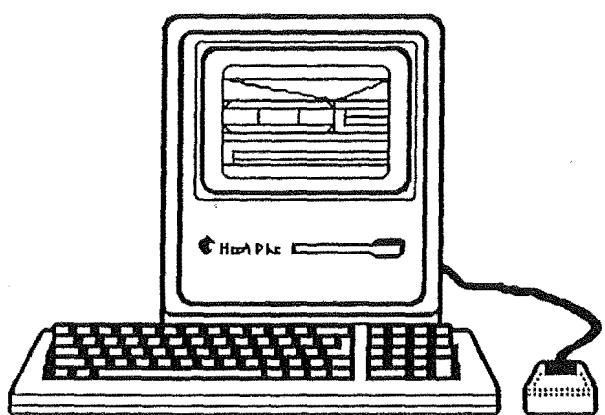




N-S Chart

User's Guide

A. B. Couch 1988



Supplement to
N-S Chart Honours Project Report
and
N-S Chart Project Technical Report

Contents

How to Use This Guide	3
Chapter 1: Learning About N-S Chart	4
Anatomy of the N-S Chart screen	5
Opening a Chart	6
Drawing Charts	7
If something goes wrong...	8
On-line Help	9
Chapter 2: Using N-S Chart	11
New Charts	12
Entering Text	12
Inserting Before and After	13
Selecting Symbols	13
Moving and Copying	14
Pasting	14
Saving a Chart	15
Saving Pictures	16
Fonts and Text Style	16
Line Height and Chart Width	17
Chart Defaults	18
Symbol Settings	19
Shrinking and Enlarging symbols	20
Altering Case symbols	20
Closing Charts	20
Creating and Deleting Subcharts	21
Generating Pascal	21
Printing Charts	23
Chapter 3: Reference	25
Menu Summary	26
Palette Summary	33

How to Use This Guide

Welcome to N-S Chart.

The N-S Chart program is a Nassi-Shneiderman Diagram development tool. This manual, N-S Chart User Guide, shows you how to use the various parts of the program. It does not teach you how good Nassi-Shneiderman diagrams should be drawn.

- If you want a brief lesson on getting started with N-S Chart, see "Learning About N-S Chart." You should be able to follow this chapter easily, even if you've never drawn a Nassi-Shneiderman chart before.
- For more detailed information on how to use N-S Chart, look through chapter 2: Using N-S Chart.
- For a brief summary of the various features of N-S Chart, see chapter 3: Reference.

If you are wanting more detailed information about the program, refer to the separate volume "N-S Chart Project Report"

Chapter 1:

**Learning
About
Π-S Chart**

Learning About N-S Chart

Anatomy of the N-S Chart screen

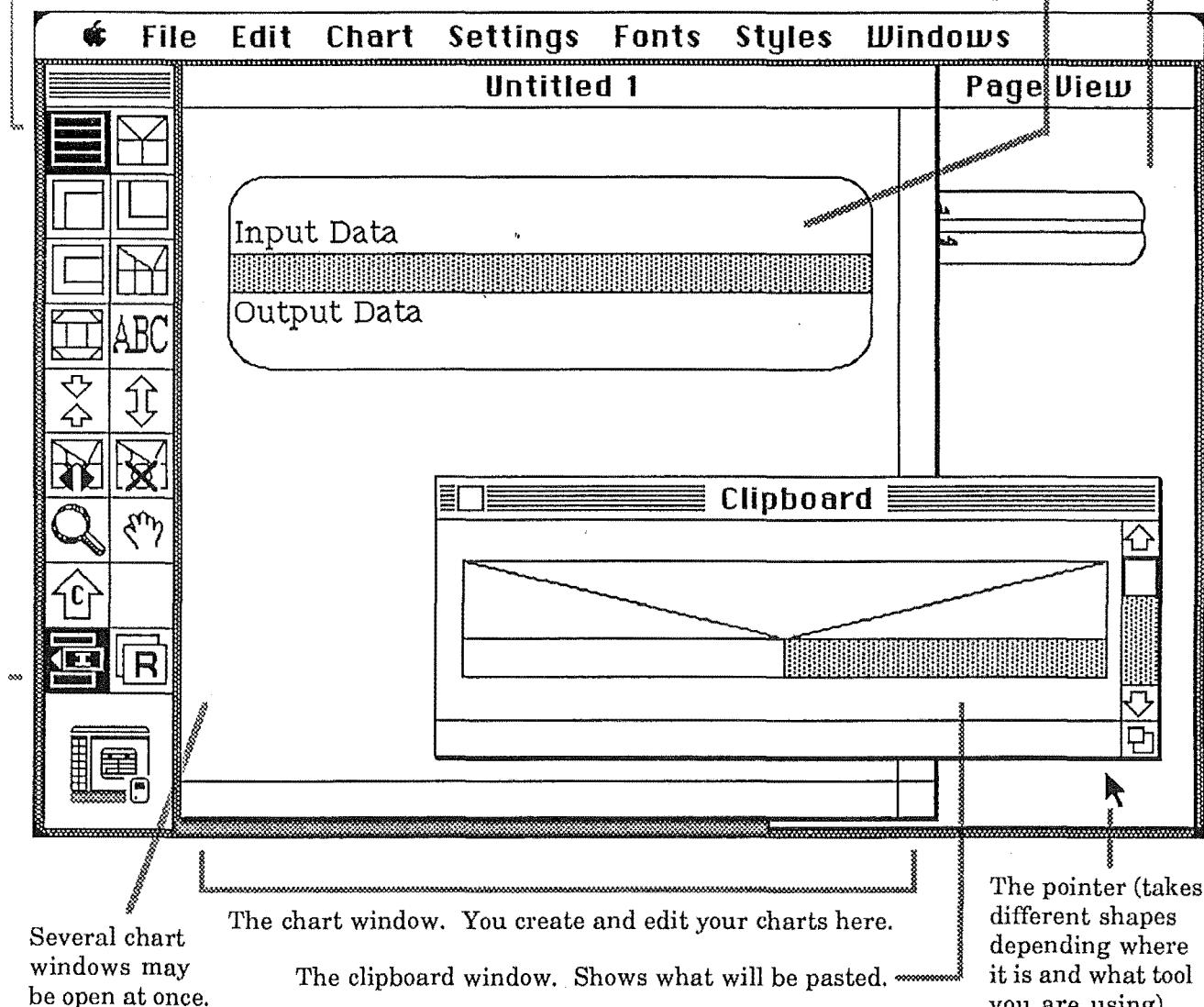
After starting-up N-S Chart the screen should look similar to the picture below - without the clipboard and page view windows.

The page view window shows how the whole chart will look on paper

Tool palette for selecting symbols, tools and drawing modes.

A starting 'blank' Nassi-Shneiderman chart.

Menus for creating, editing and manipulating your diagrams.



If N-S Chart was started by double clicking on a chart file, that file will be opened and its top level chart window will be displayed.

Opening a Chart

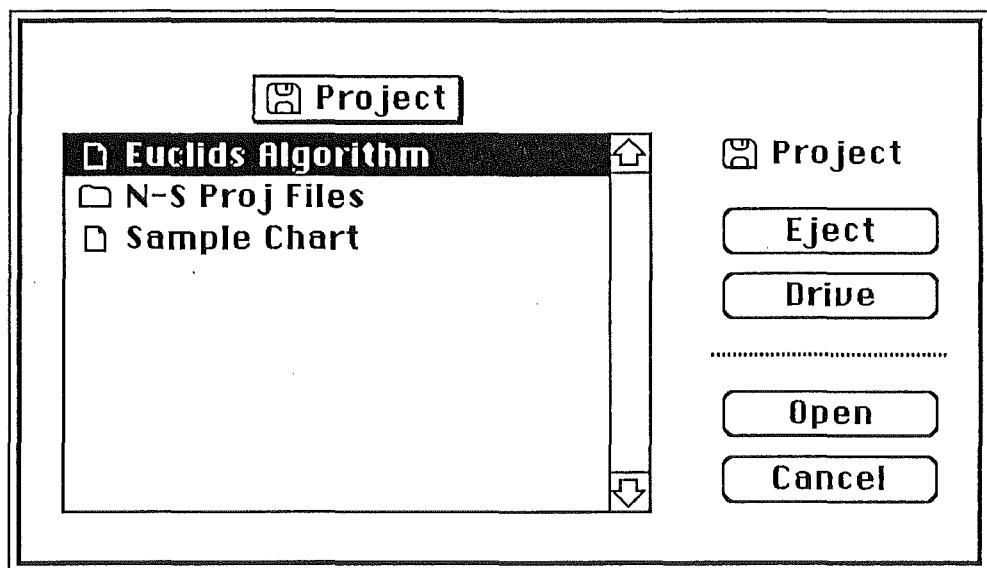
If you selected chart files to be printed from the finder, N-S Chart will start-up, print the charts in full, and the automatically close down again.

A blank Nassi-Shneiderman chart window (like the one shown above) will be opened if no charts were selected.

Opening a saved chart

- Choose **Open...** from the **File** menu.

A dialog box like this will appear on your screen:



- Click the name **Euclid's Algorithm**.
- Click the **Open** button.

A new chart window will appear (in the first available slot) with the **Euclid's Algorithm** chart in it.

Note that if you already had a Untitled blank chart open when you opened Euclid's Algorithm chart, the other chart will still be open. You may open up to 8 totally separate charts in this way.

Drawing Charts

Drawing Symbols

Symbols are added to a chart by selecting a symbol tool and clicking on the diagram where you want it inserted. When a symbol tool is selected, the cursor will change to a pointing finger.

- Click on the IfElse symbol icon in the tool palette. 

The square will become highlighted to indicate the current tool. (A summary of what each of the tool palette icons mean can be found in chapter 3).

- Click on the Input symbol at the top of the chart.

A blank IfElse symbol will be inserted into the chart after the Input symbol.

When symbols are added to the chart in this way, they may be inserted after the symbol clicked on, or they may replace the symbol clicked on.

- Click the Replace Mode icon at the bottom right of the tool palette.



- Select the Process symbol tool and click on the IfElse symbol you added just before.

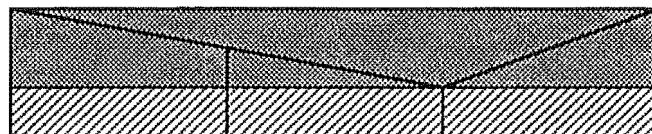
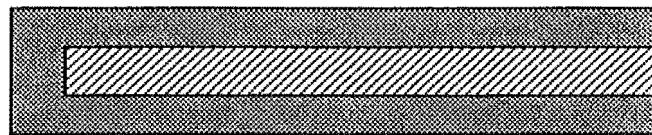
The process symbol will replace the IfElse symbol and the chart will be resized appropriately. When ever you make changes to a chart, N-S Chart will automatically resize everything to keep the chart neat and tidy.

To keep things balanced, N-S Chart sometimes inserts special process symbols called Fillers into the chart. These are coloured light gray to help you distinguish them from ordinary symbols.

The insert/replace mode may be changed at any time by clicking one of the two icons at the bottom of the palette. Notice that two of the tool palette icons will always be highlighted. One indicates the insert/replace mode, and the other the current drawing tool.

You may have found above that when you clicked on a symbol in the chart to add another, the new symbol did not appear where you expected.

All the symbols look rather different but they share the same basic parts shown below:



Symbol Area Inside Symbol

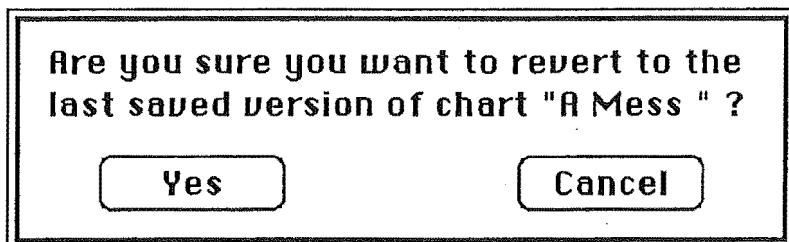
To click on a symbol you must click on the areas shown above in gray. If you click on the diagonal shaded area, you will actually be clicking on a different sub-symbol.

Revert

If you have made some changes to a chart that you think you are better off without you can revert back to the original version of the chart.

- Choose **Revert** from the **File** menu.

A box like this will appear:



- Click **Yes** to bring back the original chart.

If something goes wrong: Don't Panic!

If you do something wrong that N-S Chart thinks it should warn you about, a box similar to the one below will appear (the message may be different, but the ***!** will always be there).



A process symbol has not been properly selected and so a subchart can not be created.

- Click anywhere in the box to make the message go away.

Some messages advise you that you are trying to do something the wrong way (like the one above) and often give clues as to the right way to do it. Others just warn that what you have tried to do should not be done and tell you why you can't do it!

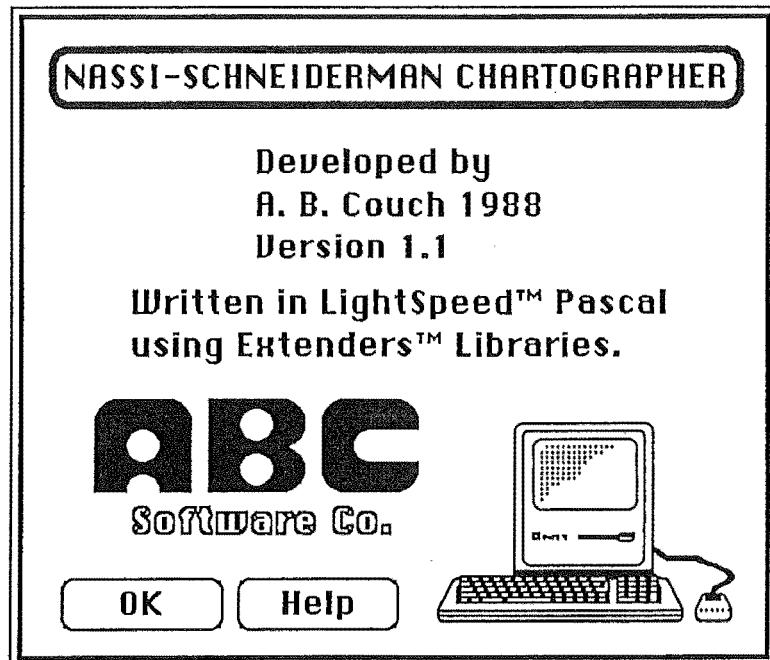
Help

On-line Help

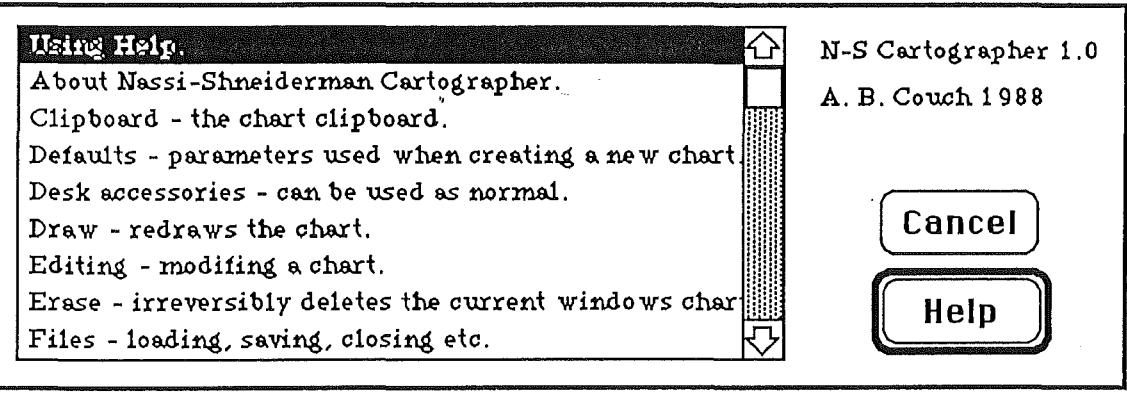
N-S Chart has a built-in help function that contains information on how to use many of its features. To be able to use Help, you must have the N-S Chart Help File in the same folder as your N-S Chart application.

- Choose **About N-S Chart...** from the  menu.

The 'about' box will appear:



- Click on the **Help** button...



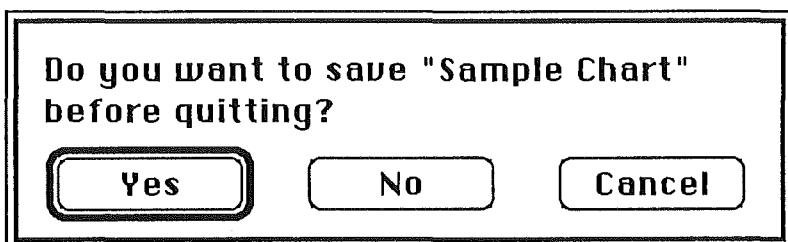
... and the topics dialog will appear. To get help on a topic, select it and click on **Help**. Another window will open with information on that topic. You can return to the dialog above by clicking the Topics button.

Quitting

Leaving N-S Chart

- Choose **Quit** from the **File** menu.

If you have made changes to any of the open charts, N-S Chart will ask if you want to save changes before quitting:



If you press **Yes** the changes you have made will be saved to the chart file.

If you click **Cancel**, N-S Chart will not quit.

Chapter 2:

**Using
N-S Chart**

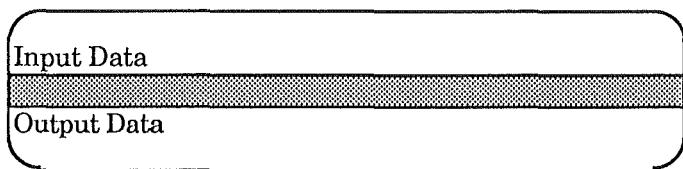
New Charts

Getting a New Chart

To obtain a new 'blank' chart window:

- Choose **New** from the **File** menu.

A new window will be opened with the standard Input-Filler-Output chart.



Entering Text

Entering Symbol Text

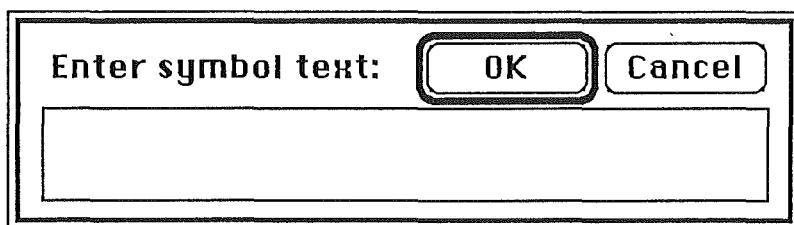
To enter text into a symbol:

- Select the Text tool from the palette.



- Click on the symbol.

A dialog box like this will appear:

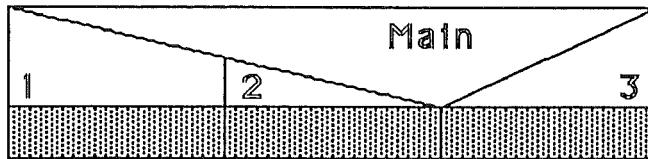


- Type the text for the symbol. It may as long or short as you like. You can use return to separate lines.
- Then click the **OK** button.

As much of the text as possible will be drawn in the symbol.

The text in a symbol may be edited at any time by clicking on it with the Text tool.

The top part of IfElse and Case symbols is split into several parts for entering text. The top upside-down triangle contains the main caption for the symbol. The text in this triangle is always centred in the symbol.



The other polygons show captions for the various alternatives of the symbol. To enter text into these, just click inside the appropriate polygon.

Insert Before/ After

Insert Before/After mode

When the IfElse symbol was drawn in chapter 1, it was inserted after the symbol clicked on. A symbol may be inserted before the symbol clicked on by changing the insert before/after mode. This option only applies when in insert mode - not when in replace mode.

- Choose **Insert Before** from the **Settings** menu.
- Select Insert mode (by clicking on the insert icon on the palette).
- Click on one of the DoWhile symbols in the middle of the chart.

The symbol will be added before the symbol clicked on. You may return to insert after mode by choosing **Insert After** from the **Settings** menu.

Selecting symbols

Cutting, Copying and Clearing

Cutting and pasting on symbols works similar to cutting and pasting of text. You first select the symbols in question, and then choose the required action.

Text is selected with the Grab tool. The cursor is changed to a hand to help you remember you are using the grab tool.



To select a single symbol, just click on that symbol (in the area shown in gray in chapter 1).

To select several symbols, click down on the first one and drag the hand up or down the chart. The selected symbols will become highlighted.

You can select an entire chart (less the Input and Output symbols) by choosing **Select All** from the **Edit** menu.

Moving and Copying

(Input and Output symbols can never be copied since it does not make sense to have more than one pair per chart).

Typing the Backspace key or choosing **Clear** from the **Edit** menu erases the selected text.

You can move symbols form one part of a chart to another, or even from one chart to a different chart.

- Select the symbols to be moved.

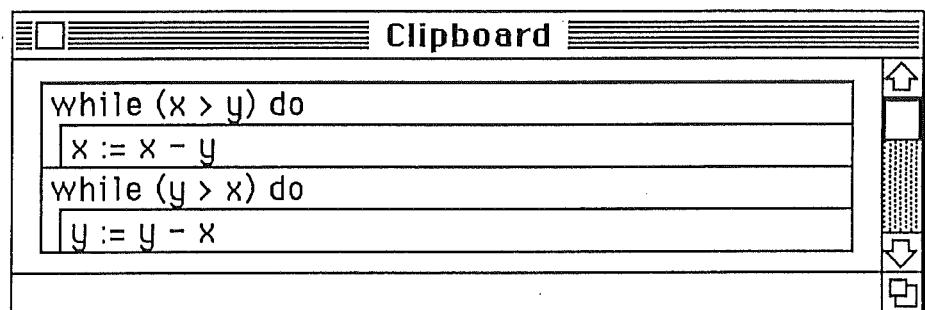


```
y := b
while (x < y) do
    while (x > y) do
        x := x - y
    while (y > x) do
        y := y - x
Output GCD(a, b)
```

- Choose **Cut** from the **Edit** menu.

The selected symbols are deleted from the chart and copied to the clipboard. They may be viewed at any time by opening the clipboard window:

- Choose **Clipboard** from the **Windows** menu.



Pasting

Now that the symbols are in the clipboard, you can insert them anywhere in your charts.

- Select a symbol with the Grab tool that you want the symbols to follow.
- Choose **Paste** from the **Edit** menu.

The symbols will appear after the selected symbol (if in Insert After mode) or before the selected symbols (if in Insert Before mode).

Pasting does not remove the contents of the clipboard; it only puts a copy at the selected symbol. Thus, you can make several repeated copies if you like.

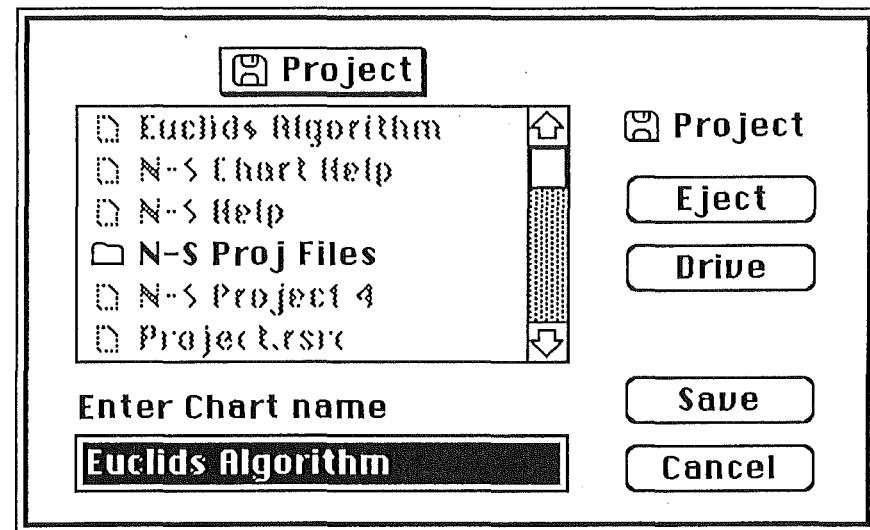
If you want to copy selected symbols to the clipboard without erasing it, choose **Copy** instead of **Cut**.

Saving Charts

Any chart may be saved to a file for future use. N-S Chart does not just save diagrams as a picture, but rather in its own special format.

- Choose **Save** from the **File** menu.

If the chart has not been saved before, a dialog box will appear to allow you to enter a file name:



You may browse files already on the disk, or even change disks and folders. If you decide against saving the chart, you may abort the operation by clicking **Cancel**.

If the chart has been saved before, no dialog will appear and instead the chart will be saved to the same file as before.

You may save a chart to a file of a different name or on to another disk with the **Save As...** command. The box above will be displayed.

Saving Pictures

Saving a Chart in PICT format

Rather than just printing completed charts on a page by themselves, you often will want to include them into documents and reports.

N-S Chart allows you to do this by providing an option to save charts as pictures.

- Choose **Save Picture...** from the **File** menu.

A box like the one above will appear for you to specify a name for the picture file. The chart is saved in the standard PICT format rather than just a MacPaint bitmap. This means the picture files are completely compatible with applications like SuperPaint, MacDraw and **Draw**.

If a N-S Chart generated picture file is opened, it will automatically start up MacDraw. Each element of the picture may be edited as with any picture in MacDraw.

Fonts

Fonts, Type Size and Style

The font for a chart may be changed by selecting the font name from the **Fonts** menu.

The default font is Beverly Hills which is built in to N-S Chart and so will always be available.

When a new font is chosen, all text in the current chart is changed to that font.

The type size may be specified by choosing a number from the **Styles** menu. The available sizes are shown in outline.

Again, choosing a new type size causes all the text in the current chart to be changed to that size. The type size has no direct relationship with the Line Height (q.v.) so if a large size is used, it may be necessary to change the line height to make the text readable.

Text Style

The current type style may be set by selecting various combinations from the **Styles** menu.

Whenever a new symbol is added to the chart, it records with it the current text style. The symbol style is also set when entering new text into a symbol.

A chart may be shown in all the same style (the current style) or with each individual symbol in its own style.

- Choose **Unique Style** from the **Settings** menu.

Line Height

This will redraw the chart showing all text in it's own style. (It won't look any different if you haven't entered any text, or you haven't changed the style).
To change back to drawing the chart all in the current style:

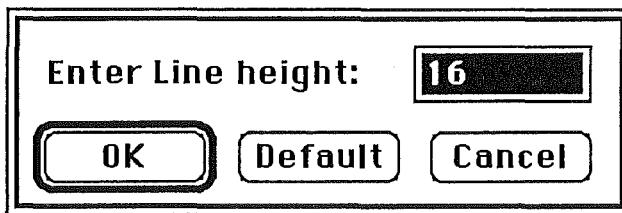
- Choose **Uniform Styles** from the **Settings** menu.

Setting the Line Height

All symbols are an integer number of 'lines' high. The size on one line can be set with the line height option.

- Choose **Line Height** from the **Settings** menu.

A box like this will appear:



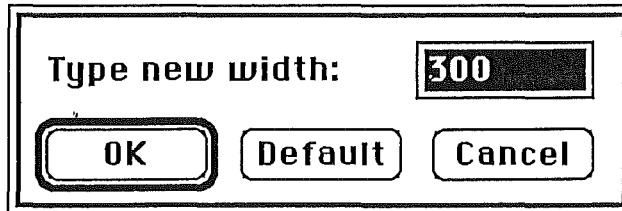
Type the new height for lines in pixels. A useful guide is to set the line height to about two to four pixels taller than the font point size you are working with. Experimentation will show what size you think looks best.

Chart Width

The width of each symbol added to a chart is automatically set depending on where it has to fit. Nevertheless the overall width of a chart diagram may be changed:

- Choose **Chart Width** from the **Settings** menu.

The following box will be displayed:



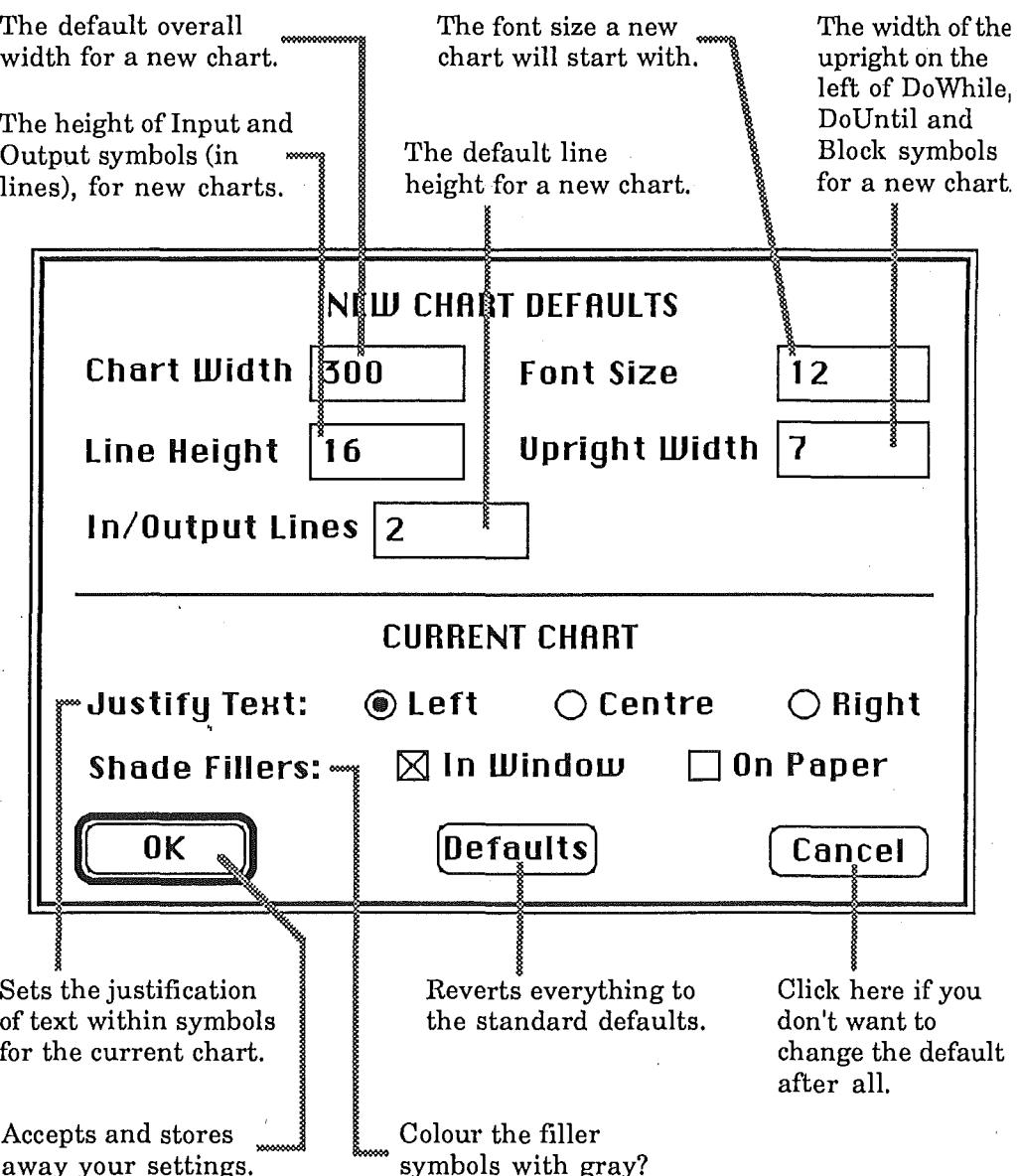
The maximum width is 600 pixels which is equivalent to the width of an A4 page. Clicking the **Default** button sets the chart width to the default of 300 pixels.

Defaults

Chart Defaults

- Choose **Defaults...** from the **Settings** menu.

A dialog box like this will appear:



The default Default settings are:

Chart width	= 300 pixels
Line height	= 16 pixels
Input and Output symbol height	= 2 lines
Font Size	= 12 point
Symbol upright width	= 7 pixels
Text justification	= Left
Shade filler symbols in window	= Yes
Shade filler symbols on paper	= No

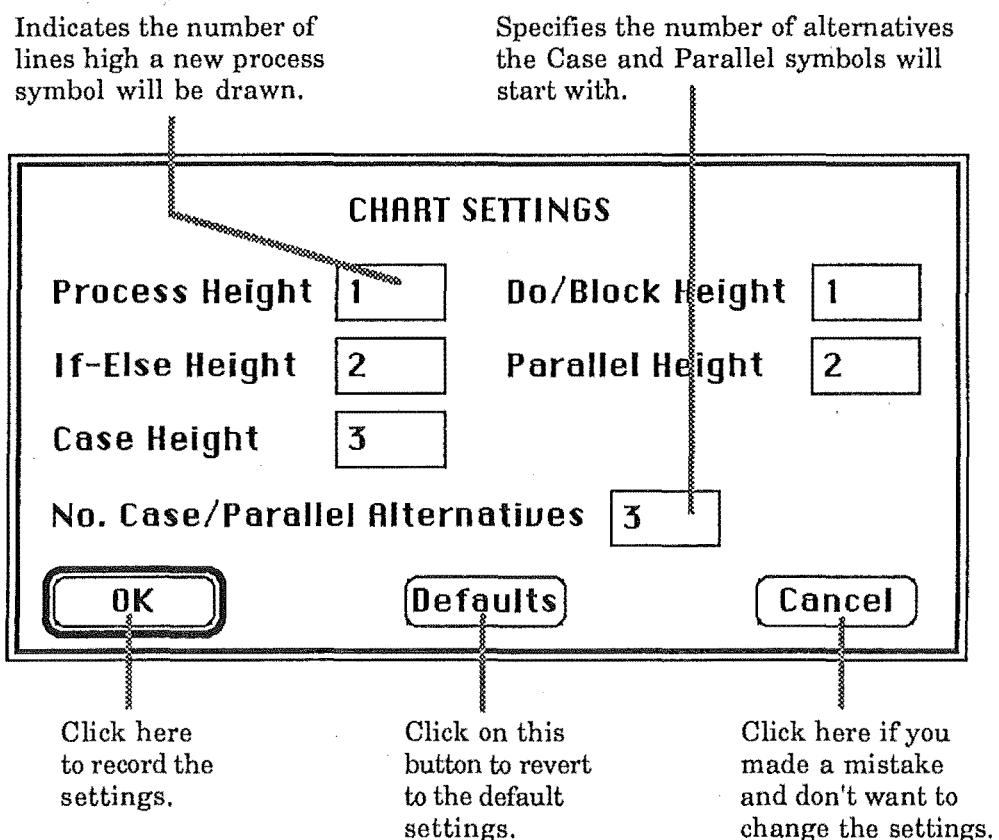
Settings

When you start-up N-S Chart, a new chart will have these attributes.

Symbol Settings

- Choose Symbol Settings... from the Settings menu.

The settings dialog looks like this:



The default chart settings are:

Process symbol height	= 1 line
IfElse symbol height	= 2 lines
Case symbol height	= 3 lines
DoWhile, DoUntil and Block symbol height	= 1 line
Parallel and Case symbol alternatives	= 3 cases

The symbol settings allow you to customize the size of new symbols drawn.

Grow and Shrink

You can change the shape of symbols that are already in the chart with the Grow and Shrink tools.



To enlarge a symbol, select the Grow tool and click on the symbol. The symbol will be enlarged by one line. Keep clicking on the symbol to make it even bigger. You can make a symbol as large as you like.

To make a symbol smaller, use the Shrink tool. Each time you click on a symbol it will be shortened by one line. You can not make a symbol shorter than one line high.

Case Symbols

Altering Case and Parallel symbols

When created, a Case or Parallel symbol starts off with the default number of alternatives. You can add more cases or delete cases with the Add Case tool and the Delete Case tool respectively.



The Add Case tool works just like inserting new symbols.

- Select the Add Case tool on the tool palette.
- Click on the symbol the new alternative is to be inserted after (before).

The **Insert Before** and **Insert After** options in the **Settings** menu also apply to inserting cases.

To remove an alternative:

- Select the Delete Case tool.
- Click on the top symbol in the case to be deleted.

All the symbols in the alternative will be deleted, and the chart will be redrawn adjusted appropriately.

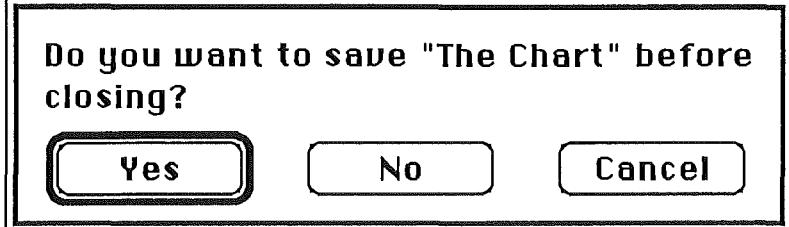
Closing a Chart

Closing Charts

- Choose **Close** from the **File** menu.

If you have made modifications to the chart since you opened it, or last saved it, a dialog like this will appear:

Subcharts



If you press **Yes** the changes you have made will be saved to a chart file. If you haven't saved the chart before, the **Save** dialog will be displayed for you to enter a name for the file.

If you click the Go-Away box of a new (or like new) chart, it will be closed (without saving it) - a new one can be opened again if needed.

Creating and Removing Subcharts

N-S Chart supports the building charts in a hierarchical manner. A whole subchart may be represented by a single process symbol in the parent. To make a subchart:

- Select a process symbol.
- Choose **New Subchart** from the **Charts** menu.

A new window will be opened with the 'blank' subchart in it.

A symbol with a subchart is drawn with a gray border to remind you it is special. The subchart window can be opened from its parent by double clicking on this symbol.

To delete a subchart:

- Select the symbol that represents the subchart.
- Choose **Remove Subchart** from the **Charts** menu.

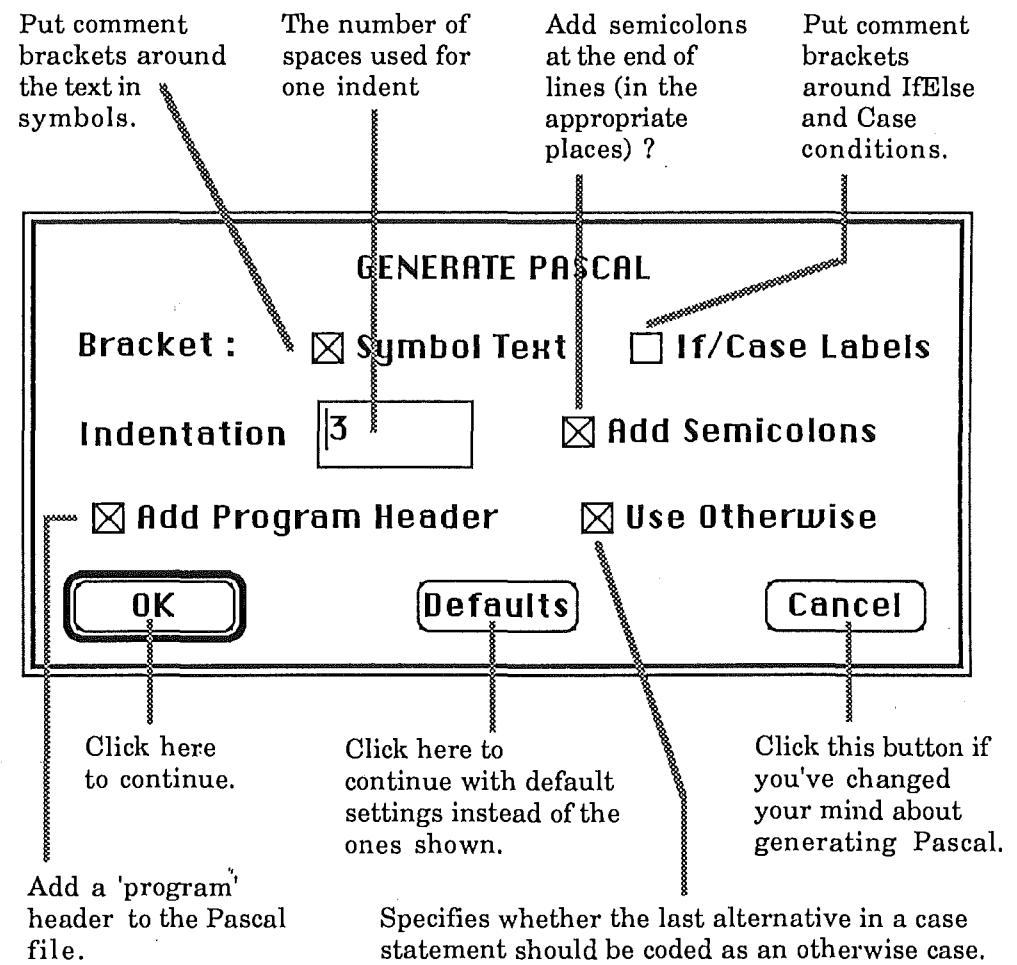
The subchart and all its descendants will be deleted.

Generating Pascal

N-S Chart can generate pseudo Pascal directly from a Nassi-Shneiderman chart. Each of the symbols are converted to the corresponding Pascal control structure. (Any parallel processing symbols can be turned into Pascal but are inserted into the code as comments).

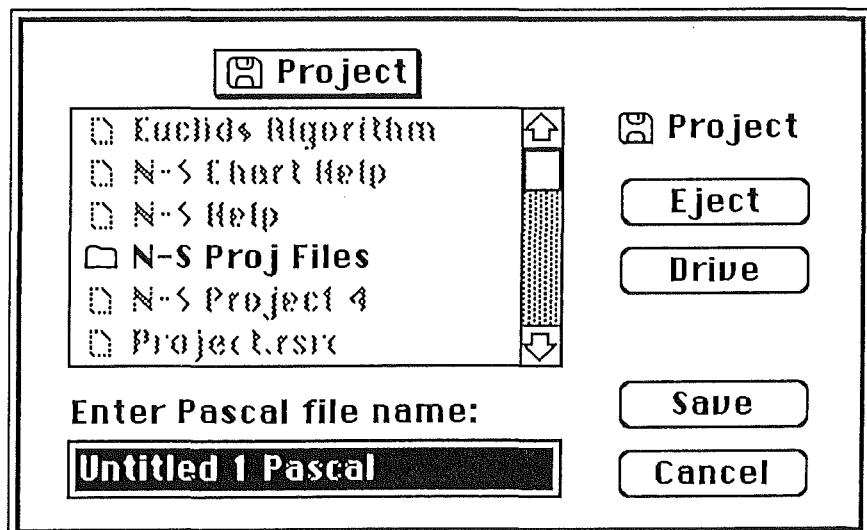
- Choose **Generate Pascal...** from the **Chart** menu.

A box like the one below will appear:



This dialog allows you to specify various options for generating the code.

When you click **OK**, this next box will appear:



Printing

- Enter the name of the file to which you want the pseudo Pascal written.

When you click **Save** the code will be generated and saved to a text file of that name.

You may read the file into any other application for editing, compiling etc.

If you click **Cancel** in either of the two dialog boxes, no file will be written.

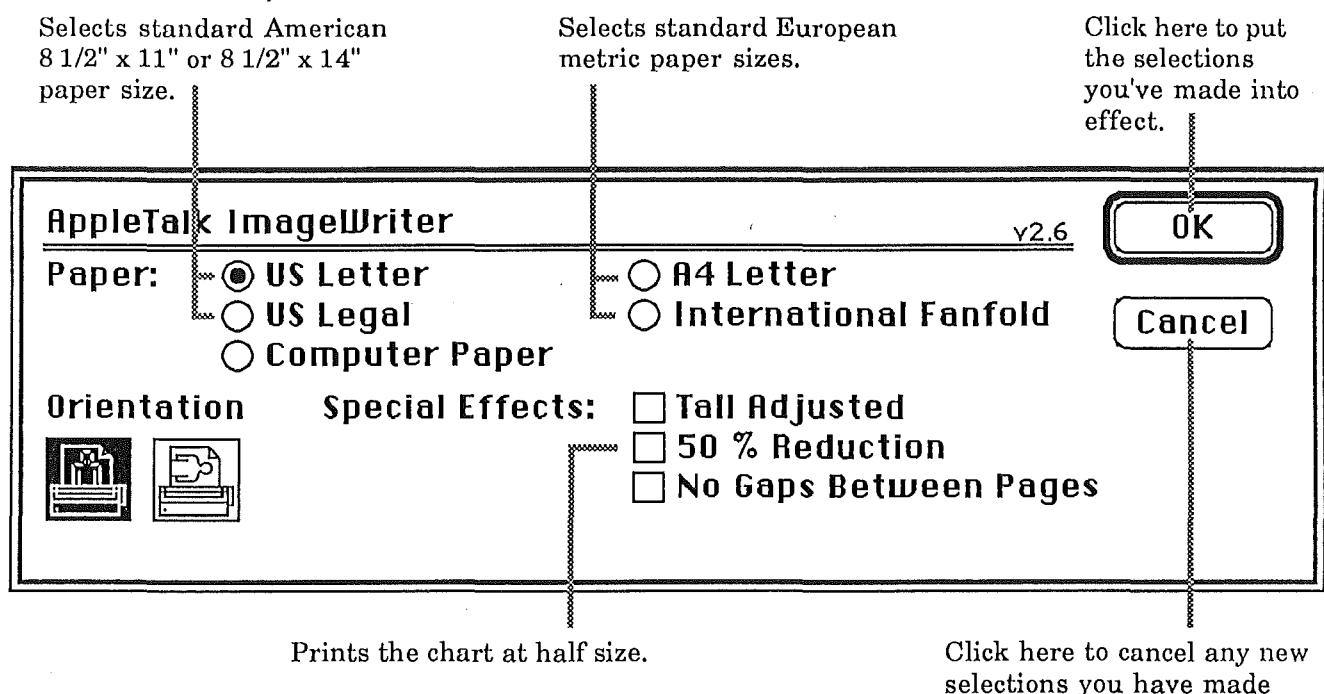
Printing Charts

When working with large charts, it is always helpful to have a hard copy of the whole chart in front of you. Scrolling windows are nice, but sometimes a paper printout of the chart makes it easier to follow.

To set up for printing your chart:

- Choose **Page Setup...** from the **File** menu.

This dialog box will be displayed:



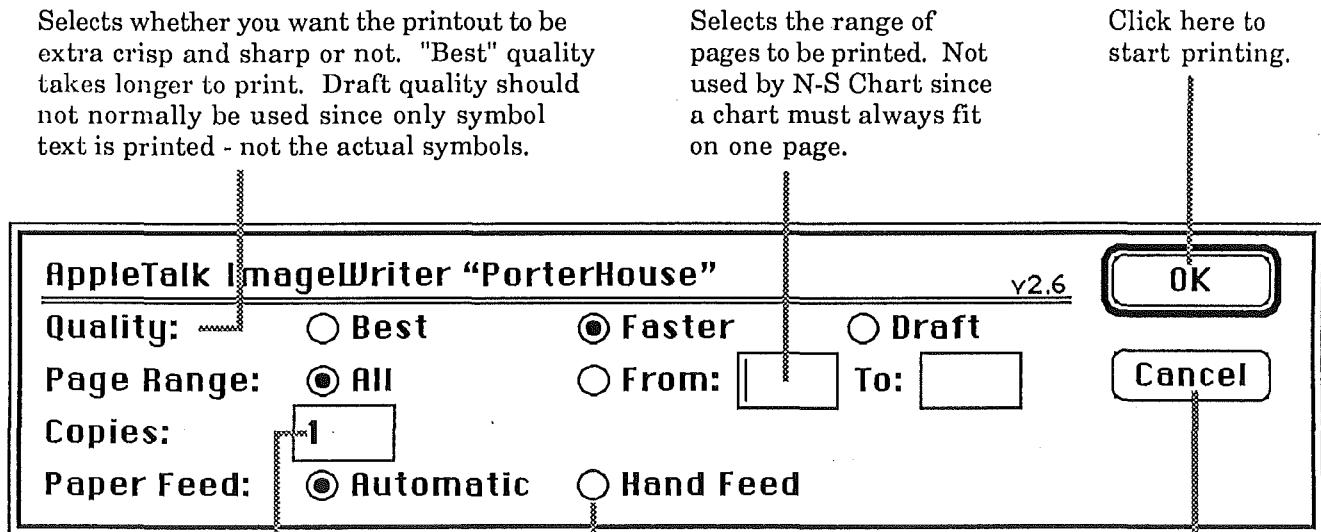
This dialog does not actually cause your program to be printed. It only allows you to specify how you want the printing to be set up on the page.

If you've already selected how you want printing to be done once before, and you don't want this printout to be any different, then you can skip doing a **Page Setup**.

To get a printout of your whole chart:

- Choose **Print All...** from the **File** menu.

A dialog box like this will appear:



Selects the number of copies of your chart you want printed.

Selects whether the printer will be printing on fan-fold paper or individual sheets.

Click here if you have decided not to print after all.

To print a single chart, rather than the whole hierarchy of charts:

- Choose **Print...** from the **File** menu.

Chapter 3:

Reference



About N-S Chart...

Tells you about the version of N-S Chart you are working with. The help topics dialog is displayed when the Help button on the About dialog is pressed.

The rest of the choices on this menu are standard Macintosh desk accessories.

File	
New	⌘N
Open...	⌘O
<hr/>	
Close	
Save	
Save As...	
Revert	
<hr/>	
Save Picture...	
<hr/>	
Page Setup...	
Print...	⌘P
Print All...	
<hr/>	
Quit	⌘Q

New

Creates a new, empty chart window named **Untitled** for you. You can give it a new name with **Save**, **Save As...** or **Chart Name**.

The window starts off with an empty chart.

Open...

Puts up a dialog box that lets you browse the chart files that N-S Chart knows about. When you choose one of the files, it appears in a new chart window. All of the charts subcharts are available in **Window List**.

Close

Closes the current chart and all of its subcharts. All windows of the chart are closed. If you have made any changes to the chart that you haven't saved, it asks you first if you want to save them.

Save

Saves changes made to your chart. If the chart is a new one (named **Untitled** or not saved yet), it asks you first for the programs name, like **Save As...**

Save As...

Puts up a dialog box that lets you save the current chart under a new or different name. It also lets you select which disk and folder the program will be saved in.

Revert

If you have made changes to a chart that you have decided you are better off without, you can

bring back the last version of the chart you saved with
Revert. **Revert** will always double-check with you before reverting, just to make sure you don't want the current version.

Save Picture...

Saves the current chart as a picture (PICT format). Save picture puts up a dialog box for you to enter a name for the file you want the picture saved to. The picture can be loaded and edited using MacDraw or other similar applications.

Page Setup...

Lets you tell N-S Chart what kind of paper you're going to be printing on: what size the paper is and what size you want the charts printed.

Print... ⌘P

Puts up a dialog box that lets you tell N-S Chart how the printing should be done: what quality the printing should be, how many copies

to print and whether it can expect the paper to be fed continuously or a single sheet at a time.

Print All...

Does the same thing as **Print**, except that all the subcharts of the current chart are printed, rather than just the front chart.

Quit ⌘Q

Returns to the Finder. If you've made changes to any chart that you haven't saved yet, it asks you if you want to save them before it quits.

Edit

- Undo**
-
- Cut ⌘X**
- Copy ⌘C**
- Paste ⌘V**
- Clear**
-
- Erase ⌘E**
-
- Select All**

Cut ⌘X

Removes the selected symbols and places them in the clipboard. Any symbols previously in the clipboard are overwritten.

Copy ⌘C

Does the same thing as **Cut**, except that the selected symbols are not removed; only a copy of them is placed in the clipboard.

Paste ⌘V

Inserts a copy of the symbols in the clipboard after the selected symbols when in Insert mode, or in place on the selected symbols in Replace mode.

Clear

Similar to **Cut**, except that the symbols are not placed in the clipboard, they are simply removed.

Erase ⌘E

Clears the current chart to a blank chart and deletes all subcharts of the current chart. **Erase** will always double-check with you, to make sure you really want to erase the chart.

Select All

Causes all symbols between the Input and Output symbols in the current window to become selected.

Note:

Edit menu choices may not be applied to symbols in the **Clipboard** window.

Chart

New Subchart
Remove Subchart

Include Subchart
Make Subchart

Collapse
Expand

Generate Pascal...

Draw

New Subchart

Opens a new subchart window from the first of the selected symbols. If the selected symbol has no caption, it is given the name of the subchart.

Remove Subchart

Removes the subchart (and all its children) that the selected symbol stands for. It will always check with you to make sure this is really what you want to do.

Include Subchart

Replaces the selected symbol with the symbols in its subchart. All the symbols' subcharts are preserved.

Make Subchart

Places a process symbol in place of the selected symbols and creates a new subchart, placing the selected symbols in the subchart.

Collapse

Collapses the selected symbols into a single process symbol. The symbols are not deleted, but just hidden from view. They can be seen by using the **Inspect** tool.

Expand

The opposite of **Make Subchart**, this option inserts hidden symbols back into the chart. The process symbol that marked their place is removed.

Generate Pascal...

Opens a dialog to let you select options about the code to be generated, then a dialog to allow you to browse files on the disk and select a file name. Pseudo Pascal is generated and saved to this file.

Draw

Redraws the chart in the current window.

Settings

Chart Width	⌘W
Line Height	⌘L
Chart Name	

Defaults...	⌘D
Symbol Settings...	⌘S

Unique Style	⌘U
Insert Before	⌘I

Chart Width ⌘W

Lets you enter a new width for the current chart. The maximum width is 600 pixels.

Line Height ⌘L

Allows you to set the line height - the height of a symbol one line high.

Chart Name

Sets the name of the current window, and hence the name of the current chart.

Defaults... ⌘D

Lets you change the default settings for creating a new chart and the chart

defaults for the current chart.

Symbol Settings... ⌘S

Brings up a dialog to let you alter the default settings for symbols. New symbols created will use these values.

Unique Style ⌘U

Switches the style mode from Uniform Styles to Unique Styles.

Uniform Styles ⌘U

This is the opposite of **Unique Style**. It switches from Unique Styles to Uniform Styles.

Insert Before ⌘I

This option changes the insertion mode. The mode is changed to Insert Before.

Insert After ⌘I

This is the opposite of **Insert Before**. It switches from Insert Before mode back to Insert After.

Fonts

Chicago
 Geneva
Monaco
Times

This menu lets you select the font to be used for the current chart. When the font is changed, all text in the chart is changed to that font.

Styles

Plain
Bold
Italic
Underline
Outline
Shadow
Condense
Extended

.....
9 Point
10 Point
 12 Point
14 Point
18 Point
24 Point

The top section in this menu allows you to select the style for symbol captions. This style is used when a symbol is created and whenever the text of a symbol is changed. The current style is used to draw the entire chart when in **Uniform Style** mode. To get different styles for each symbol, use **Unique Styles** mode.

The second part of the Styles menu selects the point size for text. Proper point sizes are shown in outline. The other sizes may be used, but will look a little rough.

Windows

Window List ⌘L

Palette
Page View
Clipboard

Chart One	⌘1
Chart Two	⌘2
Untitled 3	⌘3
Available	⌘4

Window List ⌘L

Puts up a dialog box that lets you peruse the windows (charts) that are open in N-S Chart. If a window is selected it is opened and brought to the front.

Palette

Redraws the tool **Palette** at the left of the screen. This may be necessary after using some desk accessories or after a screen saver like Pyro.

Page View

Causes the **Page View** window to become active. This window shows you how the chart will be

positioned on the printed page.

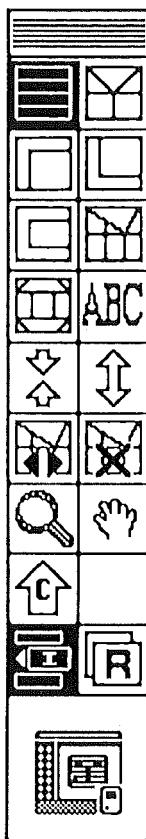
Clipboard

Causes the **Clipboard** window to become the active window. When ever you **Cut** or **Copy** selected symbols, the symbols are copied to the clipboard. The **Clipboard** window always displays the contents of the clipboard.

Untitled 3 ⌘3

The names that actually appear in the last section of this menu depend on the names of your charts. For instance, if you have a chart called **Demo**, **Demo** would appear in this menu. The names of all top level charts will appear here. Choosing a name causes the window with the chart of that name to become the active window

Tool Palette Reference



- Process Tool - Gives a process symbol.
- If Else Tool - Gives an IfElse symbol.
- Do While Tool - Gives a DoWhile symbol.
- Do Until Tool - Gives a DoUntil symbol.
- Block Tool - Gives a Block symbol.
- Case Tool - Gives a Case symbol.
- Parallel Processing Tool - Gives a parellet symbol.
- Text Tool - Brings a up a dialog box to enter a symbol caption.
- Shrink Tool - Reduces the height of the symbol by one line.
- Grow Tool - Increases the height of the symbol by one line.
- Add Case Tool - Adds an other alternative to a Case symbol.
- Delete Case Tool - Removes the indicated case from a Case symbol.
- Inspect Tool - Shows the contents of a collapsed symbol.
- Grab Tool - Click and drag with this tool to select symbols.
- Up One Button - Closes the current subchart and opens the subchart's parent chart.
- Insert Mode Switch - Changes from Replace mode to Insert Mode.
- Replace Mode Switch - Changes from Insert mode to Replace Mode.