

NS481/581 NATURAL SCIENCE SUMMER INSTITUTE

BASIC GLOSSARY FOR ARCVIEW GIS SOFTWARE

Note: terms and concepts in alphabetical order.

Active theme

When a theme is active it is highlighted in the Table of Contents. To make a theme active, click on it in the Table of Contents. To make more than one theme active, hold down SHIFT when you click on the themes.

Many of the operations you can perform on a view work on the active theme(s), so making a theme active is the first step in many ArcView procedures. For example, when you use the mouse to select features on a view, features are only selected from the active theme(s).

ArcView Map Features

Points - Points represent features found at discrete locations, such as telephone poles, wells and mountain peaks.

Arcs - Arcs represent linear features such as streams, streets and contours.

Polygons - Polygons represent areas enclosed by specific boundaries, such as countries, states, land parcels and soil types. The boundaries of polygons in a coverage can be displayed irrespective of whether the coverage contains arc features.

Label points - Label points are points inside polygons that have the same attributes as the polygons. One way to use label points is to symbolize polygons using different point symbols according to their attributes.

Nodes - Nodes are the endpoints of the arcs making up arc features and polygon features. A node occurs at the point where two or more arcs meet and at each end of a dangling (unconnected) arc.

Attribute

A characteristic of a geographic feature described by numbers or characters, typically stored in tabular format, and linked to the feature. For example, attributes of a well, represented by a point, might include depth, pump type, location and gallons-per-minute.

Charts

When used in a layout, a chart is contained in a frame. Chart frames contain a representation of a chart. When a chart frame is created, you select the chart that you want displayed in the frame. This chart must be open or the chart frame will display a solid rectangle. Any changes you make to the chart are reflected in the chart frame. The changes to the frame can occur either in real time or only when the layout window is active. Chart frames display in one of two qualities, Draft or Presentation. Draft quality provides the quickest redisplay. It shows a solid rectangle containing the name of the chart. Presentation quality provides a quality graphical representation at the expense of display speed.

Chart frames can also be created without being associated to a chart. You can create templates from the layout to use in map production. When you use the template, the chart frame is filled by a chart in the project. The ability to create layouts with blank frames that can be filled with charts by subsequent sessions or with scripts, is an important tool for automating map production tasks. See Using a layout as a cartographic template.

To break the live link between a chart and a chart frame on a layout, select the chart frame with the Pointer tool and choose Simplify from the Graphics menu. This converts the contents of the chart frame into individual graphics. Choose Group from the Graphics menu to group these graphics together so you can easily move and resize the frame as desired. Note that you cannot restore a live link that has been broken in this way.

Coordinate system

A reference system used to measure horizontal and vertical distances on a planimetric map. A coordinate system is usually defined by a map projection, a spheroid of reference, a datum, one or more standard parallels, a central meridian, and possible shifts in the x- and y- direction to define x and y coordinates defining the location of point, line and area features. A common coordinate system is used to spatially register geographic data for the same area.

Database

A logical collection of interrelated information, managed and stored as a unit, usually on some form of mass-storage system such as magnetic tape or disk. A GIS database includes data about the spatial location and shape of geographic features recorded as points, lines, areas, pixels, grid cells or tins as well as their attributes.

Extensions

The Extensions dialog allows you to load and unload extensions. Extensions extend ArcView "on the fly" allowing you to enhance your working environment with additional objects, scripts and customization independent of the current project. You can use extensions provided by ESRI and you can also create your own. Extensions are a great way to share your favorite button or an interesting View document with your colleagues and because the extension installs its own components, even beginning ArcView users can easily use them.

Available Extensions list

Each extension in the list has a check box to the left of its name. You load and unload extensions by checking and unchecking the box. What do the check marks and check boxes mean? No check mark in the check box means that extension is NOT loaded. A check mark in the check box means that extension is loaded. A solid check mark means that extension can be unloaded. An outlined check mark means that extension cannot be unloaded because of dependencies upon it.

To load an extension

- 1 Drag the mouse over the check boxes to the left of the extension name in the Available Extensions list. Notice the cursor turns into a check mark.
- 2 Click on the check box for the desired extension. When you check the box, a check mark will appear.
- 3 When you hit OK, that extension will be loaded.

NOTE: If the extension you checked is dependent upon another extension, the other extension will also be loaded. If the required extension is in your Available Extensions list, its check mark will be an outline instead of a solid - an outline check mark indicates the extension cannot be unloaded because of dependencies. If a required extension is not listed in your Available Extensions list, it will NOT be added to the list, but the extension will be

loaded.

To unload an extension

- 1 Drag the mouse over the check boxes to the left of the extension name in the Available Extensions list. Notice the cursor turns into a check mark.
- 2 Click on a checked check box to remove the check mark. If a check mark is an outline (not solid), you cannot unload the extension because there are dependencies on it.
- 3 When you hit OK, ArcView unloads that extension.

OK

OK applies any changes and closes the dialog box.

Cancel

Cancel closes the dialog box, but does not apply changes .

Reset

Reset restores the loaded and unloaded states of all extension to the system default settings.

Make Default

Click Make Default to create or update your local default.apr file with the set of extensions currently defined in your project saving the extension's loaded state. The saved state will be the set of loaded extensions when you hit OK. Each time you load ArcView, these extensions will automatically be loaded.

Georeference

To establish the relationship between an image (row, column) coordinate system and a map (x,y) coordinate system.

Graphic types

The drawing tools let you draw the following types of graphics on your view or layout:

Points, Straight lines, Line with two or more points, Rectangles, Circles, Polygons

The text tool lets you draw text on your view or layout.

The frame tools let you draw the following graphics on your layout:

ViewFrame - Show a View document
LegendFrame - Show a Legend for a ViewFrame
ScaleBarFrame - Show a Scale bar for a ViewFrame
NorthArrow - Show a North Arrow
ChartFrame - Show a Chart document
TableFrame - Show a Table document
PictureFrame - Import graphics from another file.

GRID

A fully integrated grid (cell-based) geoprocessing system for use with ARC/INFO. GRID supports a map algebra spatial language that allows sophisticated spatial modeling and analysis.

Image data

An image is a graphic representation or description of an object that is typically produced by an optical or electronic device. Some common examples of image data include remotely sensed data, such as satellite data, scanned data and photographs. Image data is a form of raster data where each grid-cell, or pixel, has a certain value depending on how the image was captured and what it represents. For example, if the image is a remotely sensed satellite image, each pixel represents light energy reflected from a portion of the Earth's surface. If, however, the image is a scanned document, each pixel represents a brightness value associated with a particular point on the document.

With ArcView you can display image data and feature-based spatial data together in views. ArcView can display and print black and white, grayscale, pseudocolor and true color images. You can also include them in a layout.

To add an image to a view, see [Adding a theme to a view](#). To change the way an image looks and to derive additional information from an image you can edit an image's legend. Images are often used as the background to views, with spatial data being drawn on top of them. Themes representing images are therefore normally moved to the bottom of the view's Table of Contents, so that they are drawn on the view first.

The main difference between image data and feature-based spatial data is that images do not contain attribute data about the features they show.

Image types

The range of values the pixels in an image can assume depends upon the number of bits (binary digit) used to store pixel data. The more bits, the greater the range of possible values. For example, if one bit is used to store pixel values, the number of unique values that can be expressed is 2¹, or two. With eight bits, 2⁸ or 256 unique values can be expressed.

Image data can be organized in a number of ways depending upon the particular image format. Typically, the image data file contains a header record that stores information about the image such as the number of rows and columns in the image, the number of bits per pixel, the color requirements and the georeferencing information. Following the image header is the actual pixel data for the image. The internal organization of the image data is dependent upon the image format. Some formats contain only a single band of data, while others contain multiple bands.

There are four types of images:

- monochrome
- pseudocolor
- grayscale
- true color/multiband

Overview of labeling

ArcView has three ways for you to label the features in your themes.

1. Interactively position and enter your own text

The most flexible way for you to label a feature is by using the Text tool because you can enter whatever text you want. [Click here for instructions.](#)

Tip You can copy text from other applications or text editors and paste it into the Text Properties dialog.

2. Interactively position a label based on an attribute value

You can use the Label tool to label features by clicking on them. By using the Text Labels Theme Property, you can designate a field in your theme's attribute table as the label field. Click here for instructions

3. Automatically label some or all features

You can label all features or just selected features for an active theme. From the Theme menu choose Auto-label to open the Auto-label dialog box. From here you can set the preferences for labeling. You can Auto-label either all the features of the active theme or a selected set of features.

There are two methods that ArcView uses to Auto-label themes.

1. The first method is to place one label for every feature. These labels will always be positioned in the same location with respect to a feature, e.g., Upper left, centered, or below. The placement options are in the Theme Properties Label Text panel.

Notes on the one label per feature method

You can use this method to effectively place multiple labels per feature by specifying different label positions for each label.

This method is not very useful for labeling dense clusters of features. You should either change scales, the size of your text, or use the Find Best Placement method.

2. The first method may not be appropriate for all labeling scenarios, especially when many features have the same label text. Therefore, a second method can be used which automatically evaluates features and their label text and then only places labels that meet the placement criteria you specify in the Auto-label dialog. This second method is called Find Best Label Placement.

When you use the Find Best Label Placement method to Auto-label, the labels are linked to one symbol. So, you only have to select one label to change the font, size, or style for all labels that were created when you Auto-labeled. If you choose to allow overlapping labels, those labels will be linked to a separate symbol. The Convert Overlapping Labels option on the Theme menu lets you to change the symbol association from the overlapping label symbol to another label's symbol.

You may additionally specify whether your labels will scale when you change your view's scale and whether to label only the features that are in the current view extents (versus all features in your theme).

Notes on the Find Best Placement method

You have the option to allow overlapping labels, which will return labels that are of the same font as your non-overlapping labels, but the color will be green. If you use this option in conjunction with the Remove Duplicates option, you will get all the unique labels for your theme.

ArcView evaluates each label and determines whether a label is aesthetic. If not, then ArcView will not place that label. If you choose to Allow Overlapping Labels, these un-aesthetic labels will also be drawn in the green color with the overlapping labels.

ArcView treats point features a little different than line and polygon features. ArcView will not permit labels for point features to intersect the point symbols, while labels for line and polygon features may intersect other features.

The default label position for point features is above and to the left of the point's symbol.

Layout

A layout is a map that lets you display views, charts, tables, imported graphics, and graphic primitives. The layout is used to prepare these graphics for output from ArcView.

A layout defines what data will be used for output and how they will be displayed. A layout can be dynamic because it allows you to make specific graphics live. When a graphic is live, it reflects the current status of the data. For example, if the data in a view changes, the layout automatically reflects the change.

The same data can be displayed on a number of different layouts. Think of each layout as being a different way of presenting the data. If you are doing a marketing presentation you will probably want to present data differently than if you are doing cartographic production. With ArcView, a different layout of the data can be created for each application. Using Avenue you can extend the power of ArcView by creating custom functions, user interfaces and cartographic templates that will assist you in creating output.

What a layout can contain

The Layout provides the standard graphics and operations one would expect in a typical 'drawing' package.

These graphics are drawn using the Draw tools and include points, lines, polygons, rectangles, and circles.

The Layout also contains objects specific to the ArcView environment, including frames containing ArcView views, charts, and tables, and ancillary objects such as legends and scale bars.

Printing layouts

You can print a layout or export a layout to a number of formats to use with other software packages.

Map extent

1. The rectangular limits (xmin, ymin, xmax, ymax) of the area of the Earth's surface you want to display using ArcView. Map extent is specified in the coordinate system of the feature data source and other geographic data sets being used. Typically, the extent of the geographic database defines the map extent for display.
2. The geographic extent of a geographic data set specified by the minimum bounding rectangle (i.e., xmin,ymin and xmax,ymax).

Map scale

The reduction needed to display a representation of the Earth's surface on a map. A statement of a measure on the map and the equivalent measure on the Earth's surface, often expressed as a representative fraction of distance, such as 1:24,000 (one unit of distance on the map represents 24,000 of the same units of distance on the Earth). Map scale can also be expressed as a statement of equivalence using different units; for example, 1 inch = 1 mile or 1 inch = 2,000 feet.

Map unit

The coordinate units in which a feature data source is stored. Map units can be feet, meters, or decimal degrees.

Pixel

Short for picture element. The smallest resolvable element in an image. A pixel has both a spatial location and a value component.

Polyline

Any line defined by three or more points. Line features in themes such as boundaries, roads, streams and streets are usually polylines.

Project

A project is the file in which work you do in ArcView is stored. A project typically contains all the view, tables, charts, layouts and scripts that you use for a particular ArcView application. These are the components of a project. For example, if you are using ArcView to find suitable locations for a new office buildings, you would keep all the views, tables, charts, layouts and scripts that you use in this application in one project. In this way, your work is stored in one convenient place. The next time you want to work on this application you simply open this project file in ArcView and all the components you need are available for you to use. Project files have an .apr extension.

Does a project contain my data?

A project file doesn't contain the actual data that you use in ArcView, such as spatial data like shapefiles and ARC/INFO coverages, and tabular data like dBASE files. Instead, a project stores references to the location of these data sources on disk. In this way, the same data can be used in any number of projects without duplication.

What's the Project window for?

When you open a project, all the components in the project are listed in the Project window. From the Project window, you can create new project components, open or rename existing components, or remove components from your project. When the Project window is active, menu options and buttons are available that let you perform additional operations on the project and its components.

How do I customize my project?

You can customize ArcView's menus, buttons, and tools by choosing Customize from the Project menu or double-clicking the button bar. You can make your changes apply to just the project you're working on (in which case the changes are saved into your project file) or serve as the default for all projects. You can also customize the items in the Project Window. See Customizing ArcView.

Can I look at my project file outside of ArcView?

A project file is an ASCII file. Normally however, you shouldn't edit this file with a text editor.

Query Builder (Dialog box)

Lets you select features by defining a query based on their attributes.

Building a query

To build a query, choose a Field, then an Operator, then a Value. You build a query by double-clicking on these options with the mouse or by typing your query directly into the query text box. By default, the query is contained within parentheses, but the parentheses may not be required, depending on the complexity of your query. If the Update Values choice is on, click once on a field name to list its values in

the Values list. Field names are always enclosed in square brackets ([]). If the value you want to use in the query is not in the Values list, type it into the query text box.

For example, to select all the houses of more than 1,500 square feet, you could use the query:

```
( [area] > 1500 )
```

Strings such as names are always quoted in queries. Strings are case insensitive, so you can select California with:

```
( [state_name] = "california" )
```

Use * as a multiple character wildcard. For example, to select Mississippi you could use the query:

```
( [state_name] = "missi*" )
```

Use ? in a string as a single character wildcard. For example, to find Catherine Smith and Katherine Smith, use:

```
( [owner_name] = "?atherine smith" )
```

To select all the cities with names starting with the letters M to Z, you could use:

```
( [city_name] >= "m" )
```

Values in date fields contain eight digits in the format YYYYMMDD. For example, the 2nd of May 1961 would be represented as 19610502. Dates are handled as date objects. So when you are querying a date field you can select all dates before today by using:

```
( [date] < Date.Now )
```

To select all the dates before a specific date, you could use:

```
( [date] < 19920717.AsDate )
```

If you double-click a date in the Values list in the Query Builder dialog .AsDate is entered into your expression automatically. It tells ArcView that the eight digit number is to be treated as a date in the expression. Another way to specify a date in an expression is to give the date as a string and then tell ArcView what format you have given it in, so ArcView can convert it to a eight digit date for you:

```
( [date] > Date.Make("03/15/1993", "MM/dd/yyyy") )
```

The month format is given as "MM" to distinguish it from "mm" for minutes. Date.Now and Date.Make in the above expressions are actually Avenue statements. They use Avenue's object.request syntax. You can include Avenue statements in query expressions in order to perform operations on dates, times, strings, numbers and boolean fields. See Performing operations on date fields for more information. Values in boolean fields are either True or False. So when you are querying a boolean field you can select all the true values by using:

([Wetland] = True)

To select all the records that are true you could also use:

([Wetland])

To select all the records that are false you could also use:

([Wetland].not)

Complex queries can be built by combining expressions together with the And and Or operators. For example, to select all the houses that have more than 1,500 square feet and a garage for three or more cars, use the query:

([area] > 1500) and ([garage] > 3)

Use the Not operator to exclude. For example, to select all the New England states except Maine, use the query:

([sub_region] = "N Eng") and (not ([state_name] = "Maine"))

Queries can compare the values of two fields. For example to find all the counties with a declining population, use the query:

([pop1990] < [pop1980])

Calculations can be included in queries. For example, to find the counties with a population density of less or equal to 25 people per square mile, you could use the query:

([pop1990] / [area] <= 25)

Normally ArcView evaluates a query from left to right, but expressions that you enclose in parentheses are evaluated first. For example, the query:

([netvalue] > [area] * [price] + [tax])

will be evaluated differently from:

([netvalue] > [area] * ([price] + [tax]))

Dialog box options

Fields This lists the fields in the theme or table you are querying. If the Update Values choice is on, click once on a field to see all its values listed in the Values list. Double-click on a field to place it into the query text box. If you type in the name of a field instead of clicking in this list, field names are not case sensitive, so typing Area, area or AREA are all allowed.

Fields that have been hidden do not appear in the Field list. If field name aliases have been defined these aliases appear in the Fields list.

Operators Use these operators to specify relationships between Fields and Values in a query. Either

click or double-click an operator to place it into the query text box.

| | |
|-----|---|
| = | equals |
| > | greater than |
| < | less than |
| ◇ | not equal to |
| >= | greater than or equal to |
| <= | less than or equal to |
| () | expressions enclosed in parentheses are evaluated first. |
| and | both expressions are true, e.g. [area] >= 100 and [area] <= 200 |
| or | at least one expression is true, e.g. [rainfall] < 20 or [slope] > 35 |
| not | excludes, e.g. not [name] <= "california" |

The mathematical operators + - * / and arbitrary Avenue expressions can also be used in queries.

To enclose an expression in parentheses, select it in the query text box by dragging over it with the mouse, and then click the () operator. Parentheses will enclose the selected part of the query.

Values This lists the values for the chosen Field. Only unique values are listed. So for example if 5 features or records in the theme or table you are querying have the same value for the chosen field, this value is only listed once in the Values list. Double-click a value to place it into the query text box. If the value you want to use is not in the list, type it into the query text box. Values cannot be displayed for tables containing more than 30000 records.

Update Values By default, the Values list updates each time you choose a field. If there are a lot of values, it may take a moment for the values to be updated. Click this choice off if you don't want to update the values. This is particularly helpful if your query compares one field to another and you don't need to see their values, or if want to type specific values into the query text box instead of choosing them from the Values list.

Query text box This is where your query is displayed as you build it.

Performing a query on a view or a table

If you are using the Query Builder to select features on a view or records in a table, the following options are available for performing your query:

New Set Makes a new selected set containing the features or records selected in your query. Features or records not in this set are deselected.

Add To Set Adds the features or records selected in your query to the existing selected set. If there is no existing selected set, the features or records specified in the query become a new set. Use this option to widen your selection.

Select From Set Selects the features or records in your query from the existing selected set. Only those features or records in this existing set that are selected in your query will remain in the selected set. Use this option to narrow down your selection.

Performing a query to define a feature selection for a theme

If you are using the Query Builder from the Theme Properties dialog box to define a feature selection for a theme you will see OK and Cancel buttons instead of New Set, Add To Set and Select From Set.

OK Selects the features in your query and makes this query the feature selection definition for the theme. Only those features that meet this definition will be represented in the theme. The query is added to the Theme Properties dialog box.

Cancel Closes the Query Builder without running the query.

You can copy and paste queries. For example, you might use the Query Builder on a view to query a theme then decide to use this query as the theme's feature selection definition. In this case, you can copy the query, open the Query Builder from the theme's Theme Properties dialog box, and paste the query in. To copy all or part of a query, select what you want to copy and then press CTRL+C. To paste, press CTRL+V. There may be additional keyboard shortcuts on your platform, e.g., in Windows you can also copy with CTRL+INS and paste with SHIFT+INS.

Raster data

Raster data records spatial information in a regular grid or matrix organized as a set of rows and columns. Each cell within this grid contains a number representing a particular geographic feature, such as soil type, elevation, land use, slope, etc. Raster data is commonly, but not exclusively, used to store information about geographic features that vary continuously over a surface, such as elevation, reflectance, groundwater depths, etc. ARC/INFO grids are raster data. Image data is a form of raster data in which each cell or pixel stores a value recorded by an optical or electronic device.

Raster data is highly dependent on the resolution of the regular grid in which it is recorded. The size of the cells in the grid is fixed, so as you zoom in on raster data displayed on a view, you will eventually see the shape of the cells.

Real-world coordinates

An x,y coordinate system used to represent geographic locations.

Scale

The reduction needed to display a representation of the Earth's surface on a map. A statement of a measure on the map and the equivalent measure on the Earth's surface, often expressed as a representative fraction of distance, such as 1:24,000 (one unit of distance on the map represents 24,000 of the same units of distance on the Earth). Scale can also be expressed as a statement of equivalence using different units; for example, 1 inch = 1 mile or 1 inch = 2,000 feet.

Shape File

ArcView shapefiles are a simple, non-topological format for storing the geometric location and attribute information of geographic features. A shapefile is one of the spatial data formats that you can work with in ArcView.

The shapefile format defines the geometry and attributes of geographically-referenced features in as many as five files with specific file extensions that should be stored in the same project workspace. They are:

.shp - the file that stores the feature geometry.

.shx - the file that stores the index of the feature geometry.

.dbf - the dBASE file that stores the attribute information of features. When a shapefile is added as a theme to a view, this file is displayed as a feature table.

.sbn and .sbx - the files that store the spatial index of the features. These two files may not exist until you perform theme on theme selection, spatial join, or create an index on a theme's Shape field. If you have write access to the source data directory, the index files will be persistent and remain after your ArcView session is complete. If you do not have write access to the source data directory, they will be removed when you close the

project or exit ArcView.

.ain and .aih - the files that store the attribute index of the active fields in a table or a theme's attribute table. These two files may not exist until you perform Link on the tables. If you have write access to the source data directory, the index files will be persistent and remain after your ArcView session is complete. If you do not have write access to the source data directory, they will be removed when you close the project or exit ArcView. See Indexing a table.

Why use ArcView shapefiles?

Shapefile features display more rapidly on a view.

You can work with a theme based on a shapefile format the same as any other feature data sources that ArcView supports, such as setting the theme's properties and performing spatial analysis.

You can edit the features of themes based on shapefiles only.

You can create a new theme that's based on the shapefile format.

You can create shapefiles by converting other geo-referenced data formats such as ARC/INFO coverages and popular desktop mapping data formats.

Table

A table lets you work with data from a tabular data source in ArcView. You can bring data from almost any tabular data source in your organization into ArcView as tables. Then you can add data from these tables to maps, and symbolize, query and analyze this data geographically.

ArcView's tables are dynamic

An ArcView table references the tabular data source it represents, but doesn't contain the tabular data itself. This means that tables are dynamic, because they reflect the current status of the source data they are based on. If the source data changes, a table based on this data will automatically reflect the change the next time you open the project containing this table. You can also choose Refresh from the Table menu to refresh the table at any time to see the current state of your source data. The definition of tables you add to ArcView are saved in the project file you are currently working on.

You can create new tables in ArcView and type data values into them directly. You can also edit some tables, depending on the type of tabular data source they represent and whether you have write permission to them. See Editing the values in a table.

Sources of tabular data

dBASE, INFO, and delimited text files

You can add dBASE, INFO, and tab or comma delimited text files into ArcView as tables. These data sources can contain any data that you wish to work with in ArcView. For example, these tables might contain additional information about the features displayed on a view. See Adding a file containing tabular data to your project.

SQL database servers

From ArcView, you can connect to a database server, such as Oracle or Sybase, and run an SQL query to retrieve records from it as a table. ArcView stores the definition of the SQL query you used, not the records themselves. See Connecting to a database to create a table.

Attribute tables of spatial data

In addition to tables that are based on tabular data sources, some spatial data sources, such as shapefiles and ARC/INFO coverages have their own attribute tables containing descriptive information about the geographic features they contain.

When you add a theme representing one of these spatial data sources to a view, you can access this attribute table by pressing the Open Theme Table button .

ArcView automatically manages the relationship between themes and their attribute tables, so you don't need to load these tables into ArcView separately.

When you open a theme's attribute table, you can select features on the view by selecting their records in the table, and vice versa.

Only tables based on dBASE or INFO files on disk may be edited.

To edit the values in a table

- 1 From the Table menu, Choose Start Editing.
- 2 Select the Edit tool and place the cursor in the field of the record you want to edit. Type the new value into the field. When using the Edit tool in the table, the following keyboard accelerators are supported for the editable cell:

TAB Moves to the cell to the right
SHIFT-TAB Moves to the cell to the left
RETURN Moves down a cell
SHIFT-RETURN Moves up a cell

To finish editing and commit your changes, choose Stop Editing from the Table menu.

You cannot edit tables whose source data is a delimited text file or the result of a SQL query to a database. To edit data in these tables you should first export them to dBASE or INFO format and then add them back into your project.

You can only edit the values of fields in the destination table if the active table is composed of one or more joined tables. See Joining tables.

Table of Contents

Each view has its own Table of Contents that lists the themes in the view. Like the table of contents of a book, you look at a view's Table of Contents to see what's in it. In ArcView you also use the Table of Contents to control how the view is drawn:

The Table of Contents shows:

The name of each theme in the view

Themes can be given any name. By default, a theme is named after the data source it represents, such as "COV143" or "Landuse". You can give themes longer, more descriptive names. See Changing a theme's name.

The legend for each theme

A theme's legend shows the symbols and colors used to draw the theme. A theme may be drawn using

one symbol, or a range of different symbols and colors may be used in order to classify the features in the theme. To learn more about how legends are used in thematic mapping, see [Types of thematic maps](#).

Whether a theme is on or off

Each theme has a check box to its left that indicates whether the theme is currently drawn in the view. You control which themes are drawn in your view by simply checking these boxes. See [Turning themes on and off](#).

The order the themes are drawn in

The theme at the top of the Table of Contents is drawn on top of those below it. Themes that form the background to your view are therefore at the bottom of the list. Simply drag themes up and down in the Table of Contents to change the order they are drawn in. See [Changing the order themes are drawn in](#).

Which themes are active

When you make themes active you choose which themes you wish to work with. When a theme is active it is highlighted in the Table of Contents. Simply click a theme's name or legend to make it active. To make more than one theme active, hold down SHIFT when you click on the themes. In this example, the Major highways theme is active:

Most of the operations you can perform on a view work on the active theme(s). For example, when you select features on a view, features are only selected from the active theme(s).

Which theme is editable

A dashed line around the theme's check box indicates that you are currently editing the features in the theme. Only themes based on a shapefile can be edited. See [Editing a theme](#).

Hiding the Table of Contents

To hide the Table of Contents, drag its right border all the way to the left. The view will redraw to fill the whole window. To show the Table of Contents again, drag its border back to the right again.

Hiding a theme's legend

The Table of Contents normally shows the legend of each theme in the view. However, you can save space in the Table of Contents by hiding legends. This is especially useful when a view contains many themes. To hide a theme's legend, make the theme active and then choose Hide/Show Legend from the Theme menu. When a legend is hidden, the name of the theme and its check box remain visible.

Cutting, copying, and pasting themes

You can copy and paste themes back into same view or into another view. To remove a theme from a view, simply cut it from the Table of Contents. The view will automatically redraw without the theme you cut.

Theme

A theme is a set of geographic features in a view. A theme represents a source of geographic data such as:

A spatial data source such as an ARC/INFO coverage or ArcView shapefile.

A CAD drawing such as an AutoCAD drawing (if ArcView's CAD Reader extension is loaded)

An image data source such as a satellite photo.

A table containing XY coordinates, street addresses that can be geocoded in ArcView, or events that can be matched to route features.

A data layer managed by by ESRI's Spatial Database Engine (SDE) (if ArcView's Database Themes extension is loaded).

This data can be on a local disk or accessed across a network. A theme points to the geographic data it represents. It does not contain the data itself.

The themes in a view are listed in its Table of Contents. For example, a view of a country might have one theme representing cities, one theme representing roads, one representing an satellite image, etc.

Normally, a theme represents all the features in a particular feature class, but you can also define a feature selection property for a theme so that it only represents a specific subset of these features. For example, if you have a data source containing roads you can define a theme that represents just the major roads.

Themes have a number of other properties that you can set to control their characteristics. For example, you can specify the range of scales at which the theme will be drawn on the view. See Setting a theme's properties.

Each theme has its own legend displayed in the Table of Contents. A theme's legend controls how the theme is displayed on the view. See Types of thematic maps to learn more about how to display a theme's features.

Vector data

Vector data records spatial information as x,y coordinates in a rectangular (planar) coordinate system. Point features are recorded as single x,y locations. Line features, including the outlines of polygons, are recorded as an ordered series of x, y coordinates.

Vector data is very well suited to recording the location of discrete geographic features with precise locations like streets, parcel boundaries, streams, telephone poles, etc. ARC/INFO coverages are vector data. Drawing files used in computer-aided drafting (CAD) programs are also usually vector data, although these files are typically stored in units such as inches rather than geographic coordinate systems required for spatial data.

Vector data can accurately record the actual ground location of features. However, vector data is highly dependent on the number of x,y coordinate points that are chosen to represent features, especially natural features like streams and coastlines. As you zoom in on vector data representing such features, you will eventually see the individual straight line segments that make up the vector representation.

View

A view is an interactive map that lets you display, explore, query and analyze geographic data in Views are saved in the ArcView project you are currently working with.

A view defines the geographic data that will be used and how it will be displayed, but it doesn't contain the geographic data files themselves. Instead, a view references these source data files. This means that a view is dynamic, because it reflects the current status of the source data. If the source data changes, a view that uses this data will automatically reflect the change the next time the view is drawn. It also means that the same data can be displayed on more than one view. For example, you may have one view in your project that displays a city's census tracts classified by population, and another view that shows just the outlines of these census tracts.

A view is actually a collection of themes. A theme represents a distinct set of geographic features in a particular geographic data source. For example, a view showing a country might have one theme

representing cities, one theme representing roads, one representing rivers, etc. A view's themes are listed in its Table of Contents.

Zooming in and out on a view

Zoom In button

Zooms in on the center of a view.

Zoom Out button

Zooms out from the center of a view.

Zoom In tool

Zooms in on the position you click or the box you define on a view.

Zoom Out tool

Zooms out from the position you click or the area you define on a view.

Pan tool

At any time, you can pan the view by dragging it in any direction with the Pan tool.

Zoom to Full Extent button

Zooms to the full extent of all the themes in a view. Click this button when you want to be able to see everything in a view.

Zoom to Active Theme button

Click on a theme in a view's Table of Contents to make it active, and then click this button to zoom to the area covered by the active theme.

Zoom to Selected Features button

If you have selected features on a view, simply click this button to zoom to these features of the active themes of the view.

Zoom to Previous Extent button

Zooms back to the previous extent you were viewing. Use this option to go back to where you were before you zoomed or panned. ArcView remembers your previous five extents, so you can use this option to retrace your last five steps.

Specifying a view's scale directly

Another way to zoom in and out on a view is to specify the scale you wish to work in directly. See [Setting view scale](#).

Scale-dependent display of themes

By setting a theme's display property, you can define a range of scales at which the theme may be drawn on the view. In this way you can automatically hide a detailed theme that would otherwise clutter up your view when you zoom out to smaller scales. See [Setting a theme's display properties](#).