PYRAMIDE
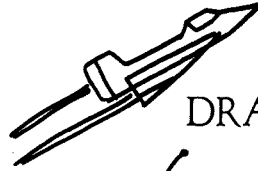
WRITTEN BY A.GASSMANN & F.MOEREL

WINDOWS

DRAW

NUCLEON

A
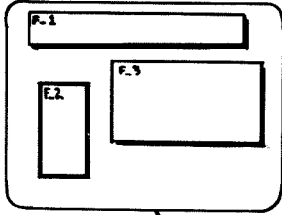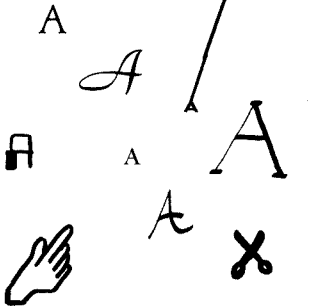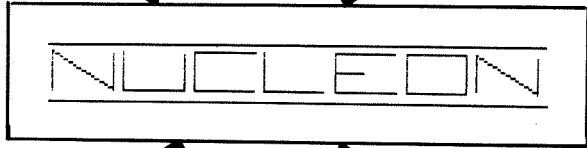
CHARACTERS

MAESTRO

N U C L E O N   The Summary

PYRAMIDE presents :

NUCLEON

Written by Alexander GASSMAN and Fran MOEREL

A Programmer's Assistant that integrates graphics, sound, screen design, icons and many other things.

This software is a PACKAGE of a certain number of modules that, used together, will become a help that you won't be able to go without !

Here is a list of the main programs :

- *Compact draw :* allows to draw a picture on screen. This picture will then be generated as a BASIC program.
- *Characters :* a character font designer. You are able to design all types of characters, and even ICONS., to use them later in your programs.
- *Windows :* have you ever heard of Computer Assisted Screen Design? THIS is it. NO MORE ghastly screens. Only nice & neat presentations, that windowswill put you in a SET_UP basic procedure.
- *Maestro :* be no longer scared by the QL's beep command since you won't have to touch it any more. Compose your music and then maestro generates a BASIC program that will replay it.
- *The INTEGRATOR :* This is the program that will allow you to put the different bits of the four previous programs together. It will generate BOOT programs that will install new Basic instructions which will enable you to use different fonts, to use the icons, and some extra routines supplied. Your small Basic programs that have been generated will be assembled in one block. This program is also a 'file manager' which will help you to clean up the mess in your cartridges or disks… You should note that this program is called 'Organiser' on the main menu.

You have also in Nucleon some small routines that add extra uperBasic keywords and that will compress graphics screens (32k to 8k according to the complexity), will give you the free memory, and so on…

This manual will make you a 'guided tour' through Nucleon, explaining the use of each program in detail. Each of these has been conceived in view of a maximum of user-friendliness, and two of them use icon driven menus.

If you're really impatient of working on the programs, then take a look at the loading instructions in Appendix F. Nevertheless we would strongly recommend that you first read the manual, or that you read the manual whilst using the software.

We hope that this software will help you in the (oh so difficult!) task of programming, and if you have some suggestions how we could eventually improve the system, or if you have some questions about certain points, please don't hesitate to write to the following address :

PYRAMIDE
For the Nucleon file
28 Waverley Grove
LONDON N3 3PX

Some more general remarks :

- The programs have been deisgned for ease-of-use. This is why the ESC key will most of the time bring you to the Main Menu or invalidate your last choice.
- And for extra comfort most of the functions can be used with a joystick. The choices have to be taken most of the time with the arrow keys and SPACE (or the joystck, which is the same).

We wish you some nice hours whilst discovering the universe of Nucleon, and good luck !

The authors, Alexander GASSMAN and Fran MOEREL.

Characters

1.0 What you can do with characters:

Characters gives yu the possibility to to define charactersets other than the standard QL characterset. You can for example make smaller, fatter, rounder, squarer and other types of different characters.

One of the real good functions of this program is that it allows you to use several charactersets at the same time.

The other use of characters is to give you the possibility to modify the different AIR-BRUSHES in the drawing program COMPACT-DRAW included in this package.

Another use of these air-brushes is to use them in your own programs.

1.1 Userfriendliness

Characters uses a very simple command entry system. For almost allof the commands you just have to type in the first letter of that command (e.g. S for Save). And besides this there's always a command list on the screen to remind you the different possibilities of the program.

The program makes great use of windows to enhance the readability of the on screen information.

1.2 Hints and tips

You can for example use different charactersets for the following things:

- Emphasising passages in texts.
- Using greek, cyrillic, japanese or other character types.
- Making games in which you use user-defined characters to represent monsters or other things.
- The rest is up to you !!!!!!

2.0 How to use the program

The commands will be discussed in different categories. Further in this manual yo will find an alphabetical list of all the commands.

2.1 The editor commands

The characters are to be edited on the small grid on the left of the screen in which a cursor (in the shape of a cross) is flashing. This cursor will from now on be named C1.

The large window on the bottom of th screen shows you the entire characterset that is now being edited. As you will noice there is a small cursor pointing the character to be edited in this window (You see one horizontal bar at the top and the bottom of the character). From now on this will be named C2.

C – Compile

Compiles the character pointed by C2 and puts it on the editor grid. Afterwards just modify the character.

I – Invert

Inverts the character displayed on the editor grid.

M – Move-To

Gives you the possibility to move cursor C2 to the character which you type in.

Z – ZAP

Empties the editor grid.

2.2 the two cursor blocks

- cursor block 1 (B1):

```
                    T

        F       G       H

                    B
```

- Cursor block 2 (B2):

```
                [UP]

    [LEFT]   SPACE   [RIGHT]

                [DOWN]
```

On initialisation cursor block B1 moves cursor C2 and cursor block B2 moves cursor C1.

F1 – Stick

This command inverts the two cursor blocks. This is very useful if you want to use a joystick to edit the characters.

Note: I can strongly advise you to use the initial set-up when having no joystick because it gives the possibility to do the edition with one hand, and the other one can be used for typing the commands.

2.4 File commands

The file names used by the program will all have the extension "_set" at the end. When the program asks you for a file name you have to omit this extension even if it appears in the Directory.

A – ALTER

Alter an already existing character-set file. This ommand is included to prevent you from accidentally writing over existing files.

L – LOAD

Loads a character-set (don't add "_set" to the file name).

N — NEW-DRIVE

Gives you the possibility to change the actual drive number.

O — OUTPUT

With this command you can change the input/output device you want to use for loading and saving your charactersets. You can for example type in "MDV" to use the microdrives or "HDK" to use a harddisk or "FLP" to use a floppy disk drive.

F3 — directory

Gives the directory of the current I/O device with the current drive number.

2.4 The air-brush editor

This editor has been conceived for the editing of the air—brushes of COMPACT—DRAW (The drawing program in this package). However you can also use the air—brushes as icons in your own programs (if you want to know how to perform this then look at the chapter MACHINE CODE ROUTINES at the end of this manual). Maestro and Windows use icons defined with this option.

The editor is entered by pressing

F2 — brush
in the character mode.

The commands :

C — COMPILE

E — EDIT

I — INVERT

Z — ZAP

F2 – letters

Go back to the character mode

F4 – horizontal

Mirror the air-brush on the editor grid horizontally.

F5 – vertical

Mirror the air-brush on the editor grid vertically.

(I/O commands)

Go back to the character mode to use these commands.

2.4.1 Editing the COMPACT—DRAW air brushes

To edit the COMPACT—DRAW air brushes you have to load the file named "brush_set" (only type in "brush" in this program) from the *NUCLEON—DATA* cartridge. Then you can modify this air-brush set and save it back on your *NUCLEON—DATA* cartridge (use ONLY your NUCLEON backup for this purpose otherwise you might damage your original).

Whenever there is no explanation about a command just look at chapter 2.1 because some of the commands are the same as in character mode.

2.4.2 Using air—brushes as icons

If you want an example of how to use air—brushes as icons just 'examine the prgrams MAESTRO and WINDOWS. You can also load the "music" or the "wind" set from your *NUCLEON—DATA* cartridge.

2.5 Quit the program

Type CTL—SH—F1 (Ctrl—Shift—F1) in character mode. WARNING This will reset your QL.

3.0 Alphabet ical command index

command   paragraph

ALTER   (2.3)
COMPILE   (2.1/2.4)
EDIT   (2.1/2.4)
INVERT   (2.1/2.4)
LOAD   (2.3)
MOVE-TO   (2.1)
NEW-DRIVE   (2.3)
OUTPUT   (2.3)
SAVE   (2.3)
ZAP   (2.1/2.4)
F1-stick   (2.2)
F2-brush   (2.4)
F2-character   (2.4)
F3-directory   (2.3)
CTL-SH-F1   (2.5)

Appendix I

To use the charactersets or air-brush-sets in your own program you have to create a characterset loader using the INTEGRATOR. This program will prompt you for the charactersets you want to put into your OL and will then generate a BASIC loader program. See the documentation on the INTEGRATOR for further information.

Appendix II

If you own a OL with a FP, AH or JM rom you should not use the first column of the characters if you want to use these characters in low-resolution modes because otherwise this characterset would appear only as garbage on your screen.

On JS. MG, MGF, MGE and other newer QL versions this problem does not appear.

MAESTRO

A musical program

This program enables to you to emphasize some parts of your programs with a little piece of music. Knowing the limited possibilities of the QL's BEEP command it is out of the question to write symphonies, but maestro is able to have one voice on a range of about two octaves.

For non—musicians I will include here some explanations about the 'technical' jargon :

To define a note you need the note duration and its heigth.

Note length : maestro allows notes that go from the triple—quaver to the semi breve. Figure 1 (appendix 6) shows you the respective durations.

Heigth of note : The heigth of a note is defined on a stave (5 horizontal lines), and the higher the note is on the stave, the higher it will be as a sound. Figure 2 (appendix 6) shows you the range covered by maestro. Each note can be sharpened or flattened by a half—tone.

Once maestro is loaded, you will be given to choice to work in TV or Monitor mode. The TV mode works with white characters on a black background, and the monitor mode does the apposite. People with sensible eyes should select TV mode even if they have a monitor. Press F1 or F2 to make your choice.

1.0 Main Options

This is the central menu offering you six choices that you can select with up and down arrows. The highlighted bar shows the current choice (Windows, which does have the same Main options, uses a hand to point your choice). Press Space to confirm.

1.1 Begin

This option has to be used carefully since it destroys every previous work in memory : the computer erases everything to give you spare memory. If there is no music in memory it does not matter, but if there are some notes, please save them before choosing this option. After it has been selected, you will have to Confirm or Abort with C or A (just to be sure).

The program then asks you what name you would like to give to the melody you will create. It has a double function: identify the melody and also giving a name to the Superbasic procedure that will be generated. This is why it is recommended to avoid long names like : Sergeant Peppers Lonely Heart's Club Band Nevertheless, the name has to be longer than two characters. You will then enter the Creation Cycle, described later.

1.2 Create Program

When your melody seems fine, you can ask maestro to generate a Superbasic program which will replay it in an absolutely independant manner. The procedure will bear the name of the melody that you specified in 1.1

The program asks you on what drive the program has to go. Please refer to Appendix E to see how you define the device. The default (just press ENTER) is mdvl. Now you will have to specify the name of the basic file under which the procedure will be saved. The extension '_bas' is automatically added to it. The last thing is to specify the first line number, and the default is 30000, If you want to generate different maestro procedures you should know that each maestro music takes 10 basic lines (e.g. from 30000 to 30090). Since the INTEGRATOR offersyou a Special Merge you don't really have to bother about it.

This option is a ONE WAY option. Maestro can generate the program from the notes on the stave, but cannot read the notes from the program. It is thus highly recommended to also save the melody with option 1.3.

1.3 Save file

As in 1.2, you will have to specify the output device (see appendix E), and the name of the file. You should note that this file will automatically receive the extension '_mus'.

The file is NOT a program. It consists only of numbers. Don't try to load it from Basic. It is only loadable by Maestro...

1.4 Load file

As in 1.1. this option is DANGEROUS for the notes in memory. Please save these if they appear important to you with option 1.3. Confirm your choice with C or A to Abort.

See Appendix E for the definition of the device from which the file should be loaded. You will have then to give the name you want. If you don't remember it, press simply ENTER to go back and use the directory of Option 1.5.

1.5 Directory

This option wi-Il display a directory of the requested device. Press CTRL+F5 to stop the scrolling of the directory. Use F5 to restart it. Press SPACE to come back to the menu.

1.6 Continue

When you have loaded notes in memory, you will have to select this option if you want to modify the notes. It is different from 1.1 (Begin) in that it does NOT destroy notes and can only be selected if there are some.

1.7 Quit Program

No comment, except that you have to Confirm or Abort with C or A since all the work in memory will be lost.

2.0 CREATiON CYCLE

This is an example of icons developed with characters. use the left and right arrows to highlight the icon that interests you and press SPACE.

2.1 SOS (Ship sinking)

You simply have to highlight the icon on which you want to know a bit more and the press SPACE. When you have read the text. press SPACE again. To quit the Help, highlight again the sinking ship and press SPACE.

2.2 Compose (Hand on a keyboard)

The real composition takes place here. Your musical score is created with this option. First. you have to give the amount of SAME notes that you want. Answer here with 0 (with arrows and space) to quit this option.

The heigth of the note is defined with the up and down arrows. You will see a note go up and down on the magnified stave, and beeping at the same time the corresponding sound. Press space when you are satisfied. You have then the possibility to sharpen (up arrow). to flatten (down arrow). or to leave the note as it is (SPACE).

Select the duration of the note with left and right arrows, and you will see the magnified note in the central right window change accordingly. SPACE when satisfied. You will then come back to the first question of this option. Answer with 0 if you want to come back to the Creation Cycle.

Here are the editing facilities if you have made a mistake :

2.3 Insert a note (Hammer)

This option is useful if you have forgotten a note in the middle of the score. Show with left and right arrow the note before which you would like to insert a note and press space. You will then have to specify the new note as in 2.2. All the notes to the right will be displaced to the right in order to manage come apace for the new note.

2.4 suppress (Scissors)

This will kill deliberately the note that you will show with left and right arrows + SPACE. Before committnig the crime the program will give you a last chance to avoid the condemmnable act.

2.5 Modify (a bottle of white corrector fluid)

Show the note to be modified with left and right arrows + SPACE, and redefine it as in 2.2

2.6 Replay (Some notes)

If you want to appreciate the masterpiece...

2.7 Graphic Output (Printer)

Oddly enough, this option has a printer icon but WON'T use a printer. It will generate a graphic screen file on microdrive, that you will then be certainly able to dump yourself on a printer. Show output device as explained in Appendix E and specify the name of the file. The extension '_scr' will automatically be added.

Just lead (under basic) the screen with LBYTES MDV1_(NAME)_SCR, 131072.

2.8 Exit (Exit)

Simply... Exit the Creation Cycle to come back to the Main Options.

Now it's up to you to become a second beethoven... (with one -voice and such a delicate sound as that of the QLyou will have to be a REAL genius!)

P.S. Try the following melody — C (C)— E (C) — G (C) — high C CM) — 6 (Q) — high C (S) — with : S=semi—breve, M=minim, C=crotchet and Q=quaver

Appendix 1

If a most improbable bug lets you return to basic, just type GOTO 180 to come back to the Main Options (then save quickly and restart)

WINDOWS

<u>THE Screen Designer</u>

Windows is very similar to Maestro for the Main Options. You only don't have the directory option, and for the description of the six others please refer to the first chapter of Maestro (called Main Options).

The Main Option *Begin* will ask you to give the start—up parameters. First, you'll have to specify the mode in which you want to work, 4 or 8 colour. The background colour is then asked. Refer to Appendix E to see how to select your colour.

You will then be asked if you want to change the shadow. What is the shadow? It is a little border on the bottom and the right—hand side of the window that suggests a certain 3—D effect. If the background is black, you should redefine the shadow as being white (it is black by default). The 3—D effect can be accentuated by increasing the size of that border.

These questions answered, you come to the

<u>Creation Cycle :</u>

The left—handed windows shows icons, with a function key associated to each. Just type the corresponding function key to access the option.

F1 : Help (A sinking ship)

In Help Mode, type the function key on which you want more info and press space when you have read the text. Press Space to exit Help Mode

F2 Open a Window (Window opening)

This is the option that will allow you to define each of your window, under every aspect... You will first have to tell the number of the window (the channel number). Note that it is NOT possible for you to redefine channel 2, and that channel 1 will be opened automatically by Windows as a CONsole

(which will allow INPUTs). All the other windows (up to thirty) are opened as SCReens.

You will now specify the left—hand upper corner of the window (with arrows and space).

The size of the window can be given in three ways

- Pixel **:** Give the size in pixels

- Characters **:** size in mode 0 characters (CSIZE 2,0)

- On Screen : With the arrows & SPACE, you move the right—handed bottom corner. A 'rubber—banded' box will follow it to show you the general size.

Don't forget to take into account the border that you might eventually add.

The program asks you now if you want a border. If it is so, give the colour (Appendix E) and define 'visually' with arrows and space the size of it.

Now you have to decide wether you want a shadow for that particular window or not. Note that if your window is at the bottom of the screen, you won't be able to add a shadow, since it would generate a 'BAD PARAMETER' error.

You are then asked to specify the colour of the paper and of the ink.

And (at last !!) the last question is about optimisation since it happens quite often that the last bottom pixels of a window are not used because the height (without the border) is not a multiple of ten. This choice will suppress these superfluous pixels if selected.

F3 : Close a *window (windoe closing)*

First you have to select the window that you want to suppress with the right arrow. The concerned window is always highlighted with black and white horizontal bars. Press TAB to zap the indicated window. Once all the windows

you wanted have been supressed. press SPACE to go back to the Creation Cycle.

F4 : Look at (eye)

The menu and the icons hide the greatest part of the screen design. Take this option to contemplate the whole surface. and press SPACE when your extatic looks are satisfied.

F5 : Quit the creation Cycle (Exit)

This will bring you back to the Main Options.

The program that is generated is a SuperBasic procedure named 'set_up' .

If you want very special features for ONE window that is not supported by WINDOWS, simply take the approximated Superbasic program generated by WINDOWS and edit it to modify it for your purposes.

To include it in your programs, you only will have to MERGE it, either with SuperBasic's MERGE command or with the SUPERMERGE of the INTEGRATOR.

APPENDiX 1

If the program crashes (most improbable !) simply type GOTO 180 and ENTER. The main options should then be used IMMEDIATELY to save your work, and then reboot NUCLEON.

COMPACT- DRAW

<u>15 What is the use of COMPACT—DRAW ?</u>

If you want to save a picture you made on your QL this would take you about 32K on a cartridge. If you need a certain number of pictures in a program then arises the famous memory problem : 32k is really too much for a picture.

COMPACT—DRAW tries to solve this problem. Instead of saving your drawing as it is, it remembers the way you build the drawing and he saves only this information. It can then be transformed in a BASIC program which, when executed. will redraw your art—work (?) in the same way you built it up.

This system gives you the possibility to make relative complex drawings in about 4 or 5 K.

Another big advantage of this sytem is that you can edit and modify parts of your picture you did already make. So when you have finished your picture and you see that there is an error at the beginning, just relax and correct the error using the editor. It's really easy and fun to do.

1.1 <u>What the program does not do</u>

The program doesn't compact drawings you made with another drawing program. You are forced to use the programs own drawing routines to make your masterpiece.

1.2 <u>Userfriendliness</u>

When using COMPACT_DRAW you just type in the first letter of a command (e.g. S for save. K for kill) to perform it. In this way it's easy to-remember the command—letters because you only have to remember very clear and obvious command names.

If however-you are stuck, just press Ft and a help file will be loaded to help you finding - your way through the commands.

1.4 Hints and tips

You could-use your compact—drawings for:

- Adventure games in which you need a lot of graphics.

- Educational programs in which you could illustrate complex 'problems by drawings.

- Just making drawings for fun without wasting your precious microdrive space.

2.0 The commands

The commands will here be considered in different categories. Further in the manual you'll find an alphabetical index.

2.1 Drawing commands

To draw your pictures you have two cursors on the screen. One is fixed and the other is mobile.

2.1.1 Creating shapes -
"SHIFT—SPACE"

Moves the fixed cursor to the place of the mobile cursor.

"SPACE"

Draws a line in the current ink between the two cursors. The fixed cursor is then moved to the place of the mobile cursor.

B —BOX

Draws a box between the two cursors (the two cursors must be at the opposite corners of the box).

C — CIRCLE

Draws a circle with it's centre on the fixed cursor and with a radius defined by the distance of the two cursors. You can then modify the circle with:

< and > (less-than and greater-than) to change the radius

<- and -> [left and right arrow keys] to change the circle in ellipse

v and ^ [up and down arrow keys] to change the ellipse's angle

Finally press SPACE to draw the circle.

H —HALF

Draws a circle arc between the two cursors.Choose the arc with ! and ! and then press space.

TRY

Draw a test line. Press SPACE to end this command.

2.1.2 Changing colours

I — INK

Changes the ink colour. Make your choice with the arrows on the colour palette and then press space.

F5 — *background colour*

Changes the paper colour. Make your choice on the colour palette and then press space.

2.1.3 Filling shapes

COMPACT—DRAW uses the same fill routine as QL BASIC so you first have to put the computer in fill mode, then make your drawing and finally give the endfill command.

F —FILL

Put the computer in fill mode.

E — END-FILL

Fills a closed shape when it is finished.
e.g.: F(ill) C(ircle) E(ndfill)

2.2 Non—graphic commands

2.2.1 File input/output commands

The files names used in COMPACT-DRAW will be extended by "_pic" or "_bas". You don't need to type these extensions in when prompted for a file name. The only exception is the kill command.

A — ALTER

Modify an already existing file. This command was made to protect you from erasing accidentally a tile.

D — DIRECTORY

Give a microdrive directory. Scroll with SPACE.

K —KILL

Kill an existing file. You need to add "_pic" or "_bas" to your file names. You can't delete tiles of other types than '_pic" and "_bas".

L —LOAD

Load a picture file.

N — NEW DEViCE

Change the I/O device drive number.

O — OUTPUT

Change the input/output device.

You can for example type in "MDV", FLP",etc.

S —SAVE

Save a picture file.

2.2.2 Generate a BASIC program

P - PROGRAM

Generate a BASIC program which will redraw your picture.

If you don't use air—brushes in your drawing you can even use SCALE ,x to change the drawings scale.

2.2.3 Miscellaneous commands

G —*GRID*

Draws a grid with spacing the same as quick cursor step.

M — MISTAKE

Erases last drawing step.

Q — QUICK

Modify quick cursor step (quick cursors activated by shifting the cursor keys).

R — RESOLUTiON

Change resolution mode (4 or 8 colours).

V —VIEW

Redraw the picture (Eventually erases-the grid).

Z — ZAP
Try it (But please only with an already saved picture)

F1 —help

Show the help file.

F2 — brush

Enter brush mode.

F3 — insert

See editor commands.

F4 — edit

Enter editor mode.

SHIFT—TAB

Display used memory.

CTRL—SHIFT—F1

Quit program. *ATTENTiON :* this command resets your QL

2.3 Air—brush mode

Move the air—brush cursor with the cursor keys and draw it with SPACE.

C — CHOOSE

Choose air—brush type. Change with — and —

I —INK

Choose air—brush ink on the colour palette and then press SPACE.

"ESC"

Return to normal mode.

"SPACE"

Draw the air—brush.

2.4 Editor mode

In the editor mode you can step through you drawing either by showing it graphically (view mode) or by showing the instructions without drawing the picture (no-view mode). To toggle between these two modes use T-Toggle.

D – DELETE

Delete a program block. Enter start and end instruction number.

G – GOTO

Got to a specified instruction number. Enter the instruction number.

I – INSERT

Enter the insert mode.

When using this command you will quit the editor and come back to normal mode at the instruction which was last indicated by the editor. When you have finished you insertion press *F3-insert* or enter the editor mode. The part you just created will then be inserted in your drawing.

T – TOGGLE

Toggle between view and no-view mode.

V – VIEW

View the picture.

"ESC"

Quit editor mode

3.0 <u>Alphabetical command list</u>

<u>command</u>	<u>paragraph</u>
ALTER	2.2.1
BOX	2.1.1
CHOOSE	2.3
CIRCLE	2.1.1
DELETE	2.4
DIR	2.2.1
FILL	2.1.3
GOTO	2.4
GRID	2.2.3
END-FILL	2.1.3
HALF	2.1.1
INK	2.1.2/2.3
INSERT	2.4
KILL	2.2.1
LOAD	2.2.1
MISTAKE	2.2.3
NEW	2.2.1
OUTPUT	2.2.1
PROGRAM	2.2.2
QUICK	2.2.3
RESOLUTION	2.2.3
SAVE	2.2.1
TOGGLE	2.4

VIEW	2.2.3, 2.4
ZAP	2.2.3
F1-help	2.2.3
F2-brush	2.3
F3-insert	2.4
F4-edit	2.4
F5-paper	2.2.3
"SPACE"	2.1.1
"SHIFT-SPACE"	2.1.1
"SHIFT-TAB"	2.2.3
"CTRL-SHIFT-F1"	2.2.3

That's all folks !

THE INTEGRATOR

Nucleon put together

The INTEGRATOR is the final end of your programming sequence : he will put together the pieces that are still separate. You can use it also as a File Manager program.

First you have to tell the INTEGRATOR on what medium you want to work on (assuming that you have already put the cartridge/disk in the drive). Type in the name of the device like MDV (microdrive). FLP (drives) or HDK (hard—disk) or just press ENTER for the default. Give then the number of the device (or ENTER for the default number).

Now that the program knows where it has to look at, it will make a directory of it and display it on the central window (also called display area) . The status area (bottom window) will display some useful information such as name of cartridge free space etc... The control area (upper window) displays all the available commands in green and it can happen when there are no files, that some are displayed in red because you can't use them (it would be silly to delete a file while there are none on the cartridge).

Here is now a description' uf the 13 commands usually available, hoping that they will satisfy your immense command need. To invoke each command, just type its first letter.

NEW DEViCE   This is to tell the program if you want to use another cartridge or another drive. The INTEGRATOR will then remake the directory

FORMAT   It has the same effect as the SuperBasic command, but use it only when the drive motor has completely stopped, because you can't format a cartridge that is still running from a previous operation. You should be careful with this command, sinnce it destroys every data on the medium. This is why the program asks for a confirmation. You can even avoid the operation by answering nothing to the question : New title of medium ?

COPY　　　　　　　　　It is used to copy just one file from the current cartridge to another one. First, you have to show the file which you want to be copied by using the four arrows to move the cursor on the different file names. When the right one is highlighted, press space bar. Then you have to tell the destination (where you want the program to go)

ALL COPY　　　　　　　This is useful for backup copies, since it copies every file to a destination that you will have to spec ify

SELECTED COPY　　　　The INTEGRATOR first asks you where the files have to go and then will ask for every file if you want to copy it or not. This is to avoid a lot of successive COPY commands

DELETE　　　　　　　　First, show the file to be deleted (using the same cursor method as for COPY), and then confirm your choice with (y)es or (n)o. Then the INTEGRATOR will remake a directory, since some parameters like free space have changed

WiLD DELETE　　　　　It has the same effect as SELECTED COPY, but with a DELETE action. If you have a certain amount of files to be deleted, use this command rather than several DELETEs. because the directory is remade only at the end of WILD DELETE, instead of each time a file is DELETEd

RENAME　　　　　　　　First show the file concerned with the cursor and then give the new name (no nameESC) . Be careful when you RENAME large files (more to this later)

LOOK AT　　　　　　　It happens quite often to me that I smply don't remember what is in a file. If it happens to you also, just use LOOK AT and it will display its contents. If it is a screen don't be surprised to see only a ragged block repeated all the way : it is the 'non displayable character' sign

TO PRINTER　　　　　IF you have a printer AND you want to mak.e a printout of the directory of the current cartridge THEN use this option (I'm sorry to be so categorical but...)

BOOT—CREATE   As you probably know, it is not possible on all versions of the QL to load a resident procedure (machine code SuperBasic extension) from the program that will use them. You have to load all the routines with a boot program that will then LRUN (or whatsoever) the main program, it is also more elegant since each time you would RUN the main program, it would load the extensions. This option is an absolutelyAUTOMATIC boot generator.

You will first have to specify the device that will be BOOTed. Most of the time it will be mdv1_, which is here the default. The name of the file is needed as well. If you just press ENTER, 'BOOT' is assumed.

You are then asked if you want a loading screen. Often, to make people wait until the main program is loaded, it is nice to let them look at a graphic screen. If you want one, just give its name.

If you don't have one, you could simply print some text (like the title and intelligent remarks like "Be patient program loading"). This is what you can do by answering yes to the question 'Do you want to print some text ?' . Give the number of lines and the text for each. The text will automatically be justified in the center of the screen.

The next question asks you if you want to load a machine code routine. Answer yes and you'll be asked what is the filename of the routine, and its length in bytes (to know the amount of memory that will have to be allocated), For the routine COMPRESS_RSP you should answer for example with 33000. Repeat this step until you've defined all the routines you need, except FONT (for the charactersi. This comes now :

The program asks if you need charactersets. If yes, you have to tell how much and the name of each -(omit the extension set it is added automatically).

The last step is to specify the name of the main program and the way to load it. If you select LByTES, you will have also have to give the length of the file.

The program is then generated. If some features don't fit exactly to what you need, just EDIT the basic file (as an ordinary program...)

MERGE—BASIC   This is a kind of a SUPERMERGE. You have to show the files that you would like to merge with the arrows & space. A Beep will confirm you choice. You are only allowed to take files with the _bas extension. Click a selected file again and a different Beep will confirm that you 'un-select' it. Whan finished, press ESC. The INTEGRATOR will then take each file and will put them one after another in one main program (the name will have to be specified by you). This merge is MERGing REGARDLESS to the line numbers. It simply takes the programs as blocks and puts them together. This means that even two programs with IDENTICAL line numbers will merge without any problem. One of them is simply put after the other. Don't forget to give the first line number of the final file, knowing that it will then be incremented by 10 until the last line of the last file.

QUIT   No comment

As a general rule. you should know that it is nearly .always possible to use the ESC key if you have choosen the wrong option. Also, if the INTEGRATOR asks you for a text input and you just answer with ENTER, you will come back to the main command level (or signify that you want to select a default).

Whenever it has been possible. I have tried to use the arrows and the space bar in order to reduce to a minimum the movements I have to do on the keyboard (oh how lazy I am !) and to be able to use my Joystick (I'm still-waiting for a mouse...). -

Now let's go to some technical aspects of the program. First of all, let me explain how the directory works :

The INTEGRATOR opens a file #5 called ZXZXZXZXZX on the drive (hoping that you won't use a file of that name), makes a DIR #5,mdv1_ (or whatever you have chosen), reOPENs the file ot go back to the beginning and makes sseveral INPUT #5 in order to transfer the data into an array called cat$. The #5 is then CLOSEd and DELETEd, so as to leave no 'trash files' on the cartridge. You should also know that the display area can only display 72 files at a time. If you have a lot more, they are ignored (sorry, but 9K is already a lot).

Finally, some explanation for the RENAME : the simplest method, and the one that I have used here, is to COPY old_file_name to new_file_name, and to DELETE old_file_name. This only works if there is enough space left on the medium. If you have for example three 32K screens on a cartridge and want to RENAME one of them, there wouldn't be enough workspace left and an error would occur. So be careful…

I hope that this program will help to improve your cartridge organisation., as it did for mine (and helped me to recover quite a lot of free space, since I have 30 cartridges), and a last hint (if you haven't found it yet) : make thematical classification, like one cartridge for UTILITIES, several for GAMES, etc… It helps to find one certain file without losing too much time.

You will find in appendix D a typical application of NUCLEON, that also shows quite well the use of the INTEGRATOR.

MACHINE LANGUAGE ROUTINES

How to use them in YOUR programs

Here is the list of the machine language routines that will add keywords to the Basic. You can install them very easily with the BOOT—CREATE function of the INTEGRATOR. Just give the name and the memory required (given here).

SWAP_RSP   **70 bytes**

Syntax : SWAP

Allows to swap the main part of the screen of the QL (used in Windows). At first use, don't be surprised to see a 'garbage screen' come up since the area where the screen goes is not protected.

COMPRESS_RSP   **33000 bytes**

Syntax :   COMPR (rel_address)
                        EXPND (rel_address)

Added functions   START
                        COUNT
                        CHECK

This routines compresses graphic screens. The gain in memory depends on the complexity of the screen.

+ To compress, load the screen and make COMPR 0

+ To decompress. type EXPND 0 (works only if a compressed screen is in memory !)

+ To save a compressed screen, type SEYTES mdv1_(name),START,COUNT (works only if a screen has been compressed. It is advised to add the extension _cpr to the name to be able to make a difference between normal _scr screens.

+ To load a compressed screen, types LBYTES mdv1_ (name) ,START

+ To know the size of the compressed screen, type PRINT COUNT. The variable CHECK is set to 1 if the compressed screen exceeds 32k, in which case the compression process is stopped.

FONT RSP   **(special INTEGRATOR chapter)**

Syntax :   FONT #channel,set_number

Allows you to select a character set for a given channel (#1 is the default).

Example : FONT #3,2 assigns to #3 the set number 2.

SPRAY_RSP   **260 bytes**

Syntax SPRAY #channel, x, y, icon_number

Sprays on the screen at the given x_y coordinates the desired icon (created with the CHARACTERS brush_mode). It is necessary to declare mode OVER 1 and select the characterset corresponding to the icons (like music_set) in the concerned ghannel. It is interesting to note that an icon is simply composed by 6 characters.

PAINT_RSP   **600 bytes**

Syntax PAINT *channel,x,y,colour

It is a slightly enhanced version of the SuperBasic FILL command, since it does not need a specified shape but fills the surface specified by x,y.

LOCK_RSP   **150 bytes**

Syntax   LOCK

         UNLOCK

Enables or Disables the CTRL + SPACE break.

Note : this routine not available on all versions of NUCLEON

EXT_RSP   **640 bytes**

Keywords added : LIST_TASKS / SET_PRIORITY / REMOVE_TASK
Functions added: FREE_MEMORY / DEVICE_STATUS

These are the SUPERCHARGE basic extensions. For the complete
explanations, refer to that manual. Note however : PRINT FREE_MEMORY will
display you the remaining free memory in bytes.

CLONE_CRE   **BASIC !!!!**

This is an exception to the Machine Language rule. This program will
generate automatically a CLONE program on the specified microdrive. Simply
type 'lrun mdv2_clone_cre' to use it.

Appendix a

Recommended file suffixes

Why shouldn't a standard be tried ?

_rsp   Resident procedure (Machine Language routines that add Basic Instructions)

_mus   Music saved by Maestro

_bin   Binary file, Machine code wooking as soon as the CALL is issued (and not activated via a Basic instruction)

_dat   Data files, most of the time specific to one program

_set   characterset (obligatory)

_bot   boot file (it BOOTs another program)

_wdw Screen designs saved by Windows

_cre   Basic program that will generate anothor e.g. clone_cre2)

_pic   Compact Draw screens

_scr normal graphic screen (most of the time 32k.)

_cpr   Compressed graphic screen

_bas   most of the time a temporary BASlC file

Appendix b

Table of colours and associated numbers

	Mode 8	**Mode 4**
0	Black	Black
1	Dark blue	Black
2	Red	Red
3	Magenta	Red
4	Green	Green
5	Cyan	Green
6	Yellow	White
7	White	White

Stipples

0	. # . .	1	. . ##
2	# . # .	3	# . . #

Appendix c

Making Backups of NUCLEON

It is VERY important to make backup copies. because it is the only way to make sure that the data will not be lost. You know as well as I do the reliability of the microdrives so I BEG you : Do it !!!!!

Use two FORMATTED cartridges as destinations. Type simply for each of the two Nucleon cartdriges : Lrun mdv1_clone and specify to the clone program where the original is and where the destination (DON'T confuse them !) You will have to be very very patient. I recommend that you go and take a coffee whilst he copies...

Note : to run the backup copies, you will need at one moment the original in drive 1 (see Loading instructions Appendix F).

Appendix D

A Typical Example

Suppose you want to write an educational program. After you have written your 'StoryBoard' you begin to make drawings with compactdraw, to make small musics with maestro, to defineicons with Characters and to prepare a Screen Design with Windows. After each bit has been generated and tested, you take THE INTEGRATOR and select the option BOOT-CREATE. The loading prog. Will display 'Loading the Teacher Program'. You will have to take the L.M. routines SPRAY_RSP and LOCK_RSP (icons and freeze CTRL&SPACE). For the fonts, take one normal set and your icon set. You can then use the option MERGE-BASIC and show all your files : the drawings, the screen design, the melodies.

Once this is fulfilled, you can begin to work on this 'skeleton' with your own program. The Integrator will also help you toprepare the program cartridge where you will need the files for the boot program and the L.M. routines (which you can use as you wish).

Appendix e

Standard Choices

We have tried to make Nucleon rather coherent to use with some conventions regarding the entry of answers. Here is the stuff :

+ How to select Numbers in Maestro and Windows

The first joystick-compatible way to show numbers ! Use Space to take the displayed number, or use left and right arrows to increase or decrease the number. If you go over th emaximum, the number will become the minimum, and vice-versa.

+ How to select colours in Windows

A first colour block will appear. With the left and right arrow, change the colour. Press Space when satisfied. Use the same method to point the second colour or ESC to reselect the first colour. If the two are not the same, you'll have to select the stipple in the same way on a thirs colour block (or ESC).

+ How to select colours in Compact Draw

Just move with the arrows the blinking box on the colour palette and select it with SPACE.

+ How to select an output device

First, you have to give the name (like MDV, FLP…) of the device or ENTER to select the default, and then give the number. It will always be checked if the device is valid.

Appendix f

Loading Procedure

- Switch the computer on or make a reset

- Put the Nucleon MASTER copyin drive 1 and the Nucleon DATA copy in drive 2

- Press F2

- Wait until the computer requests you to put in drive 1 the original of Nucleon MASTER and do it (press SPACE after that)

- When the computer asks you to put in drive 1 the MASTER copy again, press SPACE immediately and wait until the drive 1 has stopped to turn to put the copy in.

- You will come on a Main Menu, where you can choose between one of the 5 major Nucleon programs. Use arrows & space to select.

- When the program is loaded, you can remove the TWO microdrives (for Maestro, wait until you have chosen F1 or F2).

Note : Make a BACKUP (see also Appendix C)

FIGURE 1

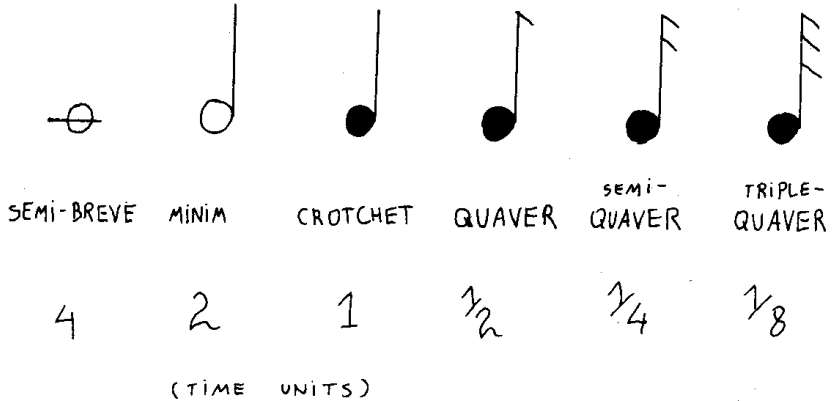| SEMI-BREVE	MINIM	CROTCHET	QUAVER	SEMI-QUAVER	TRIPLE-QUAVER
4	2	1	$\frac{1}{2}$	$\frac{1}{4}$	$\frac{1}{8}$

(TIME UNITS)

FIGURE 2

RANGE OF NOTES COVERED BY MAESTRO:

1 OCTAVE

A B C D E F G A B C$^+$ D$^+$ E$^+$ F$^+$ G$^+$