ATLAS.ti Mac
User Manual
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Introduction

This User Guide is written for users with no prior experience of working with ATLAS.ti, but also for users new to the Mac version.

The Mac version is suitable for you if you...
• …start a new project from scratch
• …have no team project exchange requirements
• …are currently engaged in the code & retrieve and model building stages of your project
• …use Mac compatible multimedia documents in your projects exclusively
• …currently have no need for geo documents
• …feel more comfortable with having virtually unlimited undo/redo levels
• …can wait for reports to become available
• …work in different languages simultaneously – full Unicode support!
• …don’t need associated documents yet (e.g., transcript and media)

Please check the "Feature Matrix" from http://mac.atlasti.com every once in a while to see if your "favorite" tool has already been implemented.

Remember: The current version does not yet support team projects!

Mac-Specific Features

There are quite a number of neat new features in ATLAS.ti Mac that are not available under Windows. These include the inspectors, the quotation display in the Quotation Manager, the way of handling audio and video data, the undo function, full Unicode support, and several more.

For a full comparison of features, see the Feature Matrix table at http://mac.atlasti.com/

The table (and this manual) will be updated on a regular basis to reflect the functionality and features that will be added to the Mac version in the coming months.

In developing ATLAS.ti Mac, the aim was to create a software in which Mac users feel at home, not simply a copy the Windows version. Therefore the two versions will never be completely identical. Still, some of the features that you already find in the Mac version may eventually also be implemented in ATLAS.ti 8. The Windows version and the Mac version will continue to "learn" from each other and will continue to mutually inspire future development.
Main Concepts And Features

The concepts of *primary documents*, *quotations*, *codes*, and *memos* are the overall foundation you need to be familiar with when working with ATLAS.ti. They are complemented by a variety of special aspects such as *groups*, *network views* (=the main visualization tool), and *analytical/data querying tools*. All of these come together in the overall project container.

The ATLAS.ti Project File

The most basic level of an ATLAS.ti project consist of the *primary documents*, followed closely by the *quotations* (= individual segments/selections from the primary documents).

On the next level, *codes* are attached to *quotations*.

*Memos* are essentially free texts you write in connection with your findings, observations, or methodological considerations.

A project can become a highly connected entity, a dense web of primary data, associated memos and codes, and interrelations between the codes and the data. To find your way through this web, ATLAS.ti provides powerful browsing, retrieval and editing tools.

Documents

Documents represent the data you have added to an ATLAS.ti project. These can be text, image, audio, video or geographic materials that you wish to interpret. When you add documents to an ATLAS.ti project, ATLAS.ti creates copies of these documents. Thus, your original documents do not become part of the project.

Document Groups

Documents can be grouped by any criteria that you need for your analysis. For instance, you might want to group them by gender: male and female, by age groups, education, family status, geographical region, document type, time aspects, etc. Such groups can later be used to restrict code-based searches like: "Show me all data segments coded with 'attitude towards the environment' but only for females who live in London as compared to females who live in rural areas."

You can also use document groups as a filter, for example to reduce other types of output, such as a frequency count for codes across a particular group of documents.

Quotations

A quotation is a segment/portion of a document that is deemed interesting or important by the user. Think of it as something you would mark, circle, or underline in a printed document.
In textual documents, a quotation is an arbitrary sequence of characters ranging in length from a single character to a word, a sentence, or a paragraph, even up to the entire data file. In an image, it can be any portion of the image; in an audio or video clip a segment of a certain length, etc.; more on that below.

Free quotations resemble passages "scribbled" on the margin of a book.

Usually, quotations are created manually by the researcher. However, if repetitive words or phrases are contained in the text, the Auto-Coding tool can be used to automatically segment these quotations and assign a code to them (see "Auto Coding").

Although the creation of quotations is almost always part of a broader task like coding or writing memos, "free" quotations can be created that indicate interesting parts in the primary data for which a meaningful classification has not yet been found.

Quotations As Layers

Quotations can be thought of as a transparent layer on top of a document. Technically speaking, a quotation consists of the identifier (a number) and a pair of coordinates that specify the beginning and end of the quotation that describe its position in the document. The actual content of the data you analyze is therefore not altered by the creation, deletion, or modification of quotations.

Quotations are stored inside the HU, independent of the document to which they belong.


Types Of Quotations

There are six different types of quotations (corresponding with the six different types of formats ATLAS.ti accepts):

**Text Quotations**

A textual quotation consists of an arbitrary sequence of selected characters. Textual quotations represent (for the computer) a sequence of characters ("strings") and can be of arbitrary size. Sentences, speech turns, or paragraphs are often the basis for the length of textual quotations. Only text offers enough "syntactical clues" to allow for searches for the occurrence of specific evidence that may support a concept. Text also offers the option for automatic segmentation as used by the Auto-Coding procedure (see "Auto Coding").

**Graphic Quotations**

The creation, activation, and display of graphical quotations has similarities with, but also differs from, their textual counterparts:

A graphical quotation is a rectangular region inside a graphical document. From its data structure, it is identical to textual quotations, since their main attributes are also the document number and two coordinates that mark the beginning and end, defining a rectangle through its upper left and lower right corner.
Handling graphical quotations is largely analogous to marking text passages in a textual document.

### PDF Quotations

PDF quotations can be of a textual or of a graphical nature. The quotation references for textual quotations indicate the page number and the start and end position on the basis of character counts. For example: \(\text{start}=1537\ \text{end}=1745\ \text{page}=1\) means that this quotation is from page 1, starting at character 1537 and ending at character 1745. The reference for coded images indicates the position of the quotation within the PDF file in the following way: \(x=29\ y=601\ \text{width}=381\ \text{height}=153\).

### Audio And Video Quotations

Audio and video quotations can be as short as a few milliseconds. The length of a quotation is selected on a timeline. Segment starting points and length are displayed in the following format:

\(\text{start}=04:04.50\ \text{duration}=00:01.61\ (HH:MM:SS.ms)\)

### Geo Quotations

Not yet implemented in the Mac version.

### Codes

The term "code" is used in many different ways. First, we would like to define what that term means in qualitative research, and then in ATLAS.ti.

#### Coding Objectives

From a methodological standpoint, codes serve a variety of purposes. They capture meaning in the data. They also serve as handles for specific occurrences in the data that cannot be found by simple text-based search techniques.

Codes are used as classification devices at different levels of abstraction in order to create sets of related information units for the purpose of comparison (e.g., a concept like "Coping Strategy"). You can think of coding as similar to tagging.

Keep code names brief and succinct. Use their comment pane for longer elaborations.

From a "low level" tool perspective, codes are typically short pieces of text referencing other pieces of text, graphical, audio, or video data. Their purpose is to classify an often large number of textual or other data units.

The length of a code should be restricted and should not be too verbose. If textual annotations are what you want, you should use quotation comments instead.

### Memos

Memos capture your thoughts regarding the text and are an important device for creating theory. A memo may "stand alone," or it may refer to quotations, codes, and other memos. They can be grouped according to types (method, theoretical,
descriptive, etc.), which is helpful in organizing and sorting them. As compared to comments, memos can be linked to quotations, codes or other memos. A comment is always directly linked to the object it refers to. In ATLAS.ti Mac, it is also possible to write a comment for each memo in addition to the memo content itself.


Groups

Groups are a way to form clusters of documents, codes, and memos for easier handling (see "Working with Groups.") Document groups can be regarded as attributes or variables. Groups can be combined using logical operators. These are called Smart Groups (see page 49).

Network Views

Network Views are a bit more sophisticated than groups. They allow you to conceptualize the structure by connecting sets of similar elements together in a visual diagram. With the aid of Network Views you can express relationships between codes, quotations, and memos. Document groups and even Network Views can also be "nodes" in a network view. See "Working with Network Views."

![Network View Diagram](url)

Figure 1: Example of a network view

Nodes, Links And Relations

A node is any object that is displayed in a Network View. You can change their look and move them around in the Network Editor.

Relations are link prototypes used to create a link between two codes or between two quotations. An example is the "is a" (ISA) relation, which is frequently used to link concepts of different abstraction level (e.g., DOG <isa> MAMMAL).
Network View Manager
The Network View Manager contains a list of all saved Network Views previously constructed by the user. It can be used to create new Network Views, to access or delete existing ones, or to write and edit comments.

Network Editor
The Network Editor displays and offers all editing capability to construct and refine semantic networks. In addition, it allows the visual creation and traversal of hypertext structures.

Relation Editor
Should the already built-in relations that are used to connect objects in Network Views prove not sufficient, you can edit them or create new ones using the Relation Editor.

Link Managers
The Link Managers provide an overview of all code-code links and of all quotation-quotation links you have created.

Analysis
ATLAS.ti contains multiple powerful, dedicated analytical tool to help to make sense of your data once it is coded. See "Tools For Basic and Advanced Analysis ."

Building Queries
For more complex search requests, a large number of query options are available in the Quotation Manager. You can build queries based on object attributes like "text content", "has comments", " has memos" or " has hyperlinks", or based on code queries using Boolean, semantic, and proximity operators. All of these can also be combined.

Smart Codes
A Smart Code differs from a standard code in the following way: A standard code is directly linked with the quotations to which it is associated, while a Smart Code is a stored query, thus provides an answer to a question (in the best case) that typically consists of several combined codes. For further information, see "Working With Smart Codes."

Code Cooccurrence Table
The Code Cooccurrence Table is a code-by-code matrix and provides frequency of code cooccurrence plus a coefficient measuring the strength of the relation between two codes. The data that belong to each cell can be displayed at the bottom of the table.

The Code Cooccurrence Table is an explanatory tool, rather than determining the codes yourself, you can ask ATLAS.ti which codes happen to co-occur in the margin area.

You find this function under the ANALYSIS menu. For further information, see "Code Cooccurrences (Code-Code Matrix)."
Code Document Table
The Code Document Table displays absolute and relative frequencies of codes or code groups by documents or document group. You can also choose to display word counts of quotations rather than absolute quotation frequency. The table can be exported as Excel table. See page 80.

Export

Reports
Reports can be generated based on the entire project via the main menu. These type of reports are shown in a browser in HTML format. Another option is to create reports in Excel or OpenOffice Calc format based on what you see in a manager.

Excel Export
Currently the results of the Code Cooccurrence Table, the Code Document Table, the content of all four managers, and the results of the Word Cruncher can be exported to Excel.
Main Steps In Working With ATLAS.ti

The figure below illustrates the main steps of working with ATLAS.ti, starting with the creation of a project, adding documents, identifying interesting things in the data and coding them. Memos and comments can be written at any stage of the process, whereas there is possibly a shift from writing comments like adding meta information to your documents, first code nodes that later turn in to code definitions, initial thoughts about specific data segments (the ATLAS.ti quotations) to more extensive memo writing during the later stages of the analysis. Once your data is coded, it is ready to be queried using the various analysis tools provided. The insights gained can then be visualized using the ATLAS.ti network view function.

Some steps must be taken in sequence. For instance, logic dictates that you cannot query anything or look for co-occurrences if your data has not yet been coded. But other than that there are no strict rules. Network views, in addition to presenting findings, also have an exploratory component and as such can help you to see your data from a different perspective. This may provide further ideas for coding, querying, or even further data collection.

The Process

There are two principal modes of working with ATLAS.ti, the data level and the conceptual level. The Data Level includes activities like segmentation of data files; coding text, image, audio, and video passages; and writing comments and memos. The Conceptual Level focuses on querying data and model-building activities such as linking codes to networks, in addition to writing some more comments and memos.

Data Level Work

Data level research activities include segmenting the data that you have assigned to a project into quotations, adding comments to respective passages (note-making/annotating), and coding selected text passages or data segments, secondary materials, annotations, and memos to facilitate their later retrieval. The act of comparing noteworthy segments leads to a creative conceptualization phase that involves higher-level interpretive work and theory-building.

ATLAS.ti assists you in all of these tasks and provides a comprehensive overview of your work as well as rapid search, retrieval, and browsing functions.

Within ATLAS.ti, initial ideas often find expression through their assignment to a code or memo, to which similar ideas or text selections also become assigned. ATLAS.ti provides the researcher with a highly effective means for quickly retrieving all data selections and notes relevant to one idea.

Conceptual Level Work

Beyond coding and simple data retrieval:

ATLAS.ti allows you to query your data in lots of different ways, combining complex code queries with variables, exploring relationships between codes and to visualize your findings using the network tool.

ATLAS.ti allows you to visually "connect" selected passages, memos, and codes into diagrams that graphically outline complex relations. This feature virtually transforms your text-based workspace into a graphical "playground" where you can construct
concepts and theories based on relationships between codes, data segments, or memos.
This process sometimes uncovers other relations in the data that were not obvious before and still allows you the ability to instantly revert to your notes or primary data selection.

General Steps When Working With ATLAS.ti

The following sequence of steps is, of course, not mandatory, but describes a common "script:"

- Create a project (think of it as your "idea container"), meant to enclose your data, all your findings, codes, memos, and structures under a single name.
- Next, add documents, text, graphic, audio and video files, to your ATLAS.ti project.
- Organize documents, codes, and memos using "groups" (see "Working with Groups")
- Read and select text passages or identify areas in an image or select segments on the time line of an audio or video file that are of further interest, assign key words (codes), and write comments and memos that contain your thinking about the data. The Word Cruncher and auto coding tool can help you to find interesting sections in text documents. We call this the data level working phase.
- Compare data segments based on the codes you have assigned; possibly add more data files to the project.
- Query the data based on your research questions utilizing the different tools ATLAS.ti provides. The key words to look for are: Simple Retrieval, Code Coccurences, Codes Documents Table, Smart Codes, and Building Queries. All of these can be found in the chapter on "Tools For Basic and Advanced Analysis".
- Build semantic, prepositional or terminological networks from the codes you have created. These networks, together with your codes and memos, form the framework for emerging theory. Look for the chapter "Working with Network Views."
Finally, compile a written report based on the memos you have written throughout the various phases of your project and the networks you have created.

Video tutorial - ATLAS.ti Mac: An Overview
Installing And Updating ATLAS.ti Mac

- After downloading ATLAS.ti Mac, double-click to unpack the file.
- Move the ATLAS.ti app - the file with the red ATLAS.ti icon - into the application folder of your Mac. This can easily be done using the Finder.

Installing Updates

- From the main menu select: ATLAS.ti / CHECK FOR UPDATES. Follow the instructions you see on-screen.

Trouble Shooting

Updating does not work for you? A likely reason is that the ATLAS.ti app is not in the application folder.

- Go to Finder and search for ATLAS.ti.
- Once you find it, double-click on it.
- That will open a folder where you will see the ATLAS.ti application with red ATLAS.ti symbol.
- Move the ATLAS.ti app into the Applications folder of your computer.
- Open ATLAS.ti from the Applications folder. Now, try again to update.

Video tutorial - Downloading Updates
The Interface

Below you see the main features of the ATLAS.ti Mac interface:

Video Tutorial – ATLAS.ti Mac: Interface

Figure 3: The ATLAS.ti Mac user interface

Figure 4: Entity representation

Personalize Your Screen

A number of panes that you see in the default interface view can be hidden (e.g., the navigator or the inspector). If hiding is possible, you see a little icon or a text "Hide" / "Show" that you can click.
Finding Your Way Around The Software

If you are not sure where to find a function, just search for it under Help. For instance you want to know where the Relation Manager is. Typing in the first letters of a search term, shows a list of hits.

When selecting an entry that seems to be the one that you are looking for, it will show you where you can find it. Click on the selected hit in the list, and ATLAS.ti Mac will open up the function for you.
Creating A New Project

When you open ATLAS.ti Mac for the first time, you are presented with two options: Create a new project, or import an existing one from other ATLAS.ti applications.

Select **CREATE A NEW ATLAS.ti PROJECT** and enter a project name:

![Create Project](image)

*Figure 7: Creating a new project*

Another option is to select: **PROJECT / NEW** from the main menu.

Importing Projects From ATLAS.ti For Windows

Video Tutorial - **Mac-Export-Import Projects**

Update your ATLAS.ti for Windows to version 7.5 or higher.
Export your project(s) using the via **PROJECT / EXPORT / MAC TRANSFER BUNDLE**.

Move the Transfer Bundle file to your Mac or to a location where it can be accessed from your Mac.

On the Mac, simply double-click on the exported file, or select **PROJECT / IMPORT PROJECT**...

**Importing Projects From iPad And Android**

- In your ATLAS.ti iPad app, select a project and tap the **EXPORT** button.
- On your Mac, select **PROJECT / IMPORT IPAD PROJECT**.

**Importing Projects From Android**

*This functionality is currently not implemented.*

**Exporting Projects From Mac To Windows**

*This functionality will become available with ATLAS.ti 8 for Windows (expected: late 2015).*

**Adding Documents To A Project**

**Supported Formats**

ATLAS.ti Mac supports text (Word (doc and docx), RTF, OpenOffice (odt), PDF, image, audio and video files (all file formats that QuickTime supports, currently no Windows Media files). You can also import a new empty text documents, e.g. to enter fieldnotes directly into ATLAS.ti or to transcribe your data.

**How To Add Documents**

Documents are imported and your project is saved silently.

- To add documents, select **DOCUMENT / IMPORT DOCUMENTS**....
- To add a new empty text documents, select **DOCUMENT / NEW TEXT DOCUMENT**. Click on the **EDIT TEXT** button to add content.
An alternative to using the main menu option to add documents is to click the + button on the top left hand side of your screen (see below). More options like drag & drop will follow.

![Figure 9: An alternative to the main menu option](image)

Add Video Snapshots

If you want to analyze a particular situation in your video data in more detail, you can create a snapshot from it. The snapshot will be added as new document to your project. This is how it works:

1. Load a video document and move to the desired position in the video.
2. Next click on the button **CREATE SNAPSHOT DOCUMENT**.

A new image file is created and added as new document to your project.

![Figure 10: Creating snapshots from videos](image)

You will immediately find it in the list of documents. The document name shows the time position at which the snapshot was taken.
Loading Documents

All added documents can be accessed via the navigator that you find on the left-hand side of the screen, or via tabs. Once you have memos and network views later on, they can also be accessed this way.

Load one or more documents with a double-click on the document in the navigator (see below).

To close the selected document tab or all other loaded documents within a region, right click on the header area and select the appropriate option from the context menu: Close Tab or Close Other Tabs (see above).
Multiple Document View

You can load multiple documents side-by-side or split your screen horizontally, or both. And this does not only apply to documents, you can also open a document and a network view or a document and a memo side-by-side, or two documents side-by-side and a memo horizontally above or below (see for instance Figure 38). This is how it works:

- Click on the plus sign to add a new region.
- Right-click on the document tab and select DUPLICATE TAB (see left) to load an already opened document into a new region. You also find the “Duplicate Tab” option under the main menu WINDOWS / DUPLICATE TAB.

TO ADD A NEW REGION VIA DRAG-AND-DROP

- First load a document, memo or network into the display area.
- Grab the document / memo / network view tab that you want to move, left-click and drag it to the right, left, top or bottom border of the main screen. When a small purple bar appears, you can drop it (see Figure 14).
- If you want to replace another document / memo / network view that is currently loaded, drag and drop the object tab on top of document / memo / network view area (see below). Instead of just the small bar, the entire region for this object is highlighted in purple.

OPENING MULTIPLE WINDOWS

To open a document, network or memo in a window of its own:

- Drag and drop the object tab outside the ATLAS.ti window and drop it there
- Or select the option MOVE TAB TO NEW WINDOW from the context menu or the main menu Windows.
Different from the multiple-document view, the new window contains its own inspector and navigator.

**The Edit Menu**

The edit menu applies to editing text documents, comments and memos. Functions like Substitution / Transformation and Speech are not yet available. Version 1.1 will allow you to edit your project documents.
Importing Survey Data

These days a lot of surveys are conducted online. A positive side effect is that (a) all data is immediately available in digital format and (b) respondents are often willing to provide lengthy answers to open-ended questions. This was rarely the case with paper-and-pencil surveys. Statistical programs like SPSS™ offer some options to analyze open-ended questions, but basically require you to encode each answer with a number. A proper qualitative analysis of the answers is not possible with these tools. ATLAS.ti, however, does permit comprehensive analysis with great ease and in great depth.

A typical work flow for working with survey data looks like this:

![Work flow when importing survey data](image)

Online surveys can be created using a variety of tools. What most of them have in common is that they let you export data as Excel™ file. And this is what you need to prepare for import in ATLAS.ti (see below). Based on specific prefixes that you add to your variable names, ATLAS.ti interprets the column headers and cells of the Excel™ table in various ways and turns them into primary documents, the contents of the primary documents, primary document families, quotations, codes, comments, and code families.

Data are imported case-based. This means each row of the Excel™ table that is imported from the online survey tool is transformed into a primary document.

**How Survey Data Is Treated In ATLAS.ti**

To represent the results of an online survey within the framework of ATLAS.ti in the most accurate and complete manner, a few basic requirements need to be considered.

A survey broadly consists of the name of the survey, the questions, and the answers from each respondent. Questions can be of different types, such as single-choice questions (yes/no, or offering more than two options), multiple-choice questions, or open ended questions. Within the framework of ATLAS.ti these concepts are mapped as follows:

<table>
<thead>
<tr>
<th>Open-ended question</th>
<th>Code (and code comment)</th>
</tr>
</thead>
</table>

---

**Figure 17: Work flow when importing survey data**

[ATLAS.ti Mac – User Manual](https://example.com)
IMPORTING SURVEY DATA

<table>
<thead>
<tr>
<th>question</th>
<th>answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>content</td>
<td>of a quotation</td>
</tr>
</tbody>
</table>

| Single Choice 0/1 | Document group |
| Single Choice > 2 options | Document group from question plus value |
| Multiple Choice | Document group from question plus value |

This does not mean that you cannot turn a multiple choice question into a code, it all depends on how you define the columns in the Excel table. If you turn single or multiple choice questions into codes, you later need to do some automatic coding based on the response choices available in the questionnaire.

Always remember that ATLAS.ti is not a software for analyzing statistical data, although it is possible to add information from traditional quantitative questions. A general recommendation is to include the following variables from the online survey:

- Variables describing the respondents, i.e. the classical demographic variables like age group, gender, profession, educational level, income groups, etc. Turn those variables into document groups.
- Responses to open-ended questions. Turn those into coded segments.
- Selected other variables like answers to single or multiple choice questions that are important in relation to analyzing the open-ended questions.

Preparing An Excel™ Table For Import

The following table shows the list of all available prefixes that you can to add to the column headers in Excel™ in order for ATLAS.ti to interpret the cells in various ways.

<table>
<thead>
<tr>
<th>Prefix and their interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prefix</td>
</tr>
<tr>
<td>!</td>
</tr>
<tr>
<td>^</td>
</tr>
<tr>
<td>§</td>
</tr>
<tr>
<td>&lt;</td>
</tr>
<tr>
<td>.</td>
</tr>
<tr>
<td>:</td>
</tr>
<tr>
<td>#</td>
</tr>
<tr>
<td>Add no prefix to all open ended questions. The text in the column header is used as code. To avoid very long code name, use a short form to indicate the question and add the full question as comment (see next row)</td>
</tr>
<tr>
<td>::</td>
</tr>
<tr>
<td>caseID</td>
</tr>
<tr>
<td>-----------</td>
</tr>
<tr>
<td>Case 1</td>
</tr>
<tr>
<td>Case 2</td>
</tr>
</tbody>
</table>

Figure 18: Sample table ready for import

By importing the above sample table, we get:

- The name, date and author of the resulting document.
- One group for Academic containing all cases with cell value 1.
- Two groups Gender::male and Gender::female
- Four groups Favorites::Beatles, Favorites::Stones, etc. The following comment is added to each document group: What bands do you listen to regularly?
- Two codes Tell us a dream and Open End. The following comment is added to the comment field of the code "Open End": How do I create a question that is interpreted as open-ended? The text in the cell is making up the document content for each case.

How To Import Survey Data

1. Prepare an Excel table as explained above.

You can add the prefixes already when you prepare the online survey, or afterward by editing the the resulting Excel table. The drawback of adding the prefixes to the survey is that such early applied mark-up also displays in the online survey interface and your respondents might wonder about the funny characters at the beginning of questions.

Editing the downloaded Excel table prior to importing it into ATLAS.ti has the advantage of not displaying unusual formatting characters to the user. A disadvantage is that you need to do this every time you download the table, for instance, because you are checking incrementally and not all respondents have filled out the questionnaire yet.

1. Save the table (as xls or xlsx file).
1. Close Excel (or at least the document that you want to import).
1. Open ATLAS.ti and select PROJECT / IMPORT SURVEY.

The import procedure starts and ATLAS.ti informs you when the data is fully imported.

During the import, one primary document is created from every row. Unlike "normal" documents that get their contents from files, these primary documents need to have their content (data source) created as well.
The creation of the textual contents is done as follows: Each row is scanned from left to right, column by column. Each cell’s content belonging to an open-ended question field is appended to the currently built document (case). In addition, each piece of appended text is also referenced as a *quotation* automatically coded with the current question.

**Figure 19: Results of a survey import**

Those columns defined as variables are turned into document groups. See "Working with Groups" for further information. Special families are created for all imported documents and codes to make filtering of the survey material easy (see Figure 19 above).

- Save the project.

If you import the same table repeatedly, rows with already existing documents are ignored. This way, you do not have to wait until the last respondent has filled out the questionnaire.

**Video Tutorial – Importing Surveys**

**Analyzing Survey Data**

In order to analyze survey data, you should get acquainted with the following features and functions of ATLAS.ti:

- Primary Document Groups, especially their use as data attributes (see "Purpose of Creating and Working with Groups").
- To gain a quick overview of your data and the words the respondents used, create a word frequency table using the Word Cruncher (page 28).
- Basic coding techniques to add some additional codes to the pre-coded responses (see "Working With Codes"). The auto coding feature might also be helpful when working with survey data, see page 36.
- Code Groups (see page 45).
- The Code Document Table (see page 80).
- Creating and working with smart groups (see page 49).
- The Code Cooccurrence Table (see page 75).
Exploring Your Data - The Word Cruncher

This feature offers word "crunching" capabilities for a simple quantitative content analysis. It creates a list of word frequency counts for the selected or all (currently filtered) textual documents. An exception list can be used to control the analysis.

<table>
<thead>
<tr>
<th>Word</th>
<th>Length</th>
<th>Count</th>
<th>%</th>
<th>Belkin's parenting blog...</th>
<th>NYT magazine blog...</th>
</tr>
</thead>
<tbody>
<tr>
<td>i</td>
<td>1</td>
<td>556</td>
<td>3.766</td>
<td></td>
<td></td>
</tr>
<tr>
<td>have</td>
<td>4</td>
<td>261</td>
<td>1.768</td>
<td></td>
<td></td>
</tr>
<tr>
<td>my</td>
<td>2</td>
<td>257</td>
<td>1.741</td>
<td></td>
<td></td>
</tr>
<tr>
<td>children</td>
<td>8</td>
<td>215</td>
<td>1.456</td>
<td></td>
<td></td>
</tr>
<tr>
<td>you</td>
<td>3</td>
<td>201</td>
<td>1.362</td>
<td></td>
<td></td>
</tr>
<tr>
<td>not</td>
<td>3</td>
<td>189</td>
<td>1.280</td>
<td></td>
<td></td>
</tr>
<tr>
<td>with</td>
<td>4</td>
<td>165</td>
<td>1.124</td>
<td></td>
<td></td>
</tr>
<tr>
<td>we</td>
<td>2</td>
<td>140</td>
<td>0.948</td>
<td></td>
<td></td>
</tr>
<tr>
<td>but</td>
<td>1</td>
<td>137</td>
<td>0.928</td>
<td></td>
<td></td>
</tr>
<tr>
<td>they</td>
<td>4</td>
<td>131</td>
<td>0.887</td>
<td></td>
<td></td>
</tr>
<tr>
<td>kids</td>
<td>4</td>
<td>125</td>
<td>0.853</td>
<td></td>
<td></td>
</tr>
<tr>
<td>who</td>
<td>3</td>
<td>110</td>
<td>0.745</td>
<td></td>
<td></td>
</tr>
<tr>
<td>life</td>
<td>4</td>
<td>109</td>
<td>0.739</td>
<td></td>
<td></td>
</tr>
<tr>
<td>happiness</td>
<td>9</td>
<td>108</td>
<td>0.732</td>
<td></td>
<td></td>
</tr>
<tr>
<td>happy</td>
<td>5</td>
<td>104</td>
<td>0.704</td>
<td></td>
<td></td>
</tr>
<tr>
<td>people</td>
<td>6</td>
<td>102</td>
<td>0.691</td>
<td></td>
<td></td>
</tr>
<tr>
<td>more</td>
<td>4</td>
<td>97</td>
<td>0.657</td>
<td></td>
<td></td>
</tr>
<tr>
<td>this</td>
<td>4</td>
<td>96</td>
<td>0.650</td>
<td></td>
<td></td>
</tr>
<tr>
<td>having</td>
<td>6</td>
<td>92</td>
<td>0.623</td>
<td></td>
<td></td>
</tr>
<tr>
<td>was</td>
<td>3</td>
<td>92</td>
<td>0.623</td>
<td></td>
<td></td>
</tr>
<tr>
<td>me</td>
<td>2</td>
<td>91</td>
<td>0.516</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 20: Example of a Word Cruncher output - comparing the word count of two documents

Creating A Word Count Table

1. From the main menu, select **ANALYSIS / WORD CRUNCHER**. The Word Cruncher opens.
2. Select one or more documents in the Documents column on the left. The table immediately fills with content. At the bottom of the table you have a few further options:
   - If you select "Separate counts by document" you get the total and relative counts for all selected documents, and separate frequency counts for each document.

Results can be improved by preparing adequate exceptions lists. You can add words to the exception list by right-clicking on a word in the Word Cruncher, or by editing the list.

Editing The Exception List

1. Select the option **Edit List**.
The first four expressions excluding the count of numbers, multiples hyphens and multiple underscores are already entered. You can de-/ activate words or expressions by clicking on the Use column. The first four entries, in addition to being useful, also serve as an example for the kinds of regular expressions you can use. For more detail see table below.

To add or delete words click the appropriate button at the bottom of the window.

The following table lists the regular expressions that can be used:

<table>
<thead>
<tr>
<th>Expression</th>
<th>Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>.&lt;,&gt;</td>
<td>excludes words consisting of a single character</td>
</tr>
<tr>
<td>/d+</td>
<td>excludes numbers of any length</td>
</tr>
<tr>
<td>-+</td>
<td>excludes strings of hyphens of arbitrary size</td>
</tr>
<tr>
<td>+</td>
<td>excludes strings of underscores</td>
</tr>
<tr>
<td>0+</td>
<td>exclude sequences of zeros</td>
</tr>
</tbody>
</table>

Word Cruncher Output

Click on the button Export Table to export the table to be opened in Excel, Numbers or OpenOffice Calc. Use the Numbers, Open Office Calc or MS Excel™ functionality such as sorting by highest to lowest frequency for further exploration.

Video Tutorial - ATLAS.ti Mac: Word Cruncher
Starting Your Analysis By Identifying Quotations

It is not always desired to start setting codes immediately. You can begin by identifying interesting segments in your data, mark them and comment on them. This is exemplified below based on a video document. If you prefer to start coding your data directly, continue reading here: "Working With Codes."

In a video or audio document, you create a quotation simply by highlighting an area on the audio-wave form. For all other document types, you need to click on the button QUOTATION FROM SELECTION. Soon you will also be able to select this option from the context menu.

After creating a quotation, you can modify the default name and write a comment in the inspector (see Figure 24).

To keep track of your data and your thoughts open the Quotation Manager by clicking on the Quotations button, or select QUOTATION / SHOW QUOTATION MANAGER from the main menu:

Each quotation automatically receives an ID and a name. The default name is Quotation 1, Quotation 2, Quotation 3 and so on and can be renamed. If a quotation contains text, the first 100 characters are included in the column 'text content'.

**Quotation ID:** The quotation ID consists of the document number and a number indicating the chronological sequence when a quotation was created in the document. Thus, quotation 9:5 comes from document 9 and was the fifths quotation that was created in this document.

---

Figure 24: Working with quotations
**Location:** If you want to reference the position of quotations in a report, you find information on start and end positions or start position and duration for audio and video quotations in the column **Location** in the Quotation Manager. For text documents quotations are referenced by characters like start=1498 end=1710; in PDF documents, page numbers are provided as well. For graphic quotations, the x and y positions and the width and height of the segment are supplied. Audio and video quotations are referenced in the form hh:mm:ss.milliseconds.

**Useful Options When Working With Quotations**

**Rename Quotations And Write Comments**

In the inspector on the right-hand side you can modify the quotation name and review or edit quotation comments.

**Modifying The Length Of Quotations**

Just drag the start or end points to a different position. The quotation bar in the margin area automatically follows. This applies to all media types (see Figure 26).
Reviewing Quotations

When you select a quotation in the list, its content is displayed in the preview area. This applies to all media types. You can read text quotations, listen to audio quotes, view image and video quotations. This is a convenient way to browse through your quotations (see Figure 26 above).

Reviewing Quotations By Code

When selecting a code on the left-hand side in the Quotation Manager, only the quotation(s) coded with the selected code are shown in the list (see Figure 27).

Grouping Quotations By....

You can group quotations by a number of different criteria. This offers a first level query. If combined with a code selection in the navigator, you can already combine two criteria, e.g. viewing quotations for a particular code by documents, or document groups.

The following grouping options are available: group by documents, document groups, codes, code groups, type, creating user, and modifying user. If you export the quotations having selected a “grouped by” view, a new tab is created in Excel / OpenOffice Calc for each group.
Working With Codes

After adding documents, you can begin to code your data. If you prefer to start by identifying interesting data segments first, see "Working With Quotations."

To code a data segment, highlight it with your mouse and select the **ADD CODING** button (shortcut: ⇧⌘O). An alternative is to right-click on the highlighted segment and select **ADD CODES** from the secondary menu.

After coding, the quotation name and the code label are displayed in the margin area (see Figure 31).

Coding image, audio or video data works in the same way: You highlight a segment with your mouse, click on the Add coding button (or right-click and select **ADD CODES**), and enter a code. When coding audio or video data, you highlight a segment on the audio-wave form (see Figure 24).

**Video Tutorial – Working with Codes**

Quick Coding

Quick Coding assigns the last used code to the current data segment. This is an efficient method for the consecutive coding of segments using the most recently used code.

Select a data segment and click on the Quick Coding button (shortcut: ⇧⌘K).

The Code Manager

Open the Code Manager by clicking on the button **CODES** above the document area, or select **CODE / SHOW CODE MANAGER** from the main menu.

If you want the Code Manager to stay on top, click on the pin icon in the top right-hand corner.
The Code Manager offers the following options: you can add write code comments, add code colors, retrieve coded segments, create code groups or use it for drag & drop coding. Further, you can review code frequency and density.

**Frequency** (indicated by the quotation icon): number of quotations coded with the code

**Density** (indicated by the code icon) is the number of linkages to other codes that the user has created.

---

Adding Code Color

Click on the circle in the "color column" just before the code name and select a color for each code. In Figure 29 below you see how code colors are displayed in the margin.

Coding With Existing Codes

You can either drag & drop a code from the Code Manager onto a selected data segment, or as shown in the Figure 31 below, from the navigator. See also "Margin Drag & Drop."
Unlinking Codes

Right-click on a code in the margin area and select the option **REMOVE FROM QUOTATION**.

Merging Codes

When developing a coding schema, it may happen in the course of the analysis that two or more codes essentially mean the same thing. One cause could be the import of code lists with different names but similar meanings.

ATLAS.ti offers a procedure to merge synonymous codes into one resulting "target" code. This target code replaces the merged codes and "inherits" all of their references, i.e., quotations, links to other codes or memos, and their comments.

There are two ways to merge codes: a list-based method, and one that works from within the Network Editor.

- In the Code Manager select the code that you want to merge with another code.
- Drag-and-drop this code to the "target" code that you want to keep. A window opens. Select the first available option: **MERGE CODE A INTO CODE B**. The quotations are added to the target code and the merged code is removed from the list of codes.
If the merged code has a comment, the comment is added to the target code. If both codes have a comment, an audit trail is provided (see Figure 32).

Replacing A Code

To replace one code with another in the margin area, drag and drop a code (either from the Code Manager or the navigation pane) on top of another code in the margin area. Select the **SWAP** option from the context menu.

If you drag-and-drop a code from the margin area on top of another code in the margin area, the code you drag is unlinked from its prior location and replaces the code that it is dropped onto.

Auto Coding

The Auto-Coding tool finds text passages, selects a specified amount of text (e.g., the exact match, or spread to the surrounding word, sentence, or paragraph), and then codes the passages with a previously selected code.

Auto-coding is useful when coding structural information like speaker turns in group interviews, or if you are dealing with a lot of text material. Auto-coding allows you to quickly collect ideas that belong to a certain concept on the basis of words or patterns found in the text.

Video Tutorial – [ATLAS.ti Mac: Auto Coding](#)
To Start Auto Coding

To open the Auto-Coding Dialog, select Codes / Auto Coding from the main menu.

![Auto Coding Dialog](image)

**Find:** A search expressions can be single words or phrases, or you can create more complex search expressions using regular expressions (GREP). See "GREP Search."

**Code:** Click on the down arrow to chose an existing code from the list. If the code you need is not available yet, create one on the Code Manager.

**Extending:** When a matched string is found, the size of the segment to be extended to the following lengths:
- The Exact Match only
- The Word surrounding the matched string
- The Line surrounding the matched string
- The Sentence surrounding the matched string
- The matched string expanded to paragraph boundaries
- Or the entire document

**Scope of Search** can be the selected document only, all textual documents, or a set of texts from a document group.

**Example:** Based on the GREP search expression shown in Figure 35, all occurrences of words that contain child or toddler or baby or babies in the currently selected documents are found and the surrounding sentence is coded with the code "children." The GREP OR expression | can be entered using the short-cut alt+7.

You can select the option Code All without checking each hit, or you can review each hit by clicking the Next or Previous button. Then select Code for each instance that you want to code.

Preparing Documents Optimized For Auto-Coding

The following instructions are useful for preparing transcriptions of focus group sessions, questionnaires, or interviews. Such data usually contains different speakers’ sections. The hints given here also apply for other documents that include sections you wish to identify for auto-coding.

When transcribing interview or focus group data, enter a blank line between speaker turns if you are going to to use the auto-coding tool for coding speaker units.
It would be tedious to code speaker or section turns manually. Two things are needed: A good "marker" for which to search and, once the marker is found, a reliable identification of the unit (sentence, paragraph) to be coded.

Insert easily identifiable markup in the text to let the auto-coding pattern matcher do this for you. In combination with a few formatting rules, documents can be created that can readily support auto-coding quite a bit. Simple examples are:

P: or <Peter> for a respondent with the name Peter
07-01-11letter for a letter written on the first of July 2011.

The identifier should be used exclusively to mark passages in the text that indeed relate to the person or object identified. The plain word Peter will likely also occur elsewhere in the text (for instance, when another person is referring to Peter). The markup "P:" or <Peter> however, is unlikely to occur elsewhere.

In order for the Auto-Coding tool to select a complete speaker section, a section delimiter is needed. As discussed above, a speaker or section turn will start with the speaker’s identifier markup. The end of a section is best marked by an empty line,

\[\text{INT: } \text{OK, so} \text{, erm, so you've got the majority of the information anyway. I mean, primarily the most important thing really is that} \text{,} \text{erm, obviously you can withdraw at any time from the study, apart from when} \text{,} \text{when it goes on to the interesting parts.} \text{,} \text{TREVOR: It's too late then yeah!} \text{,} \text{INT: Yes!} \text{,} \text{TREVOR: You're in trouble if you change your mind then [laughs!]} \text{,} \text{INT: } \text{Exactly [laughs!]} \text{,} \text{but up until that point, and we will sort of tell you when that point's gonna be.} \text{,} \text{TREVOR: It's alright I just won't watch my bit [laughs!]} \text{.} \]

Figure 36: Example transcript

I.e. two paragraph markers (see Figure 36). The text of one speaker needs to be contained within one paragraph. If you brake a speech into multiple paragraphs, only the first paragraph will be coded. When auto-coding such a document, you would choose \textbf{PARAGRAPH} for extending the matched text.

\section*{GREP Search}

The core of a GREP search is the inclusion of special characters in the search string that control the matching process. GREP finds instances in your data that match certain patterns.

The ATLAS.ti GREP search offers a subset of the Regular Expression language used in sophisticated text search systems. For detailed information about regular expressions see \texttt{http://en.wikipedia.org/wiki/Regular_expression}.

\section*{Supported GREP Expressions}

\begin{table}[h]
\begin{tabular}{|c|l|}
\hline
GREP Expression & Description \\
\hline
^ & Matches an empty string at the beginning of a line. \\
$ & Matches an empty string at the end of a line. \\
. & Matches any character except a new line. \\
\hline
\end{tabular}
\end{table}
GREP Expression | Description
--- | ---
+ | Matches at least one occurrence of the preceding expression or character.
* | Matches the preceding element zero or more times. For example, ab*c matches "ac," "abc," "abbbc," etc.
? | Matches the preceding element zero or one time. For example, ba? matches "b" or "ba." []
{} | Matches a range or set of characters: [a-z] or [0-9] or [aeiou]. For example: [0-9] finds all numeric characters, while [^0-9] finds all non-numeric character
\b | Matches an empty string at a word boundary
\B | Matches an empty string not a word boundary
\c | Matches an empty string at the beginning of a word
\e | Matches an empty string at the end of a word
\ | The escape character disables the special GREP functionality of the following character. For example: \[ matches an opening bracket.
\[ | OR. Enclose ORed expressions with parentheses if OR should be restricted to certain sequences of characters or expression

Examples Of GREP Searches

The expression man|woman matches "man" and "woman."

You could also use (|wo)man to the same effect. H(a|e)llo matches "Hello" and "Hallo." H(a|e)+llo matches "Haaaaaallo" as well as "Heeeeeeaaeeeaaeeeaello."

And how about the (angry|lazy|stupid) (man|woman) (walk|run|play|fight)ing with the gr(a|e)y dog – get the idea?

GREP Expression | Description
--- | ---
\d | Matches any digit (equivalent to [0-9])
\D | Matches anything but a digit
\s | Matches a white-space character
\S | Matches anything but a white-space character
\w | Matches any word constituent character
\W | Matches any character but a word constituent

These escapes are also allowed in character classes: \[\w+\] means "any character that is either a word constituent, or a plus, or a minus."

\[\w+\]\ matches any whole word
\<\[:alpha:]+\> matches whole words containing only alphanumeric characters.

Character classes can also include the following elements:

GREP Expression | Description
--- | ---
[:alnum:] | Any alphanumeric, i.e., a word constituent, character
[:alpha:] | Any alphabetic character
[:cntrl:] | Any control character. In this version, it means any character whose ASCII code is $<$ 32.
[:digit:] | Any decimal digit
[:graph:] | Any graphical character. In this version, this mean any character with the code $\geq$ 32.
[:lower:] | Any lowercase character
[:punct:] | Any punctuation character
[:space:] | Any white-space character
[:upper:] | Any uppercase character
[:xdigit:] | Any hexadecimal character

In the following, a few search examples are presented showing the matching GREP expression in the column on the right.
SUGGESTIONS FOR STRUCTURING THE LIST OF CODES

A frequent question is how to add a structure to the otherwise flat code list in ATLAS.ti. The easiest way to work with higher and lower order codes is to structure your codes alphabetically in the Code Manager, e.g., according to the basic pattern below:

```
category A_sub 1
category A_sub 2
category A_sub 3
category B_sub 1
category B_sub 2
category B_sub 3
```

As a means to visualize the beginning of a category, you can enter a free code that is not linked to any quotation, as shown below. Such a main category code might initially be empty, but may prove to be quite handy during further coding work. You may come across some data that fits the category but there is no fitting sub code yet, or you are unsure where to put it. Then you can use the main category code to collect these instances. Once a number of instances are collected, you can review them and think some more about them. By reading through or viewing/listening to a couple of examples it becomes often easier to decide how to code it. You may decide to create a new sub code or decide that an existing sub code fits after all. Adding colors will also help you to distinguish between different types of level of codes.

```
CATEGORY A
category A_sub 1
category A_sub 2
category A_sub 3
CATEGORY B
category B_sub 1
category B_sub 2
category B_sub 3
```

A further possibility is to sort codes by numbers (or numbers and letters):

```
1 CATEGORY A
11_A_sub 1
12_A_sub 2
13_A_sub 3
2 CATEGORY B
21_B_sub 1
```

**Examples**

<table>
<thead>
<tr>
<th>GREP expression</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>\[.*\]\</code></td>
<td>Find text (of arbitrary length) enclosed within brackets. Note that the brackets have to be escaped with <code>\</code> as they are themselves control characters.</td>
</tr>
<tr>
<td><code>20[01-4]</code></td>
<td>Find all years between 2001 and 2004:</td>
</tr>
<tr>
<td><code>\d\d$</code></td>
<td>Find all numbers with 2 digits at the end of a line or paragraph:</td>
</tr>
<tr>
<td><code>M[ae][iy]er</code></td>
<td>Find all &quot;Meyer&quot;s - spelled in four different ways:</td>
</tr>
<tr>
<td><code>^[.[:</code></td>
<td>Find all lines (paragraphs) starting with one arbitrary letter followed by a colon. If you search for a &quot;d&quot; following the colon you will have to use the Escape character: <code>\\d</code> Otherwise, the letter &quot;d&quot; would be interpreted as a digit.</td>
</tr>
</tbody>
</table>
The sorting order is: (1) special characters (* + ' # - _ : . ; , etc.), (2) numbers, and (3) letters. Therefore, it is NOT a good idea to use prefixes like 1, 1.1, 1.1.1, 2, 2.1, 2.1.2 etc. Such a numbering scheme will necessarily wreak havoc with your intended sorting order ("10" will be sorted before "2"). When using numerals, always use "01," "02," "03," or and so on.

All terms preceding a colon (:) indicate the main category name; the terms following the underscore or colon constitute sub codes. Other projects may require additional sub levels. But don't overdo it!

As main category code and sub code names may contain more than one word, an empty space is not sufficient to separate the two levels of coding. Therefore it is best to use one of the special characters that you find on your keyboard to visually separate levels of coding.

Beginners often stuff lengthy treatises into a code name, blurring the distinction between codes, comments, and memos and thereby mistaking codes for their more appropriate siblings.

If you find yourself using more than a few words as code word, consider using quotations or the code comment instead.
Working With Memos

Memos are explanatory and descriptive texts that may be associated with other "objects" like quotations, codes, or other memos. Memos can also "stand alone" – simply as part of an HU. They can contain methodological notes; they can be used as a bulletin board to exchange information between team members; you can use them to write notes about the analytical process, keeping a journal of to-dos. Memos may also serve as a repository for symbols, text templates, and embedded objects that you may want to insert into documents or other memos.

Difference Between Memos And Codes

Code names are (or should be) succinct, dense descriptors for concepts emerging during the stage of closely studying the data. They often reduce complex findings to crisp placeholders and/or theoretically relevant concepts.

Beginners often stuff lengthy treatises into a code name, blurring the distinction between codes, comments, and memos and thereby mistaking codes for their more appropriate siblings.

If you find yourself using more than a few words as code word, consider using quotations or the code comment instead.

Like codes, memos have names. These names, or titles, are used for displaying memos in browsers, and help to find specific memos. Just like code names, a memo’s title should be short and concise. Don’t confuse the name with its content!

How Memos And Comments Differ

Memos are very similar to comments in that both are intended to hold lengthy texts, as opposed to codes that are simply naming a concept. Comments exclusively belong to one entity.

Comments are not displayed in browsers separately from the object to which they are attached. Memos can be associated with more than one object and have an additional type attribute, e.g., theoretical, methodological, commentary, etc. They can also be free-standing, unlike comments.

Creating A New Memo

1. Open the Memo Manager by clicking on the Memos button or select MEMO / SHOW MEMO MANAGER from the main menu.
2. Click on the + sign to add a new memo. Enter a name.
3. Double-click to open it. It will open as new tab.
WORKING WITH MEMOS

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Loading Memos

You can also open a memo into its own region, so that you can see both the memo and your data. To do so, drag the memo tab to the right, left, top or bottom edge of the document area. If you see a blue band, you can drop it (see figure below).

You are free to split your screen vertically or horizontally (see also "Multiple Document View").

To link a memo to a data segment, drag & drop it from the Memo Manager onto a quotation, or select a memo in navigator and drag & drop it from there.

Figure 37: Open a memo, document or network in a new region

Figure 38: Alternative arrangements of documents and memo
When selecting a memo in the margin area, the inspector on the right-hand side is displaying the detailed information for this memo (see Figure 39).
Working With Groups

Just as codes describe sets of quotations, groups cluster Primary Documents, Codes, and Memos. One important objective is to manage large amounts of objects by classifying them into subsets, e.g., all theoretical codes, all documents from respondents of a certain age group or location, all memos related to a theme, etc. Objects of the same type can be a member of multiple groups. For example, the interview transcript of Eva Smith, can be a member of document group Gender: female and a member of document group: Location: city.

Unlike Network Views, which can contain objects of different types as nodes, groups can only contain one type of object. For example, a code can never be a member of a memo group.

Purpose Of Creating And Working With Groups

Partitioning objects into groups reduces the number of “chunks” requiring the researcher’s attention. Groups are often used for filtering purposes. The navigators in the managers offer a convenient way to create them and to set them as filters. The “grouped by” option also makes use of groups and you can use them to display your data in different ways.

Example: When conducting an interview study with respondents from various backgrounds and locations, document groups can be created to classify the respondents into:
- Female / Male
- Marital status
- Age Group 1 (20-30), Age Group 2 (31-40), Age Group 3 (41-50)
- Educational level, etc.

Once implemented, you can use document groups to compare and contrast answers of different groups of respondents, or check whether they are differences between locations, across time or type of documents. For example, you can ask for all quotations coded by Code_A and Code_B that occur in documents of white-collar female respondents from location B. Thus, document groups in effect can be used as variables. Figure 40 below shows how document groups can be used as filters: The manager only shows documents of married female respondents.
The **Document Group table** function provides a convenient way to import and export variables (feature not yet implemented).

**Code groups** can be used to loosely group codes that belong together. You can use them to sort, filter, and organize your codes in the Code Manager in the navigator. Other than in Network Views where specific relationships between codes need to be defined, in code groups it is not necessary to specify the ways in which codes relate to each other.

Use **memo groups** to sort, filter, and organize your memos.

**Common Procedures**

In the following, the general procedures for working with groups are described.

Groups can be created in both the Group Manager and the navigator of the respective managers. The navigators are better integrated into the regular workflow. Thus, for daily regular activities it is easier to use the navigators. Currently you need to use the Group Manager to remove items from a family and to describe your families. Later you will also be able to create smart groups in the manager using AND, OR, XOR and NOT as operators. The navigators offer AND and OR combinations only.

**Creating Groups In The Navigator**

In case you are familiar with the Windows version of ATLAS.ti, groups are the equivalent to “families.” Groups can be used for sorting and organizing purposes, and to set filters.
Open one of the Managers. Click on the plus sign at the bottom of the Groups pane or right-click inside the Groups pane and select **NEW GROUP**. Enter a group name.

Add members to the group via drag and drop from the list of documents / codes / or memos in the respective manager.

**Filtering By Group In A Manager**

- If you click on a group, the items in the manager are filtered and only the members of the selected group are listed (see Figure 40).
- Click on **SHOW ALL (OBJECT NAME)** to reset the filter.

**To Remove An Item From A Group**

- Open the Group Manager, e.g. via the main menu (Show Documents- / Codes- / Memos Group Manager), or double-click on a group; or right-click on a group in a manager. Then select: **OPEN IN GROUP MANAGER** For further instructions see the section on the Group Manager below and Figure 43.

**The Group Manager**

In the Group Manager, you can search for groups, rename groups, write descriptive comments, review creation and modification dates, add new code groups by clicking on the + button, add and remove group members, sort the list by codes and smart groups, filter the list by a number of criteria (see below), and export the list to Excel or OpenOffice Calc.

**Opening A Group Manager**

- In the main menu, under **Documents, Codes, and Memos** you find an option to open the respective group manager. You can also open a Group Manager via a context menu in any of the object managers, or simply double-click on a group to open the Group Manager.
WORKING WITH GROUPS

Adding And Removing Group Members

Select one or more objects from the list "Not in Group" and click on the button with the double arrows pointing to the left "In Group." Or double-click each item.

Select one or more objects from the list "In Group" and click on the button with the double arrows pointing to the right "Not in Group." Or double-click each item.

Filtering The List Of Groups

To filter groups, click on the filter icon on the top right of the group manager.
To add a filter rule, click on the plus sign as highlighted in Figure 45.

Next, select one of the available options (see Figure 48) to create the filter you are interested in.

The following filters are available for groups:

All available operators and the process of building queries is explained in detail in the section “Overview Of Main Sets Of Operators” on page 82.

Working With Smart Groups

Smart groups are combinations of other groups. They can also contain other smart groups. You can build complex groups incrementally from existing groups using a set of powerful Boolean operators. You can either generate temporary groups using the Venn diagram in the navigation panel, or you can create and store smart groups in the Smart Group Editor.

Purpose Of Smart Groups

The purpose of smart groups is to use them as filter in your ongoing analysis. For instance you may want to examine the difference in attitude among respondents who have an engineering degree only, an MBA only and both an engineering degree and an MBA. Via smart groups you prepare the filter you need and combine them with a code query, or use them to prepare a Codes-Primary Documents-Table.
Creating Temporary Smart Groups

You can create new groups based on AND and OR (ALL or ANY) operations using the Venn diagram in the navigation pane for groups. For instance, as shown in Figure 46 you can select two code groups by holding down the cmd key. If you want to display all codes from both groups, set the Venn diagram to OR (ANY).

![Displaying two code groups using OR (All)](image)

Figure 46: Displaying two code groups using OR (All)

If you are interested in the intersection of two groups, use AND (ALL). You can switch between ANY and ALL by clicking on the Venn diagram.

Another way to create smart groups is via the smart group editor.

**The Smart Group Editor**

Open the smart group tool via a right-click inside the group navigation panel. Select the option NEW SMART GROUP.

![How to open the smart group editor](image)

Figure 47: How to open the smart group editor

You can combine groups using Boolean operators. Each operator is explained below and an example is provided.

![Available Smart Group Operators](image)

Figure 48: Available Smart Group Operators
**OR: Any Of The Following Are True**
The OR operator retrieves all objects (i.e., documents) that are added to any of the groups used in the expression. The query in Figure 49 will give you all respondents that have an MBA or an engineering degree including those respondents that have both. This results in a total of 17 retrieved documents.

**XOR: Exactly One Of The Following Is True**
At least one of...,” excluding the case where ALL conditions match. The XOR operator asks that "EXACTLY one of..." the conditions must meet. It translates into everyday "either-or." Example: you want to group all respondents that either have an engineering degree or an MBA (excluding those respondents who have both an engineering degree and an MBA). This results in a total of 11 retrieved documents.

**AND: All Of The Following Are True**
The AND operator finds quotations that match ALL the conditions specified in the query. In Figure 52, the smart document group contains all respondents that both have a MBA and an engineering degree. This results in a total of 6 retrieved documents.

**None Of The Following Are True (NOT)**
The NOT operator tests for the absence of a condition. Technically, it subtracts the findings of the non-negated term from all other available objects of the same type. If you select "none of the following are true" and the group "engineering degree," you retrieve all respondents that have an MBA or other degrees This results in a total of 20 retrieved documents. If your data set also contains other data like reports that are not grouped in any "degree group", you retrieve all other documents that have not been grouped as “degree: engineer.”
If you only want to retrieve respondents with an MBA that do not have an engineer degree, select:

All smart groups are listed in the navigator together with the other groups. They are automatically named by ATLAS.ti: Smart Group1, Smart Group 2, Smart Group 3 and so on. The group icon is filled in (see left). It is recommended to rename the smart groups after creation in order to remember what they contain.

A smart group can be edited at any time. In order to do so, right-click on a smart group and select Edit Smart Group. This opens the Smart Group Editor again.
Working With Hyperlinks

A network with text (or other media) as nodes is often referred to as a hypertext. The original sequential text is de-linearized, broken down into pieces that are then reconnected, making it possible to traverse from one piece of data to another piece of data regardless of their original positions.

The procedures described so far have focused on working with codes. Direct linking of data segments (quotations) to other data segments offers similar flexibility in choosing and defining relations.

What Codes Cannot Do

Maybe we should ask a different question first: How can you express that statement X in text A contradicts statement Y in text B, or how can you retrieve all contradictory statements of a specific utterance if all you have is codes and their associations with the data?

The "code & retrieve" paradigm, which is so prevalent for many systems supporting the qualitative researcher, is not adequate for certain types of analysis. In formal terms, attaching codes to chunks of data creates named sets of segments with almost no internal structure. This is not to say that partitioning lots of text segments into sets is not useful. On the contrary, classification leads to manageable amounts of segments that later can be retrieved with the help of the attached code words. But this may not be the only way you want to look at your data.

The concept of a hypertext introduces explicit relations between passages. These links have to be built manually and result from an intellectual effort. The system cannot decide for you that segment x is in contradiction to segment y. But after the work of establishing the links, you can make semantically richer retrievals: "Show all statements that are contradictory of statement x."

Hypertext allows you to create different paths through the data you are analyzing. For example, you may create a timeline different from the strict sequence of the
original text. The concept of hypertext introduces explicit relations between passages. While a code offers fast access to sets of data segments, it defines only a simple relation between them, namely equivalence.

Hyperlinks, which directly relate data segments, express more differentiated relationships between quotations: contradiction, support, illustration, etc.

No code is needed to connect quotation Q1 with one that it contradicts (Q2).

Cross-references between text passages are very common even in conventional media like books - just think of religious and juridical texts, literature, journals etc. Footnotes and end notes are another common deviation from the pure linearity of sequential text. However, in conventional media, not much navigational support is provided for "traversing" between the pieces of data that reference each other.

Computer-related hypertext applications include, for example, online help systems that display operational information in suitable small chunks (compared to lengthy printed information), but with a considerable amount of linkage to other pieces of information. A well-known hypermedia structure is the World Wide Web with its textual, graphical and other multimedia information distributed world-wide.

Graphical Hyperlink Maps

ATLAS.ti incorporates procedures for creating and browsing hypertext structures. It allows for two or more quotations being connected using named relations. Further, you can create graphical maps (using Network Views) to make parts of your hyperspace accessible in a comfortable way. Hyperlinks may connect quotations (textual, graphical, multimedia) across documents (inter-textual links) or may link segments within the same primary document (inter-textual links). The natural boundary for hyperlinks, like all structures in ATLAS.ti, is your project. The figure below shows a network views based on a number of hyperlinks and a few codes. Other node types can also be included in the Network View, like for instance a memo.
Creating Hyperlinks

Creating Hyperlinks In The Quotation Manager

To link two quotations to each other, simply drag one quotation (source) and drop it on top of another quotation (target) – either in the Quotation Manager or in the margin area.

Next, select one of the offered relations. If the offered relations do not suit your needs, you can create new relations in the Relations Manager: From the main menu select: QUOTATIONS / SHOW RELATION MANAGER. (see also “Defining New Hyperlink Relations.”)

Creating Hyperlinks In The Margin Area

Like the method described above, creating hyperlinks in the margin area is best suitable for connecting two quotations that are in close proximity to each other. If they are not, utilize the multi-document view for linking (see "Utilizing The Multi-Document View For Creating Hyperlinks."

Select a quotation bar in the margin area (the source).

Hold down the left mouse button and drag the bar onto another quotation bar (the target).

Release the left mouse button. The Relation menu opens. Select a relation.

Display Of Hyperlinks In The Margin Area

Hyperlinks in the margin area are colored in gray and if a transitive link was selected like "supports," the source link points to the right. And vice versa, the target link points to the left (see Figure 58 below). Symmetric links point in both direction. Whether a link is directed or non-directed can be specified in the Link Manager, see "Defining New Hyperlink Relations."
Utilizing The Multi-Document View For Creating Hyperlinks

- Open two documents side-by-side (see "Multiple Document View").
- Grab a quotation bar and drag it across to the document in the second tab and drop it onto another quotation bar.
- Select a relation.

Modifying Hyperlink Relations

Currently, you can only modify the relation type in the Link Manager:

- Open the Link Manager via QUOTATION / SHOW LINK MANAGER.
In the Relation column, click on a relation and select the desired relation.

Defining New Hyperlink Relations

The procedure for defining or editing hypertext relations is equivalent to the methods described for editing code-code relations (see also "Working with Network Views").

Open the Relation Manager from the Quotation’s main menu:

*QUOTATION*/ **RELATION MANAGER**.

Click on the + button to add a new relation.

Define the properties for the new relation and write a comment (optional). The various fields are explained in more detail below.

**Relation Properties**

The following can be defined: Cosmetic and descriptive as well as structural aspects of relations.

**Cosmetic and descriptive aspects** include the name and the line. The relation name is shown when creating relations and in a Network View Editor. Once implemented, the symbol and short name can be used as an alternative display option in network views. Instead of a short name, you can for instance also use a different language as shown on the left. Further you can define the width and solidity of the line. Color will be added later.

**Formal property** associated with a relation has a cosmetic effect and it controls the "procedural semantics" of the semantic operators in the Query Tool. When you want to utilize the semantic operators (children / parent), transitive relations need to be used.

**Preferred layout direction**

A more sophisticated "cosmetic" property is the preferred layout direction. By using this relation characteristic, the user can assert some control on the automatic layout algorithm. Indeed, this option justifies the name "semantic layout."
Traversing Hyperlinks

For a better view, open up the context menu in the margin area and only select Show Hyperlinks. Deactivate all other options.

- Double-click a hyperlink in the margin to jump to the linked quotation.
Margin Drag & Drop

All objects populating the margin area (i.e., "margin objects") support drag & drop. The bar visualize quotations segmenting the document, and depending on the context - the objects attached to the bars represent themselves or the link with the quotation.

The effect of a drag & drop operation depends on the objects that are involved as drag sources (those that are dragged) and targets (those onto which objects are dropped). A large variety of objects from the margin area can be dropped into the margin area. Furthermore, objects can also be dragged from other object managers and browsers.

Move Linked Objects

When a code, memo, or a quotation is dropped on a quotation bar, a new link is created between the object and the quotation represented by the bar. You can for instance drag-and-drop quotations, codes and memos from the navigator or any of the managers.

Figure 63: Coding via drag and drop from the navigator

Figure 64: Coding via drag & drop from the Code Manager
Copy Linked Objects

An object in the margin is unlinked from its original quotation when it is dropped on another quotation bar. To keep the object from unlinking from its original place, hold down the alt-key when dropping. This resembles dragging objects from managers and browsers into the margin area, which does not change existing links.

You will see a green button with a plus sign if an object is copied and not moved.

Linking Quotations

Dragging a quotation bar onto another quotation bar creates a hyperlink between the two quotations.

- Open two documents side-by-side (see "Multiple Document View").
- Drag the quotation bar from one document onto the quotation bar in another document. A list of relations opens to chose from. Select one of the offered relations. If none of the existing relations adequately reflects the relation between the two quotations, you can create new relations in the relation manager (see "Defining New Hyperlink Relations"). After selecting a relation the two quotations are linked and the hyperlink is displayed in the margin area (see Figure 58).

Figure 65: When copying linked objects, hold down the alt key

Figure 66: Creating a hyperlink across documents when opening two documents side-by-side
ATLAS.ti allows you to establish named links to more clearly express the nature of the relationships between concepts.

With named links, you may express a sentence like "a broken leg causes pain" by two nodes (the source node "broken leg" and the target node "pain") connected with a named link ("causes" or "is-cause-of").

The name of a link is displayed in the Network Editor as a label attached to the link midway between the two connected nodes. Six preset relations--or link types--are available in ATLAS.ti. These standard relations can be substituted, modified, or supplemented by user-defined relations. The default relations are listed in the table below. C1 and C2 are source and target nodes, respectively.

<table>
<thead>
<tr>
<th>Relation</th>
<th>Symbol</th>
<th>Short Name</th>
<th>Width</th>
<th>Color</th>
<th>Formal Attribute</th>
<th>Layout Direction</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1 is-associated-with C2</td>
<td>==</td>
<td>R</td>
<td>1</td>
<td>Black</td>
<td>Symmetric</td>
<td></td>
</tr>
<tr>
<td>C1 is-part-of C2</td>
<td>[]</td>
<td>G</td>
<td>1</td>
<td>Black</td>
<td>Transitive</td>
<td></td>
</tr>
<tr>
<td>C1 is-cause-of C2</td>
<td>=&gt;</td>
<td>N</td>
<td>1</td>
<td>Black</td>
<td>Transitive</td>
<td></td>
</tr>
<tr>
<td>C1 contradicts C2</td>
<td>&lt;&gt;</td>
<td>A</td>
<td>1</td>
<td>Black</td>
<td>Symmetric</td>
<td></td>
</tr>
<tr>
<td>C1 is-a C2</td>
<td>isa</td>
<td>0</td>
<td>2</td>
<td>Black</td>
<td>Transitive</td>
<td></td>
</tr>
<tr>
<td>C1 noname C2</td>
<td></td>
<td></td>
<td>1</td>
<td>Black</td>
<td>Symmetric</td>
<td></td>
</tr>
<tr>
<td>C1 is-property-of C2</td>
<td>*)</td>
<td>P</td>
<td>1</td>
<td>Black</td>
<td>Asymmetric</td>
<td></td>
</tr>
</tbody>
</table>

Some of these characteristics directly affect the display of links, while others affect processing (e.g., search routines, automatic layout). A link between concepts is displayed in a Network Editor by a line with the relation's label. You can choose from three different labels: relation name, symbol and a short name.

The "formal attribute" affects both the display and processing capabilities of a relation. For example: All asymmetric relations are symbolized in the Network Editor with an arrow pointing toward the target code. Symmetric relations are displayed with an arrow at both ends.

A typical transitive relation is the is-cause-of relation: if C1 is-cause-of C2 and C2 is-cause-of C3, it follows that C1 is-cause-of C3. Transitive relations also enable the "semantic retrieval" based on parent and child nodes (see "Semantic Operators").

The following properties are user-definable: full name, short name, symbol, the property of the relation (symmetric, asymmetric, transitive), the width and line style (solid or dashed), and the preferred layout direction. The preferred layout direction affects the layout of a network when ATLAS.ti automatically arranges the nodes.

Video Tutorial: [Working with network views](#)

**Link Vs. Relation**

It is important to understand the difference between a relation (or a link type) and the link itself. There is only one "is part of" relation, but potentially many links using it. In the Network View below, the relation "consequence" is used only once, while the relation "strategy" is used four times.

Another way to think of links and relations is to view links as instances of relations. Links are well informed about the characteristics of relations, which define their
styles. If a characteristic of a relation is changed (e.g., line width, color, symbol), these changes are propagated to all links using it.

The Role Of Relations

It is useful to understand the role that relations play in the construction of a theory. The concepts (codes) that are linked using relations represent aspects of the problem domain under investigation. On the other hand, the relations used to link these domain concepts are part of the methodology used to analyze the phenomena. As important epistemological tools they constitute the main questions that guide the development of a model or a theory.

The "Grounded Theory" method of Glaser & Strauss uses relations like "is-phenomenon," "is-context-of," "is-consequence-of," "is-condition-for," "is-strategy-for," etc., to relate concepts found during the data-oriented open coding phase.

In the analysis of argumentation structures, other relations are more suitable: e.g., "is evidence of," "is contradictory to," "warrants," etc. A medical expert attempting to capture diagnostic knowledge would use, e.g., "is-symptom-of," and "is medication for."

The Network Editor

The Network Editor offers an intuitive and powerful method to create and manipulate network structures. It favors a direct manipulation technique: You can literally "grab" codes, quotations, memos, or other objects using your cursor and move them around the screen as well as draw and cut links between them.

The following describes various methods available for creating and editing Network Views.

Network View Characteristics

Network Views have certain important characteristics:

- Several different Network Views on the same network are possible.
- Network Views can be given names under which they are stored and accessed inside the HU.
- Network Views can be commented.
- Network Views are displayed and edited in the Network Editor.
- Network Views allow individual layout of the nodes.
WORKING WITH NETWORK VIEWS

• As a node, a single object can be a member of any number of Network Views, just like a code can be an element of more than one code group.
• An object, e.g., a specific code, can only appear once in any Network View.

Network Views allow for a flexible but logically consistent display of the network of objects, so there are a few constraints to keep in mind:

If code A is linked to code B using the relation "is associated with," then every Network View that contains code A and code B will necessarily include the relation "is associated with" between the two. Furthermore, as only one link can exist between any two nodes at any given time, no Network View will display any other relation between those two nodes.

If however, you want to link code A and B differently in a different network view, then you need to work with "dummy or modifier codes." These are empty codes, i.e. you have not used them for coding, but you need them to modify a relation.

Node Types

The following object classes can be displayed and edited as nodes within the Network Editor. The display characteristics of the nodes can be altered in a variety of ways.

Codes As Nodes

Codes are probably the most prominent objects in ATLAS.ti networks. They provide the main ingredients for models and theories.

Memos As Nodes

Memos in networks are often an important supplement to code networks. Several theoretical memos can be imported into a network to map out their relationship. The visual layout provides comfortable territory for moving from memo to memo to read and contemplate each individually and the relationship(s) between them.

Documents As Nodes

Documents as nodes are useful sometimes, but in the presence of quotations may clutter the view by myriad links. However, Document Previews as nodes make a nice graphical content table for graphical primary documents (see “View Options” for further detail).

Quotations As Nodes

Quotations and codes have one thing in common that is not true for the other objects. They can link to each other (quotations to quotations and code to codes) with fully qualified "first class" links using relations. The inclusion of quotations in a Network View supports the construction and inspection of hyperlink structures.
If you add image or video quotations, there content can be displayed if you set the view option to “Show Quotation Previews”. See also page 69.

**Network Views As Nodes**

Network Views as nodes allow the inclusion of Network Views in other Network Views. To open the network view in a new tab, right-click and select **Open Network**.

**Groups As Nodes**

Groups are a useful device to group codes, memos, or documents. Instead of displaying all of the codes belonging to the concept, the Code group may be displayed. Or you display the group with all of its members.

![Network View Example](image)

Figure 69: Display of a code group with its members in a network view

**Creating A New Network View**

To create a new network view, select **Network / New Network**. This opens a tab with new content. The name network 1 / network 2 / network 3, etc is generated automatically. If you decide that you want to keep a particular network view, you can rename it later in the Network View Manager (**Network / Show Network Manager**).

In the network view manager you can enter a comment for each network to describe it.

Drag and drop items from the Managers, margin area, or the navigator into the view.

The node types (document, quotation, code, memo, network view) can be recognized by their entity specific icon (compare Figure 4). If you right-click on a node, you see further options that are available (Figure 70).
Linking Nodes In Network Views

The links between nodes in a network are real connections between the objects. Therefore, creating and removing links should not be regarded as solely "cosmetic" operations. Links make permanent changes to your entire project.

**Strong Links (First Class)**

You can link almost all ATLAS.ti objects to each other. Qualified named relations can however only be created between two codes and between two quotations, the so called hyperlinks (see also "Working with Hyperlinks").

**Weak Links (Second Class)**

Other objects can be linked, but you cannot specify the relation between them. Therefore they are called "weak links" or second class links in ATLAS.ti. These are:
- Code – memo links
- Code – quotation links (this is the same as coding)
- Memo – memo links
- Memo – quotation links
- Groups and their members (see Figure 69 above).
- Documents and their quotations

Document-Quotation links cannot directly be created by the user, they can only be displayed. It is possible to display the quotations that are contained within a document, via the importing neighbor option (see below), but you cannot link a quotation to a document in a network view. It would not make much sense. e.g. to link a quotation from document 5 to document 3, as it does not belong to it.
Creating Strong Links

To link for instance two codes to each other, select a code node. A circle appears at the top left corner of the node. If you begin to drag starting from the circle, a line appears. Drop the line on top of another code node. A list of relation opens. Select the one that best fits the relation between the two codes.

Another way to link either two quotations to each other or two codes is via drag and drop in the respective managers.

Creating Weak Links

To link for instance a code to a memo, select a code node. A circle appears at the top left corner of the node. As you begin to drag, an arrow appears. Drop the arrow on top of the memo node and drop the line.

Linking Two Nodes Using Mouse And Keyboard

Place the mouse pointer over the source node.

Hold down the ALT key on your keyboard.

Hold down the left mouse button and drag the mouse pointer to the target node.

Release the left mouse button and the ALT key.

In case you create a strong link (code-code or quote-quote link), select a relation.

Selecting Links

To select a link or a relation, simply click on the link. It turns blue. To open the context menu to either delete or flip the link, right-click.
Modifying Links

The type of a link (e.g., its relation) can currently only be changed in the Link Manager. Further options will follow.

- Open the appropriate Link Manager via QUOTATION / SHOW LINK MANAGER or CODE / SHOW LINK MANAGER.

- In the Relation column, click on a relation and select a different relation (compare Figure 60).

Selecting Multiple Or All Nodes

To select all or a selected group of nodes, you can either draw a frame around all nodes with your mouse or hold down the **cmd** key and click on each node that you want to select.

Moving Nodes

By moving nodes to different positions, you can modify an initial layout created by the automatic layout procedure. To move a single node, just drag it with the mouse to the desired position.

**To Move Multiple Nodes**

- Create a multiple selection of nodes as described above. Then grab one of the selected nodes with the mouse and move the entire group of selected nodes to a different position.

Removing Nodes From Network Views

Removing nodes from the view simply takes the nodes out of a Network View. The nodes remain in your project. Removed nodes can be “re-imported” at any time.

- Select the nodes to be excluded from the view. Right-click and select the option **REMOVE FROM NETWORK**.

Defining New Code-Code Relations

The procedure for defining or editing code-code relations is equivalent to the methods described above for defining hyperlink relations (see Defining New Hyperlink Relations).

- Open the Relation Manager from the Code’s main menu: CODE / SHOW RELATION MANAGER.

- Click on the + button to add a new relation. Define the properties for the new relation and write a comment (optional). The various fields are explained in more detail below.
Relation Properties

The following can be defined: Cosmetic and descriptive as well as structural aspects of relations.

COSMETICS

Cosmetic aspects include the name and the line. The relation name is shown when creating relations and in a Network View Editor. Once implemented, the symbol and short name can be used as an alternative display option in network views. Instead of a short name, you can for instance also use a different language as shown on the left. Further you can define the width and line style. Color will be added later.

FORMAL PROPERTY

The formal property associated with a relation has a cosmetic effect and it controls the "procedural semantics" of the semantic operators in the Query Tool. When you want to utilize the semantic operators (children / parent), transitive relations need to be used.

PREFERRED LAYOUT DIRECTION

A more sophisticated "cosmetic" property is the preferred layout direction. By using this relation characteristic, the user can assert some control on the automatic layout algorithm. Indeed, this option justifies the name "semantic layout."

COMMENT

As with all entities in ATLAS.ti, a comment can be attached.

Bear in mind that a comment written for a relation is different from a comment written for a link. The comment for a relation is of a global nature and defines the relation type: e. g., what is meant by the relation "is associated with." A link using this relation connects two specific quotations. When writing a comment for this link, the meaning is local and explains why two quotations were connected using this relation.

Opening Existing Network Views

You can access network views via the Network View Manager and via the navigator on the left hand side of your screen.
Select **Network / Show Network Manager**.

Open the navigation pane and select the network view tab (see left).

**View Options**

The following view options for network views are available:

- Show Document Previews
- Show Quotation Previews
- Show Document Comments
- Show Quotation Comments
- Show Code Comments

![Figure 74: View options for network views](image)

**Document And Quotation Previews**

When selecting **Show Document or Quotation Previews**, "thumbnail" images of the documents are displayed. This also applies to image and video files and quotations. The content of video and also audio files can be started from within the network view and previewed.

![Figure 75: Preview of video documents and video quotations](image)

![Figure 76: Preview of graphic documents and graphic quotations](image)
Further Options In Network Views

A number of layout options are at your disposal (see left).

Further you have the option to remove multiple nodes from a network view. To do so, select a number of nodes either by drawing a frame around them with your mouse, or by holding down the SHIFT key. Next click on the button “Remove Selected Nodes”.

Code-Document connections can be displayed or hidden. Just activate or deactivate the option, depending on what you want to see in a network view.

Printing Network Views

Open the network view you want to print or save as external file first.

Select Project / Print. If you click on Show Detail, you have the following options:
Analytic Functions In Network Views

**Import Node Neighbors**

This method imports all direct neighbors of the selected nodes into the Network View. This option is currently available from the node’s context menu. Importing direct neighbors allows you to construct a *connected* Network View step-by-step. (In a connected graph, there is always a direct or indirect path between any two nodes.)

**Import common Neighbors** imports all directly linked objects. All other options let you specifically select which objects you want to import. Below the options for the various objects types are listed:

<table>
<thead>
<tr>
<th>Quotations</th>
<th>Import Common Neighbors</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Import Codes</td>
</tr>
<tr>
<td></td>
<td>Import Memos</td>
</tr>
<tr>
<td></td>
<td>Import Hyperlinks</td>
</tr>
<tr>
<td>Documents / Codes / Memos</td>
<td>Import Common Neighbors</td>
</tr>
<tr>
<td></td>
<td>Import Codes</td>
</tr>
<tr>
<td></td>
<td>Import Memos</td>
</tr>
<tr>
<td></td>
<td>Import Quotations</td>
</tr>
<tr>
<td></td>
<td>Import Groups</td>
</tr>
<tr>
<td>Groups</td>
<td>Import Members</td>
</tr>
</tbody>
</table>

- Select the node(s) whose neighbors are to be included in the Network View.
- Right-click and select **IMPORT NEIGHBORS** from the context menu and make your choice.

![Figure 80: Importing code neighbors](image)

**Creating Case-Based Network Views**

Importing a document’s codes neighbors allows to create case-based network views. You can ask questions like: Which of the codes have been applied in which document (and where do they not occur). ATLAS.ti automatically draws light gray dashed lines between codes and the primary documents. This is how you do it:
Create a new network view: **Network / New Network**.

Drag-and-drop two or more document nodes into it, e.g. from the navigator.

Right-click on each document node and select the option **Import Neighbors / Import Codes**. Don’t forget to do it for all document nodes, even if results pop up immediately.

Usually a lot of different codes have been applied to a document. Therefore this option works best, if you apply a filter for codes (the option to set a filter in network views is not yet implemented). The example below compares two respondents from a survey (case 6 and 9). The survey only included two open-ended questions and therefore the number of codes is still comprehensible.

![Figure 81: Case-based comparison using the import codes option for documents](image)

**Import Co-occurring Codes (Not Yet Implemented)**

For code nodes, there is a special import feature that exploits the spatial relations of different codings. A code co-occurs with another if it has been used to code quotations that are in close proximity: embedded, overlapping, or if two or more codes are applied to the same quotation.

Until this feature is implemented, you can use the Code Cooccurrence Table instead, see page 75.
Tools For Basic And Advanced Analysis

The following options are at your disposal:

- Simple retrieval by code in the Quotation and Code Manager
- Complex retrievals by a number of criteria, Boolean, semantic and proximity operators in the Quotation Manager
- The creation of smart codes also offering the full range of operators (Boolean, semantic and proximity operators).
- Code Cooccurrence Table
- Codes Documents Table

Simple Retrieval In The Code Or Quotation Manager

Select a code in the Code Manager. If not opened, open the inspector on the right-hand side of the Manager. All linked quotations are listed in the bottom pane of the inspector.

Click on the right-arrow to view each quotation in context.

OR

Open the Code Manager and double-click on a code. The list of quotations coded by this code opens. Click on a quotation to view it full length and in context.
Open the Quotation Manager.

Select a code in the navigator on the left-hand side. This filters the list of quotations and only those quotations linked to the selected code are shown. Click on each quotation to view its content in the preview pane at the bottom.

Do view the quotations in context, make sure that the Quotation Manager stays on top by selecting the pin (top right). Double-click on each quotation to view it in context.

Simple Boolean Queries In The Quotation Manager

The simple retrieval option in the Quotation Manager can be extended to include also more than one code:

Open the Quotation Manager. At the bottom of the screen you see a VENN diagram. You can set it to AND (= All must apply) or OR (any selected apply).

Select two or more codes holding down the cmd key.

Figure 85 shows the result of an example AND query. The two codes '#fam: have children' and '#fam:t-teenagers' have been selected holding down the cmd key. The quotation list displays the resulting 6 quotations that contain all comments written by parents of teenage kids.

The quotation content is displayed in the bottom pane.
Code Cooccurrences (Code-Code Matrix)

You find the Code Cooccurrence Table under the Analysis menu. In Figure 86 below you see an example query comparing the answers provided by respondents with and without children (column codes) with regard to a number of different issues (row codes):
The operators that are used to calculate code cooccurrences are enclosing / being enclosed / overlapping at start / overlapping at end / All of the following are true. For further information on these operators see “The Co-occurrence Operator” on page 86.

To create a table as shown in Figure 86 select column and row codes on the left-hand side by ticking the boxes in front of the codes. The table fills in automatically when selecting row codes. The first number is the number of hits – how often do the code and column codes co-occur; the second number is the c-coefficient (see below for further information).

**Setting Filters**

It is also possible to filter the list of codes that you want to select from. To do so, click on the Filter button and then on + to create the filter you want. Below two examples are shown.

![Figure 87](image)

*Figure 87: Selected filter: Show only codes that are in the code group “Effects of parenting”*

![Figure 88](image)

*Figure 88: Selected filter: Show only codes that I have used in document: case 3*
Figure 89: Available filter options in the code-occurrence table

Figure 89 Shows all available options to create a filter in the code-occurrence table. For a detailed explanation of Boolean and semantic operators (last two blocks), see “Overview Of Main Sets Of Operators” on page 82.

What Is Displayed

Currently both, number of hits and c-coefficient are displayed. In the future, you will be able to choose which number(s) you want to see. The c-coefficient only makes sense and is interpretable with specific type of data and higher case numbers.

Click on a cell in the table to view the resulting quotations in the pane at the bottom. Double-click to access a quotation in context.

The C-Coefficient

The calculation of the c-coefficient is based on approaches borrowed from quantitative content analysis. Thus, interpreting such a coefficient is only meaningful with a sizable data set and not for an interview study with 10 respondents.

The c-coefficient should vary between 0: codes do not co-occur, and 1: these two codes co-occur wherever they are used. It is calculated as follows:

\[ c = \frac{n_{12}}{(n_1 + n_2 - n_{12})} \]

\( n_{12} \) = co-occurrence frequency of two codes \( c_1 \) and \( c_2 \), whereby \( n_1 \) and \( n_2 \) are their occurrence frequency.

What you may experience is the following:

Out of range. The C-index exceeds the 0 - 1 range it is supposed to stay with.

Colored circles. Cells can have additional visual cues, e.g., a red, yellow or orange circle.
Out Of Range

The c-index (structurally resembling the Tanimoto and Jaquard Coefficient, which are similarity measures) assumes separate non-overlapping text entities. Only then can we expect a correct range of values. However, ATLAS.ti’s quotations may overlap to any degree.

Case 1: Two differently coded quotations overlap, we assume no more quotations available. Let P1 be a textual document, q1 and q2 be quotations and a,b be codes. q1 is coded with a, q2 is coded with b.

Using the formula: \( c = \frac{n_{ab}}{n_a + n_b - n_{ab}} \), we get:

- \( n_{ab} = 1 \) one co-occurrence of a and b
- \( n_a = 1, n_b = 1 \) a and b each code exactly one quotation.
- \( c = \frac{1}{1 + 1 - 1} = 1 \)

Such a scenario results in the maximum co-occurrence of 1!

Case 2: q1 is coded with both codes a and b, the overlapping quotation q2 is coded with b.

\[ n_{ab} = 2. \] q1 alone counts for a co-occurrence event and the overlapping q1*q2 for another.

- \( n_a = 1, n_b = 2 \)
- \( c = \frac{2}{1 + 2 - 2} = 2 \)

This results in a value of twice the allowed maximum. Thus, the C index is not appropriate to correctly represent co-occurrence in redundantly overlapping texts. If the c-coefficient exceeds 1, you need to do some cleaning up and eliminate the redundant codes.

Color Indicators

Red circle: When the c-index exceeds 1 (see "Out of range").

Yellow circle: An inherent issue with the C-index and similar measures is that it is distorted by code frequencies that differ too much. In such cases the coefficient

*Figure 90: Out of range example 1*

*Figure 91: Out of range example 2*
tends to be much smaller than the potential significance of the cooccurrence. For instance, if you had coded 100 quotations with code "depression" and 10 with "mother" and you had 5 co-occurrences:

\[ n_{dep} = 100, \quad n_{mother} = 10, \quad n_{dep-mother} = 5 \]

\[ c = \frac{5}{(100 + 10 - 5)} = \frac{5}{105} = 0.048 \]

A c index of only 0.048 may slip your eye easily, although code "mother" appears in 50% of all its applications with code "depression." Looking from code "depression" only 5% cooccur with code "mother."

If the ratio between the codes frequencies exceeds a certain threshold (currently 5) the yellow light goes on in the cell. So whenever a cell shows the yellow marker it should invite you to look into the co-occurrences of this cell despite a low c-index.

**Orange Circle:** The orange circle is simply a mixture of the red and yellow conditions.

**Example Queries For Cooccurrence Table**

Returning to the examples used in the section on smart codes, let’s now take a look at the negative aspects of parenting that those respondents report that also write about positive aspects.

1. **Open the Code Cooccurrence Table.**
2. **Select the smart code ##parents who report positive effect of parenting as column code, and all effects neg codes as row codes.** This results in the following table:

   ![Figure 92: Results of a cooccurrence table and exported version showing number of hits only](image)

   To see the full code names, move with your mouse of the column or row codes. In the near future, you will be able to resize the columns, so that the full code names can be displayed. On the right-hand side of Figure 92, you see the exported Excel / Numbers table. As the c-coefficient does not make any sense with this small data set, the number of hits are shown. What you can see from the table is that those reporting positive effects of parenting also write about issues like having less fun, loss of freedom, more worries, more stress, financial issues, negative effects on relationships and on self.

**VIEWING RESULTS IN CONTEXT**

In order to interpret these findings, you also need to go back to the data and read what exactly these respondents have been writing. This can be done by clicking on the quotations for the row codes in the Code Cooccurrence table.
The Code Coccurrence Table can be exported to Excel. You find the export option at the bottom right of the table. The Excel table currently will contain the absolute frequency counts only.

Export

Currently the output option consists of exporting the frequencies in form in XLS / CSV (Excel) or ODS (OpenOffice Calc) format; other options like a full report of all cooccurring quotations will follow.

Code Document Table (Code-Document Matrix)

The table contains either a frequency count for each code or code family per document or document family, or a word count of the coded segments per code and primary document.

The table can either show absolute or relative counts; optionally you can select to display row and column totals. And it is possible to switch the orientation of rows and columns similar to the Pivot option in Excel.

To open the tool, select ANALYSIS / CODE DOCUMENT TABLE from the main menu.

Example Query

A useful application is a comparison across different groups of documents for a particular category of codes. Thus, you are likely to create such a table if you have a certain question in your mind. This will guide you to create the code and document
groups you need to construct your query. Based on the Happiness Stage II project that can be downloaded from our website: Download.

We can compare for instance the view of males and females regarding their attitude about parenting or reasons for having or not having children. For this purpose the four code groups on effects of parenting and reasons for having / not having children were selected and the two document groups gender::female and gender::male.

The table can be exported to Excel.

**Relative Counts**

Relative counts are often more meaningful than absolute counts, especially if groups size is unequal. The current implementation offers a percentage relative to the total number of quotations for the selected code or code group.

For instance, negative effects of parenting (first row in Figure 96) has been mentioned in 19.23% of the quotations of all female respondents, as compared to 31.82% of all male respondents. The issue overall makes up 25% of the total number of quotations in the data set.

The four selected topics contribute to 92.31% of the coding for female respondents and to 90.91% of the codings for male respondents.

**Figure 95: Code-Document Table**

**Figure 96: Code Document table displaying relative frequencies**

**Video Tutorial – Code Document Table**
Overview Of Main Sets Of Operators

In this chapter the three main sets of logical operators are explained in detail. You need to know about them, what they mean and what they do in relation to a number of different functions in the software. For example, you will come across Boolean operators when creating smart document / code or memo groups (see page 49). You need to know about all three sets when creating smart codes (see page 87), or when using the query option in all four managers (see “Querying Quotations” on page 93, “Querying Codes” on page 96, “Querying Memos” on page 98, “and Querying Documents” on page 99. Boolean and semantic operators are available as filters in the Code Cooccurrence Table (see page 76) and in order to understand the table, you need to be familiar with the proximity operators (see page 75).

**Boolean operators** allow combinations of keywords according to set operations. They are the most common operators used in information retrieval systems.

**Semantic operators** exploit the network structures that were built from the codes.

**Proximity operators** are used to analyze the spatial relations (e. g., distance, embeddedness, overlapping, co-occurrence) between coded data segments.

---

### Boolean Operators

Four Boolean operators are available: XOR (exactly one), AND (All), OR (any) and NOT (none).

**OR, XOR, and AND are binary operators** which need exactly two operands as input. NOT needs only one operand. However, the operands themselves may be of arbitrary complexity. Codes, code groups, or other smart codes can be used as operands: "(A OR B) AND (NOT C AND D)."

**XOR (Exactly one of the following is true):** The XOR operator asks that "EXACTLY one of..." the conditions must meet. It translates into everyday "either-or."

Example: "All quotations coded with EITHER 'Earth' OR 'Fire' (but not with both)."

**AND (All of the following are true):** The AND operator finds quotations that match ALL the conditions specified in the query. This means you have applied two or more codes to the same quotation. Example: "All quotations coded with 'Earth' AND 'Fire'." The AND operator is very selective and often produces an empty result set. "Precision" of this operator is high, but the "recall" is rather low. It produces best results when combined with less restrictive operators or when the overall number of the available text segments is large.

**OR (ANY of the following are true):** The OR operator does not really match the everyday usage of "OR." Its meaning is "At least one of...," including the case where ALL conditions match. The OR operator retrieves all data segments (i. e.,
quotations) that are coded with any of the codes used in the expression. Example: "All quotations coded with 'Earth' OR 'Fire'."

**NOT (None of the following are true):** The NOT operator tests for the absence of a condition. Technically, it subtracts the findings of the non-negated term from all data segments available. Given 120 quotations in the HU and 12 quotations assigned to code "Fire," the query "NOT Fire" retrieves 108 quotations - those which are not coded with "Fire." Of course, the operator can be used with an arbitrary expression as in the argument "NOT (Earth OR Fire)" which is the equivalent of "neither Earth nor Fire."

The OR operator has the potential to generate a HUGE number of hits. It has high "recall" (a lot is retrieved), but low "precision" (many of the retrieved quotations may not necessarily fit).

Venn diagrams are descriptive schemes for illustrating the different set operations associated with Boolean operators.

The rectangle encloses the set of all retrievable quotations, e.g. the "document universe." The two circles represent two codes A and B. Q1 to Q5 are quotations coded with A, B, or none (Q5).

**Semantic Operators**

The operators in this section exploit connected codes resulting from previous theory-building work. While Boolean-based queries are *extensional* and simply enumerate the elements of combined sets (e.g., LOVE or KINDNESS), semantic operators are *intentional*, as they already capture some meaning expressed in appropriately linked concepts (e.g., All Children of code (POSITIVE ATTITUDES)).

The **All parents of Code** operator looks at all directly linked codes and their quotations at higher levels.

The **All children of Code** operator traverses the network from higher to lower concepts, collecting all quotations from any of the sub codes. Only transitive relations between the codes are processed (see "Relation Properties"); all others are types ignored. When building a terminology from your codes, use the ISA relation for sub-term links.
Like the OR (any) operator in the set of Boolean operators, the 'All children of Code' operator may produce large result sets. However, because you make use of a theory, the "precision" is likely better as compared to using OR (i.e., you get only what you expect). Of course, if your network contains dubious connections ("computer ISA intelligent entity"), the quality of your retrieval will decline.

The **Children of all parents of Code** operator finds all quotations that are connected to the selected code or any other descendants of the same parent code. Example: "All quotations coded with Love or any other Positive Attitude, here: kindness." See Figure 100 above.

With such a network of codes the following queries would make sense (Q1 to Q8 = quotations):

- All children of Code (Positive Attitude) => {Q1, Q2, Q3, Q4, Q5}
- All children of Code (Negative Attitude} => {Q6, Q7, Q8}
- All children of Code (Attitude) => {Q1, Q2, Q3, Q4, Q5, Q6, Q7, Q8}.

### Proximity Operators

Proximity describes the spatial relation between quotations. Quotations can be embedded in one another, one may follow another, etc. The operators in this section exploit these relationships. They require two operands as their arguments. They differ from the other operators in one important aspect: proximity operators are non-commutative. This property makes their usage a little more difficult to learn.

Non-commutativity requires a certain input sequence for the operands. While "A OR B" is equal to "B OR A," this does not hold for any of the proximity operators: "A FOLLOWS B" is not equal to "B FOLLOWS A." When building a query, always enter the expressions in the order in which they appear in their natural language manifestation.

Another important characteristic for these operators is the specification of the operand for which you want the quotations retrieved. "A WITHIN B" specifies the constraint, but you must also specify if you want the quotations for the As or the Bs.
This is done implicitly by the sequence. The code (or term) that is entered first is the one in which you are interested. If B’s quotations are requested, you have to enter "B ENCLOSES A" using the query language described below.

**Embedding Operators**

The *embedding* operators describe quotations that are contained in one another and that are coded with certain codes.

- **Quotations enclosing quotations**: A ENCLOSES B retrieves all quotations coded with A that contain quotations coded with B.

- **Quotations being enclosed by quotations**: A being enclosed by B (WITHIN) retrieves all quotations coded with A that are contained within data segments coded with B.

For example, if you want to retrieve all segments for "give joy" related to the code "#fam: have children" (see figure 102), you would need to enter the query as follows:

If you were to enter the query the other way around (i.e., the code ‘fam: have children’ first), the query tool would not deliver any results.

If you enter: Quotations enclosing quotations: "#fam: have children," "give joy, the the larger segments coded with "#fam: have children” are retrieved:

From the above example we learn that you begin with the code whose content you are most interested in. **Overlap Operators**

The *overlap* operators describe quotations that overlap one another:
**OVERVIEW OF MAIN SETS OF OPERATORS**

**Quotations overlapping at start:** A OVERLAPS B retrieves all quotations coded with A that overlap quotations coded with B.

**Quotations overlapping at end:** A OVERLAPPED BY B retrieves all quotations coded with A that are overlapped by quotations coded with B.

If you are interested in data segments coded with "Happiness: effect of wanting children" that co-occur with "hard work but," you click: "Happiness: effect of wanting children," "hard work but" COCCUR. If you want to read the "hard work but" segments, you enter the query the other way around, i.e. starting with the "hard work but" code.

**The Co-occurrence Operator**

Often when interested in the relation between two or more codes, you don't really care whether something overlaps or is overlapped by, or is within or encloses. It this is the case, you simply use the **Quotation cooccurrence** operator. Co-occurrence is essentially a short-cut for a combination of the proximity operators discussed above, plus the operator AND (all). AND is a Boolean operator, but also finds cooccurrence, namely if coded segments overlap 100%.

The more general cooccurrence operator is quite useful when working with transcripts. In interviews people often jump back and forth in time or between contexts, and therefore it often does not make much sense to use the very specific operators embedding or overlap operators. With other types of data they are however quite useful. Think of video data where it might be important whether action A was already going on before action B started or vice versa. Or if you have coded longer section in your data like biographical time periods in a person's life and then did some more fine-grained coding within these time periods. Then the WITHIN operator comes in handy. The same applies when working with pre-coded survey data. ATLAS.ti pre-codes your questions, then you do some further coding. This enables you to ask for instance for all quotations coded with "topic x" WITHIN "question 5."

**Adjacency Operators**

The **distance** operators describe a sequence of disjoint quotations.

**Quotations following quotations:** A FOLLOWS B retrieves all quotations coded with A that follow quotations coded with B.

**Quotations preceding quotations:** A PRECEDES B retrieves all quotations coded with A followed by quotations coded with B.

When selecting any of the two operators, you can specify a maximum distance. Possible base units are characters and paragraphs for text, milliseconds for audio files, frames for video data and pixels for images.
Working With Smart Codes

Smart codes are a convenient way to store queries. They are very similar in look and feel to normal codes, with one important difference: Instead of "hardwired" connections to quotations, smart codes store a query to compute their virtual references whenever needed. They "automatically" change their behavior during the course of theory building. If you have a smart code based on a query like

(Code A | Code B) COOCCUR Code C

and you add or delete quotations linked to either Code A, B or C, then the quotations linked to the smart code will automatically be adjusted.

Smart Codes can be selected in a code list (either in the Code Manager or the navigators) like any other code and they will display their quotations in an identical way.

Smart codes are displayed in the Code Manager and in the Navigator just like regular codes and can be recognized by the filled icon (see left). The list of quotations associated with a smart code can be displayed with a double-click, just as for any other code.

Smart Codes are not displayed in the margin area and as they are stored queries they can not be used for coding.
Smart Codes can however be added to code groups, to Network Views, and last but not least, as powerful operands in other queries, allowing you to incrementally build complex queries.

Creating Smart Codes

To create a new smart code, select Code / New Smart Code from the main menu. Enter a name for your smart code and click Create.

This opens the smart code editor where you can define the conditions for your smart codes. Below, the available operators are explained in detail. This is followed by a description of a few example queries. To the left you see the menu that lists the various options you have to build a smart code. You can build a smart code based on codes or code groups, or on a combination of both (first section)

Example Queries

The examples presented are based on the "Children and Happiness" project.

Example 1

Question: Do parents who report positive aspects of parenting also talk about negative aspects? If so, which aspects are those?

Codes needed:

- #fam: have children
- code group: effects parenting: negative
- code group: effects parenting: positive

At first you need to find all statements of parents (#fam: have children) about positive effects of parenting and store the results as smart code. As we later want to
find within the same response also statements about negative aspects of parenting, we need to start the query with the code '#fam: have children'. This quotation covers the full comment that the person has written. The number of resulting quotations is shown at the end of each line.

Next we look for statements about negative effects of parenting that occur within the comment that also includes a positive effect.

To answer the second part of the question – Which aspects are those? - read the quotations that come up as a result of the query. Close the smart code tool and open either the Code Manager or the Quotation Manager. In the Code Manager double-click on the smart code and click through the quotation in context, or simply select the smart code to just read the quotations in the bottom pane of the Code Manager.

In the Quotation Manager, select the smart code in the navigator on the left hand side and click on each quotation to read it at the bottom pane of the Quotation Manager.

**Building Queries Using Embed Rules**

Without creating the in-between step and creating the smart code ##parents who report pos effects of parenting, the question can also be answered by building just one smart code. In order to do this, we will make use of the “embed rule” button. One needs to start with the “enclosing operator”, which need to embed the following rule: #fam: have children COOCCUR with code group 'effects of parenting: positive'
Next, select the second term for the enclosing operator, which is the code group 'effects of parenting: negative'. The results show 5 quotations.

Example 2

**Question:** What is the attitude toward the relationship between children and happiness of those respondents who question the study design?

Let's do this step-by-step again before we show you how to put it all in one query:

**Codes needed:**
- children: < happiness
- children: = level of happiness
- children: > happiness
- study design: asking the wrong question
- study design: critique / *blog entry

We first need to find all statements questioning the study design and in a second step we need to look for those statements within the blog comments.
The smart code \#respondents who question the study design contains all comments where respondents critique the study design. This can now be related to the attitudes respondents have with regard to the question whether children make happier or not. This part of the question is best answered using the Code Cooccurrence Table (see "Example Queries For Cooccurrence Table").

**Building the Query Using Embed Rules**

The question can also be solved by creating just one smart code without the intermediate step. To build such a query it is best to use the "embed rule" button (see left and Figure 112).

We need to embed the OR query where we combine all quotations of 'Study design: critique' and Study design: asking the wrong questions' as part of the enclosing query:
Editing Queries

If you want to modify a query, open the Code Manager and right-click on a smart code. Select the option **Edit Query**.

![Editing smart codes](image1)

Figure 114: Editing smart codes

You may have noticed that I started the smart code name with two hash signs (##). As the codes are sorted in alphabetic order, this pushes the codes on top of the code list. Otherwise they “disappear” in the list of all other codes. They are recognizable by the filled-in code icon, but still I prefer to add a distinguishing color (here: bright green). And to add them to a code group (here: *smart codes) for quick access. The effect of the asterisk * in the name is that the code group ‘smart codes’ is on top of the list.

![Quick access to smart codes](image2)

Figure 115: Quick access to smart codes

Another option is to use the “Grouped by:” option to sort the code list be smart codes.
Asking Questions – Finding Answers

Querying Quotations

If you know how to build smart codes, you will also find it easy to query your data segments using the filter option in the Quotation Manager. Those who are familiar with ATLAS.ti 7 for Windows, this is more or less equivalent to using the Query Tool. The Mac version however offers many more options to ask questions about your data. In addition to using the three group of operators (Boolean, semantic and proximity operators), you can combine a code-based search with a text search, or only search for a particular set of quotations that has comments or hyperlinks, or has been modified by a particular author, and so on.

![Figure 116: Query options for quotations](image)

**Quotation attributes:** The options in the first block allow you to search for specific aspects of your quotations or for particular words contained in a quotation (text content), or for particular words in the quotation name (Name)

**Time stamp / User:** The time options allow you to query for creation and modifications dates or for the user that has created or modified a quotation

**Linkages:** In the next group you find options related to the type of objects a quotation can be linked to like codes, other quotations, memos or documents.

This is followed by the three groups of standard operators. For a detailed description see here: “Overview Of Main Sets Of Operators” on page 82.
Building A Query In The Quotation Manager

1. Open the Quotation Manager and click on the filter icon.
2. Click on the + button to begin adding rules.

Example – Looking For Code Co-occurrences

The result of a query in the Quotation Manager are always quotations. As the overlap of two co-occurring quotations is in most cases not a quotation (exceptions are AND occurrences), the result list will give you the quotations of the first code entered, here: all quotations coded with #fam: have children. If you want to read only the sections on where they talk about children have made be happier (children:>happiness), you would need to enter the query the other way around:

All quotations that result from a query are displayed below the query and can be exported with a click on the Export button (see left).

Example – Looking For Quotations Of Two Or More Codes (OR)

This may also have an effect on the resulting number of quotations. See also: “Proximity Operators“ on page 84.

All quotations that result from a query are displayed below the query and can be exported with a click on the Export button (see left).
For an OR query you can simply change the first line to any and add the codes that are you interested in.

**Example – Looking For Quotations Coded By Codes Of A Code Group Containing A Particular Word**

![Combining a text query with a code query](image)

**Figure 121: Combing a text query with a code query**

**Example – Query With Embedded Terms**

Queries can be as complex as you want or like them to be. For most users it might be sufficient to build queries with two codes or code groups. To get used to the query logic, we recommend that you start with those simple queries and over time you will feel also comfortable to click more complex queries. Below you find two example:

![Example of an embedded query](image)

**Figure 122: Example of an embedded query**

This query extends the example provided in the section on smart codes. To review the step-by-step instruction, see here: “Example 2“ on page 90. The rows where the embedded rule have been added are marked in green.

To clear a query click on the – (minus) button.

**Example – Quotation Queries Combined With The “Grouped By” Option**

A further option you have is to group the results by the options available in the “Grouped by:” field. These are for quotations: grouped by codes, code groups, documents, document groups, quotation type, and creating / modifying user.

The example below shows all quotations where respondent who also talk about reasons for having kids mention various sources of happiness. The results are grouped by document families, so that for instance it can easily be seen whether the quotations are contained in documents where respondents either talk negatively or positively about the effects of parenting. In case of interview data these groups could also be all male or all female respondent, or respondents from different locations, etc., anything that you have considered to be important and grouped into document families.
Combining the various filter and grouping options available turn the Quotation Manager into a very powerful query tool.

Querying Codes

- Open the Code Manager and click on the filter icon.
- Click on the + button to begin adding rules.

For codes, the following query options are available:
The results of a code query are always codes.

Example – Code Query Combined With The “Grouped By” Option

As has been described for quotations, this can also be combined with the “Grouped by” option. Figure 127 shows a query for all codes of the code group reasons for having kids grouped by document groups that represent various educational levels.

Finding Codes Linked To A Quotation Query

A code query can also be combined with a quotation query – however different from a quotation query, the results are codes, namely those linked to the quotations that would come up as a result of the quotation query. This is how it works:

You select the TED WITH option plus the option QUOTATIONS OF QUERY. In the next step you enter the quotation query as has been explained above. The query options are the same as available in the Quotation Manager, see Figure 116 on page 93.
Endless Possibilities

The possibilities are endless. If you were to click on the is coded with button, the whole range of quotation operators is at your disposal again. The following example (Figure 127) shows a code query that asks for all codes that are linked to quotations that contain the word *happiness* and occur in document *Rubin’s happiness project*.

Instead of *Is in Document*, you can also select *Is in Document Group* or *Is in Document of Query*... and follow up by entering a document query, and so on.

In order to avoid redundancy, please read the chapter “Asking questions – Finding Answers” from the beginning starting at page 93.

Querying Memos

- Open the Memo Manager and click on the filter icon.
- Click on the + button to begin adding rules.

For memos, the following query options are available:
As for quotations and codes, the results of a memo query are always memos. When selecting Linked with Code, further options are Codes of group and Codes of query. If you select Codes of query, all query options for codes become available. Similarly, if you select Linked with Quotations, you can also select Quotations of Query. In the latter case, all query options for quotations are at your disposal.

In order to avoid redundancy, please read the chapter “Asking questions – Finding Answers” from the beginning starting at page 93.

Querying Documents

- Open the Document Manager and click on the filter icon.
- Click on the + button to begin adding rules.

For documents, the following query options are available:

The results of all document queries are documents. Figure 130 shows as example an AND query. The aim was to retrieve all documents from married female respondents.
To avoid redundancy, please read the chapter “Asking questions – Finding Answers” from the beginning starting at page 93.
Creating Reports

Reports Based On The Entire Project

You find an output option under the main menu of each entity type: Document, Quotation, Code, Memo and Network.

Currently, all output options refer to the entire project. You cannot for instance, export quotations of just one code. Such reports will, however, be implemented soon.

Below a few output options are shown as examples:

- **DOCUMENT / OUTPUT / LIST OF DOCUMENT GROUPS AND THEIR MEMBERS**

![Figure 131: Report: List of document groups and their members](image-url)
CREATING REPORTS

**Quotation / Output / Quotations by Code**

Also feel free to try other output options, such as
- **Codes / Output / Codebook**
- **Codes / Output / List of Codes by Document**
- **Memos / Output / Memos with Content and Linked Quotations**
- **Network / Output / List of Code-Code Links with Comments**

**Video Tutorial** - [Creating output based on the entire project](#)

**Video Tutorial** - [ATLAS.ti Mac: Creating a code book](#)

**Print / Export Selected Items**

You can export the content of all four managers (document, quotation, code and memo) to Excel or OpenOffice Calc. If you no make no selection, all items are exported. If you only want to export selected items, you need to filter the content of the managers. The simplest option is by selecting a group in the navigator and possibly combine it with a “grouped by” view; or you formulate a more complex query by clicking on the filter icon (see left).

Click on the Export icon. Enter a file name or leave the default name. Select a location for the file and chose the desired format.
Print Network Views

See page 70.

Print Documents With Codes

You can print the documents with the codes on the right-hand side as you see it on your screen. The report creates a WYSIWYG printout of coded documents (What You See Is What You Get). Instead of printing the document, you can also save it as PDF file, mail the PDF file or add it to iBooks, etc. See Figure 134 for available options.

The print documents with codes option is available for textual primary documents, PDF and image documents.

The printout resembles the screen display at the time of creating the output. Only those margin objects are included that are currently displayed in the margin. If not everything that you want to be visible is included, adjust the margin area. To change the type of objects that are displayed, right click on a white space in the margin area to open the context menu and select the objects to be included in the output.

- Load the primary document that you want to print.
- Select PROJECT / PRINT from the main menu.
- The printer dialogue window opens. Select Show Detail to see all option as shown in Figure 134. Make your choices. Select landscape view if your codes spread over several columns. If you change the settings the preview adjusts automatically. If you do not want to print the entire document, select start and end page. The pages are shown in the preview.
Prior to printing the document, you can also open a PDF preview or select other options. See Figure 135).

Figure 134: Print with margin settings

Figure 135: Print with margin options