystrokes in the key single sequence<sup>29</sup>.

---

<sup>27</sup> Suppose you have defined an ALT-keysequence ALT-5. If another key sequence invokes ALT-5, it does not reproduce the ALT-5 key sequence, but issues the (meaningless) ALT-5 code.

<sup>28</sup> The KEDIT implementation of the mainframe XEDIT program can be invoked with the width option [KEDIT PROFILE.V&F (WIDTH 2000)]; the older EDLIN line editor is capable of handling long lines.

<sup>29</sup> The dynamic nature of the list structures involved makes it impossible to give exact figures, but a rough estimate of the memory usage can be given. Each defined key sequence occupies 40 bytes plus the keystrokes. Each keystroke occupies between 22 and 60 bytes. To record three key sequences, one with four, one with six and one with fifty keystrokes, the system allocates about 3.1 KBytes of memory.

## Pre-Defined Macros

The system comes with a few pre-defined macros:

ALT-A	jumps to Author select
ALT-H	displays the CURSOR MOVEMENT help screen
ALT-L	gets the user into the Find result list (if any)
ALT-M	places current line in the middle of the screen
ALT-R	writes template for "full reference" locate
ALT-S	writes pattern template with spaces
ALT-T	writes pattern template with alternatives
ALT-V	gets into view mode directly
ALT-W	jumps to Work select
ALT-X	export and conversion to WordPerfect, context of present line
ALT-Y	start up screen
Alt-1	exports present work
ALT-2	exports author
ALT-3	exports papyrus/inscr.

### d) User Interface: General Remarks

Recent operating systems like OS/2<sup>®</sup> and Windows/NT<sup>®30</sup> implement a graphical user interface directly into the user interaction with the system; character-based interaction is launched from the graphics environment. Previously it has been the other way round (X/Windows under UNIX, MS-Windows<sup>®</sup>). We will remain content with our system's menu system and its usability under different operating systems.

- 1) V&F will remain basically the same; users do not need to change their behaviour. They might have to learn new features, but it should never be necessary to re-invest time in learning how to use the program.
- 2) Whereas these graphical user interfaces might make it easier for the absolute beginner to start computing, the advanced user is constrained and limited by the graphical interfaces, which tend to be anarchically chaotic and of little suggestiveness.
- 3) We are somehow irritated by the idea (advanced by the software industry) that after 3000 years of letter-based scripts the ultimate progress in human communication should be a return to pictographic systems and deictic behaviour.

---

<sup>30</sup> We did not have the opportunity to test V&F under the latter system.

## 4 View Text

After having selected an author and a work, press V from the main menu, or move the menu bar to the View option and press <RETURN>. The screen will change to graphics mode and display the beginning of the selected work. The graphics display shows the text with the cursor line inverted. A status line gives the reference of the actual line; the second status line gives the name of the author and the number and title of the work. The numbers of the block and line are displayed in the lower right corner of the screen<sup>31</sup>. The first line

<p>HERM. Irris. 11 (D. 653) καὶ μὴν οὐκ ἐπιτρέπει τούτοις εὐδοκμεῖν Ἀ. ἀποφαινόμενος τῶν ὄλων ἀρχὰς θερμὸν καὶ ψυχρὸν.</p> <p>EPIPHAN. adv. haer. III 2, 9 (D. 590, 1) Ἀ. ὁ Ἀπολλοδώρου, κατὰ δέ τινας Μίλωνος (Ἀθηναῖος δὲ ἦν φυσικός) ἐκ γῆς τὰ πάντα λέγει γεγενῆσθαι. αὕτη γὰρ ἀρχὴ τῶν ὄλων ἐστίν, ὡς φησι.</p> <p>AUGUST. de civ. d. VIII 2 (D. 174) Anaxagorae successit auditor eius Archelaus. etiam ipse de particulis inter se similibus [d. i. ὁμοιομέρεια] quibus singula quaeque fierent ita putavit constare omnia, ut inesse etiam mentem diceret, quae corpora aeterna, id est illas particulas, coniungendo et dissipando ageret omnia. Daraus Sidon. Ap. carm. 15, 94 post hoc Arche- leos usw.</p> <p>CLEM. Protrept. 5, 66 (I 50, 15 St.) τούτω μὲν γε ἅμφω τὸν νοῦν ἐπεστησάτην τῆι ἀπειρίαι.</p> <p>ΑἸΤ. I 7, 14 (D. 302) Ἀ. ἀέρα καὶ νοῦν τὸν θεόν, οὗ μέντοι κοσμοποιὸν τὸν νοῦν.</p> <p>-II 1, 3 (D. 327) Ἀναξίμανδρος, Ἀναξιμένης, Ἀ. ... ἀπείρους κόσμους</p> <p>2303.001.1.1.1.10.3 Archelaus Phil. 001 Testimonia</p> <p style="text-align: right;">&lt;0:78&gt;</p>
--

V&F view mode (graphics display)

of the status section, which explains the meanings of the reference levels is given only in text mode (menues), since higher order design decisions demanded a 16 lines graphics display, which did not leave enough space for three status lines.

<sup>31</sup> Block: 0 based; line: 1 based.



## 5 Moving through Text

In View mode, you can move around in the file freely:

Curs Up	one line upward
Curs Dn	one line down
Pg Up	16 lines up
Pg Dn	16 lines down
HOME	to beginning-of-block
END	to end-of-block
Ctrl Curs Left	to beginning-of-work <sup>32</sup>
Ctrl Curs Right	to end-of-work
Ctrl N	to beginning of next papyrus/inscription <sup>33</sup>
Ctrl P	to end-of-previous papyrus/inscription
Ctrl HOME	to beginning of file
Ctrl END	to end of file
Ctrl Pg UP	to previous block
Ctrl PG DN	to next block
F10	move screen horizontally 20
F9	move screen horizontally 20 back
F8	rewrite screen, reset horizontal offset
F5	direct access to bibliography
TAB	move line 20
Shift TAB	move line 20 back
Curs Right	move line 1
Curs Left	move line 1 back
<RETURN>	Reset offset in active line
ESC	return to main menu
Ctrl BREAK or ALT-Q <sup>34</sup>	abort V&F, immediate return to operating system

The cursor and Page/Bild keys will automatically scroll through the entire text, whereas the HOME/END keys are confined to the actual block. Only one block is active at a time. The block most recently read is held in a separate cache buffer. Thus, although reading over the end-of-block takes about a second (the more there are in the current block, the longer it takes to read it), scrolling back to the previous block or switching to the next (if you have scrolled backward before) does not incur much time overhead.

Lines that begin with a + are continuations of the preceding lines; this is used if a line is longer than 256 characters. Lines that are not as long as this are not split even if they do

---

<sup>32</sup> This works only if the author selected is divided into work sections; otherwise the command has no effect.

<sup>33</sup> This works only if the author selected is a papyrus or inscription file; otherwise the command has no effect. Combinations of keystrokes can be used to perform more complicated jumps. For instance, Ctrl-N Ctrl-N Ctrl-P jumps to the END of the next papyrus/inscription, and Ctrl-P Ctrl-P Ctrl-N to the beginning of the previous one.

<sup>34</sup> Preferred command: ALT-Q.

not fit on one screen. Therefore, there are lines that do not fit on the 90 character HERCULES or 80 character CGA/VGA screens. To alleviate reading, we have implemented a horizontal panning mechanism that affects either the active line only (i.e. the line that is highlighted by the inverse video line cursor) or the entire screen.

If you press one of the `Curs Left`/`Curs Right` keys, the display begins one alphabetic character "later" in the line than previously. Editorial signs or numbers are jumped over. Thus, pressing `Curs Right` makes the display jump from letter to letter in the highlighted line. Since the display is moved a certain number of alphabetic characters, not screen columns, and since lines contain different numbers of editorial signs at different positions, the columns of different lines do not necessarily align when they are panned horizontally.

## 6 Direct Access to Bibliographical Information

Both the PHI CD #5.3 and the TLG "D" disc contain information that allows for rapid access to the bibliographies on these discs. V&F can invoke a routine to make use of this feature. In View mode, you can call it with the F5 key. If the bibliography index can be read and the appropriate Canon file is accessible, the information contained in that file for the author and work actually chosen is displayed on the View screen. Normally, it takes a few seconds to calculate the information and to read it from the CD. If no information is present or if the files cannot be accessed, an error message is displayed. During the search phase, the process can be interrupted using the ESC key<sup>35</sup>.

## 7 Literary Genre and Author Epithets

On the TLG CD-ROM, the two database files DOCCAN1 and DOCCAN2 can be viewed and searched like any other text file. With F5 bibliography access it is, however, seldom necessary to read the bibliography as a text file. DOCCAN2, the data base file, is of higher utility. It contains information pertaining to the authors and works on the disc (and a few not yet included on the disc) with three-letter field markers. These give an abbreviation of the nature of the information contained in a line. All the lines are bound to author and work numbers by references. The `cla` fields, for instance, give the classifications of authors and works according to genre, `wrk` gives the titles of single works and so on. All these three-letter markers are followed by one blank and the information itself. This makes it possible for you, to find, for instance, all authors and works with the same classification. Suppose you want to check for all mechanical works. Select DOCCAN2 as the author,

---

<sup>35</sup> The PHI #5.3 Latin disk contains an error in its index file for the last bibliography entry; V&F therefore displays only the first few bytes of the bibliography entry for *Zeno of Verona*.

select the work, i.e. the database and press F for the Find menu. Specify the entire author as Find range. Specify the find pattern:

```
SP1 'cla' sp. 'mech'
```

and leave the reference pattern empty (as you would do normally). The resulting list will contain all lines with `cla Mech.`; the references will contain the numbers of both the authors and their works. You can even print this list in the usual manner. Such a list will only serve as a safeguard against leaving out important authors from your searches. The classifications of the authors themselves are of minor importance in this context, since they are contained in the author list, too; you can always select authors by their epithets using the `Group` system variable<sup>36</sup>.

## 8 Marking Text

Before exporting or indexing arbitrary portions of your text<sup>37</sup>, you should mark its beginning and end. You do so by pressing F1 at the beginning of the section, and F2 at its end. F1 must be placed at the beginning of the section, F2 at its end. Both markers must designate one and the same file. If either of these conditions does not hold true, exporting or indexing the portion leads to an error message. However, text that spans over several works within the same file (the same author) may be exported or indexed. The F1 and F2 markers can be distinguished by different sound signals associated with them. Both issue a short legato-mode C major triad, F1 in upward direction, F2 downward.

## 9 Locating the Viewing Window

V&F allows you to directly jump to a specific portion of the text in a variety of ways. Press ESC to get into the main menu. Press L or select Locate from the main menu. You will have to answer, whether you want to locate within the present block, within the selected work or within the file (author = all works). After this, the system presents you with another menu: You may locate according to a reference given or according to a pattern to be applied to the text lines. If the item to be searched cannot be found, the system will go back to the main menu.

If locating a pattern is active, the file is searched until the word or word combination is found, and the display is transferred to this location. After you have entered a valid SNOBOL4 pattern<sup>38</sup>, the locate operation will be executed. When specifying the pattern, keep in mind that everything except letters is removed from the text before the pattern is

---

<sup>36</sup> See p. 29.

<sup>37</sup> Indexing and concordance production can be done either on an entire author, a work or an arbitrary portion; the latter has to be marked.

<sup>38</sup> See p. 52.

applied. The program automatically converts your pattern to upper case. If specified incorrectly, it may be edited.

If citation locating is active, a specification of work, paragraph, line etc. numbers is used to identify a specific location in the work. An edit screen appears with the reference string to be entered:

```
Citation [no author]:
```

```
1.1.1.1.1.2.1
```

```
[Author].Work.....Section.line  
0057.001.1.1.1.1.1.1  
Galenus Med. 001 Adhortatio ad artes addiscendas
```

The meaning of the references is explained by the third line (being the third line of the status section), whereas the reference of the actual line is given in the second line of the status section. In the above example, 0057 refers to the author; this first information must never be given<sup>39</sup>. The others refer to the work (001 and 1), while the next four are meaningless. Only the last two (section and line) are significant. The significance of the reference levels can be detected by comparing the reference string with the first line of the status section.

After specifying the reference, you are asked for the method to be used for reference locate:

```
MODE  
Full ref. [work no. + 6 levels]  
Abbrev. ref.  
ID-Jump [work no. + 6 levels]
```

Reference locate can be executed in one of three modes. 'Full' reference requires that you specify levels B (work number) and N (document number) plus all of the five levels V to Z. 'Full' reference location is a complicated process, leading to comparatively high speed, but without the possibility to search for additional information that is present in papyri, inscriptions and some of the Latin text files.

'Abbreviated' reference locating looks at the reference as a string. If the string that you have entered occurs in an actual reference, the search succeeds and the system automatically jumps to the new position. That is: Whereas you have to write out the full numeric reference to execute 'Full' mode reference locating (e.d.: 3.1.1.1.1.5.6), in 'Abbre-

---

<sup>39</sup> Leading zeroes can be left out.

viated' mode you can restrict your input to which string component of an actual reference interests you most (e.d.: 5.6 or Oxy), and you can search for such metatextual information as is present in some files on the PHI discs, which consists mainly of strings. However, 'Abbreviated' reference locating searches for the reference string regardless of its positional value, and it is much slower. On the other hand, it does not apply any special heuristics to the search, so it may be safer, especially with some of the inscriptions. To search for the additional information of the PHI discs, use 'Abbreviated reference'. For instance, to search for a papyrus from Oxyrhynchos, enter the initial space and the abbreviation Oxy.

The third option in reference locating mode menu (ID-Jump) works like 'Full reference locate': You have to specify all the reference levels B to Z (and only these). ID-Jump has several advantages over the other methods: Normally, it is the fastest; it can search backward from the actual cursor position, whereas the other methods work from the actual position in the file in the direction of its end only. However, to achieve this, it introduces an additional element of data-dependency into the process, because it uses information contained in special files on the CDs; sometimes, it does not find the reference, especially, if non-numeric references or null-valued references are present.

If in doubt, use 'Abbreviated reference' and much patience<sup>40</sup>.

The reference levels and their usual meanings (leave out the first element, i.e. the work number):

B	work
N	document
V	subsection
W	book
X	chapter
Y	section
Z	line

Not all these references may be in use, and the meanings may vary. Note that the author (file) number (A level) is never used in any of the reference locating routines, although it is dutifully displayed by V&F, since the author specification is redundant for the locating process. You do not need to remember the names of the reference levels, since you will not refer to them by their names, but by their positional values. What you have to bear in mind is that the contiguous string at the left side of the screen with dots as dividing markers, but without the first (author) part gives the 'full' reference as understood by V&F.

---

<sup>40</sup> With 'Full' reference and ID-Jump problems may occur, once you have placed the cursor at on title line (marked  $\tau$  in one of the reference levels) or in a preface section ( $\rho\tau$ ). The program will regard this as larger than any numeric value. The best thing to do is to place the cursor behind the title or proem section and to start locating from that position.

On PHI #1 #2 #5.3 and #6 discs, some information about the nature of the texts is added to some of the references in the files. The meanings and positional values of the sections of this material vary greatly (provenance, date, date according to letter shapes, cross reference to other editions, properties of text, provenience of fragment, running number). All these details, however, are accessible by V&F using 'Abbreviated' reference searches. These informations are separated by spaces ( ) instead of dots (.).

The information as to the meanings of the reference levels is deducted from information present on the CDs; this is not always correct, and notably the papyri files are not consistent<sup>41</sup>. We have tried to circumvent difficulties by carefully choosing defaults, but cannot correct erroneous data or add what is wholly absent. There may be some cases where you will have to find out manually, whether a given reference number refers to a book, a single inscription, a section etc.

The program initializes all reference levels to 1 automatically. Conversion between string and integer values is automatic. Therefore, you should specify 1 for unchanging reference levels in 'Full' references. However, the coding of some of the texts is so nonstandard that this scheme will not work. The IG inscriptions references use 0 to initialize references in multiple-column texts. Under normal circumstances, the program will handle these references correctly, but in the case of an unsuccessful locate attempt you should be aware of the possibility of some zeros' (or empty strings) being present in the reference string. With such texts, locating in 'Abbreviated' mode is a slower but safer strategy.

To interrupt an ongoing Locate process that does not seem to find its target, press ESC. If 'Full reference' or ID-Jump mode locating does not seem to find a target, interrupt the search and repeat it with 'Abbreviated reference'.

A special section of the additional information section on PHI discs (M-level) marks textual items in fragmentary texts; it consists of a running number that counts any new extended information that is present in the file. It is only rarely the case that you might be interested in this information, and one could ask, why it should have been included in the display at all. Besides our will to retain all information as much as possible, there is one serious use for this. PHI has included only Latin verbatim fragments of fragmentary texts. For the historian who is interested in the contents of a work, this is all but satisfying, especially, if a lot of material has been preserved mainly in Greek (e.d.: *Fabius Pictor*). Comparing the M-level value with the fragment number enables you to guess how much has been left out. If the M-level is 6, and the fragment number (usually Y-level) is 12), 6 fragments have been left out.

---

<sup>41</sup> It seems as if all .IDT table files for papyri on PHI disc #6 contain an error: They give document as the meaning of the z-level instead of giving the n-level the document string as its meaning; we have supplemented the string Text as the meaning of the n-level to correct this error.

Papyri references look like:

```
Author.Work.Text....document  
0161.010.3 rp.1.1.1.1.10 BGU 4,1153,I;CPapJud 2,147 2 14 BC Alex  
CPapGr 010 Vol 1
```

The first line of this status section gives the meaning of the reference levels, the second lists the actual reference and the third line gives author name, work number and work title. In the second line, 0161.010.3 rp.1.1.1.1.10 gives 'Full' reference, including the redundant leading author number; the remainder of the line, which follows the space, is additional information. In this additional information section, the string BGU4,1153,I;CPapJud2,147 lists two parallel editions of the text, 2 gives a running number (M) of the document within the work section, 14 BC gives the date and Alex an abbreviation of the place where the document has been found.

With inscriptions, the same might look like:

```
Author.Work.Text....document  
0001.002.401.1.1.1.1.1 Athens Akropolis 2 c 700-600? LSAG 94,3a  
Attica 002 IG I(2) [not in IG I(3)]
```

In this example, 0001.002.401.1.1.1.1.1 gives author number plus 'Full' reference. Athens (place) and Akropolis (location) are easily recognized in the additional information section as region and place where the document has been found. 2 (running number, M level) appears in nearly every document; c 700-600? gives the approximate date and LSAG 94,3a an edition: The meanings of most of these details will become clear at first sight. With inscriptions, properties of the text may be given (stoichedon, including the number of characters per line, non-stoichedon etc.).

In the case of Latin fragmentary texts, the information looks like:

```
Author.Work....fragment.line  
0010.001.1.1.1.1.3.1 3 Cic. de Orat. 2.224  
Marcus Iunius Brutus [iur.] 001 iurisprudencia  
Cic.de Orat.2.224 refers to the provenance of the fragment and 3 gives the running  
number.
```

Cicero's letters list date and place of the document:

```
Author.Work...book.letter.section.line  
0474.056.1.1.1.1.1.10 1 Id. Ian. 56 Romae  
Marcus Tullius Cicero=Cicero 056 Epistulae ad Familiares
```

In inscriptions, the references are sometimes set to zero explicitly. For instance, in the following example the Y level is set to the null string. You have to be aware of this possibility if Locate processes apparently do not produce the right result:

```
Author.Work.Text....document  
0001.043.1497bis.1.1.fr a..1 Aegean Islands Delos 1 160/59  
Attica 043 ID 4 [Delos]
```

Normally, you should use ID-Jump or 'Full reference' first, especially with literary texts, using 'Abbreviated reference' only for searching additional information or those files where either the former two do not succeed or you prefer not to specify the full spelled-out form of the reference. The ID-Jump routine is the fastest, and given this routine's backward-

searching capabilities, the most versatile of the reference locators. If it runs into difficulties, it is generally because of one of the following two problems:

- 1) Incorrect specification of the work level (first level to be specified). Check, if the work number in your search specification is really correct. Quite often one fails to set this number correctly.
- 2) Strange association of reference levels. This is due to the data in the text files and cannot be changed. Usually, you will notice this if you jump from the beginning to the end of the work<sup>42</sup>.

## 10 Find Operations

Finding differs from locating in that it produces a list of occurrences of a given pattern in a text or set of texts. You may then view this list and choose whichever entry might interest you for in-context-display. The list produced is a separate item that may be printed (see below). In finding, patterns work line-oriented. Words which are split over more than one line count as part of the line where their last parts reside.

Select **Find** from the main menu in the usual manner.

Then, enter the pattern as a valid SNOBOL4 pattern (note: lexical strings must be surrounded by paired quotes ( ' ' or " " ), capital and small letters are equal).

```

                                BETA CODE TABLE
Greek:   A B Γ Δ E F Z H Θ I K L M N ≡ O Π P Σ T Y Φ X Ξ Ω h
          A B G D E V Z H Q I K L M N C O P R S T U F X Y W J
Coptic:  2 w † 4 6 x           stigma      koppa      sampi
          H S T F G J           ?           @           <

```

```

Pattern [&ANCHOR = 0] or <RETURN>:
pos(0) breakx('pe') ('pracis' | 'ergon')

```

If specified incorrectly, the pattern may be edited. The beta code table explains the correspondences between Latin letters and Greek beta codes. Attic H (aspiration) has been encoded as Latin J. After you have entered your Find pattern, a second pattern input field is opened:

---

<sup>42</sup> An example: On the new TLG "D" disc, the *Epidemiae* of Hippocrates use reference levels `Work...Book.chapter.section.line`; the work is the sixth in the file. However, a reference like Hippocrat., *Epid.* IV 21 cannot be entered as `6.1.1.4.21.1.1`, since the "chapter" level is a bogus level, which is never used in the text; "section" is being used instead. Thus, we would write the reference `6.1.1.4.1.21.1`.



```
Reference pattern [&ANCHOR = 0]:  
'oxy'
```

This second pattern (note the quotes) is applied to the string of references and metatextual information and works as a restriction: Only those text lines that match the Find pattern and whose reference information is matched by the reference pattern are reproduced in the Find result list. If you do not want to apply a restrictive pattern to the references and additional information strings, enter a "null" reference pattern (i.e.: press <RETURN> without specifying a pattern). In the above example, lines containing  $\pi\rho\acute{\alpha}\xi\iota\varsigma$  or  $\xi\rho\gamma\omicron\nu$  are found, if the references or additional information strings contain the letters  $\omicron\chi\upsilon$  (for instance, if the papyrus comes from Oxyrhynchus). As usually, case folding is in effect, that is, upper and lower case letters are considered identical.

To find all lines with a specific reference pattern component, enter SUCCEED as the first text pattern (which is applied to the lines of the text) and a pattern that matches the pattern information as the reference pattern. If applied to the text lines, SUCCEED picks all lines, and the reference pattern then checks if the lines thus found satisfy the reference pattern. Except for this special case of a reference pattern search, you will never use SUCCEED, however. Reference pattern searches are useful if you want to work on a set of texts with specified provenance, date etc., since these informations are contained in the reference section.

After entering the reference pattern (if any) select, if you wish the system to apply your pattern to:

Work	the actual work in the actual file (author)
Author	all works of the actual author
Select authors	choose authors from the author list (press <RETURN> to accept one author, ESC to leave author list and start process)
Global	all authors (files) present in active author list
View results	view the actual LST.V&F result file

If you enter a text pattern (the first of the two patterns that can be entered) that matches the null string (""), the system will issue an error message; if you press <RETURN> without entering a pattern, you will get directly into View Results mode. The latter is meant as a shortcut for ergonomic reasons.

After everything has been specified correctly, the system will start the find process; output will be written to file LST.V&F. After the process has terminated, the resulting list may be viewed (Find - View Results or shortcut Find - <RETURN>) and the results can be selectively chosen. Press the Space Bar to enter a string to be searched within the list (as in work or author lists). To move through the list, use Home, End, Curs Up, Curs Dn; press <RETURN> to select one of the items to be displayed in View (graphics) mode. Long text lines in the find result list can be panned horizontally using the right and left cursor keys, TAB and Shift-TAB.

If you press the Space Bar to enter a specific string to look for in the list, note that quotes are not used; only this string is entered. You can use wildcards (\* and ?): \* denotes any number and kind of letters, ? matches one letter:

```
???των
```

looks for πάντων, τούτων etc., but not αὐτῶν.

The current state of the result-list is saved; upon returning to it, the system will pick up, where you had left. A delete option allows you to selectively mark individual records of the Find result list as deleted. Press the DELETE (German keyboard: Entf) key. The number of the present item in the list is added to the DEL.V&F delete marker file. Once you have moved the cursor to another item the item marked as deleted is not displayed any more. This allows you to work in a selective way on some of the Find results. You can mark all records except for the last one as deleted. The Find result list viewer displays the number of entries in the Find result list, the number of the entry actually displayed and the number of deleted entries:

```
Demosthenes Orat.  
032 Contra Zenothemin  
0014.032.1.1.1.1.1.1  
ΑΝΔΡΕΣ ΔΙΚΑΣΤΑΙ ΒΟΥΛΟΜΑΙ ΠΑΡΑΓΕΓΡΑΜΜΕΝΟΣ ΜΗ
```

```
Entry #:          1  
Entries in list: 103  
Deleted:         0
```

The deletion mark is active until a new Find operation is run and a new empty DEL.V&F file is initialized, or until you deliberately delete or edit the file DEL.V&F. It is an ASCII file that contains the numbers of deleted records (0 based). You can feed this file into an ASCII editor to delete the deletions. Author names in find result lists may be up to 64 characters long. Longer names are truncated.

## 11 Finding Collocations which Span Lines

Ultimately, V&F's Find routines work upon single lines in the text files. Finding a string or a few words which span over two or more consecutive lines is possible, however, if you adopt a special strategy. Suppose you want to search Thucydides for all Κόρινθ- followed by Κέρκυρ- in the present or one of the following lines. First, select Thucydides and the work, then enter the Find pattern edit field and enter a pattern alternative

```
SP1 ORN('Korinq,Kerkur')
```

and start the Find process. Your Find result list now consists of all lines that contain either Κόρινθ- or Κέρκυρ- or both. We want all Κόρινθ- followed by Κέρκυρ-, regardless of

whether these span lines or not. If you look through the Find result list using the space bar and some wildcard pattern (Korinq\*Kerkur - without quotes), you get those lines only in which both words occur together in this sequence.

To enable multi-line searches through the Find result list, we have implemented the hash sign (#) to be included in your wildcard specification. This works with the Find result list only. The number of hash signs you enter gives the number of lines that will constitute the context for the Find result list search. To do this, press F from the main menu and <RETURN> (or ALT-L) to enter the Find result list, press the Space Bar to look for a specific string in the Find result list and enter:

```
###Korinq*Kerkur
```

In this case the strings will be found if they occur in the specified sequence within a context of 1+3 consecutive lines. There is one situation in which the program might signal success erroneously, i.e., although the lines are not consecutive and the context is larger than specified: At the ends-of-blocks it might "find" your string collocation even if there are some interfering lines which the program is not aware of any more<sup>43</sup>. Spaces may be entered, of course, for higher precision:

```
### Korinq* Kerkur
```

This works, of course, for more words and in reverse order (### kerkur\* korinq). The general rule is: Start the Find process and enter a pattern that looks for all lines that contain either of the elements that you are looking for in conjunction; then look through the resulting Find result list using hash sign and/or wildcards to get specifically common occurrences of the elements.

Pressing the space bar opens up a look-up entry field in many V&F contexts. There are differences, however. Whereas the search for authors and works in the author and work lists works in "unanchored" mode, looking up the Find result list produces "anchored" results. This means: Pressing space bar and entering ARISTOTLE will directly jump to Aristotle, although the string "Aristotle" does not occur right at the beginning of the line. This works the same way with works (POLITEIA will produce the Ἀθηναίων πολιτεία, although it is the second word).

For several reasons, this is different in Find result lists. There you must precede your look-up string with an asterisk (\*) to make it be found at the ends of (or within) longer lines.

We recommend you develop the habit of using the asterisk with authors and works, too. Write \*ARISTOTLE instead of ARISTOTLE - just to remind you of the right way. In fact,

---

<sup>43</sup> The reason for this is that the program does not know how many lines a specific block contains. We could have been more restrictive, but some wrong positive results are much superior to even a single entry that is left out.

we have implemented it this way to make looking up authors and works easier, that is: for ergonomic reasons, but there is always a disadvantage with inconsistencies.

## 12 Pattern Matching

### a) Implementation

Locating and Finding strings has been implemented as a three-phase process. First, V&F preprocesses the texts: Non-alphabetic items, including numbers, are discarded and all letters are converted to upper case. Your pattern may be specified in lower case, upper case or both, since the search engine automatically converts it to upper case. Searches are nonsensitive to breathings, accents and capitalization. Then, the pattern is applied to the alphabetic strings in an entire block of text (8 KBytes) to see, if a string occurs in the block that satisfies the pattern. If this is not the case, the pattern match fails. If it succeeds, the pattern is applied to the block line-wise (third phase) to see which lines contain strings that are matched by the pattern. What has been thought of as a way to speed up the process - much time-consuming conversion of line references on blocks is avoided -, can result in an actual waste-of-time, if patterns are specified badly.

Finding and Locating require that you specify the pattern as a SPITBOL pattern: We have implemented and extended the full pattern language of this dialect of the SNOBOL4 programming language in our search engine. A complete treatment of this pattern language is beyond the scope of this documentation, and you should consult the available literature if you want to get deeply into its details<sup>44</sup>.

### b) Pattern Entry

V&F uses an edit field to enter patterns. The edit field shows up as an highlighted area of six lines on the screen. Normal editing keys are available (cursor keys, Home, End, Ctrl-Left (word left), Ctrl-Rigth (word right), Ctrl-Home (erases left of cursor), Ctrl-End

---

<sup>44</sup>

You should read either of the following books:

S.HOCKEY, *SNOBOL Programming for the Humanities*, Oxford (1985) [best introduction available]  
E.JOHNSON, *Computer Programming for The Humanities in SNOBOL4*, Madison SD (<sup>6</sup>1995) [similar to the above book in its practical approach, introduction with instructive exercises, there are descriptions of various patterns on pp. 96ff.]  
R.E.GRISWOLD & J.F.POAGE & I.P.POLONSKY, *The SNOBOL4 Programming Language*, Englewood Cliffs, N.J. (1970) [clearly written and comprehensive, but outdated]  
R.E.GRISWOLD & M.T.GRISWOLD, *A SNOBOL4 Primer*, Englewood Cliffs, N.J. (1973) [outdated]  
M.EMMER, *SNOBOL4+, The SNOBOL4 Language for the Personal Computer User*, Englewood Cliffs, N.J. (1985) [comes with Catspaw's SNOBOL4+ interpreter; useful both as an introduction and a reference book]  
M.EMMER, *MACROSPITBOL, The High-Performance SNOBOL4 Language*, Salida, Co. (1989) [comes with Catspaw's SPITBOL386, SPITBOL68K and SPARC SPITBOL compilers; best reference available]  
W.W.PETERSON, *Introduction to Programming Languages*, Englewood Cliffs, N.J. (1974) ch. 9 [overview]

(erases right of cursor), Backspace, DEL, Ctrl-Backspace (erases field), ESC (restores field to previous state), INS (toggles insert/overwrite), <RETURN>. Except for Curs Up and Curs Dn which are available only in multi-line edit fields, the same keys are used for all highlighted edit fields in V&F.

### c) The SNOBOL4/SPITBOL Pattern Language

A pattern specifies a string or a class of strings in terms of certain properties. The class specification is applied to a particular string to see if it satisfies the pattern. If it satisfies it, the pattern match succeeds (the pattern matches the string), otherwise the operation fails. The simplest way to specify a pattern is to enclose a specific string in pairs of quotation marks:

```
'logos'
```

```
"logos"
```

Both find  $\lambda\acute{o}\gamma\omicron\varsigma$ , regardless of whether the word is surrounded by prefixes and suffixes or not. Note that quotation marks must be paired, i.e. they must be equal. More complicated patterns can be constructed using unary or binary operators or functions. Unary operators precede a specific construct immediately, without intervening blanks, as in:

```
~'logos'
```

This pattern matches all blocks and then all lines that do not contain  $\lambda\acute{o}\gamma\omicron\varsigma$  (this strategy is useless, though). ~ is the negation operator, it converts success or failure to their corresponding opposites. To specify alternatives, a binary operator must be used (| = ASCII 124)<sup>45</sup>. Binary operators must be surrounded by at least one blank on each side. Thus, the following pattern will match  $\lambda\acute{o}\gamma\omicron\varsigma$  or  $\acute{\alpha}\rho\epsilon\tau\acute{\eta}$ :

```
'logos' | "areth"
```

Single and double quotes are equivalent as long as they are paired. Using the above pattern is not very efficient: Increasing the number of alternatives will lead to long-running search jobs with search times proportional to the number of alternatives. Using a few of the functions or reserved system variables of the pattern language we can reformulate the above pattern so that the system will scan the string faster. First, we have to instruct the system to not back up at all. This is done either with the reserved word FENCE or with a function that instructs the system not to back up: POS(0). Thereby, we instruct the system to scan the entire string in "anchored" mode (because FENCE or POS(0) make the pattern matcher behave as if a reserved keyword that is called &ANCHOR had been set). This will lead to patterns that match from the beginning of a string. For instance,

```
POS(0) 'logos' | "areth"
```

---

<sup>45</sup> On German keyboards the | sign is available left of Y; hold down the AltGr key to produce |. Otherwise, hold down the ALT key and enter 1 2 4 on the numeric keypad.

matches blocks that contain logos or areth as their first components. However, this is not what we want. The best and fastest way is to look for the initials of the strings and test if any of the patterns searched matches immediately after the matching initial letter. We use a function that matches any single letter from a class of letters passed to it as a string (that is: in quoted form) and retries if there is no succeeding element that follows. Thus, we rewrite our pattern in either of the following ways:

```
POS(0) BREAKX('la') ('logos' | 'areth')
fence breakx('LA') 'LOGOS' | 'ARETH'
```

Note that the brackets which follow the function calls immediately are necessary whereas brackets surrounding alternatives are optional. This is certainly the most efficient way of specifying alternatives. Note that there is a `BREAK()` function in SNOBOL4 that differs from the `BREAKX()` function in that it does not retry if an anchored match-attempt was unsuccessful. Therefore, you should not use `break()` for the purpose of searching alternative strings; use `breakx()` instead. Note that we used `POS(0)` to artificially "anchor" the pattern for efficiency purposes. Long running find or locate actions may be due to inefficient patterns rather than to a hanging program. Press ESC to stop such a process and wait a short while.

More complicated string patterns can be constructed using a few of the SNOBOL4 functions and reserved words. `ANY(string)` matches any single character that is contained in the class of characters that is passed as the argument to that function. For instance,

```
'logo' any('usn')
```

matches `λόγος`, `λόγους` and `λόγους`. This is faster and more concise than writing

```
'logo' ('s' | 'u' | 'n')
```

The opposite of `ANY()` is `NOTANY()`; it matches any character that is not contained in the string passed to it as its argument. For instance,

```
'l' notany('awo') 'gw'
```

matches all strings that contain `λ`, followed by a single letter other than `α ω ο` and followed by `γω` (`λέγω`, for instance). You can use this to exclude word boundaries:

```
'areth' notany(' ')
```

matches `αρετη` that is followed by at least one letter other than the space (`ἀρετήν`, `ἀρετῆς`). To specify a certain length of any letters, use `LEN(integer)`.

```
'log' len(1) any('sz')
```

matches `λόγος`, `λογίζ-`, etc. To specify strings that follow upon each other closely, you can use `BREAK()`. For instance,

```
POS(0) BREAKX('L') 'LOGON' BREAK('O') 'OUK' BREAK('E') 'EXWN'
```

matches `λόγον`, then tries to find the next `ο` upon which `οὐκ` must follow; then it tries to find `ε` upon which `ἔχων` must follow. Anything between `λόγον - οὐκ` and `οὐκ - ἔχων` is "jumped over". This is useful if you do not know how many spaces are between the words

or if there are other words that interfere with the pattern. For instance, the above pattern matches *λόγον δὲ οὐκ ἔχων*.

Specifying a pattern that describes any co-occurrence of two strings in one line is more complicated. The following pattern matches all lines in which *καί* and *μή* occur together, regardless of their sequence in the line:

```
pos(0) breakx('km') ('kai' breakx('m') 'mh') | 'mh' breakx('k') 'kai')
```

Note that all expressions of the pattern language, including the `ORX()` and `WILDCARD()` pattern functions of V&F<sup>46</sup>, can be combined to form very complicated, nay unintelligible patterns. Some examples of actual patterns will be found in the chapter on performance, where the patterns used to run a few benchmarks are given<sup>47</sup>. We recommend that you study these patterns carefully since most possibilities that occur in actual search jobs will be found reflected in these patterns.

#### d) Searching Words

All patterns work on entire strings. This means that `'TUX'` will match *τύχη* as well as *ἔτυχε*. To restrict our search to single words, we have to add restrictive elements to the pattern formulation. There are three V&F patterns for this purpose:

SP1	matches the beginning of a word
SP2	matches the end of a word
SP.	matches spaces between words

For example, to make sure that only the word *καί* will be found, we enter

```
SP1 'KAI' SP2
```

To find a sequence of *δὲ καί*, we use

```
SP1 'DE' SP. 'KAI' SP2
```

These patterns need not be used in conjunction. For example, you can specify the beginning of a word without specifying its end. To match different forms that begin with *πολιτ-*, we enter

```
sp1 'polit'
```

SP1, SP2 and SP. can be used in connection with all other SPITBOL or V&F patterns. SP. has been defined as a "dotted" pattern variable in `PROFILE.V&F`.

#### e) ORX() and ORN() Patterns

Extending Gimpel's `OR()` pattern function<sup>48</sup>, we have implemented two functions which make the searching for alternatives easier and faster, especially, if you want to search for variations of the same root. The functions automatically construct anchored patterns which

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<sup>46</sup> See p. 55.

<sup>47</sup> See p. 75.

<sup>48</sup> J.F.Gimpel, *Algorithms in SNOBOL*, New York, London, Sydney, Toronto (1976) 157-159.

look for the initials of the words specified and factor out common elements to work as efficiently as possible. There are, however, restrictions to the use of these pattern functions within the pattern language: They take only string arguments. The alternatives are specified as one string of words, separated by commas and surrounded by one pair of quotation marks. This is contrary to the usual SPITBOL/SNOBOL4 conventions.

```
ORX('logos,logou,logw,logon,logoi,logwn,logois,logous')
```

searches all forms of the word *λόγος*. Technically, the search operation is the same as if the user had entered the pattern

```
FENCE BREAKX('l') 'log' ('o' (ANY('suni') | any('iu') 's') | 'w' ('n' | ''))
```

This, however, would be much more complicated and apt to errors. ORX() should not be used in connection with SP1, SP2 or SP., because it looks for the initials of the strings to be searched, even if these initials do not follow immediately upon the word boundary. Instead, you should use ORN(), if you want to look for alternatives of entire words. The pattern function ORN() behaves exactly as ORX() except that it does expect the initials of the strings to be searched immediately after the previous pattern component. To search for different forms of *λόγος* and to improve our pattern, we would write:

```
sp1 orn('logos,logou,logw,logon,logoi,logwn,logois,logous') sp2
```

This is the recommended method for ordinary search jobs. with SP1 and SP2 simple alternatives (|) will be faster, too. To look for *λόγος* or *κόσμος*, enter:

```
SP1 ('LOGOS' | 'KOSMOS') SP2
```

#### f) WILDCARD() Pattern

V&F contains a pattern generator that accepts wildcards like the DOS command interpreter does (i.e.: \*?). WILDCARD() allows for spaces in the wildcard specification. The pattern function that evaluates the wildcard may be used in ordinary pattern specifications to match entire text lines. However, wildcard patterns work very slowly. For example, to search for all a?t (ant, alt, act etc.), you enter the following pattern:

```
WILDCARD(' *A?T')
```

The wildcard pattern may be combined with the other pattern functions of the SNOBOL4 language.

#### g) ASSOC() Pattern Function

This pattern function has been implemented to alleviate the detection of string associations in the same text line, regardless of sequence or distance. We have called the function ASSOC(), because it finds word associations. To find all lines, where *πραγματικ-* and *τροπ-* occur together, we enter:

```
ASSOC('trop', 'pragmatik')
```

There is a calling difference between ASSOC() and ORX()/ORN(): While the latter two expect commas within the quoted strings (e.d.: ORN('texnh,texnhs,texnhn'), ASSOC()



requires that the entities be quoted separately. Do not mix up the different calling conventions. The sequence of the strings is not important. We can surround the pattern by SP1 and SP2 to draw out word boundaries. The following could be used to find *πραγματική*, followed by *ιστορία* or vice versa:

```
SP1 ASSOC( 'ISTORIA' , 'PRAGMATIKH' ) SP2
```

The latter does not absolutely restrict the pattern to words: The first word may continue, the latter one may be preceded by other letters.

### **h) New Negation Operator**

V&F uses the SPITBOL negation operator (~) mainly to invert the success/failure return values of functions that test the identity of certain strings within patterns. Its use is complicated and error-prone, and I should not have recommended it at all.

Users have expressed their dissatisfaction with the ~-construct<sup>49</sup>. We have, therefore, introduced a new unary negation operator, the exclamation-mark (!). If a given pattern (e.d.: "EPI") signals success, then !"EPI" signals failure. This can be used to check for certain sequences of strings, excluding one kind and selecting the other.

We recommend the following usage. Suppose, you want to look for every *καί* which is not followed by *έπί*. Enter the pattern

```
SP1 'kai' span( ' ' ) !'epi'
```

There is no space between the ! and the following pattern. Use brackets, if necessary, like in !( 'epi' ). To exclude alternatives, enter

```
SP1 'kai' sp. !( 'de' | 'mhn' )
```

which includes all *καί* except for those followed by *δε-* or *μην-*.

The system looks for those lines which contain a *καί* which is not followed by *έπί*. If there are two *καί*s in the line, one with and one without *έπί* following, the line is picked, i.e., all lines which contain at least one *καί* which is not followed by *έπί* are selected.

You should use brackets to combine the new negation operator with other pattern components. For instance, we might want to look for *καί* which is followed by any other word, except the word *έπί* (but including composita with *έπι-*). This means, we want to look for all words *καί*, followed by interword spaces and any word except the full word *έπί*. This can be matched with the following pattern:

```
SP1 'KAI' SP. !("EPI" SP2)
```

### **i) Complicated Negations Using ABORT**

To exclude certain words or sequences of words from being searched, use the ABORT pattern primitive. For instance, the pattern

---

<sup>49</sup> I am grateful to Prof. Dr. Helge Hauglin of Oslo University for the suggestion.

```
SP1 'KAI' SP. (( 'MHN' SP2 ABORT) | (LEN(3) SP2))
```

looks for all  $\kappa\alpha\iota$  which is followed by a three-letter word, except  $\mu\eta\nu$ . ABORT causes the pattern alternative where it is specified ("mhn" sp2 ABORT) to signal failure and no following alternative to be tried (len(3) sp2). The pattern backs up and looks for the next word  $\kappa\alpha\iota$ , testing if  $\mu\eta\nu$  occurs (failure) or any other three-letter word (success). Generally speaking, ABORT causes all alternatives on the same level not to be tried.

This construct can be combined with all other pattern constructs, including alternatives, etc. Since the pattern primitive FAIL is more restrictive in that it causes only the corresponding branch of the alternative to fail, it is less useful for forming negations.

In order for the patterns to work correctly, you should use a first pattern component that is likely to succeed on a block-wide base, since V&F first applies your pattern to entire blocks to avoid time-consuming conversions on those portions of the texts that are most likely not to be of any interest at all. While these heuristics help at saving time with positive searches, they may lead to unacceptable results with negative ones. For example, using the pattern

```
SP1 !("KAI") SP2
```

on a Greek text to get all those text lines which do not contain  $\kappa\alpha\iota$  would be useless, because it is to be expected that all Greek texts contain  $\kappa\alpha\iota$  in all text blocks - you wouldn't probably get any results at all. Therefore, we have refrained from providing a possibility to select all lines which do not contain a given single word (only combinations with negations are possible).

### 13 Exporting Text

Marking a specific portion of text for export is done in View mode (graphics display). Press F1 at the beginning of the portion to be exported, F2 at its end. You will hear an upward and a downward triad. Press ESC to return to the main menu.

If specified correctly, the portion thus marked can be exported via the Export option of the main menu. You will be asked for a filename to hold the results.

V&F itself can export only Beta code text. It does not perform conversion for printing and the inclusion of the text in word processors or typesetting programs. Conversion of this kind is done by the V&F utilities shell and several utilities programs which are described in a special section of this manual<sup>50</sup>.

The format of the export file is fairly simple: Initially, after a tilde and a space, author name, file name and work are given. The work title is given wherever a new work begins. The records themselves consist of references and text lines. References occupy the first 32 columns (column 0 to 31); the author reference is left out (since it is contained in the first

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<sup>50</sup> See p. 79ff.

two lines of the file). If the reference is longer than 32 columns, it is truncated; otherwise it is padded to a length of 32 characters with blanks (ASCII 32). Additional reference information (such as provenance of text, date etc.) is not reproduced. If the text line starts in Greek, its first byte is a dollar sign (\$), otherwise a &. The following output portion may serve as an example. You will need this if you want to produce your own conversion routines or filter programs.

```

~ Author:   Marcus Iunius Brutus [iur.]
~ File/No.: LAT0010
~ Work:     iurisprudentia
1.1.1.1.1.1.t      &@@@{1DE IVRE CIVILI LIBRI TRES}1
1.1.1.1.1.1.1     &Forte euenit, ut in Priuernati
1.1.1.1.1.1.2     &essemus ego et Marcus filius.
1.1.1.1.1.2.1     &In Albano eramus ego et Marcus filius.
1.1.1.1.1.3.1     &In Tiburti forte assedimus ego et Marcus filius.

```

If you want to append an export portion to an already existing file rather than replace this file, add a space, a minus sign and the letter "a" to the file name as in:

```
TEXTFILE.OUT -a
```

Do not forget to write a space between the file name and the minus sign. The -a directs the program to append the output to the existing file instead of creating it. If the file does not exist it is created. Thus, you can collect all your citations during one V&F session in one file with a short name and convert this when you have finished searching and viewing. We recommend that you always use one and the same name for this file (e.d.: X.OUT).

## 14 Options Menu

To change system variables that contain subdirectory information and control the display of the text, enter the Options menu from the main menu. Press O or select the options menu with the menu bar. In the options menu you can alter a few system variables by pressing their number (1-9):

Press number to switch value:

```

1  fo_ (initial font)      1  (Greek)
2  fc_ (font change)      1  (allowed)
3  do_ (? and !)          1  (converted to dots)
4  fr_ (re-assign font)   0  (start lines in default font)
5  br_ (2-letter symbols) 1  (display special signs)
6  CDdrive                 G:\
7  CDind                   G:\
8  Group
9  lf_ (list font)        1  (Greek)

```

Pressing one of the numbers 1-5 and 9 on the left alters the pre-set display variables. Their actual values are shown on the right side:

FO_	alters the initial font	0: Latin	1: Greek
FC_	allows font change	0: no change allowed	1: changes allowed
DO_	?/! as editorial signs	0: ?/! displayed	1: ?/! as dots
FR_	re-initialize font	0: re-initialize	1: pick up font
	at beginning of new line		
BR_	display brackets	0: no	1: brackets displayed
LF_	find result list display	0: Latin	1: Greek

Options 6-8 require that you enter the new values in an edit field. Press the appropriate number (6-8) to open the edit field:

CDdrive	drive and directory where text files are found
CDind	drive and directory where AUTHTAB.DIR resides
Group	DOS wildcard-compatible author name specification

Εἰ μὲν τοῖς πρὸ ἡμῶν ἀναγράφουσι τὰς πρά-  
 ξεις παραλελειφθαι συνέβαινε τὸν ὑπὲρ αὐτῆς τῆς  
 ἱστορίας ἔπαινον, ἵσως ἀναγκαῖον ἦν τὸ προτρέ-  
 πεσθαι πάντας πρὸς τὴν αἴρεσιν καὶ παραδοχὴν  
 τῶν τοιούτων ὑπομνημάτων διὰ τὸ μηδεμίαν ἔτοι-  
 μοτέραν εἶναι τοῖς ἀνθρώποις διόρθωσιν τῆς τῶν  
 προγεγενημένων πράξεων ἐπιστήμης. ἐπεὶ δ' οὐ  
 τινὲς οὐδ' ἐπὶ ποσόν, ἀλλὰ πάντες ὡς ἔπος εἶπεν  
 ἀρχὴ καὶ τέλει κέχρηται τούτῳ, φάσκοντες ἀληθι-  
 νωτάτην μὲν εἶναι παιδείαν καὶ γυμνασίαν πρὸς  
 τὰς πολιτικὰς πράξεις τὴν ἐκ τῆς ἱστορίας μάθησιν,  
 ἐναργεστάτην δὲ καὶ μόνην διδάσκαλον τοῦ δύνα-  
 σθαι τὰς τῆς τύχης μεταβολὰς γενναίως ὑποφέρειν  
 τὴν τῶν ἀλλοτρίων περιπετειῶν ὑπόμνησιν, δηλὸν  
 ὡς οὐδενὶ μὲν ἂν δοῖται καθήκειν περὶ τῶν καλῶς  
 καὶ πολλοῖς εἰρημένων ταυτολογεῖν, ἥκιστα δ' ἡμῖν.

0543.001.1.1.1.1.2.5  
 Polybius Hist. 001 Historiae <0:13>

Normal setting of V&F display system variables

Normally, these system variables are set automatically, so you need not care for their values. Some texts, however, are so strange, that you have to adjust the values of the display parameters manually<sup>51</sup>, and you might want to change to a different text file directory. Since the TLG texts are in Greek and do not bear a language stamp, while nearly all PHI texts contain such a language marker, leave the FO\_ variable set to 1.

The find result list of V&F is viewed in text mode. To see a Greek text within its context in the correct font, select the item (<RETURN>) and View the text. To alleviate the reading of text mode Greek, we have implemented an option to represent the Find result

<sup>51</sup> The New Testament dictionary on PHI disc #1 required Greek and font change, but ?/! and two-letter-symbols had to be disabled.

```

@*EI) ME\N TOI=S PRO\ HCMW=N A)NAGRA/FOUSI TA\S PRA/-
CEIS PARALELEI=FQAI SUNE/BAINE TO\N UCPE\R AU)TH=S TH=S
IC(STORI/AS E)/PAINON, I)/SWS A)NAGKAI=ON H)=N TO\ PROTRE/-
PESQAI PA\NTAS PRO\S TH\N AIC/RESIN KAI\ PARADOXH\N
TW=N TOIOU/TWN UCPOMHMA/TWN DIA\ TO\ MHDEMI/AN ECTOI-
MOTE/RAN EI)=NAI TOI=S A)NQRW/POIS DIO/RQWSIN TH=S TW=N
PROGEGENHME/NWN PRA/CEWN EPISITH/MHS. E)PEI\ D' OU)
TINE\S OU)D' EJPI\ POSO/N, A)LLA\ PA\NTES WCS E)/POS EI)PEI=N
A)RXH=: KAI\ TE/LEI KE/XRHNTAI TOU/TW!, FA/SKONTES A)LHQI-
NWTI/THN ME\N EI)=NAI PAIDEI/AN KAI\ GUMNASI/AN PRO\S
TA\S POLITIKA\S PRA/CEIS TH\N EJK TH=S IC(STORI/AS MA/QHSIN,
E)NARGESTA/THN DE\ KAI\ MO/NHN DIDI/ASKALON TOU= DU/NA-
SQAI TA\S TH=S TU/XHS METABOLA\S GENNAI/WS UCPOFE/REIN
TH\N TW=N A)LLOTRI/WN PERIPETEIW=N UCPO/MHSIN, DH=LON
WCS OU)DENI\ ME\N A)\N DO/CAI KAQH/KEIN PERI\ TW=N KALW=S
KAI\ POLLOI=S EI)RHME/NWN TAUTOLOGEI=N, HC/KISTA D' HCMI=N.

```

```

0543.001.1.1.1.1.2.5
Polybius Hist. 001 Historiae

```

<0:13>

All V&F display system variables set to 0

list entries in a kind of text mode Greek. This is done, once LF\_ has been set to non-zero. To alter it, get into the options menu and press 9. To alter the directories where CD text files are located, press 6 from the OPTIONS menu. The CD text file drive and directory are highlighted and you can edit it. Be sure to add a back slash (\) to the directory, otherwise the system will not be able to read it. By default, the CDind directory where AUTHTAB.DIR resides is altered, when CDdrive is altered. You can edit it separately to make it point to a different directory. After changing CDind and/or CDdrive execute a Re-Read author table file command, if the texts listed in the AUTHTAB.DIR file on your new drive are not the same as on the previously selected drive. You may wish to alter the text file location under two circumstances: If you have more than one CD drive built into your computer or access to a drive via a network, and if you have transferred some often-used text files to a directory of a hard discs to gain by that drive's higher transfer rate and seek time.

The Group system variable may prove useful if you want to selectively work on a set of authors with common characteristics. You can restrict the set of authors to be included in the author list to 'globally' search all historians or medical authors etc. To do this, set the Group system variable to a string that is interpreted as a DOS wildcard pattern. This pattern is applied to all the file and author names and synonyms to check if they match. If they do, the names are entered in the list, otherwise, they are left out. This leads to a reduced author list. You must issue a Re-Read Author List command before Group is activated. For instance, \* med.\* picks only the medical authors. As the DOS command

processor, V&F interprets the pattern regardless of capitalization. If you want to restore the system to a state where it has all the authors available that are on the present CDdrive, enter the Options menu, press 8 to change the Group system variable and press Ctrl-BACKSPACE (or otherwise delete the string). Then press <RETURN> to enter the null string, <RETURN> to get back to the main menu and issue a Re-Read Author Table command. This will re-initialize your author list, and all authors will show up during author selection. The following wildcard selects all those authors that are marked by a language code g (Greek): \* g ? Note that both the star and the question mark are necessary to ensure that the g is surrounded by blanks. The following specification selects all the Latin LAT files on PHI disc #5: lat

The following wildcard selects all Historians that are marked as such: \* Hist.

Contrary to the entries in PROFILE.V&F, the string-valued system variables CDind, CDdrive and Group must not be enclosed in quotes once they are entered from the Options menu. To close the options screen and return to the main menu, press ESC or <RETURN>.

## 15 Index

This menu option lets you produce either a wordlist or an in-context concordance of the presently selected author or work or a portion marked with F1/F2. Before indexing, author and work have to be selected. To start indexing, press I from the main menu to enter the indexing menu. Select the indexing object: author, if the entire author/file is to be indexed; work indexes the work that you have chosen previously with the Select-Work option<sup>52</sup>; if you want to index a marked portion of the text, make sure you have marked the text to be indexed with F1 at the beginning and F2 at its end.

Once the indexing object has been chosen, the index format is to be selected. To produce a simple word list, select Wordlist, for an incontext-concordance select Concordance. Next, you have to specify the language-dependent sort order. If the text is mainly in Greek, specify Greek sort order (for a sorting of ABΓΔ...), otherwise specify Latin sorting (ABCD...). After a few seconds you will be asked the minimum word length. You should enter a numeric value. Default is 3, i.e.: Words must have at least 3 characters to be recognized. To accept this default, press <RETURN>. To index all words, enter 1. Using this option, you can restrict the index entries to longer words to save storage space and to avoid indexing uninteresting words. Numeric values can be from 1 to 9999. Other values

---

<sup>52</sup> If a work is indexed, it should be selected with the Select-Work option. If on browsing through the text you have crossed work boundaries, the indexing machine will nevertheless index the work that you had selected before, regardless of the present position of the cursor line in the file. We recommend you to develop the habit to specifically select a work before indexing it.

(including 0) will be interpreted as the default (3). After that, the system will ask you for a string of letters (without quotation marks). If given, only words which begin with one of the characters specified will be inserted in the index. If you press <RETURN> without entering any letter, all words are indexed, i.e.: The default is all letters. This option may be useful in two cases: If you want to index a very long text and run out of memory, you can produce the index in smaller portions. For the first run, enter the letters of the first part of the alphabet, then index on the second half.

After entering the initials (if any), the indexing machine begins its work. The word list or concordance is written to a file with the name INDEX.V&F. Using separate V&F utilities this file can be converted for printing or translated into a format that can be read and viewed directly from inside V&F.

If Latin sorting is selected, the indexing machine maps all J to I and all V to U, regardless of capitalization. Indexing takes much time. The indexing machine writes the references and text lines (if the concordance option is set) in one or two temporary files. These files are located in the directory which has been specified with the TEMP\_ system variable in the PROFILE.V&F file. The system can handle files with up to 16.777.216 records. The strategy that we have adopted saves on memory at the expense of time. If you have sufficient memory at hand, we recommend that you install a large hard drive cache - normally resident driver software -, since this will reduce indexing times dramatically. The indexing machine detects out-of-memory conditions automatically.

## 16 DOS Shell

This menu option opens up an editing field to enter commands to be passed to the command processor. As default, the DOS\_ system variable is presented to be entered. If a null string is entered, COMMAND.COM is started as a child process, otherwise the command is executed and returns directly to V&F. If COMMAND.COM is started, enter EXIT to return to V&F. If you want to change the default directory where V&F operates, use the DOS shell of V&F. From the DOS shell, you can alter the default drive<sup>53</sup>.

The state of the system is saved and restored upon returning: Just choose VIEW from the main menu to get back into the graphics display. The DOS command processor receives about 300 KBytes of memory space with the V&FRUN.EXE version, and between 64 and 96 KBytes from SPITRUN.EXE+V&F.SPX.

---

<sup>53</sup> If select the CD drive or a hard disc drive that is already full, the system cannot write to it. Locate and Find, however, need some spare place on the current drive to write their temporary files. If this cannot be found, they will not work. The same happens, if the temporary file JOB.V&F cannot be written to.

With the latter system, these values can be altered with the program CFIG386 which comes with the SPITRUN.EXE module<sup>54</sup>. If you want to use the V&F utility programs for print and word processor conversion from the DOS Shell inside SPITRUN.EXE+V&F.SPX, you should use CFIG386 to modify SPITRUN.EXE. You should reserve about 256 KBytes. From the DOS prompt, enter the command<sup>55</sup>:

```
CFIG386 SPITRUN.EXE -clear -minreal 14250 -maxreal 16000
```

While at this, you can increase the I/O buffer size, provided you have at least 2 MBytes of memory in your machine:

```
CFIG386 SPITRUN.EXE -minibuf 4 -maxibuf 32
```

With increased buffer sizes you will save some CD accesses. The reduction in FIND times should be somewhere in the 10 % region. Do not set -maxibuf to a value larger than 32! If you experience problems with loading the DOS-Shell, just set the DOS\_ system variable to "COMMAND" as its default value in PROFILE.V&F as follows: Run the DOS editor EDIT (type EDIT and press the <RETURN> key from the DOS prompt). Load the file PROFILE.V&F. Look for the following line:

```
DOS_ = ''
```

Change this line to

```
DOS_ = 'COMMAND'
```

Save the file - that is all. In this case, COMMAND will be executed whenever you simply press <RETURN> in the DOS Shell window. Erased the "COMMAND" string, the program will execute any other DOS command as well. Normally, however, you need not do this: Pressing <RETURN> from the DOS Shell should automatically involve the operating system's command interpreter.

## 17 Help

V&F contains a simple Help option. If called, it displays the contents of file HELP.V&F, in portions of 22 lines. The Help file HELP.V&F is a simple ASCII text file which optionally contains a programmable menu definition section at its beginning. This section consists of entries which start with the ampersand (&) character, followed by a space, a menu header, a second space, the line number designator (#, hash sign) and a line number. This line number (1 based) refers to the starting line in the file for the help screen which the menu entry refers to. For example:

```
& FIND operations #134
```

---

<sup>54</sup> See the SPITRUN.EXE documentation which CATSPA, Inc. ship with their product. Note that if the DOS shell has less than 64 KBytes it will not be possible to run .COM utilities like V.Buerg's well-known LIST utility. Some of these .COM programs are so ill-behaved that they crash the system if they find less than the necessary amount of memory.

<sup>55</sup> You should not do this with only 1 MByte of memory available to the system.



The menu definition entries must be at the very beginning of the file. Line numbers include all lines in the file, including the menu definition section itself. Most ASCII editors give line numbers, so you will normally be able to alter the Help file easily. There can be up to 20 help menu index entries in the definition section. Each menu header may be up to 60 characters long. If there is no menu definition section at the beginning of the HELP.V&F file, the system displays the contents of the file in portions of 22 lines without Help menu selection option.

The structure of the Help screens themselves is fairly simple: Asterisk characters (\*) mark comment lines which will never be displayed. The at character (@) at the beginning forces the system to end the display of the current screen; this is useful to display screens that have less than the maximum of 22 lines. The lines of single Help screens may be up to 79 characters long.

## 18 Quit

This option ends V&F processing and returns to the command processor of the operating system. This menu command is the ordinary way of ending a V&F session. In addition, there is the possibility of pressing Ctrl-Break or Alt-Q to abort V&F once you think you have run in serious difficulties. This is considered an abnormal ending, and your results will be lost in this case. Note that some older keyboard drivers for keyboards with "dead" keys (e.d.: ` ^ on European keyboards) produce the Ctrl-Break code when pressing a "dead" key and a function key in this sequence. We have seen this with pre-DOS 3.30 keyboard drivers, but not with later editions.

## IV Special Problems

### 1 Multi-tasking V&F

The program runs under multitaskers, such as DESQView<sup>®</sup> and MicroSoft's Windows<sup>®</sup>, if you carefully select the parameters to install V&F. See p. 17 for details about the configuration of V&FRUN.EXE for MS-Windows<sup>®</sup> in extended mode.

#### a) SPITRUN.EXE+V&F.SPX under DESQview<sup>®</sup> and Windows (standard mode)

SPITRUN.EXE+V&F.SPX will run in "standard mode" under MS-Windows 3.n with HIMEM.SYS installed, since its DOS extender is not compatible with MS-Windows' extended 386 mode. The .PIF file should be set up to specify operation in graphics mode, minimum 320 KBytes and 800 KBytes of XMS memory, maximum of -1 KBytes of XMS memory (unlimited), close on exit. True multitasking will only be available under Windows, when Windows is started in extended mode, however.

Normally, the combination of SPITRUN.EXE+V&F.SPX takes over all available free memory from DESQView<sup>®</sup>, so it is necessary that you tell the multi-tasking manager how to allocate memory to the program. We recommend you set up the program information file (.DVP) so as to allocate at least 290 KBytes of real memory to V&F and an EMS partition of maximum size of 1200 KBytes or more (try to get this figure as high as possible, if you want to run large indexing jobs). V&F writes text directly to the screen; it displays graphics information; reserved memory 0; program should be closed on exit; close window command must be disabled; V&F can be swapped out and runs successfully in background mode; experiment with screen virtualization, we prefer to have the screen virtualized. If the V&F graphics (view) screen gets messed up from interaction with other windows, press F8: This rewrites the entire screen. If this happens in text mode (main menu), press ESC. Multitasking V&F is useful if you want to run large searching or indexing jobs in background mode. You can work on something different while your search is executed. With ordinary DESQview<sup>®</sup>, some problems may arise: V&F uses different modes to access the console, graphics display writes directly to the screen memory, DOS interrupt routines are carefully intercepted by DESQview<sup>®</sup> and do not pose any problems, and direct access to the text screen which may create problems with interacting windows. This may happen when the main menu of V&F is displayed after a Find or Locate operation: It blanks the screen and writes its messages directly into it. Therefore, you might find the screen of your foreground process messed up, because the multitasking program will not be aware of what had been written into the screen memory area. Press ESC to get your main menu back (it is written completely anew any time ESC is pressed), or V, if you are afraid of stopping an ongoing search unconsciously. V will rewrite the graphics screen after completion of the process or else the command will be ignored.

#### **b) V&F and DESQview/X**

DESQview/X<sup>®</sup> provides DESQview's multitasking capabilities coupled with the X11 graphical interface well known in the UNIX world. Since it mimicks text mode graphically, it completely avoids interacting windows and provides a stable platform for V&F. SPITRUN.EXE+V&F.SPX is compatible to DESQview/X and can be multitasked in that environment. V&F can be multitasked together with VGA applications in 512 character-mode, that is: with Greek display enabled. Thus you can work with your Greek and Latin word processor (e.d.: WordPerfect<sup>®</sup>, NotaBene<sup>®</sup> IV)<sup>56</sup> while searches or indexing operations are

---

<sup>56</sup> We have successfully multitasked V&F with different programs (NotaBene IV, WordPerfect 5.1, Chi-Writer 3.11, V&F Utilities Shell, MS-DOS screens, J.Malitz' GNOMON ancient history bibliography, a communication window that was routed via terminal emulation and modem line to a UNIX server at Halle University Computing Centre etc.); V&F can be multi-tasked with other copies of itself (but make sure you do not work on the same files with both, or else load the SHARE program from the DOS prompt).

executed in background mode. Task switching can be performed independently from the present display mode (graphics/text).

Before using the program, you will have to add its commands to the DESQview menu<sup>57</sup>. Select the add program option. Depending upon your CONFIG386 settings (see p. 64), you will have to reserve 190 or more KBytes of real memory for V&F and at least 800 KBytes of expanded memory for V&F. Under "Details - Advanced Options"

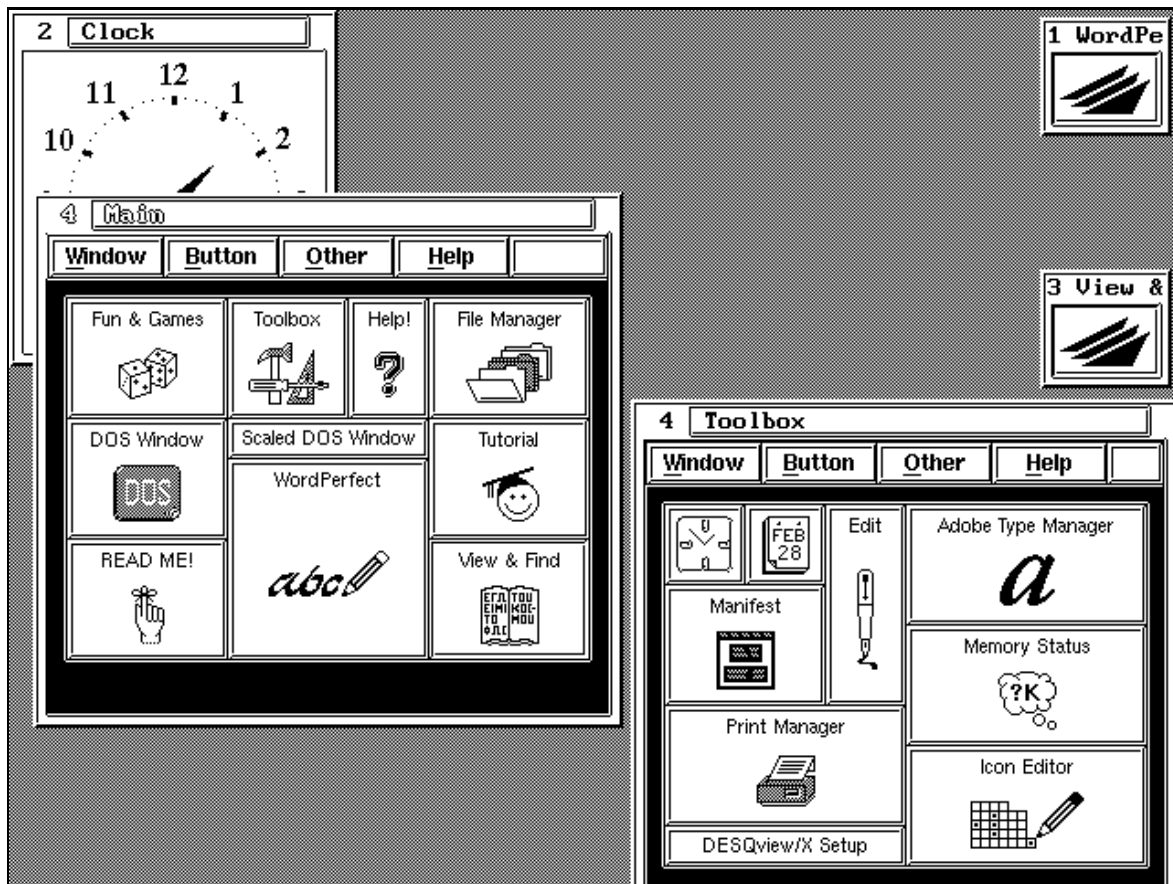


V&F under DESQview/X<sup>®</sup>

specify 5 KBytes of "System Memory" to make the multitasking work correctly. The "Display DOS Window" option must be "on", make sure "uses its own colours" is set to "on". The program does neither need COM1 nor COM2. See your DESQview documentation on the integration of new applications into the DESQview/X environment. Try to set the memory requirements large to get as much space as possible for View & Find. With class 486 computers "Tune Performance" should be set so as to reserve 9 timer ticks for the foreground process and 5 for the background process: According to our experiences, these values provide a fast platform. To complete your workplace environment, try to include the VFS shell as another DESQview/X task and perhaps a DOS window. The latter two, however, require at least 8 Mbytes of RAM. To include both V&F and the VFS shell, it is a good idea to copy SPITRUN.EXE to two files (SPITRUNL.EXE and SPITRUNS.EXE). Configure one of the files with very little real memory, using CONFIG386.EXE (-minreal 200 -maxreal 220) and the other with a rather large amount of real memory (-minreal 14600 -maxreal 14600). Use the "small" one for V&F (we do not need the DOS shell, since DESQview/X provides a DOS shell) and the large one for the utilities shell (since this uses that much real memory). Under DESQview/X, text and graphics screens must be virtualized for the multitasking to work correctly.

<sup>57</sup> This will create a new .DVP file for DESQview/X. We provide SPITRUN.DVP as an example.

Do not start V&F automatically (as a "local client") under DESQview/X; start it from a DESQview/X menu. Do not run a "Locate" process in background mode ("Find" processes etc. can be run in background mode while you are doing other work)<sup>58</sup>.

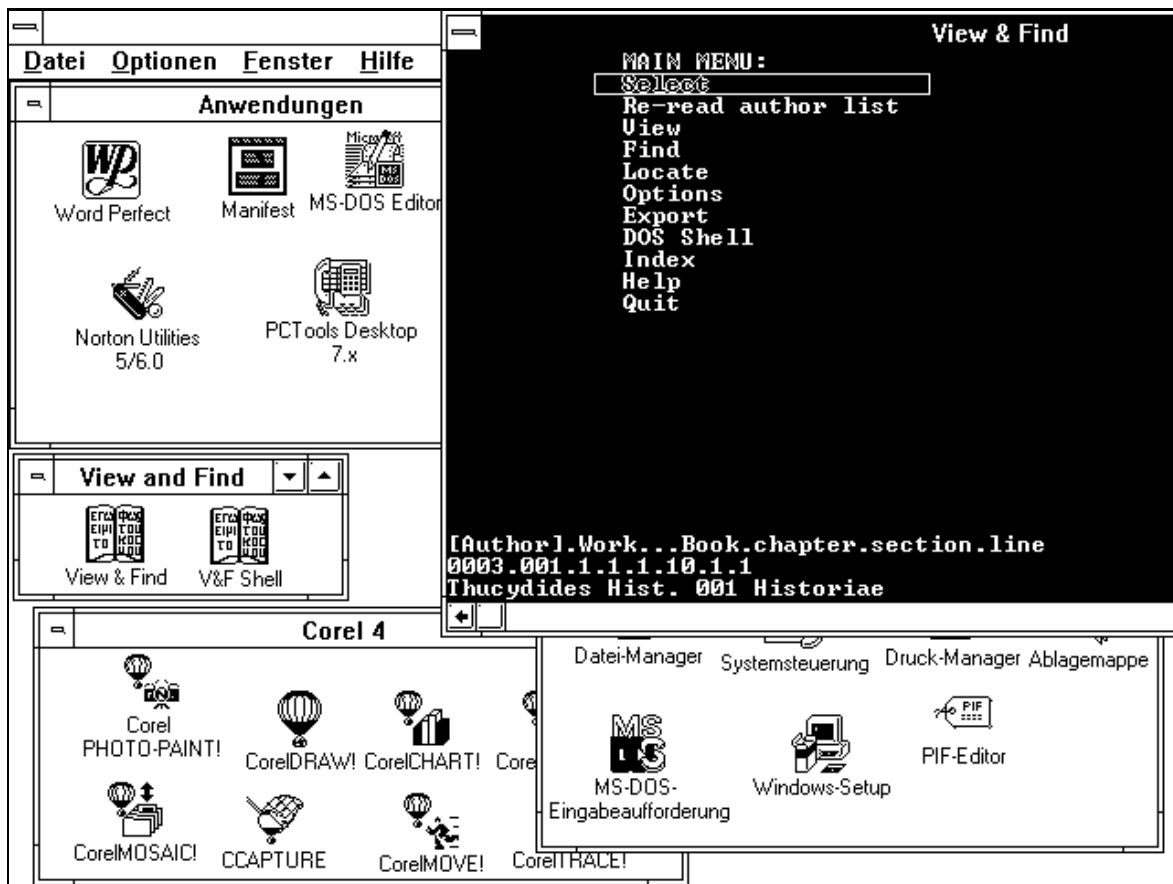


Application manager V&F icon

icon shows the same symbol as the MS-Windows<sup>®</sup> icon for V&F (V&F.ICO) and the OS/2 icon (VAF.ICO), though in a different format. To use this icon, copy the V&F.XPM file to your DESQview/X icon library sub directory, enter the DESQview/X Application manager and add V&F as a new button (to any of the Application Manager windows). Select button-new and set the V&F parameters; select the new icon option and scroll through the icon symbols until you reach the V&F symbol (it will probably be the last one shown on the screen); select this icon and check all program characteristics as described above. This will enable you to bring up V&F by pressing a symbolic button in the shape of a book.

<sup>58</sup> According to our experiments, DESQView/X<sup>®</sup> does not allow for software running in windows which makes use of the monochrome video modes. Therefore, use the \COMPAQ (as opposed to the \EGAVGA) version of V&F.SPX with SPITRUN.EXE. We have experienced the same problems with some of the Norton's Utilities running under DESQView/X<sup>®</sup>, especially UNERASE and FILEFIND. This means: If you are using V&F under DESQView/X on a Laptop equipped with a LCD screen, we recommend you use the \COMPAQ version and not the \EGAVGA (monochrome) version.

c) V&F and Windows® (enhanced mode)



V&F under Windows for Workgroups®

Installation of V&F under Windows in enhanced mode has been described sufficiently in the installation section<sup>59</sup>. V&F can be run under Windows for Workgroups® and reads its files over the network, if required.

## 2 Networking V&F

All V&F programs use ordinary DOS I/O (no direct MSCDEX CD-ROM calls etc.), so that every file that is accessible through logical DOS drives/paths/names should be readable by V&F. Therefore, re-directed network access is possible, and some of our clients are successfully using V&F in networking environments.

Experiences show that V&F and all its utilities work in networking environments, provided these are configured correctly. Especially the number of available file control blocks must match the requirements. Many DOS installations have a default value of FCBS=4, which may prove insufficient. This will not cause any problems under ordinary DOS, but needs

<sup>59</sup> See p. 23ff.

to be increased when reading translation table files etc. from network file systems (NFS). Configuration depends upon your specific software, but will probably include the configuration of a FCBS/FCB etc. option.

Another configurable option which should be changed with at least some NFS systems is read/write access. Individual users should NOT have write access to those files that are read from a network (and only read) like the translation table (\*.TAB) files. The reason for this lies with the networking software and is unknown to us, and V&F has no capability of altering the access rights of networked files. Therefore, set the access rights to all the \*.TAB files to read-only, if they are to be read over the network, i.e. if they are kept on a central file server<sup>60</sup>.

#### **a) V&F and Microsoft Windows Network**

V&FRUN.EXE, SHELL.EXE and all the V&F utilities are fully operational under Windows for Workgroups 3.11<sup>®</sup>. As soon as the CD drives have been freed for network access and the necessary connections have been established, the resources can be freely accessed via the corresponding logical drive letters. V&F sees these as normal drives and is not aware of their true nature as remote devices.

Net access to CD drives is accomplished with MSCDEX.EXE VERSION 2.22 or higher. To enable MSCDEX network capabilities, you must use the /S parameter on the command line (normally in AUTOEXEC.BAT), as in: C:\DOS\MSCDEX /S. The machines with CD-ROM drives must explicitly free these drives for net access; under WfW, the file manager can be used to explicitly free them for other users. These must connect to the network drives, using their file managers, too. Once the connection has been established, it will be re-established any time WfW is started again, unless explicitly cancelled by one of the users. The server machine, that is the machine which provides access to its CD-ROM drives, must be started and must be running WfW for the system to work correctly.

V&F performance under WfW 3.11 is very low on machines with less than 8 MBytes of memory, especially if files are read from a CD over the network. With 8 Mbytes or more, the system works well and rather fast, since with MSCDEX.EXE v.2.22 and SMART-DRIVE.EXE, CD-ROM reading is included in efficient caching.

You should, however, ensure that you abide by the terms of the TLG and PHI licenses: These preclude the access to the databases by more than one person at any one time, if no site license has been solicited before. Since WfW 3.11 does not contain technical mechanisms to ensure such access restrictions, you must "manually" make sure that only one researcher is reading any one of the discs, since V&F itself does not impose any technical

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<sup>60</sup> We are grateful to Prof. Helge Hauglin of Oslo University for this hint.

restrictions upon text access. We take the position that it is not the software's task but the task of its users to abide by the laws.

**b) Improving Windows for Workgroups Networking Performance  
(Cheap-and-Dirty Net)**

Windows for Workgroups stations equipped with less than 8 Mbytes of RAM show slow performance with V&F when reading files over the ethernet LAN, especially when other application programs are active. During viewing (browsing), the 8 KB block-transfer of text files uses large amounts of virtual memory, leading to excessive disk swapping and performance degradation. There is very little gain in running V&F as sole application under such circumstances, since the Windows application manager, its graphical user interface and the networking software all take away from precious memory and CPU resources.

We have, however, found a way to circumvent this bottleneck completely, if you have one workstation in your WfW network with the beta code files on CD-ROM or hard disk and at least 8 MBytes (recommended: 16) of RAM which could be used as a "non-dedicated server". Setup your WfW network as usual and verify its functionality, especially access to all beta code files from all work stations. Among these there will probably be some with less than 8 MB of RAM (say: 4). Shut down WfW on all computers, make sure, all necessary WfW network drivers are loaded. Now start WfW on your "server" as usual. **DO NOT START IT ON THE SMALLER WORKSTATIONS.**

Instead, switch to your WfW directory on these "client" workstations (CD C:\WINDOWS). Make sure, your AUTOEXEC.BAT file contains the line NET START (type C:\AUTOEXEC.BAT). If it does not, enter it manually (NET START) from your WINDOWS directory. Now enter

```
NET USE
```

WfW will start the networking routines and complain about some processes not having started yet. You will be asked if these are to be started. Press YES/JA/OUI/SI/ȚA or whatever the assertion is in your language.

The WfW network will now start correctly and you will be prompted for your machine name and password, as under WfW. This, however, will not be done in graphics mode under Windows, but in text mode under DOS. After your authentication has been checked, the process will mount your usual network drives as under Windows, and with the same names. You will be able to access them as network drives under DOS as if from a Windows DOS shell. You may use RDT to make sure all drives are mounted correctly.

Now you can start V&F, switch to the drives and directories via the OPTIONS menu (if required - do not forget the trailing back slash) and read the files. You will see a marked increase in speed over WfW on 4 MB workstations<sup>61</sup>.

This restricted version of WfW is one of the cheapest and simplest ways to share beta code files and CDs in a local-area networking environment: You just have to have one or two 8 or 16 MB power horses equipped with CD-ROM drives and large hard discs, and a bunch of moderately-equipped low-level workstations (e.d.: 4 MB RAM, 80386SX at 25 MHz, 40 MB hard disc, VGA card - the kind of machine that can be had for free at upgrading science departments). Quite often, you may get old network cards and wiring, too (as we did for an experimental network at our department), and this sort of network can be established with minimum cost effort. Within your institution, you can use V&F in such a networking environment, of course, without buying another copy<sup>62</sup>.

### c) V&F and Serial Network

Kyle A. York (noesis@ucscb.ucsc.edu) has written DOSRIFS (DOSRIFS.ZIP and DOSRIFS2.ZIP in SimTel archives). This program establishes a kind of network over the serial line. Once two machines have been connected (via null-modem), one of the machine can give access to any of its drives as a non-dedicated server, while the other may use its resources. Thus, you can share CD ROM files between a machine with a CD ROM drive and one that has no CD drive, connect two CD ROM drives to a machine that has only one etc.

We have tested V&F with this program successfully. Once you have set up MSCDEX.EXE v. 2.22 or higher (with the /S parameter), you call the necessary server and client programs (see DOSRIFS documentation). There is one peculiarity: DOSRIFS does not correctly translate the "find next" operating system call for remote CD drives (INT 21h, ah=4Fh). Therefore, you will see only "AUTHTAB.DIR", once you execute a "dir" command on such a drive under DOS (this works fine for floppies and hard discs). In practice, this is not a problem for V&F, since V&F does not need this function: All displaying and finding works correctly with the system.

On modern machines (386SX or higher), this networking software can be run at a baud rate of 115200. We have seen data transfer rates of 13.84 KB/sec. This is 113392 data bits/second at 115200 baud, which means: 98.43 % transfer efficiency, a very high rate, indeed.

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<sup>61</sup> We recommend not to use the /S parameter on 4 MB machines (although we do this regularly ourselves; we have however, observed one single abnormal ending on a 4 MB machine with V&FRUN.EXE and the /S parameter; SPITRUN.EXE+V&F.SPX will not come up with the /S parameter on a 4 MB machine).

<sup>62</sup> But, if you use SPITRUN.EXE, make sure you have one copy for any single workstation.



### 3 Hardware Requirements

The system requires that a 80386SX or higher processor<sup>63</sup> be installed into your machine. An 80386DX (true 80386) with at least 25 MHz is strongly recommended; 2 Mbytes of RAM are required to run the program. Even if no LIM-EMS emulator (such as EMM386, 386MAX<sup>®</sup> or QEMM386<sup>®</sup>) is used, the system will address extended memory in protected mode. Normally, V&F assumes control over the entire memory present in the system. If problems occur, remove any memory manager or memory-resident software that might be present in your system.



V&F under Linux and dosemu

V&F comes in four versions for different graphics systems:

<sup>63</sup> Some people have tried to run V&F on non-IBM-compatibles, using software PC-emulators (such as Insignia's "soft-PC" on Macintosh machines or "pcsim" on IBM RS6000 machines under AIX). Normally, these emulators provide an 80286 environment without 32 bit instructions and are thus not suitable for 32-bit software such as V&F. V&F itself is not a DOS program. It contains a small DOS loader, true 32-bit code and a DOS extender, which calls DOS services for input and output. Therefore, DOS-compatibility is not enough to run V&F; INTEL 80386-hardware-compatibility is required. Complete hardware compatibility is, in fact, provided by Linux's dosemu, and we have used V&F under Linux DOS emulation successfully for years; it runs very fast and reliably. We have also used Bochs under Linux and Windows XP to run V&F; although this is slower, it is also reliable, and we didn't experience any system faults or breakdowns at all. However, we have not had the opportunity of looking at other emulators.

HERC	HERCULES and compatible graphics cards
COMPAQ	EGA/VGA colour mode (recommended for general use)
EGAVGA	EGA/VGA monochrome mode (recommended for LapTop computers with monochrome display)
CGA	most other graphics cards (low resolution)

For all four graphics systems there exist two different programs with different DOS extenders. The V&FRUN.EXE system is a stand-alone module that works under DOS, Windows (extended mode) and in a DOS shell under OS/2. V&F.SPX must be executed by the SPITRUN.EXE module; it is compatible with most system configurations, including DESQview<sup>®</sup>, DESQview/X<sup>®</sup> and Windows<sup>®</sup> (standard mode only). Because the system reprograms the timer chip of the computer to sound notes on the speaker, IBM hardware compatibility is needed to make V&F fully functional. A harddisc is necessary to run V&F; a mouse is not required and will not be supported.

According to our experiences, CD ROM drives and discs are very sensitive to dust and aerosoles: Try to get a CD ROM drive cleaning kit; keep your CDs clean.

V&F memory requirements are gigantic. V&F is a very large program; upon being loaded, it expands itself automatically to a much larger size than the length of the files that contain the compressed program image. The following memory benchmark figures do not include the operating system and drivers: Only the size of the loaded V&F program and its data is given.

SPITRUN.EXE+V&F.SPX with /S parameter	2933.7 KB
SPITRUN.EXE+V&F.SPX without /S parameter	1141.7 KB
SPITRUN.EXE+V&F.SPX without /S parameter under DESQView/X	1169.7 KB
V&FRUN.EXE with /S parameter	3378.3 KB
V&FRUN.EXE without /S parameter	2850.3 KB

These figures show conclusively that SPITRUN.EXE+V&F.SPX can hardly be run on a 1 MB machine any more<sup>64</sup>. You should NOT use V&FRUN.EXE with the /S parameter on a 4 MB machine, since, although it may come up under these circumstances, it will not receive sufficient memory and may abort abnormally.

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<sup>64</sup> Earlier versions could be run on machines as small as that.

## 4 Performance

Due to several unexpected sudden deaths of hardware components, V&F performance tests had to be run on gradually changing hardware platforms. Therefore, we give the results in chronological order<sup>65</sup>.

### a) Benchmarks

A) 80386DX processor, 25 MHz, 2 MBytes of RAM, no memory cache NEAT chip set, BIOS shadowing (64 KBytes), page interleave memory access, 2 harddiscs Seagate (R) ST 251-1 with 40 MBytes each, 28 msec. seek time, MFM harddisc controller, 1:1 interleave, Hercules (R) plus graphics card, Toshiba (R) internal CD-ROM drive [XM 3201B], Toshiba (R) CD drive interface [XM-PB301], MS-DOS (R) 3.3 with 386max<sup>®</sup> v.4.08, MSCDEX v. 2 loaded into high memory, 32 KBytes used for CD drive caching, hard drive cache disabled.

- 1) Searching 'palaiο' in all the files on the PHI #2 disc (DDB papyri): 15 minutes 4 seconds
- 2) Searching 'texn' in Polybius: 1 minute 41 seconds; when read from the harddisc instead of the CD-ROM, this search took 1 minute 26 seconds
- 3) Indexing Cicero, Pro Fonteio, all words (wordlength min. 1 letter), producing a concordance: 2 minutes 33 seconds; with a 128 KBytes hard drive cache installed, the same process took 1 minute 3 seconds; with the PHI #5 disc, the same process took 1 minute 4 seconds. This shows that indexing time can be reduced significantly by caching external storage devices if sufficient RAM is available.

- 4) Searching αὐτουργ- and ἄκωνθ- on all text files on the TLG disc C took three hours and 28 minutes:

```
POS(0) BREAKX('A') ('AKANQ' | 'AUTOURG')
```

- 5) Searching 'Ερκυν- and 'Αρκυν- on all text files of the TLG disc C took three hours and five minutes:

```
POS(0) (' | BREAKX(' ') SPAN(' ')) ANY('AE') 'RKUN' NOTANY(' ')
```

- 6) Searching all forms containing -τεχν-, -μηχαν- and -μεθοδ- in the Septuagint took 3 min. 24 sec.:

```
ORX('MHXAN,MEQOD,TEXN')
```

- 7) Searching all forms of τέχνη, μέθοδος and μηχανή on all works of Aristotle on TLG disc C took 7 minutes (pattern broken for readability):

```
(POS(0) | ' ')
```

```
ORX('TEXNH,TEXNHS,TEXNHN,TEXNAI,TEXNWN,TEXNAIS,TEXNAS,  
MEQODOS,MEQODOU,MEQODW,MEQODON,MEQODOI,MEQODWN,MEQODOIS,  
MEQODOUS,MHXANH,MHXANHS,MHXANHN,MHXANAI,MHXANWN,MHXANAIS,  
MHXANAS')
```

```
(' ' | RPOS(0))
```

- 8) Searching τέχνη, μέθοδος and μηχανή (same pattern as in previous benchmark) on all text files on the PHI disc #2 took 18 minutes as a background task; V&F was run with 50 % priority; a moderate wordprocessing job was run in the foreground while V&F was executed. When run as a sole task, the same search took 13 minutes.

---

<sup>65</sup> For speed differences between V&FRUN.EXE and SPITRUN.EXE+V&F.SPX see p. 17.

- 9) To test memory utilization, Sappho texts were read from TLG disc C into memory (including one block as "cache"). After this, a destructive routine was executed that made the system allocate as much memory as it possibly could to terminate with an out-of-memory error: On the machine configured as explained, a maximum of 840 KBytes free heap were directly allocatable (this figure will be higher if more memory is installed or a different configuration is used); this should be sufficient for small indexing jobs. For larger indexing jobs we would recommend that at least 8 MBytes be installed in the machine.
  - 10) Producing a concordance of *De Bello Gallico* of Caius Iulius Caesar on PHI disc #1 took 25 minutes and 45 seconds.
  - 11) It took 8 minutes to produce a wordlist of Genesis from TLG disc C.
  - 12) Searching different forms of burgus on the PHI disc #5 took 33 minutes:  
 POS(0) BREAKX('B') 'BURG' ('US' | 'I' | 'O' | 'UM' | 'IS' | 'OS')
  - 13) Searching BREAKX('we') ('EAN DOQH' | 'WS DEI POIH') on all DDP files on the PHI #6 disc took 15 minutes.
  - 14) The inscriptions of Ionia (PHI #6 INS0008.TXT, 2,949,120 bytes) were searched for occurrences of φίλῖα (Pattern: SP1 'filia'), running without memory manager (pure DOS), no drive cache:
 

V&FRUN.EXE	2:40 min.
SPITRUN.EXE+V&F.SPX	2:40 min.

 running with HIMEM.SYS (Windows 3.0), no drive cache:
 

V&FRUN.EXE	2:40 min.
SPITRUN.EXE+V&F.SPX	2:36 min.

 SPITRUN.EXE+V&F.SPX in different environments:
 

with 128 KB hard drive cache	2:30 min.
without hard drive cache	2:40 min.
HIMEM.SYS, Windows (standard)	2:30 min.
- B) 80486DX/2, 66 MHz, 8 MBytes of RAM, AT-bus, Mitsumi CD drive, benchmarks run with TLG D disc
- 1) Searching 'ekpon' through all text files (excluding bibliography and canon files): 1h 10min. Pattern: 'EKPON'.
  - 2) Searching all forms of τέχνη in the *Corpus Aristotelicum*: SPITRUN.EXE+V&F.SPX: 1:45 min.; V&FRUN.EXE 1:30 min. Pattern:  
 SP1 ORN('TEXNH, TEXNHS, TEXNHN, TEXNAI, TEXNWN, TEXNAIS, TEXNAS') SP2
  - 3) Producing a concordance of Galen, *Adhortatio ad artes addiscendas*: 13sec. With 1MByte read/write cache for hard disc; 38 sec. with 1MByte hard disc read-only cache.
- C) 80486DX/2 66 MHz, 16 MBytes of RAM, SCSI/II, Toshiba double speed internal CD drive, benchmarks run with TLG D disc
- 1) Searching all forms of δίολκος through all files on the TLG "D" disc (including canon and bibliography files): 53 min. Pattern:  
 SP1 ORN('DIOLKOS, DIOLKOU, DIOLKW, DIOLKON, DIOLKOI, DIOLKWN, DIOLKOIS, DIOLKOUS') SP2
  - 2) Searching the same through all files on the PHI #6 disc, including bibliographies etc., read from the hard disc: 5min 20secs.

## b) Increasing V&F Speed

To be memory-efficient under DESQview/X, SPITRUN.EXE+V&F.SPX allocates very little memory at a time. Therefore, much garbage collection has to be performed, leading to a low execution profile. Optionally, this can be changed. If the V&F program is called with the /S parameter, it allocates about 2 MBytes of additional memory, saving on future garbage collections. This increases V&F speed up to 30% in all operations, but needs more memory, of course. With V&FRUN.EXE, the /S parameter leads to only slightly higher speeds.

To activate speed increase, you should call either V&FRUN.EXE or SPITRUN.EXE+V&F.SPX with the /S (or /s) parameter:

```
V&FRUN /S          or          V&FRUN /s
SPITRUN V&F /S    or          SPITRUN V&F /s
```

If there is not enough memory to activate the speed increase mechanism, the system cannot be loaded and aborts with the new error message:

```
Insufficient memory for /S parameter
```

# V V&F: The System

## 1 V&F Files

V&F uses and writes a couple of files that you should know to make further use of them.

HELP.V&F	Help file. Its structure is explained above <sup>66</sup> .
PROFILE.V&F	V&F profile file to set default system variables <sup>67</sup> .
JOB.V&F	First experimental versions of V&F were 16 bit programs that called external routines to perform searching and locating. For communication between the separate processes a few file formats had been defined. Since then, we have retained this organization, because it saves on system memory when larger "global" searches are run. JOB.V&F contains everything that the searching and locating routines must know to do their jobs.
RES.V&F	This file contains the result from the last locating operation.
LST.V&F	The list file. It is written by the searching (Find) routine to be used by V&F. It contains an entire word list and can be converted to different formats by utility programs that accompany V&F. Enter the DOS Shell command to rename the LST.V&F file if you want to make further use of it <sup>68</sup> . Otherwise, the next finding operation overwrites the file.
INDEX.V&F	Results of indexing operations are written to this file. If you want to make further use of it (printing, for example), rename it from a DOS Shell command <sup>69</sup> .
DEL.V&F	This file holds the deletion information when records of the Find result list are selectively deleted. To undelete the records, simply delete the entire DEL.V&F file or edit the file (it is an ASCII text file). You can edit or delete this file from the DOS shell of V&F or else when you are in DOS command mode <sup>70</sup> .
REFS.V&F	The temporary file that is written during indexing operations to hold all the de-coded references. It is deleted after termination of the indexing process. If it is retained, because you have reduced the DOS shell size to such a minimum as to prevent the program from deleting it, you can delete it manually.
LINES.V&F	Temporary file to store the textual material for concordance creation. What applies to REFS.V&F applies to LINES.V&F, too.

---

<sup>66</sup> See p. 64.

<sup>67</sup> See p. 28.

<sup>68</sup> E.d.: REN LST.V&F LST\_1.V&F.

<sup>69</sup> E.d.: REN INDEX.V&F INDEX1.V&F.

<sup>70</sup> E.d.: EDIT DEL.V&F.

\*.SRC "Source" files of simple PROFILE.V&F fragments that are used by the PROFILE.BAT process to build a simple profile according to user input.

The files that you will probably use, are PROFILE.V&F, LST.V&F, HELP.V&F and INDEX.V&F. When the system is running, DEL.V&F, LST.V&F, HELP.V&F etc. may be deleted or renamed. The system will not abort in this case, but the information contained in these files will no longer be accessible.

## 2 V&F Utilities

### a) The V&F Utilities Shell

In order to make the conversion routines more easily usable, we provide a V&F Shell system (VFS.BAT). Using it, you can call several print routines and word processing converters as well as other routines from a simple but easy-to-understand menu system.

#### Installing the Shell

Copy SHELL.EXE, SHELL.SPX and VFS.BAT from the disc #1 into your V&F sub directory. Edit VFS.BAT, using an ASCII editor (EDIT or EDLIN). If C:\V&F is your V&F sub directory, the line that calls the program should read:

```
SPITRUN SHELL /D=C:\v&f
```

Otherwise the /D= parameter should be followed by your proper V&F directory. If you have a 24 pin printhead printer, you should write:

```
SPITRUN SHELL /D=C:\v&f /P=1
```

(use 2 instead of 1 for LaserJet compatible printers, 3 for DeskJet printers; note that DeskJet has not been tested sufficiently).

When this has been done, you should ensure you have modified your SPITRUN.EXE file using the CFG386 utility. If not, proceed as described on p. 64<sup>71</sup>.

There are two versions of the shell: SHELL.EXE contains a stand-alone module that has been compiled using the DPMI-compatible INTEL CodeBuilder<sup>®</sup> DOS extender, SHELL.SPX is for execution by the VCPI-compatible PharLap DOS extender SPITRUN.EXE<sup>72</sup>. If you want to use the DPMI version of the shell, you need not modify the SPITRUN.EXE module. You should, however, edit the VFS.BAT file. The file contains the following lines near its end:

---

<sup>71</sup> The appropriate commands to achieve the necessary modification are:

```
cfig386 spitrun.exe -clear
```

```
cfig386 spitrun.exe -minreal 14250 -maxreal 16000 -minibuf 4 -maxibuf 32.
```

This is necessary, because the shell calls the V&F utility programs, and we need that much DOS memory to make sure the programs work correctly.

<sup>72</sup> Therefore, SHELL.EXE behaves like V&FRUN.EXE, SHELL.SPX like V&F.SPX. See p. 14ff. for technical details.

```
SPITRUN SHELL.SPX /d=c:\v&f /p=2
```

```
REM
```

```
REM If you want to run the .EXE version of the shell, the last line should read:
```

```
REM SHELL /D=C:\V&F /P=2
```

You should delete the first of these lines or mark it with REM; the REM before the last of the above mentioned lines should be deleted instead. SHELL.EXE should work correctly under most memory managers, including EMM386.EXE, but it will not work on machines with only 1 MByte of RAM installed. In this case, use SHELL.SPX and do not modify the batch file. Since SHELL.SPX is much smaller, it also saves on hard disc space. SHELL.EXE might be useful for those of you who have a computer with large amounts of RAM space (minimum: 4 MBytes) or those who want to run it in a DOS window of Windows 3.n<sup>®</sup> in extended mode. If you set the free DOS space in the SPITRUN.EXE module very high (-minreal 25000 -maxreal 25000), you can run the shell program SHELL.EXE from inside the V&F DOS Shell. We have experimented with this successfully: You can work with V&F, create any output you want, enter the DOS Shell (D command from the main menu) and start the Utilities Shell to directly convert the output to another format, print it etc. If you have really large amounts of memory, you can instruct SPITRUN.EXE not to use all of the expanded memory (-MAXVCPI<sup>73</sup>) or extended memory below a specified address. If you set the DOS Shell size large enough, or if you use a memory manager that provides both EMS and XMS (such as QEMM386), you can then run your Utilities Shell or your favourite word processor from inside V&F. The batch file SPX\_EXE.BAT configures your SPITRUN.EXE and PROFILE.V&F files automatically for you, if you want to do this<sup>74</sup>.

### Starting the Shell

From your V&F directory, call the batch file VFS. Make sure, all your V&F utility programs reside in this directory, including your .TAB files. If you have entered the /D= parameter in the VFS batch file, pointing at the V&F sub directory (see above), you can also call the VFS batch file from any directory you want.

Before starting, the shell calls MEMO.COM (which in turn must reside in your V&F directory) to determine how much free DOS shell memory is available. If this number is too small, the system aborts with an error message. In this case you should modify the SPITRUN.EXE module to get more real memory. If the main menu appears, everything

---

<sup>73</sup> See the extra documentation that came with SPITRUN.EXE.

<sup>74</sup> SPITRUN.EXE+SHELL.SPX' memory usage has been optimized for use with DESQview/X<sup>®</sup>. It allocates memory in chunks of 32 KBytes, leading to very accurate memory allocations and memory usage. SHELL.EXE uses 900 KBytes of extended memory (plus 155 KBytes of low DOS memory for a small DOS program to bootstrap the system and 300 KBytes of low DOS memory for the utilities).



should work correctly. The system automatically senses the graphics card installed and works on HERCULES, EGA/VGA and CGA systems.

### Using the Shell

The menu system works in exactly the same way as the V&F menu. Contrary to the V&F menu layout, however, subordinate and higher level menus are displayed together, so that the menu hierarchy is more easily understood. The edit cursor is different from the one used by V&F to ensure equal functioning on different graphics systems. ESC brings you from one menu level to the next higher one. The main menu lets you select one of the following options:

```
V&F UTILITIES SHELL      (c) B.Meißner, 1992
```

#### **Word Processor Conversion**

```
Print
```

```
Convert INDEX.V&F (concordance) to V&F format
```

```
ASCII and similar conversions
```

```
Line printer control
```

```
DOS Shell
```

```
Quit
```

Word Processor Conversion lets you convert any V&F output file to ChiWriter 3.nn, WordPerfect 5.1 or NotaBene IV formats. You will be asked which word processor format you want. An edit field is opened to enter the input file name. You may either enter the file, or press <RETURN> to get a file pick list; this list is displayed, too, if you enter a full path without file name. It contains the files of one directory<sup>75</sup>. In the directory list, you can move with the cursor keys, Home/End and Pg Up/Pg Dn. If the files do not fit on one screen, they are presented in portions. You can switch between such file list screens using Ctrl Pg Up/Ctrl Pg Dn. The highlighted file can be selected with the <RETURN> key. If you press ESC, no file is selected and the process of file selection is cancelled. This mechanism works whenever an input file has to be given. Output file names must be entered verbatim.

The program senses the formats of V&F output files automatically: Text files, Find result lists and Concordance files are recognized. As the default, LST.V&F format is assumed. The automatic sensing of file formats is effective on all VFS (Shell) levels. The Print option directly prints the conversion results. The program requires that the download font files be downloaded before printing. If this has not been done, it automatically starts

---

<sup>75</sup> For proper functioning of the system, full drive and path names must be given, i.e. C:\TEXTS\MYTEXTS instead of \TEXTS\MYTEXTS.

downloading the files, if possible. Line Printer Control lets you select a printer type or port (PRN, LPT1, LPT2, COM1, COM2 with PRN used as default). It also allows you to download the font files appropriate for your particular printer.

Conversion of INDEX.V&F to V&F (beta code) format performs the IND2BETA process and assumes that INDEX.V&F resides in the present directory.

"ASCII conversions" is a name for the following processes:

- Modify author tables
- Remove references from exported text
- Convert text to plain ASCII format
- Extract statistics from Index/Concordance file
- Get word usage information from Index file

The modification of author tables means the AUTHCONV process<sup>76</sup>: Selection and addition of text and ID table files pointed at by AUTHTAB.DIR. Removing references means the STRIP process: A V&F export file is returned without the line references. Plain ASCII conversion is the conversion from a V&F export file, using CONV.EXE with hyphenations resolved and conversion of alphabetic characters to upper case. The latter two extract informations from index or concordance files (with similar results): The frequencies of single words are taken from the files with line references (and text lines) left out to provide a more selective overview on word usage.

### **Possible Shell Problems**

If the /D= parameter is set incorrectly and the system does not find the MEMO.COM routine, it reports insufficient DOS memory and aborts. Before using CFG386 to modify your SPITRUN.EXE runtime module, carefully review your VFS.BAT batch file: Is your V&F directory really C:\V&F?

If during text file download the printer is not ready, the process aborts with an error message. The conversion results can be found in a file called PRINT2.\$\$\$, and if this does not exist, PRINT1.\$\$\$\$. Once you have fixed your printer problem, you can either re-run the conversion process (recommended method) or else you can copy the .\$\$\$ file to the printer port in text mode (`copy print2.$$$ lpt1`). Under DOS 5.0 with some printers, the program does not intercept the operating system's error message, if the printer is not ready (`Abort`, `Retry`, `Ignore`). This happens only sometimes: Under DOS 3.3 with a NEC P6 printer the shell intercepts all such error conditions; with a HewlettPackard LaserJet under DOS 5.0 printer offline conditions are recognized correctly, too. Under

---

<sup>76</sup> See ch. V 2 r).

DOS 5.0 with an EPSON LQ 400, however, we have seen DOS' Abort, Retry, Ignore message while the printer was not ready for printing.

If serial printers (connected to the COM1 or COM2 ports) are not ready, the system will not detect this condition: Instead, the downloaded information will be lost.

The shell program invokes the command processor to read certain file directories. If the DIRCMD environment variable is set to /P (pagewise listing), this will stop the system repeatedly, while the command processor waits for user input to list the next page. Therefore, you should reset dircmd before calling the SHELL. VFS.BAT does this automatically. SHELL.EXE uses the same DOS extender as V&FRUN.EXE. It works under OS/2, but with the same caveat that applies to V&FRUN.EXE: Do not attempt at entering its DOS Shell via the D (DOS Shell) command from the main menu of SHELL.EXE. If you do by chance, Press Ctrl-C and select Abort Program.

### **General Advice**

When to use the shell? If you have several printers, and if your conversion work is not always one and the same, it might be tedious to repeatedly study the usage of the several batch files. In this case, the shell is easier to use than batch files. Also, if different persons with different computing knowledge and background use the program package, the shell might be useful for those less versed in computing.

When not to use the shell? If you have one standard printer and word processor, and if your routine print or conversion jobs are always the same, calling batch files is much faster. Also, the batch files give you more control over the switch settings of the routines: We have adapted standard settings for the more uncommon switches in the shell. For example, the /R switch which is necessary for some of the older PHI #1/#2 files, is not recognized by the shell, since it is not necessary with the newer editions of CD-ROM texts. If, however, you want to print or convert one of the old CCAT files, you should use a batch file.

### **b) Printing Output on 24-Pin Printhead Printers**

#### **PINTIND**

Printind prints an index file on an EPSON®/NEC® compatible 24 pin printer. Before printing, load the font into the printer's memory: COPY ELGREEK.BIN LPT1 /b. Then call the program. It must be called with an input file (INDEX.V&F normally) and an output file, optionally followed by any of the following parameters (optional parameters marked by [] in the examples):

/G text is in Greek  
/C font changes are allowed

**/R** re-assign fonts at ends-of-lines (only for compatibility purposes with older text files, obsolete)

**/X** file is a concordance (not a word list)

Make sure you use the **/G** parameter for Greek concordances. Suppose, you have invoked the program:

```
PRINTIND INDEX.V&F INDEX.PRN /G /X /C
```

after initially loading the font into your printer. Then you can print the index with the command

```
COPY INDEX.PRN LPT1
```

or

```
COPY INDEX.PRN LPT1 /b
```

### **PRINTTXT**

This program prints an exported text in a way similar to PRINTIND. If you haven't copied the font into the printer's memory, do this first. Then call the program:

```
PRINTTXT TEST.TXT TEST.PTN [/c /g /R]
```

Except for the **/X** parameter the parameters are the same. For Greek text, the **/G** parameter may be used; the **/C** parameter should always be set. The batch file TEXTPRN sets this parameter automatically. This batch file is called:

```
PRINTTXT TEST.TXT TEST.PRN
```

### **LISTPRN**

This batch file consists of two separate .EXE modules that you can use separately. Normally, however, you will use them in conjunction to produce a file that directly prints a LST.V&F find result file. After having loaded your font, invoke the batch file with the **/G** parameter, if the list contains Greek text. The batch file is an example of how to automate the processes of these utility programs. Output is to LST.BIN. This file can then be printed in the usual manner (`copy lst.bin lpt1 /b`). The LISTPRN program can be fed the DEL.V&F deletion information file that is written to whenever the DEL key is pressed upon browsing through a FIND result list. Look at the LISTPRN.BAT file: The first program invoked by LISTPRN, the LST2PRN module, takes the deletion information file as its optional third argument (after the input and the output files). If given, this directs the program to leave the deleted records out when processing the list for printing.

#### **c) Removing Line References in Text Output**

##### **STRIP**

This program removes references in text output files. The program can be fed text files that V&F has exported as well as print files that PRINTTXT has produced from such a

file. The program detects the format of the file automatically and deletes the repeated references. Only the starting and ending citation will be given once at the beginning. Call:  
`STRIP inputfile outputfile`

Suppose you have produced a file TEST.PRN with the PRINTTXT program. To remove references, call

```
STRIP TEST.PRN TEST.NRF
```

and send the file to the printer:

```
COPY TEST.NRF LPT1 /B
```

Instead of producing a file and copying this file to the printer in binary mode, you can use the printer as the output device for the program:

```
STRIP TEST.PRN LPT1
```

This is a method which can be employed generally with the utility programs: The printer can be specified as output "file".

### **REFX**

This program can be used, whenever STRIP.EXE can be used. Whereas STRIP.EXE removes references and records only the first and last references, REFX.EXE can be configured to include as much reference information into the output file as you want. Usage:

```
REFX infile outfile [/refs]
```

The program takes as its first argument an input file, as its second argument the output file, and as its optional third argument a list of reference levels. This is a string of digits between 1 and 7. 1 denotes the work (B) level, 7 the line (Z) level. All levels that are specified will be included in the output file, all the others will be left out. Specified levels are recorded whenever they change. E.d.: /123 denotes the first three levels of the V&F export format which does neither include the A (author level) nor additional information (/123 denotes B N and V). Reference numbers need not be contiguous (e.d.: /125).

References are included in the text in Roman font, followed by a ":". REFX does not work with the 24-pin-printhead printer conversion routine. REFX should be run before performing any further conversion on an export file.

#### **d) Converting Text Output to ChiWriter 3.nn Format**

The TLG2CW program converts an export text file to ChiWriter format (version 3.nn). Load the BGREEK font to F2, the DIACR font to F3 and the GRNUM font to F13<sup>77</sup>. Result can be directly loaded into the ChiWriter word processor. Call and parameters are the usual ones. Before using the conversion routine, you can use STRIP to remove the line

---

<sup>77</sup> These files can be extracted from the CW.COM file in the CW subdirectory of V&F as distributed on the program discs.

references. Batch file BETA2CW infile outfile [/G] converts text export file infile to ChiWriter file outfile. If text is in Greek, always use /G parameter.

### e) **Converting to WordPerfect® 5.1**

WordPerfect® conversions use the programmable beta code translator XLATE.EXE and two translation table files, a WordPerfect header file and a few batch files that convert V&F output to WordPerfect® format. Texts retain many font attributes (Underline, Small, Subscript etc.). To convert a Greek text export file TEST.OUT to TEST.WP in WordPerfect format, enter from the DOS prompt:

```
BETA2WP TEST.OUT TEST.WP
```

To convert a Greek concordance for direct inclusion in WordPerfect, enter

```
CONC2WP INDEX.V&F INDEX.WP /G
```

Make sure you use the /G parameter for Greek concordances. The resulting files can be read into WordPerfect using WordPerfect's F5 command: F5 - [drive and path] - [highlight file] - 1

LST2WP converts a Find result list (LST.V&F) for direct inclusion in WordPerfect. Call:

```
LST2WP infile outfile [/G]
```

Use /G for Greek.

Example:

```
LST2WP LST.V&F LST.WP /G
```

The WordPerfect translation table produces hard hyphens ([ - ]) instead of hard dashes (-). In WordPerfect, these are produced (and searched) using the Home/Pos1 and - (dash) key sequence. You can look for these codes and automatically delete them. The WordPerfect macro NHYPH.WPM is provided as an example: It deletes all hyphen codes with a hard return following, thus helping at formatting.

All WordPerfect conversion routines can be used to translate files to WordPerfect 6.0 and WordPerfect for Windows, too. Just run the conversions, either as described as a batch process or through the V&F Utilities Shell. Load the resulting files into WordPerfect 6.0; WordPerfect will convert the text to its 6.0 format automatically. We have seen excellent results using this method.

### **WordPerfect 5.1 Hint for Printing: HEADER.WP**

The WordPerfect conversion routines use HEADER.WP as the WordPerfect document header. HEADER.WP does not contain any formatting codes, nor does it specify a printer. When reading a converted text into WordPerfect, you will notice the message `Reformatting text...`. This informs that WordPerfect is adapting your text to specific formatting settings. Whenever such a text is printed prior to saving it to disc and exiting the word processor (i.e.: if you immediately print such a converted text), WordPerfect asks you after

each single page to feed the printing paper manually and give the printing process a "Go" command.

To avoid this, you could either save your document, exit WordPerfect, re-load the document and print it in one go, or else you could provide a new HEADER.WP file. The latter is the easiest way. The following method should be used:

Start WordPerfect

End WordPerfect (with an EMPTY document) [F7]

WordPerfect asks you, if you want to save the text, answer: Yes/Ja

Enter the name of the text [HEADER.WP]<sup>78</sup>

Confirm overwriting the old document

Exit WordPerfect

This new header file should be supplied as the HEADER.WP to your WP\_TEXT translation table file.

### **Subscript Dots in WordPerfect Translation**

WordPerfect can reproduce subscript dots. The WordPerfect text translation routines mark dotted letters in V&F export files by a strange hook sign. To convert these marks to dotted letters under, copy the NDOT.WPM macro that is provided with V&F to your WordPerfect 5.1 macro directory. To convert the hooks to WordPerfect dots, load the converted text into WordPerfect 5.1, press ALT-F10 and enter NDOT. The macro converts all hook signs to dots under the letters before the hooks. You have to be patient: WordPerfect macros are very slow. Because many users have been asking for WordPerfect 5.1 macros to produce sublinear dots independently, we have composed two macros that add sublinear dots to a previously written character in WordPerfect. Strictly speaking, these macros have no relationship to V&F, but we think we should provide them, since they may be useful for others who have to type Greek or Latin papyri or inscriptions<sup>79</sup>.

#### **f) NotaBene<sup>®</sup> Conversion Routines**

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<sup>78</sup> You must specify the path of your old HEADER.WP file, e.d.: C:\V&F\HEADER.WP.

<sup>79</sup> The macros are ALTS.WPM and ALTX.WPM. To use them, copy these two files to the directory where your WordPerfect 5.1 macros are stored. E.d.:

```
XCOPY A:\ALT*.WPM C:\WORDPROC\WP51\MACROS
```

Now you can use them from inside WordPerfect. To do so, hold down the Alt key and press any of the two letters S or X simultaneously. ALT-S Writes a sublinear dot under the letter which is ABOVE the cursor, ALT-X Writes a sublinear dot under the letter immediately left of the cursor. The sublinear dots will not be shown on the text screen, but will be printed and displayed on the preview screen. WordPerfect can display up to 512 different characters on VGA and Hercules+ graphics cards. If you use this feature, we recommend you use the \COMPAQ (colour) version of V&F with a VGA card (and not the \EGAVGA version), since we have observed that under certain circumstances WordPerfect cannot sense the presence of a VGA card after a BIOS mode switch to monochrome mode. This is certainly a spurious bug in WordPerfect: It is remedied by the screen/Bildschirm-attributes/Attribute options of the setup (F1) menu. However: Since this is tedious, we recommend you use the \COMPAQ version.

The NotaBene<sup>®</sup> conversion tables for the XLATE program:

NB\_TEXT.TAB       for texts and concordances  
NB\_LST.TAB        for LST.V&F files

Calling the conversion routines:

BETA2NB.BAT infile outfile               text export file "infile" to "outfile"  
CONC2NB.BAT infile outfile [/G]       INDEX.V&F concordance file  
LST2NB.BAT infile outfile [/G]       list file conversion

The resulting file can be loaded by NotaBene 4.0 via the F1-open command.

The conversion routine fills its output file with many redundant formatting codes, and NotaBene does not remove them when saving the files. They are harmless, except for a waste of memory space.

### g) **GreekT<sub>E</sub>X Conversion**

Building upon earlier attempts at typesetting in Greek advanced by Sylvio Levy, K.J.Dryl-lerakis (Imperial College, Department of Computing, London) has produced GreekT<sub>E</sub>X, a typesetting environment that cooperates with most implementations of the LaT<sub>E</sub>X typesetting system. It consists of a set of KD... fonts and a series of definitions and macros to start and end Greek<sup>80</sup>; we are using it under emT<sub>E</sub>X. The system realizes Greek typesetting by defining a "Greek" environment that is entered via the `\beginngreek` command and left by `\endngreek`. If you include `\input greektex` and `\greekdelims{dollar}` at the beginning of your document, you can switch to and from Greek using the dollar sign (\$).

There are two converters to interface with this system, which consist of translation table files for exported texts, KD\_TEXT.TAB and KD\_TEXX.TAB<sup>81</sup>. KD\_TEXT.TAB is used by the batch file BETA2KD.BAT, KD\_TEXX.TAB by BETA2KX.BAT. They differ in the way they handle font changes. These differences affect the readability of converted texts. Suppose, you have exported a portion of Greek text to TEST.OUT.

Call

BETA2KD TEST.OUT TEST.TEX to get a readable "Greek" T<sub>E</sub>X text,  
BETA2KX TEST.OUT TEST.TEX to get a text that can be TEXed "as is" but hardly be read.

The file TEST.TEX will contain the Greek text with the Latin representation that Greek-TEX expects. It needs some manual touch-up before being fed to GreekT<sub>E</sub>X:

- You have to create a .TEX document into which you have to insert your Greek portion. Use the `\input greektex` command. We provide a test document V&FSAMPL.TEX into which you should insert your Greek texts to run T<sub>E</sub>X on them for

---

<sup>80</sup> Available from ftp.uni-stuttgart.de under /pub/tex/language/greek/kd.

<sup>81</sup> Note the file name difference.



test purposes. It contains definitions for Greek<sub>TEX</sub> typesetting and a Greek test text that you can replace by other texts that are to be tested for their includability into the Greek-<sub>TEX</sub> system.

- The original line breaks will be preserved by `\par` commands. If you do not like the way the lines are broken, you will have to reformat the text manually, deleting the `\par` commands etc.

- If you have used the batch file BETA2KD (and not BETA2KX), you should enclose all the Greek portions by `\beginGreek` and `\endGreek` commands (or rather `$ ... $`), as in: `$>En t~h| p'olei$82`. Font changes are left to you, if you are using BETA2KD.BAT. At the expense of readability, this is different with BETA2KX.BAT; its output is more suitable for direct processing, but less appropriate for manual reformatting. Running your document through the <sub>TEX</sub> compiler will probably produce a few warning messages (Underfull `\vbox` (badness 10000) has occurred while `\output` is active), but according to our experiences, these can safely be ignored. The <sub>TEX</sub> converter has not been integrated in the utilities shell: <sub>TEX</sub> is basically a batch-oriented system, and a menu-driven conversion routine would not suit the <sub>TEX</sub> approach to computing. The conversion is for exported text only; concordances may work, but have not been tested; list file conversion does not seem to make much sense.

Given the following V&F export file:

```
~ Author: Hippocrates Med. et Corpus Hippocraticum
~ File/No.: TLG0627
~ Work: Aphorismi
12.1.1.1.1.1.1.1.1      $*(O BI/OS BRAXU\S,
12.1.1.1.1.1.1.1.1      $H( DE\ TE\XNH MAKRH\,
12.1.1.1.1.1.1.1.1      $O( DE\ KAIRO\S O)CU\S,
12.1.1.1.1.1.1.1.1      $H( DE\ PEI=RA SFALERH\,
12.1.1.1.1.1.1.1.1      $H( DE\ KRI/SIS XALEPH/.
```

BETA2KX produces:

```
\greekdelims{dollar}
~ Author: Hippocrates Med. et Corpus Hippocraticum \par
~ File/No.: TLG0627 \par
~ Work: Aphorismi \par
$<O$ $b$$'i$$o$$c $b$$r$$a$$q$$'u$$c,$ \par
$<h$ $d$$'e$ $t$$'e$$q$$n$$h$ $m$$a$$k$$r$$'h$, \par
$<o$ $d$$'e$ $k$$a$$i$$r$$'o$$c $$>o$$x$$'u$$c,$ \par
$<h$ $d$$'e$ $p$$e$$~i$$r$$a$ $s$$f$$a$$l$$e$$r$$'h$, \par
$<h$ $d$$'e$ $k$$r$$'i$$s$$i$$c $q$$a$$l$$e$$p$$'h$. \par
```

and BETA2KD produces:

```
\greekdelims{dollar}
~ Author: Hippocrates Med. et Corpus Hippocraticum \par
~ File/No.: TLG0627 \par
~ Work: Aphorismi \par
<O b'ioc braq'uc, \par
<h d'e t'eqnh makr'h, \par
<o d'e kair'oc >ox'uc, \par
<h d'e pe-ira sfaler'h, \par
<h d'e kr'isic qalep'h. \par
```

---

<sup>82</sup> Beta code: \*)EN TH= | PO/LEI.

Before and after Greek sections in the second output, you should insert dollar signs (\$) to switch between Greek and non-Greek environments:

```
($<0 b'ioc... ..qalep'h.$ \par).
```

#### **h) Printing on Hewlett-Packard LaserJet®**

The programmable converter program XLATE is used, too, by three batch files to print V&F output on Hewlett-Packard LaserJet compatible laser printers. As with all other output files of V&F, converting and printing for laser output is a process with multiple stages: First, the text/concordance/Find result list is converted, the printer font is then downloaded, and finally the file is sent to the printer.

To initiate these processes, you can call a few batch files:

LOAD\_HP            Loads the necessary fonts into your laser printer.

BETA2HP            Converts text output file to laser-printable file.

For instance, to convert TEST.TXT to TEST.BIN, enter:

```
BETA2HP TEST.TXT TEST.BIN
```

LST2HP            converts LST.V&F (Find result lists).

Use /G parameter for Greek text, if necessary:

```
LST2HP LST.V&F LST.BIN /G
```

INDEX2HP          Conversion of concordance file for laser printing.

If text is in Greek, use /G parameter:

```
INDEX2HP INDEX.V&F INDEX.BIN /G
```

To print the resulting files, you should copy them in binary mode to your printer:

```
COPY TEST.BIN LPT1 /B
```

```
COPY LST.BIN LPT1 /B
```

```
COPY INDEX.BIN PT1 /B
```

after having loaded the fonts<sup>83</sup>.

If you do not want to produce intermediate binary files, you can print directly from the conversion program, after having loaded the fonts. This is easier and less error-prone:

LOAD\_HP                            Load fonts into printer

BETA2HP TEST.OUT LPT1            Print text output

INDEX2HP INDEX.V&F LPT1 [/G]    Print [Greek] index file

LST2HP LST.V&F LPT1 [/G]        Print [Greek] LST (Find result) file

If the text is not in Greek, do not use the /G parameter. The laser conversion is slow, but it gets the job done.

---

<sup>83</sup> On some systems this may pose problems; in these cases, you should send the files in ASCII mode (without the /B parameter).

### **i) DeskJet® Fonts**

EXBGREEK.DJ and EDIACR.DJ are fonts in Hewlett-Packard DeskJet format that correspond to EDIACR.HP and EXBGREEK.HP. If you have installed sufficient memory in your DeskJet printer to hold download fonts, they should make it possible to print V&F export files on DeskJet or compatible printers, provided the two \*.DJ files have been loaded to the printer in binary mode (instead of the .HP files):

```
COPY *.DJ LPT1 /B
```

BETA2DJ.BAT and LST2DJ.BAT are analogues to BETA2HP.BAT and LST2HP.BAT.

At the moment, these fonts have not been sufficiently tested: they are provided for additional experiments and require that a DeskJet be at hand with additional memory installed. Instead of testing, we have written the appropriate routines on the basis of available documentation.

### **j) Converting to Plain ASCII: CONV**

This program converts a V&F text output file as produced by the Export option to a file that can be used for text analysis. All references are stripped off, all diacritical signs and additional marks are removed, only spaces are retained, all letters are converted to upper case, all hyphenations are resolved. This allows for a selective analysis of specific portions of any given text for the frequency of selected words, once you know how to write simple word count programs. Call:

```
CONV infile outfile
```

As an optional third argument, CONV accepts a file name. If given, the program writes a list to this file that correlates word numbers to reference strings for every hundredth word in the text and for its last word. This facilitates complex text statistics. CONV accepts an optional parameter in either of the following forms: /V /v /U /u. If given, it directs the program to change all vV to U and all jJ to I, as necessary with Latin texts.

### **k) EXTR**

EXTR extracts the word usage information from a concordance or word list file, leaving out references and text lines. This may be useful if you want to read an index for statistical purposes. EXTR accepts two arguments, the input file (usually INDEX.V&F) and an output file.

### **l) Programmable Translate Program XLATE**

XLATE is a conversion program for V&F beta code output that can be programmed for different translation operations on texts, concordances and Find result lists. This program is used for different conversions (WordPerfect®, NotaBene® IV, GreekT<sub>E</sub>X, laser printer, ink jet printer) but can be used for other purposes as well. It reads the input file together

with a conversion table file and writes an output file according to the specifications given in the translation table:

```
XLATE in_file out_file table_file [options]
```

Options are:

- /R Re-assign font after each line (normally unnecessary).
- /N Suppress processing of reference fields (columns 0-31). This has to be used, if SPLIT or REFX have been invoked before to process or remove reference strings.
- /G Text is in Greek font (unnecessary for text output, necessary for concordances and Find result lists).
- /L Input file is Find result list (LST.V&F).
- /X Input file is concordance file (INDEX.V&F)<sup>84</sup>.

Conversion is performed as a four-stage process:

- 1) TLG-specific switches (&\$) (fast)
- 2) String conversions (slow)
  - a) conversions restricted to font
  - b) general conversions
- 3) TLG escape sequences (fast)
- 4) alphabetic conversion (slow)

The program has not been programmed as a macro processor to avoid the danger of recursive explosion: Output from one process is not passed to the others to prevent interferences. The processes are ordered hierarchically. Conversion is therefore generally slow, but flexible.

The conversion table file is vital for the working of the program. This file consists of conversion lines, empty lines and comment lines. Empty lines and comment lines are ignored by the program. Comment lines are marked with an asterisk (\*) in the first column. Conversion command lines contain an equals sign (=), left of it a string and right if it a replacement specification, both without quotes, as in:

```
auto = fahrzeug
```

Left of the equals sign all entries are literal values (e.d.: 12 means "12") with two exceptions: EQU denotes the equals sign itself (=), and SP means the space sign (ASCII 32). Right of the equals sign, numeric values always represent ASCII byte values (e.d.: 12 means the formfeed character ASCII 12; on the right side, "12" has to be encoded as 49 50. The usual mnemonics for ASCII byte values 0 through 31 are recognized. Otherwise, literal strings can be entered using alphabetic characters. There are a few reserved command tags to direct the behaviour of the translation program:

---

<sup>84</sup> /L has precedence over /X, if conflicts occur.

OUTPUT_PREFIX = string	Precede output with string
OUTPUT_POSTFIX = string	Put string at the end of output file
PAGE_END = bytes	Write bytes at page end
PAGE_LINE_NUMBER = n	Number of lines per page
EOL = bytes	End-of-line bytes (DOS uses 13 10; UNIX and WordPerfect® use 10)
LATIN: s1 = s2	Remap Latin characters in s1 by characters in s2.
GREEK: s1 = s2	Remap Greek characters in s1 by characters in s2.
s1 G= s2	Convert s1 to s2, if s1 is Greek font.
s1 L= s2	Convert s1 to s2, if s1 is Latin font.
s1 O= string	Switch off s1 font command by string.

LATIN: and GREEK: must be followed by two strings of equal length, separated by an equals sign; each letter on the left of the equals sign is translated to the corresponding character on the right if the active font is the font specified. E.d.:

```
GREEK: XCJxcj = CXYcxj
LATIN: Vv = UU
```

String conversions can be restricted to a specific font. G= restricts to Greek, L= to Latin font. E.d. to convert all Greek %1 to question marks, and all Latin %1 to the string "dot" we write:

```
%1 G= 63
%1 L= dot
```

OUTPUT\_PREFIX may either be a string or the contents of a file. In the latter case the reserved word @PREFIX\_FILE: is used to designate the file to be copied to the output:

```
OUTPUT_PREFIX = @PREFIX_FILE: file_name
```

OUTPUT\_POSTFIX may be used similarly:

```
OUTPUT_POSTFIX = @POSTFIX_FILE: file_name
```

The command must be given in uppercase letters; otherwise it is treated literally. The space after the colon is optional.

For special signs (e.d.: %123 #34) there are several possible translations:

If a replacement is specified, the translation takes place:

```
%123 = 12
```

The above example translates all %123 to the form feed character. If a null replacement is specified or the sign combination is not mentioned in the translation table, the sign is eliminated:

```
#34 =
```

If a double equals sign is used, the signs are reproduced as they are:

```
%125 ==
```

This would directly copy %125 from input to output. If you want to replace a string with a complex character string, be sure you insert space characters. If you specify

Auto = Dieses ist ein Fahrzeug

the program will replace "Auto" by "DiesesisteinFahrzeug". To enter it correctly, write:

Auto = Dieses 32 ist 32 ein 32 Fahrzeug

The O= command is used for & and \$ font and type style commands only. The WordPerfect translation table WP\_TEXT.TAB uses this feature to switch off specific scripts. For instance, while the line

&23 = 195 02 195 195 08 195

switches to Latin characters with TLG number 23 script (large italics), the line

&23 O= 196 02 196 196 08 196

switches off the script attribute codes in WordPerfect®.

While WordPerfect does not need special codes for the character sets, it needs text attributes paired. The = and O= commands ensure that we can have attribute codes paired, enabling us to convert to output formats which need paired character set or attribute codes.

The following .TAB translation table files are available as yet:

XLATE.TAB	Example translation table
WP_TEXT.TAB	Translation table for WordPerfect® text and concordance conversion
WP_LST.TAB	Translation table for WordPerfect® list conversion
HP_TEXT.TAB	Laser printer text and concordance translation table
HP_LST.TAB	Laser printer Find result list translation table
DJ_TEXT.TAB	DeskJet printer text and concordance translation table (experimental)
DJ_LST.TAB	DeskJet printer Find result list translation table (experimental)
NB_TEXT.TAB	NotaBene® IV text and concordance translation table
NB_LST.TAB	NotaBene® IV Find result list translation table
KD_TEXT.TAB	GreekT <sub>E</sub> X text translation table
KD_TEXX.TAB	Variant GreekT <sub>E</sub> X text translation table

If you want to produce your own translation table file for special purposes, use these files as examples.

### m) DELLST

The program is called with an input file and an output file as its arguments. It reads the input file, assumed to be a file of LST.V&F format and writes it in the same format to the output file, while it looks for DEL.V&F in the present directory. If it finds this file, and if it has the usual DEL.V&F format, DELLST records the deleted entries and does not copy these entries to the output file. The program can be used to prevent deleted entries from being printed or converted for the inclusion in word processors. E.d.:

```
DELLST lst.v&f lst.new
```

To be small and fast, DELLST has short integers (<32768) and limited workspace (<64KB). You can have up to 3340 deletions marked in your DEL.V&F file. These deletions must be within the first 32767 records of the find result list. All records that go

beyond this limit are not deleted, but copied to the output file. If you want to keep Find result lists for later reference or conversion, we recommend the following strategy: After running your Find process and after deleting the unwanted records inside V&F run DELLST:

```
DELLST lst.v&f keep_lst.v&f  
DEL lst.v&f
```

DELLST produces an identical copy of LST.V&F without the deleted records (KEEP\_LST.V&F or any name you choose). If you want to re-feed this list into V&F, enter the following from DOS in your V&F directory:

```
COPY keep_lst.v&f lst.v&f
```

and start V&F. The old Find result list is then accessible as if it was the result of the ultimate Find process; deletions, however, cannot be reversed any more. To achieve this, you should have kept the del.v&f together with its corresponding lst.v&f file without running DELLST under different names. If you want to keep Find result lists for reference, we recommend you use an archiving program to compress the files. There are several powerful packing programs in the public domain.

#### **n) Viewing Concordance Files inside V&F**

Reading an INDEX.V&F concordance file is no easy task, especially if it is a concordance of a Greek text file. The IND2BETA batch file converts a concordance to a format that can be read directly from V&F to be viewed like any other beta code text file. Suppose you have a concordance file INDEX.V&F in your present working directory. From this directory call:

```
IND2BETA /G
```

Use the /G parameter only, if it is a concordance of some Greek text. Your index file will be translated to INDEX.TXT automatically; the program writes INDEX.IDT and AUTH-TAB.DIR into the same directory. The process works on concordances only, since it does not make much sense translating a word list. After this, start V&F. Enter the Options menu, select 6 to alter the text file directory and enter the directory where the new files reside, e.d.:

```
c:\index\v&f\
```

Do not forget the back slash at the end, press <RETURN> to get back to the main menu. Press R to re-read the author list. Select author and work and view the concordance file. You can perform any V&F operation on this file.

#### **o) Converting from IGEyst (Prof. Dr. J.Malitz)**

The Catholic University of Eichstätt, Germany (Prof. Dr. J.Malitz) provides a set of Greek and Latin epigraphical corpora on disc. They come with concordance routines and browser

facilities, but the files use a special format. To integrate these texts into the beta code environment, which is now generally used by classicists, conversion is necessary. The MC conversion program performs the task.

MC.EXE should run in all 32bit INTEL environments that provide XMS memory (never set the NOXMS parameters with your memory manager), except for DESQview® and standard mode Windows®. It should run in a Windows DOS window (as established by a .PIF file) in extended mode and in an OS/2 DOS window: From the point of view of the underlying DOS extender, MC.EXE behaves exactly as V&FRUN.EXE and SHELL.EXE. To use MC, you should know something about the organization of the Eichstätt text files: Each text corpus is organized around a corpus (.CPS) file which contains pointers to a set of index (.NDX) and text (.TXT) files. In order to collect all texts of such a corpus into one beta code file, one has to resolve the file pointers in the corpus file and the pointers to the single texts in the .NDX files. Our program does all this for single corpora. This means: You must run it on every .CPS file to obtain a full conversion of all text files. It assumes that the .TXT, .NDX and .CPS which belong together are located in the present directory and writes its output into the same directory, automatically creating AUTHTAB.DIR.

Suppose, you have got DFG.CPS with its adjacent files. To create a beta code file set CV\_001, start MC:

MC

The program asks for file names interactively. Enter the name of the input file without extension (DFG) and the output file without extension (CV\_001). For Latin texts, enter Y upon the third question; this overrides the default Greek font of the Eichstätt files. Finally, confirm with Y, otherwise re-enter all details. The program will create CV\_001.txt, CV\_001.idt and AUTHTAB.dir. Be sure there are no files with the same names which you do not want to be overwritten. An ongoing MC conversion process can be interrupted using the Ctrl-Break key. In this case you should allow some time to the MC.EXE virtual memory manager system to restore the memory state to DOS standards, close the swap file and close the files written so far.

When the process finishes, you can start V&F, make the directory, where the new files are, your CDdrive directory (Options menu, 6, do not forget the back slash), Re-Read the author list and work on this file. To append the new files to existing sets of beta code texts, you may use the AUTHCONV utility with the /A switch and the DOS APPEND command<sup>85</sup>.

There are no restrictions as to the use of the resulting files; they can be read, searched and indexed like any other TLG or PHI beta code text. MC sorts the texts by names; it is quite

---

<sup>85</sup> See p. 104 ff.



slow with large text collections. Its memory requirements are gigantic. There is no way of running it on a 1 MByte machine; a machine with only 2 or 3 MBytes may come into serious difficulties with excessive swapping. For practical applications, 4 MBytes are the minimum.

### MC - An Example Session

Suppose you have a set of Eichstätt files. These come as text files (.TXT), index files (.NDX) and corpus files (.CPS). The dictionary files (.DCT and alike) are not needed by MC<sup>86</sup>. You should copy all these files in one sub directory (for security reasons, you should perform the conversions, using copies of the files, and not the original ones). Now determine how many and which .CPS files there are:

```
DIR *.CPS
```

Suppose you have the following .CPS files:

```
ann_epig.cps          73  14.12.91  11:09
dfg.cps               109 10.09.92  16:54
germania.cps         118 22.01.88  17:04
ils.cps              82  23.04.91  14:56
```

Afterwards, create a sub directory for every single .CPS file with a distinct name, empty as yet:

```
MD ann_epig
MD dfg
MD germania
MD ils
```

and start the conversion process:

```
MC
```

Enter `ann_epig` once the program asks for a .CPS file name. Enter a distinct name for the output files when asked (e.d.: `cv_001`). You should know, if most of the text is in Greek or in Latin. If the texts are in Greek, you should simply press `<RETURN>`, otherwise `Y` or `y` as the answer to the next question. This enters the Latin language code in the resulting files instead of `g` and allows for much less language codes, reduced size higher V&F speed with Latin texts. To start the process, enter `Y` or `y` upon the fourth question, any other letter if you want to make corrections. In this case, you must start MC anew.

In the above example, MC converts the texts and writes three files:

```
CV_001.TXT
CV_001.IDT
AUTHTAB.DIR
```

For security reasons, you should copy these files to your ANN\_EPIG sub directory:

```
COPY CV_001.TXT ANN_EPIG
COPY CV_001.IDT ANN_EPIG
```

---

<sup>86</sup> Nevertheless, do not delete them: These files are necessary for the Eichstätt concordance routines themselves.

```
COPY AUTHTAB.DIR ANN_EPIG
```

The same processes should be performed for all four .CPS files separately. Of course, you should select divers file names for the output files (e.d.: CV\_002 CV\_003 CV\_004 and so forth).

After the last conversion has been performed (CV\_004 being the last output in our example), you should have all resulting files in the sub directories (four in our case). Now copy the files of the first sub directory in your present directory:

```
COPY ANN_EPIG\*.*
```

It now contains the text file, its corresponding .IDT file and AUTHTAB.DIR. Call AUTHCONV with this file specified as the output file, the AUTHTAB.DIR files in the other sub directories as input files and the append parameter:

```
AUTHCONV      c:\DFG\AUTHTAB.DIR      AUTHTAB.DIR  /A
AUTHCONV      c:\GERMANIA\AUTHTAB.DIR  AUTHTAB.DIR  /A
AUTHCONV      c:\ILS\AUTHTAB.DIR      AUTHTAB.DIR  /A
```

Finally, you should copy all .TXT and .IDT files and the new AUTHTAB.DIR file to one sub directory where all files can be accessed:

```
MD D:\MALITZ
XCOPY          ANN_EPIG\*.IDT          D:\MALITZ
XCOPY          ANN_EPIG\*.TXT          D:\MALITZ
XCOPY          DFG\*.IDT              D:\MALITZ
XCOPY          DFG\*.TXT              D:\MALITZ
XCOPY          GERMANIA\*.IDT         D:\MALITZ
XCOPY          GERMANIA\*.TXT         D:\MALITZ
XCOPY          ILS\*.IDT              D:\MALITZ
XCOPY          ILS\*.TXT              D:\MALITZ
COPY          AUTHTAB.DIR              D:\MALITZ
```

The old files in the four sub directories can be deleted:

```
DEL          ANN_EPIG
DEL          ILS
DEL          DFG
DEL          GERMANIA
DEL          CV_*. *
DEL          AUTHTAB.DIR
```

If you want to access these files together with your CD-ROM, you should use the DOS command APPEND. Insert your CD into the CD drive. Let's suppose, the drive be G:. Change to the drive and directory of the new inscription files:

```
CD          C:\MALITZ
```

Create a common AUTHTAB.DIR for both sets of texts. Keep the old ones for reference:

```
AUTHCONV G:\AUTHTAB.DIR AUTHTAB.DIR /A
```

Use the DOS command APPEND to make both directories accessible:

```
APPEND      G:\
```

You can append multiple directories, separated by ";". In your V&F profile PROFILE.V&F you should make 'C:\MALITZ\' your CDdrive text file directory. In this case you will have both sets of texts available at one time. If you insert the DOS APPEND command in

your V&F.BAT file to start the program, you can automate the process for the future. To revoke the APPEND assignments, give the command with only one ";":

```
APPEND ;
```

#### p) **Conversion to Oxford Concordance Program**

BETA2OCP prepares V&F export files for input to the Oxford Concordance Program. It writes a new file with references in the COCOA format as used by the OCP program. Both files must be given in the command line:

```
BETA2OCP infile outfile
```

BETA2OCP resolves hyphenations and wraps the hyphenated words to the next lines, where the respective rests of the words are to be found. Since it would be useless to convert Find result lists or V&F concordance files to OCP format, BETA2OCP works only on Export files. BETA2OCP changes #2 to Ü, #3 to Ö and #5 to Ä; all | are converted to } and all { and } to " .

Several options govern the behaviour of the program:

/X parameter: Remove non-alphabetic characters from the text lines and convert letters to upper case.

/Y parameter: Convert all text lines, removing all special beta codes, but retaining accents (=) ( | /\), square brackets ([ ]) and apostrophes ('). No case folding.

/%x parameter: x represents any one of the reference letters ABCDNVWXYZ. If used, the program does not resolve the references denoted by the reference letter passed as argument in brackets (<...>), but uses a percentage line instead. E.d.: /%N

/%x( (alternatively: "/%x"): This version of the /%x parameter, consisting of the % parameter, followed by a left or right bracket, directs the program to output the percentage references in a different form. These references are not written to the output file in a separate line; instead, they precede the corresponding text lines directly. In addition, the percentage sign is not used: The references are bracketed (e.d.: (1) Some . . . text)

/Nx parameter: This parameter instructs the program to not output any reference of the x type, where x represents one of the reference letters. For instance, to prevent the program from outputting any reference at all, you could use: /NA /NB /NC /ND /NN /NV /NW /NX /NY /NZ.

/= parameter: This parameter instructs the program to produce references of the <B=1> type, otherwise <B 1> is given.

#### q) **Oxford Text Archive and V&F**

The texts in the Oxford Text Archive have been encoded using different coding systems, the most common being a special version of SGML. The remainder in the present section is of concern only to those who want to convert some of this material to V&F-compatible

beta code. If you do not have access to OTA text files, this discussion will be of little interest to you.

Once you have got the texts, converting them requires that two things be done:

- 1) The special codes (in the Latin case) or the entire letter system (Greek) must be translated in to beta code (e.d.: E)STI\N).
- 2) The texts must be brought into beta code file formats. Beta code consists of the text code definition as well as a special block-based file format.

The first of these two steps is straightforward and may be performed by anyone who knows how to write very simple filter programs for text files. The second step requires more computation, however, since it consists of the translation from text files to binary, block-structured files with block references and a complicated, though highly-efficient method of encoding the references. Since this is so, we have decided to perform our import via the V&F output (export) file format as the standardized file format in two steps:

- 1) Translation from any format into V&F output format
- 2) Translation from V&F output format into beta code files

V&F output files contain everything that allows the creation of beta code files. Their layout is as follows:

```
~ Author: Thucydides Hist.
~ File/No.: TLG0003
~ Work: Historiae
1.1.1.t.1.1.1      $@@@@@@{1$20*Q*O*U*K*U*D*I*D*O*U$}1
1.1.1.1.t.1.1      $@@@@@@@{1*I*S*T*O*R*I*W*N *A}1
1.1.1.1.1.1.1      $@*QOUKUDI/DHS *)AQHNAI=OS CUNE/GRAYE TO\N
```

For example's sake we have written a few filter programs for Latin texts that furnish OUT2BETA, the converter for the second step, with the appropriate input. They are called OTALC (Oxford Text Archive Latin Converter), OTALBC (Oxford text Archive Latin-B Converter) and OTAGC (Oxford text Archive Greek Converter). Their purpose is to convert different file formats of the text archive into V&F output format; we still have problems with Greek that is embedded into Latin texts.

## OTALC

This program converts SGML-tagged Latin files to V&F output format and writes an OUT2BETA.L\$G file. The input text must have SGML format like the following:

```
<A RUFUS FESTUS>
<W BREVIARIUM>
<C 1><L 1>
breve fieri clementiam tua praecepit. parebo libens prae+
cepto, quippe cui desit facultas latius eloquendi; ac morem
secutus calculonum, qui ingentes summas aeris brevioribus
exprimunt, res gestas signabo, non eloquar. accipe ergo, quod
breve dictis brevius computetur: ut annos et aetatem rei
publicae ac praeteriti facta temporis non tam legere tibi,
gloriosissime princeps, quam numerare videaris.
<C 2><L 1>
ab urbe condita in ortum perennitatis vestrae, quo
prosperius fratrum imperium Roma sortita est, anni numeran+
tur mcxviii=. sic sub regibus anni numerantur ccxliiii=, sub
```

The program writes two output files:

- (1) The one specified on the command line. It is like a V&F output file, suitable for further editing
- (2) out2beta.l\$g which supplies informations to OUT2BETA. It may be manually "enriched" as to the meaning of reference levels.

Normally, some manual touch-up will be necessary before processing the file further. E.d.: Not all files provide the author names and work titles in special tags; therefore you should add the appropriate header lines (~ Author: etc. lines). Also, you should revise the OUT2BETA.L\$G file to make sure the associations between reference levels and their meanings are as you would like to have them.

OTALC.EXE accepts two command line switches: /G and /S. The /S switch is useful for Latin texts (mainly inscription files) that use the star (\*) to mark out Greek words - these are translated to beta code Greek (upper case) -, /G directs the program to treat the text as if it were in Greek. The latter should be used with caution, since under normal circumstances it is likely to produce irregular results.

### **OTALBC**

This is for converting fixed-record-length files with references on the right side as they were in use in the age of the punched card. Such files might look like:

```
CUM IN OMNIBUS PHILOSOPHIAE DISCIPLINIS EDISCENDIS          SH083120
ATQUE TRACTANDIS SUMMUM VITAE POSITUM SOLAMEN              SH083120
EXISTIMEM, TUM IOCUNDIUS, ET VELUTI CUM QUODAM             SH083120
FRUCTU ETIAM LABORIS ARRIPIO QUAE TE=CUM COMMUNICANDA     SH083120
COMPONO. NAM ETSI IPSA SPECULATIO VERITATIS                SH083120
```

This program, too, writes two output files:

- 1) The one specified on the command line. It is like a V&F output file, suitable for further editing
- 2) out2beta.l\$g which supplies informations to OUT2BETA. It may be manually "enriched" as to the meaning of reference levels

E.d.:

```
OTALBC boethius.320 boethius.out
```

The output should then be revised, re-edited (if necessary) and converted further using OUT2BETA.

### **OTAGC for Greek Texts**

The utility program OTAGC.EXE is similar to OTALC/OTALBC; it converts Oxford Text Archive texts to V&F output format. We have used it to convert the following Oxford text files to beta code format:

```
Autolykus of Pitane          OTA Nr. 219  size 106.126
Archytas                     OTA Nr. 224  size 2.770
Aristarchus of Samos        OTA Nr. 225  size 47.324
Sectio canonis              OTA Nr. 241  size 17.986
Pseudoplato, Dupl. of cube  OTA Nr. 561  size 1.706
```

Usage is the same as of OTALC/OTALBC, e.d.:

OTAGC archytas.224 archytas.new

Some manual touch-up is necessary with the files, due to internal coding inconsistencies in the Oxford text files. If you have files with even more complicated internal layout, you could either edit them, too, or else write a filter that "fools" the conversion programs prior to invoking them.

### Converting to Beta Format

This is done by OUT2BETA. This program converts any V&F output file to an equivalent beta code file, its .IDT file and a single-entry AUTHTAB.DIR. The latter can then be combined with other author tables using AUTHCONV.EXE. The program needs some additional information about the meaning of reference levels. This is supplied with the file OUT2BETA.L\$G. It contains lines of the following kind:

```
leftmost side of the line
|               |
|               | OTA reference tags (may be ignored)
|               | TLG-specific reference levels (some should be given)
|               | Meaning of the levels
|               |
|               |
|               | (==: and spaces are mandatory)
~ Levels: A = A = Author
~ Levels: x = B = Work
~ Levels: y = N = number
~ Levels: z = V = section
~ Levels: C = W = subsection
~ Levels: C = X = paragraph
~ Levels: L = Z = line
```

The last two columns (e.d.: ... A = Author) associate beta code reference levels with meaningful strings. Such an association table might be written automatically by a program that performs the first of the two steps, but it may also be supplied by hand. However, it must be called OUT2BETA.L\$G. OUT2BETA reads the file, modifies it and deletes its contents. If you want to have such a short file for several runs, please keep it elsewhere.

Calling the program:

```
OUT2BETA text.out OTA0001.TXT
```

Be sure you select a name for the file that relates to its provenance. E.d., OTAnnnn.TXT (where nnnn represents the Oxford Text Archive number, padded with 0's on the left). Keep OTA0001.TXT, OTA0001.IDT and AUTHTAB.DIR in a separate directory for later use; you might want to add it to another set of texts in one AUTHTAB.DIR. Technically, OUT2BETA is similar to V&FRUN.EXE and SHELL.EXE in that it contains a DPMI-compatible DOS-extender. All characteristics as to environments etc. that apply to V&FRUN.EXE and SHELL.EXE, apply to OUT2BETA, too. The text file (input file in V&F output format) should have the usual header section that supplies the program with the necessary information as to author, work heading etc. If not present from previous conversion processes, the header information should be supplied manually, using an editor. You should make sure that the editor does not insert TABs in its output inadvertently.

E.d.: To translate the *Codex Theodosianus*, we enter (assuming the original OTA file has been renamed from its longer UNIX name to DOS-compatible theodos.329):

```
OTALC theodos.329 theodos.out
OUT2BETA theodos.out ota0329.txt
```

Now, we would store it away:

```
md theodos
copy ota0329.* theodos
copy authtab.dir theodos
```

To convert Boethius, we enter:

```
OTALBC boethius.320 boethius.out
OUT2BETA boethius.out ota0320.txt
```

Now, we would store it away:

```
md boethius
copy ota0320.* boethius
copy authtab.dir boethius
```

To combine both texts in one directory:

```
md \combine
copy boethius\*.txt \combine
copy boethius\*.idt \combine
copy theodos\*.txt \combine
copy theodos\*.idt \combine
copy theodos\authtab.dir \combine
authconv C:\boethius\authtab.dir C:\combine\authtab.dir /A
```

Now you should have all the texts available under V&F in the \combine directory. Do not forget to append the back slash in the V&F Options menu.

If the first of the references in the "export" file does not match the number of the ~ work entry, the program will not create the right reference for it. This means, V&F will not find the work title. Suppose you have the following "export" file:

```
~ Author: Galenus Med.
~ File/No.: TLG0057
~ Work: Adversus ea quae a Juliano in Hippocratis aphorismos enuntiata sunt libellus
5.1.1.1.18a.250.11 $TOU\S U(DERIW=NTAS [2H( TW=N]2 U(DATWDW=N:
5.1.1.1.18a.250.12 $KAI\ TOI=S I)ATROI=S PROSH/KEI MIMEI=SQAI.
```

In this case, the title is the first work title in the file, whereas the work references refer to the fifth work. This will never be found, however. You should manually change either the references to match:

```
~ Author: Galenus Med.
~ File/No.: TLG0057
~ Work: Adversus ea quae a Juliano in Hippocratis aphorismos enuntiata sunt libellus
1.1.1.1.18a.250.11 $TOU\S U(DERIW=NTAS [2H( TW=N]2 U(DATWDW=N:
1.1.1.1.18a.250.12 $KAI\ TOI=S I)ATROI=S PROSH/KEI MIMEI=SQAI.
```

or else insert as many empty "works" as are required to make the numbers correspond to each other:

```
~ Author: Galenus Med.
~ File/No.: TLG0057
~ Work:
~ Work:
~ Work:
~ Work:
~ Work: Adversus ea quae a Juliano in Hippocratis aphorismos enuntiata sunt libellus
5.1.1.1.18a.250.11 $TOU\S U(DERIW=NTAS [2H( TW=N]2 U(DATWDW=N:
5.1.1.1.18a.250.12 $KAI\ TOI=S I)ATROI=S PROSH/KEI MIM EI=SQAI.
```

## r) Reading Texts from Hard Disk

If you have transferred only a part of a CD-ROM to a hard drive, it is useless that the AUTHTAB.DIR file still contains all files of the original CD-ROM. The program AUTHCONV circumvents the difficulties that may result from such selectively copying files to another directory. Suppose, you have copied some text and .IDT files to a hard drive directory. Copy the AUTHTAB.DIR file from the CD-ROM to the hard drive directory, too. Then call the AUTHSEL batch file. It does the following:

Creating a directory file of the texts present on the disc:

```
DIR > DIR. $$$
```

Call a selection process that writes a new author table file:

```
AUTHCONV AUTHTAB.DIR AUTHTAB.NEW DIR. $$$
```

Copy the new file over the old one and save the old:

```
COPY AUTHTAB.DIR AUTHTAB.OLD
COPY AUTHTAB.NEW AUTHTAB.DIR
DEL DIR. $$$
```

This assures you have exactly those files in the author list that are present on the drive.

AUTHCONV.EXE can also be used to join two author table files. To do so, the program has to be invoked with the /A option (A for add). This is useful, if you want to have contemporary access to text files that are located in different sub directories or drives without changing directories or discs. Suppose, you have some Latin texts on drive d: sub directory \beta and your Greek material on drive g:\. First, create a selected author table file of the contents of d:\beta as described earlier:

```
DIR D:\BETA >DIR.DIR
AUTHCONV D:\BETA\AUTHTAB.DIR D:\BETA\AUTHTAB.NEW DIR.DIR
```

Then create one common author table file for both directories:

```
AUTHCONV G:\AUTHTAB.DIR D:\BETA\AUTHTAB.NEW /a
```

With the /A parameter, the contents of AUTHTAB.DIR will be appended to the input file AUTHTAB.NEW. If everything has gone well, copy the new file over the old. In the present directory there will be a backup file AUTHTAB.BAK of the modified file.

```
COPY D:\BETA\AUTHTAB.NEW D:\BETA\AUTHTAB.DIR
```

Now, issue the APPEND command of DOS:

```
APPEND G:
```



This lets the program access files that are not located in the present directory. In your PROFILE.V&F file let D:\BETA be your actual text file directory:

```
CDDRIVE = 'D:\BETA\  
CDIND = 'D:\BETA\  
'
```

Now start V&F. The program reads AUTHTAB.DIR from D:\BETA, which includes all files on G:, too. If the program tries to open a file that is not present in D:\BETA, it automatically looks on G:, thus effectively connecting the two different drives. You can use this strategy to connect more than one drive, if you connect APPEND specifications by semicolons (APPEND G:;f:\BETA)<sup>87</sup>.

### s) Determining DOS Memory Partition

To get information about how much memory the DOS shell provides under your present configuration, call

```
MEMO
```

from the DOS shell prompt. This will display how much real DOS memory is available for your shell applications. The program can be used whenever you want to determine how much DOS memory is available.

### t) Drive Ready Detector

DRIVEX.COM is a utility that detects if a drive (ed: a CD-ROM drive) is ready for reading. It sets the DOS error level accordingly which in turn can be used by a batch file. It is useful for cases where the operating system cannot handle a drive that is not ready. This may happen with some CD-ROM drives where the MSCDEX.EXE software does not display the Abort, Retry, Ignore message, once it has been loaded in High DOS memory (UMB). Similar problems may occur with Hercules display screens operating in graphics mode. Sometimes, an Illegal SHARE-operation message is produced instead of the usual DOS error message. If, under these circumstances, a program tries to access the drive, the operating system crashes, due to a bug in either MSCDEX.EXE or DOS high memory management. DRIVEX is meant to circumvent this. It is called with a drive letter as its parameter (e.d.: DRIVEX g). If the drive can be accessed, it returns the error code 0, if its root directory is empty 1. If the drive does not exist, the program returns 255. Called with no valid drive letter (a-z) as its argument, the program returns DOS error code 64. A drive that is not ready is signalled by 128. You can use this in batch files to test for the availability of CD or floppy disc drives. Suppose you have your

---

<sup>87</sup> Note that in APPEND specifications under DOS the back slash is not used at the end of a sub directory specification, whereas V&F requires that the back slash be given. Note that the DOS-command APPEND is not compatible with DESQview®; therefore you have to be careful with this strategy in multitasking environments.

program SPITRUN which is to be called with V&F as its parameter. A portion of the appropriate batch file might then read:

```
DRIVEX g
if errorlevel 128 goto ko
if errorlevel 1 goto ko
:ok
SPITRUN V&F
goto end
:KO
cls
ECHO The drive is not ready. Insert disc/CD ROM and restart
:end
```

Note, however, that some versions of MSCDEX.EXE are so strange that, if highloaded, they can be accessed only once, if the drive is not ready; the next time they would crash the system<sup>88</sup>.

### **CD-ROM Drive Detection Program**

Knowing which logical drive letters are attributed to the CD-ROM drives that are attached to your system may not be easy, making it difficult to setup PROFILE.V&F correctly for V&F. This is especially true, if the computer for which you are configuring V&F is not a machine which you are familiar with or if there are different CD-ROM drives attached to it with different, unknown logical drive letters. The program CDT (Cdrom DeTect) solves this problem. It is called without any parameter (from the DOS prompt: CDT and the <RETURN> key) and displays the MSCDEX version number, the number of CD-ROM drives on your system and a list of all drives with their logical (DOS) drive letters. The following is its output for one of my own machines:

```
CDT - Detect and display all CD-ROM drives
      (c) Burkhard Meißner
      Lilienstraße 51
      D-06122 Halle/Saale

MSCDEX driver version:  2.21
Number of CD drives:    1
Logical CD drive(s):    G:
```

If there aren't any CD-ROM drives, the program displays an appropriate message. You can direct the output of the program to a file, if the list of CD-ROM drives is too long to be remembered intuitively (CDT > cdt.out <RETURN>).

### **Remote Drive Detection Program**

---

<sup>88</sup> This is the case with one of our CD drives (Philipps CM 205) when MSCDEX.EXE is loaded high.

RDT (Remote drive DeTect) does for remote drives what CDT does for CD-ROM drives: It detects them automatically and displays a list of all remote drives. Remote drives are those logical drives (under DOS: D: E: F: ...), which have been mapped to a network server or to a network redirector. The CD-ROM DOS interface program MSCDEX.EXE is such a redirector. This means: All CD-ROM drives attached to your PC are remote drives, but not all remote drives are necessarily CD-ROM drives. Therefore, RDT lists all CD-ROM drives and all logical network drive letters, whereas CDT gives only a list of your CD-ROM drives. With both programs, you should be able to get a rapid overview over the drive configuration of any machine on which you are installing V&F.

Output of RDT is similar to that of CDT:

```
RDT - Detect and display remote (networked) drives
      (c) Burkhard Meißner
      Lilienstraße 51
      D-06122 Halle/Saale
```

```
Number of remote drives: 1
Logical remote drive(s): G:
```

and, like the former, can be re-directed to a file.

#### **u) Editor for 24-Pin Printer Fonts**

The V&F print routine for 24-pin printers which the shell invokes (PRINTTXT) uses download fonts for 24-pin-printhead printers. We provide two font files for this purpose:

```
DRGREEK.BIN
ELGREEK.BIN
```

If your printer has a very different font shape or if the placement of the letters within the character cell is much unusual, you might be looking for a way to alter these fonts. This may be useful with EPSON<sup>®</sup> printers and some EPSON<sup>®</sup>-compatibles. It can be achieved with the FONTED program.

Use

```
FONTED DRGREEK.BIN to alter the draft quality font,
FONTED ELGREEK.BIN to alter the letter-quality font.
```

Read the FONTED.DOC file about using the program.

```
FONTCOM elgreek.bin elgreek.com
```

converts a font into a self-loading font "program". This might be useful if your operating system does not interface well to the LPT1 or PRN devices in binary mode. There is a file FONTCOM.DOC that describes its use.

#### **v) BETAINFO Beta Code Information Utility**

In order that you can get information about the meanings of uncommon beta code symbols, we provide the BETAINFO utility program. It relies on the Thesaurus Linguae Graecae BETA CODE MANUAL (ON-LINE VERSION) document (TLG PROJECT TLG BETA CODE SUMMARY 10/9/93). We have added those codes that are missing in the document mentioned and whose meanings we know. BETAINFO is, therefore, useful to display the meanings of the more uncommon symbols. It can be called from inside V&F's DOS shell and covers many more codes than the two help screen contained in the usual HELP.V&F help file.

If called without any arguments, BETAINFO displays the meanings of all beta codes, page-by-page. After each single page the program stops and asks for a command letter and the <RETURN>-key; command letters are either U, D, O, L or Q. Q quits and aborts the program, D or a simple <RETURN> causes the program to display the next page, U goes up one page. L goes one line down, O one line up. Do not forget to add the <RETURN>-key to any of the command letters (unlike V&F itself).

If called with a single string argument, the program searches this string (e.d.: #56 or miscellaneous) and displays all lines which contain the string in much the same manner as it would display the entire document. I.e.: You can look up the meanings of certain beta code escapes as well as look up the encoding of certain items (e.d.: Stigma).

If called with either of the following arguments, the program displays a simple help screen:

```
-h /h -? -help /help
```

Nota bene: Case folding is in effect for help parameters, but not for search strings. Therefore, -HELP is the same as /help, but miscellaneous and MISCELLANEOUS are distinct.

If your DOS shell is large enough, you can invoke the program from inside V&F to get information on specific beta codes, which you do not know. This is much easier than consulting a manual.

DOS uses angle brackets (<>) for redirection; therefore, you cannot directly specify compositions with angle brackets (<2 >3). Use angbrl or ANGBRL for the left angle bracket (<), angbrl or ANGBRR for the right angle bracket.

You may use dquote or DQUOTE for double quotes ("), if your operating system does not pass the " to the program correctly; normally, however, this should work well, and it should be unnecessary to use dquote.

We have added the Alt-B macro to PROFILE.V&F and PROFILE.SRC. It opens up a DOS Shell to look up beta codes via BETAINFO.

BETAINFO uses a very simple screen interface with DOS and BIOS calls (no direct video I/O, no screen blanking). This assures that the program should run in any 16-bit DOS environment, but makes it look ugly under "raw" DOS. In DOS windows under

DESQView/X or WINDOWS 3.nn, however, it looks very nice, because these hide screen scroll operations from the user.

### w) PALET Colour Change Utility

Some users have requested a way to change the default colour palette of V&F. Since V&F (\COMPAQ version) uses BIOS calls for mode changes, any time the mode is reset, the colour palette is restored to its default values. We could have implemented a sophisticated palette changing routine, but decided to refrain from directly reprogramming the hardware registers, since this might lead to future incompatibilities with protected mode systems which prevent the program from directly accessing the registers. Instead, we have adapted a program whose source code is in the public domain. This program (PALET2a) has been written by<sup>89</sup>

Charles Lazo III		Tim Worley
P.O. Box 452	and	1314 Poplar St.
Hohenwald, TN 38462		Charlottesville, VA 22901

In order to know, how PALET can be used to change V&F colours, you should know something about the colour model which V&F implements. To simplify matters, display colours are looked-up in a look-up table with 16 entries; therefore, 16 different colour values can be realized. To index this table, V&F uses attributes (text mode) or colour planes (graphics mode) to write its letters. If you change the values corresponding to these indexes in the look-up table, V&F will look different.

V&F uses the following six colour index codes:

binary	decimal	index	colour	purpose
0000	0	1	black	background colour in text and graphics modes
0010	2	3	green	background colour of selection bar in menus background of editing fields
0011	3	4	cyan	options header, foreground (script)
0100	4	5	red	options header, background selection bar, script editing fields, script
0111	7	8	white	normal script (text mode)

---

<sup>89</sup> We have changed the program to suit V&F's needs; especially, we have removed all code that pertains to blinking and underlining control, since this lets the resident portion of the program grow unnecessarily, and V&F does not need these features; we have also moved the default colour table values from a fixed address - used for patching the table - to a floating address to reduce overall program size. Since PALET is in the public domain, and since our own contributions to its present version are only slight ones, we do not claim authorship or any rights on the program; nor can we be held responsible for its performance and effects. We are grateful to Messrs. Lazo and Worley for putting the source of this program in the public domain: It is an good example for the dying art of assembly programming.

1111        15        16        white        script (graphics mode)

Upon being called for the first time, PALET installs itself as a resident, configurable INT 10h handler that watches all calls which could affect the colour palette table. The size of the resident portion is 464 (program) + 256 (environment) = 920 bytes = 0.89 KBytes. Upon the first and all subsequent calls, the program can be used to change the colour table. Invoking the program without any parameter will not install PALET but display directions for its use.

Command line options:

PALET D (reset to Default): PALET will be installed (if not installed already) and write the default values stored within palet to the EGA registers. The 'd' command should precede any other parameters on the command line.

PALET N1 N2 . . . . N16: This will set up any or all of the sixteen EGA palette registers. The numbers n1, n2, etc. are two digit decimal numbers that represent one of the 64 valid values for the EGA colors. The numbers may be separated by a space, or you may run all digits together (in which case any single digit must be preceded by a zero, ie.: 7 4 16 is same as: 070416). It is not necessary to enter values for registers above the ones you wish to change. Values for registers you wish to remain unchanged can be replaced with a period.

e.d.: PALET . . 7 . . . . 2 will change registers 3 and 8, and leave others unchanged. This command will change the EGA registers and by default, will set the 'X' switch, which will allow other programs to change the EGA registers also (see the exclude and exclude text commands).

PALET E (exclude changes): Entering this will set the exclude changes switch. PALET will now prevent any attempt to change the values in the EGA registers, no matter what display mode is set (text or graphics). For programs that display in graphics mode, but don't provide a way to set the colors used, this is a useful option. We recommend its use in connection with V&F. The easiest way to use this is in a batch file, ie.:

```
echo off
palet n1 n2 . . . . n16 e
program (program to run)
palet d
```

This file will set the registers of the EGA, make the change exclusive and load the program to run. Upon exiting the program, palet will set the EGA registers to the default value, leaving the exclude switch set.

PALET T (exclude text colour changes): This variation of the exclude command will only trap text mode color changes.

PALET X (turn off exclusions): This command will turn off e or t exclusions, and allow other software to reset the EGA registers.

PALET F (turn off): This command will disable palet. Any other command with a recognized argument will enable it again.

PALET N (enable PALET): This command will enable palet. Use after palet f if you don't want to change anything in the previous setup.

If switched on, PALET makes BIOS mode switching slightly slower; this performance penalty is not paid, once the program has been switched off.

Since V&F uses only six out of sixteen possible palette register values, it is not necessary to re-program all of them when using the program with V&F. To allow for an easy installation and usage of the utility, we provide the batch files SETCOL.BAT and RESETCOL.BAT. RESETCOL.BAT resets PALET to its default values and switches BIOS monitoring off. SETCOL accepts up to six possible arguments in decimal form (1 2 3 4 5 . . . 63). These six values correspond to the six palette registers which V&F uses, ordered sequentially as in the above table.

Each numeric value represents a new number to be entered at the corresponding position.

E.d.:

```
SETCOL 1
```

sets background colours to blue in text and graphics modes.

Suggested values and the corresponding colour effects are:

0	black
1	blue
2	green
3	cyan
4	red
5	magenta
6	brown
7	white
8	dark grey
9	light blue
10	light green
11	light cyan
12	light red
13	light magenta
14	yellow
15	white
63	bright white

I suggest you experiment with the values between 16 and 62; just feed them as first parameters to SETCOL or PALET, and the background shows you the corresponding colour value.

Dots may be used to represent unchanged values. To set the background to blue, script to white, use:

```
SETCOL 1 . . . 7 7
```

You can use SETCOL and RESETCOL sequentially in batch files to surround V&F program calls to implement a different colour scheme and to reset it afterwards. There is no memory penalty upon PALET being called many times: It installs itself only once.

```
CALL SETCOL 1 . . . 7 7
SPITRUN.EXE V&F.SPX /S
CALL RESETCOL
```

Nice colour schemes which closely resemble WordPerfect's VGA default palette will be implemented using:

```
SETCOL 1 12 8 2 63 63
```

or

```
SETCOL 1 10 11 12 63 63
```

or

```
SETCOL 1
```

The programs can be used with both SPITRUN.EXE+V&F.SPX and V&FRUN.EXE.

Hardware Requirements: SETCOL needs at least an EGA card; it is useless in monochrome modes. Therefore, use it only in connection with the \COMPAQ version of V&F. SETCOL does not verify if an EGA or VGA card is installed in your system. If you are not sure if you have such hardware, please refrain from using the program. We do not assume any risk as to possible hardware damages etc.

Since the program directly re-programs the hardware colour palette, it should not be called from inside DOS windows (i.e. when programs or operating systems have shelled to DOS to return later). It should be installed before DESQview/X or MS-WINDOWS 3.nn are started.

Nota bene: Once you have installed PALET, you can reset its behaviour from inside a V&F DOS Shell. You should, however, not attempt at installing it for the first time from inside a DOS Shell. This will probably lead to a crash of your system.

The following calls will set your display to black on white:

```
PALET 63 . . . . . 0 . . . . . 0
```

or:

```
SETCOL 63 . . . 0 0
```

The default values of your EGA/VGA card which PALET restores when called with the D command, are as follows



decimal	index	default value
0	1	0
1	2	1
2	3	2
3	4	3
4	5	4
5	6	5
6	7	20
7	8	7
8	9	56
9	10	57
10	11	58
11	12	59
12	13	60
13	14	61
14	15	62
15	16	63

PALET may be loaded high to save precious low DOS memory. However, in this case, the program may not be able to determine its load state automatically, loading itself another time once it is called to re-configure itself, if this second call is not preceded by a LH (LOADHI) call, too. This second copy of the program is then most likely to be loaded low, if it is called independently from the command to load it high.

To load the program high, use the DOS command LH (or its QEMM equivalent LOADHI), or let PALET be loaded from AUTOEXEC.BAT and optimize the loading sequence using the DOS program MEMMAKER or QEMM's OPTIMIZE. Suppose, you have loaded PALET with the following command:

```
LOADHI C:\V&F\PALET.COM 1
```

or:

```
LH C:\V&F\PALET.COM 1
```

to have a blue background and you want to re-set the values to their defaults, you should use

```
LOADHI C:\V&F\PALET.COM D
```

or:

```
LH C:\V&F\PALET.COM D
```

This avoids loading a second copy of the program. We recommend you load the program high on system-startup, using D to disable it (LH PALET.COM D). All software that you want to run with PALET-driven screens should be called from batch files that first enable PALET (LH PALET.COM 1), then call the software (CALL V&F) and then re-set PALET (LH PALET.COM D).

With QEMM's LOADHI program, you should use the /BESTFIT parameter to avoid fragmentation of high memory regions:

```
c:\qemm\LOADHI /BESTFIT c:\v&f\palet.com 1 2 3
```

or:

```
c:\qemm\LOADHI /BESTFIT c:\v&f\palet.com D
```

One of our colleagues at Halle shows symptoms of excessive red-green colour-blindness; in fact, it has been established that he is absolutely red-green blind. He has tried several colour schemes for interaction with V&F, but reports to prefer the default V&F colour scheme to any other combination. This means: The default red-green/black&white/red-blue colour palette as used by V&F seems to be most suitable to colour-blindness. Whereas a blue background might be preferable for those without a colour handicap, the default black background seems more suitable for those with such a handicap. Therefore, we recommend you keep this palette unless you have serious reasons not to do so.

We are aware of contradictory ergonomic tenets, but admittedly, considerations of software ergonomics are never free from subjective preferences. A general rule-of-thumb is that a script in either red or blue should not be written upon a dark background; so, our white-on-black default seems the best under ordinary circumstances.

### 3 Implementation Details

#### a) Personal Details

The V&F program was developed 1990-1995 by Burkhard Meißner, who during this time has held academic positions of various kinds as an ancient historian at the universities of Erlangen (Germany), Rome (Italy) and Halle (Germany). The author of the program has received much generous help from a variety of persons:

Mark Emmer (Salida, Co.) has produced an outstanding SPITBOL386 development system, has given valuable advice as to its efficient use and often optimized it for V&F.

Dr. Johannes Saltzwedel (Hamburg), Dr. Matthias Heesch (Mainz) and Dr. Antje Meißner (Halle/Osterburken) have critically commented on the user interface and documentation of V&F. Prof. Dr. Andreas Mehl (Erlangen) and Marcus Nenninger, M.A. (Halle) have made suggestions to the Indexing and Find routines. The development of the EGA/VGA screen drivers would have been difficult without Prof. Dott. Tito Orlandi, who was so generous to give us access to the computing machinery of the CISADU at the Facoltà di Lettere e Filosofia dell'Università di Roma I "La Sapienza". We owe several suggestions for the improvement of the export option to Rev. Frickenschmidt



BURKHARD MEISSNER, Halle

(Wuppertal). Leif Gunnar Berling (Rostock) tested the NotaBene<sup>®</sup> conversion routines. OS/2 testing has been done by Dr. Christoph Hesse of Hesse Analysenservice, Erlangen. Lou Burnard and Allan Morrison of Oxford University Computing Services gave us access to their texts. Messrs. Trieb, Knauff and Franke of Universitätsrechenzentrum Halle and Prof. Dr. Joachim Ebert of Institut für Klassische Altertumswissenschaften Halle have been exceptionally cooperative with mainframe resources and data networks.

## b) Technical Details

The main program files of the system have been produced using Catspaw's SPITBOL386 compiler implementation of the SNOBOL4 language and the Microsoft Macro Assembler v.6.10a in 32-bit addressing mode. Besides, Realia's PC-SPITBOL 3.6 compiler, Catspaw's SPITPC32 compiler and 16-bit assembly have been used, too.

The main program of the system, the utilities shell and some of the utilities programs (OUT2BETA, MC) run in protected mode under DOS, using either of two DOS extenders: PharLap's DOSX<sup>®</sup> (SPITRUN.EXE+V&F.SPX, SPITRUN.EXE+SHELL.SPX) or INTEL's extender (MC.EXE, V&FRUN.EXE, SHELL.EXE, OUT2BETA.EXE). The code is true 32-bit code and can therefore not be executed directly as a DOS program. To run it, the DOS extenders must execute it: The runtime module SPITRUN.EXE loads and executes V&F.SPX; V&FRUN.EXE contains the extender itself.

All 16- and 32-bit code of all V&F programs has been compressed and is decompressed automatically before execution; do not attempt at patching the files to alter the signing-on-messages etc. This will most probably lead to system crashes.

Overall, we have written nearly 400 different source modules for the V&F system with nearly 700 pages of printed A4 output and 50000 lines of code.

There are versions of the system for four different graphics standards. In text mode, the technical characteristics of these versions are similar. Graphics resolutions are different:

	HERCULES	COMPAQ	EGA/VGA	CGA
vertical screen lines	348	348	348	200
number of text lines, View mode	16	16	16	16
screen lines per text line	20	20	20	11
bytes per character	16	16	16	8
character region in character box,	12	12	12	6-8
upper case letter, height	10	10	10	6
lower case letter, height	7	7	7	5
screen lines diacritic	5	5	5	3
screen columns	720	640	640	640
characters per line	90	80	80	80

The Hercules<sup>®</sup> version performs mode changes by directly reprogramming the hardware registers, whereas the other systems use BIOS calls for video mode change. The EGA/VGA version uses BIOS video mode 0Fh (monochrome) for graphics and 07h for text; these do not work on COMPAQ<sup>®</sup>-compatible computers, since these do not provide monochrome capabilities. Our COMPAQ-version uses BIOS mode 10h (colour) for

graphics and 03h for text. These modes should work properly with a variety of monitors (digital monochrome, analog multi-frequency, analog fixed-frequency) and computers, but do not look nice on some LapTops which "emulate" the colour modes using different shades of grey. The CGA version uses mode 02h for text and 06h for graphics. This should work on nearly all class 386 machines that provide rudimentary graphics capabilities. Software emulations of the graphics modes have been tested successfully; we have run the Hercules and CGA versions on VGA systems under firmware emulation and the CGA version with a Hercules card with software emulator loaded.

## VI Further Reading on V&F

- B.MEIBNER, *V&F-Programm für TLG und PHI CD-ROMs unter MS/PC-DOS*, GNOMON 7 (1991) 670-671 (short announcement and description of features)
- U.KINDERMANN, *Burkhard Meissner: VIEW-&-FINDing Programm. Erlangen 1992*, MITTEILUNGSBLATT DES MEDIÄVISTENVERBANDES 9,2 (1992) 31-32 (comprehensive review of the V&F program)
- B.MEIBNER, *V&F: Sistema interattivo per l'analisi dei testi greci e latini*, BOLLETTINO D'INFORMAZIONI, Centro di Ricerche Informatiche per i Beni Culturali, Pisa, III (1993) n. 1, 57-68 (description of V&F usage in Italian)<sup>90</sup>
- C.SCHÄFER, *Computer und antike Texte - Wortrecherche, Konkordanz- und Indexerstellung mit Volltextdatenbanken*, St.Katharinen (1993) 137-218; 227-234 (more than a third of the contents of this book consist of a description of V&F usage in German; it is useful, because it is less technical than practical, but it contains a few factual errors<sup>91</sup>).
- M.NENNINGER, *Computergestützte Analyse antiker Texte: Projekte des Instituts für Klassische Altertumswissenschaften der Martin-Luther-Universität Halle-Wittenberg*, in:

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<sup>90</sup> Technically, the information in this article is outdated, and the press have messed up many tables, but there are some nice screen shots, and as an overview of the program its contents are still valid.

<sup>91</sup> (1) It recommends (p. 145) to use Abbreviated reference locate; he holds that references containing letters cannot be found by the "ID-Jump" method (e.d.: references in Plato's works). The latter is wrong. References containing letters can be found as long as there is some sort of ordering among them (e.d.: 1a,1b,1c; a1,a2,a3; a,b,c; 1,2,3). Because with some of the papyri, inscriptions and work titles this is not the case, ID-Jump may have difficulties with these (e.d.: c,1a,a1). With literary texts you should try "ID-Jump" or "Full reference" first. (2) The book states (p. 156f.) that 'CURATOR' ANY('EMS') will find 'curator', 'curatore', 'curatorem' and 'curatores'. Whereas the latter three are found, the first ('curator') is not found: The pattern searches for those sequences only, which consist of 'curator' followed by either of the three letters 'e', 'm' and 's'. If any other letter or the space occurs directly after the word, it is not found. Perhaps a typing error has occurred here: The pattern could have been written as 'CURATOR' ANY('EMS ') [note the space!]. (3) The text says that in case there isn't any pre-fabricated conversion routine for a specific word processor conversion of V&F output files for inclusion into that word processor has to be made via plain ASCII files (without breathings and accents). Although this is possible, it is neither efficient nor necessary. It is always better to write a small XLATE table file for the purpose, if the target program addresses files in linear mode or via text lines. (4) On p. 228 you will read that V&F export cannot be appended to existing files. However, the -a modifier to the output file specification will do this. (5) A longish portion (pp. 219-226) describes a supplementary program ("SORTLIST") that searches V&F Find result lists which have been converted to text files for string combinations that span lines, assuming that V&F lacks this facility. However of V&F allows for the scanning of strings that span lines: See p. 50. (6) P. 160 f. we read that specifying word boundaries (SP1, SP. and SP2) is valid for all string elements in a given pattern and that it is not possible to find alternatives with and without word boundaries by one and the same Find process. This is possible. SP1, SP. and SP2 are pattern variables just like any other pattern variable and may be combined as freely as these. To look for all lines that contain -privat- or the word consilio: 'privat' | (sp1 'consilio' sp2). (7) The author describes at length (p. 177-183) how TLG and PHI reference strings should be mapped to their meanings (chapter, paragraph, line etc.). He fails to mention the easiest way: When the program is in text mode (main menu or other menus) the status lines give the meanings of each reference level automatically.

M.Fell u. C.Schäfer u. L.Wierschowski (Hsgg.), *Datenbanken in der Alten Geschichte*, St.Katharinen (1994) 187-193.

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