

## NVivo 7 Tutorial 9:

### Exploring Patterns in Matrices

As a qualitative project develops, researchers need a range of ways of seeing the “big picture”, an overall “story” or a pattern. Many of the software techniques in earlier tutorials will be used at this stage, and your writing in memos will be all important. But one search technique is often critical for seeing or exploring synthesis or patterns.

This tutorial teaches just that one technique – making qualitative matrix displays – and how to use them in your project.

For a wider discussion of the challenges of seeing the “big picture” of your project, either in an overall “story” or a pattern, and for discussion of matrices in the qualitative literature, go to Chapter 9 of *Handling Qualitative Data*.

To review the uses of matrix queries, go to the online Help.

#### The idea of a qualitative matrix.

Tables are a very familiar way of showing the relation of one lot of features to another. In your project, you may be looking for a pattern of how people’s ideas vary by a demographic characteristic, for example, or how one group of nodes pattern “onto” another, as represented by your coding.

Start this tutorial by asking which of the “seeing” processes you are exploring in your project could be assisted by matrix display. Write the question in plain language first.

*My question here, (in this highly inadequate early stage in my project) might be: “does education pattern the images of volunteers?” I’ve an attribute for education and all cases have values allocated (return to Tutorial 3 if you need to revise attributes.) And there are nodes for the images of volunteers.*

#### Matrices in NVivo

Matrix coding queries create tables to compare multiple pairs of items you specify, in ways that you specify. Like any other Query (see previous tutorial) a Matrix coding query can be restricted to a scope you specify. And like any other query, it can be saved.

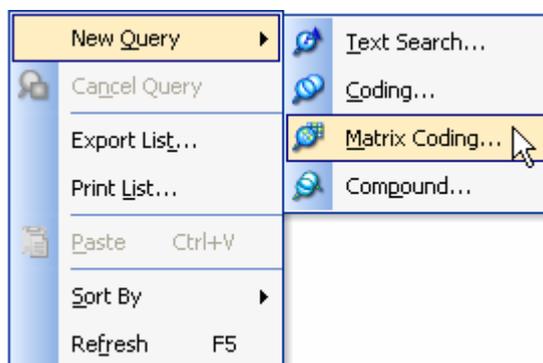
It’s called a matrix *coding* query because matrices are made of nodes that code data. The items you specify for rows or columns are nodes, and the cells of the table will contain data coded at the combination of those nodes you specify. *For example if you ask for the AND operator, the cells will contain content coded at cases with this education value AND this image node.*

Columns or rows can be coding categories of any sort – free or tree nodes that represent concepts, or relationships – or cases, chosen for their attribute values. *I wish to compare images (nodes) by education (an attribute) I specify the nodes for images, and the nodes for cases that have the required values of the attribute.*

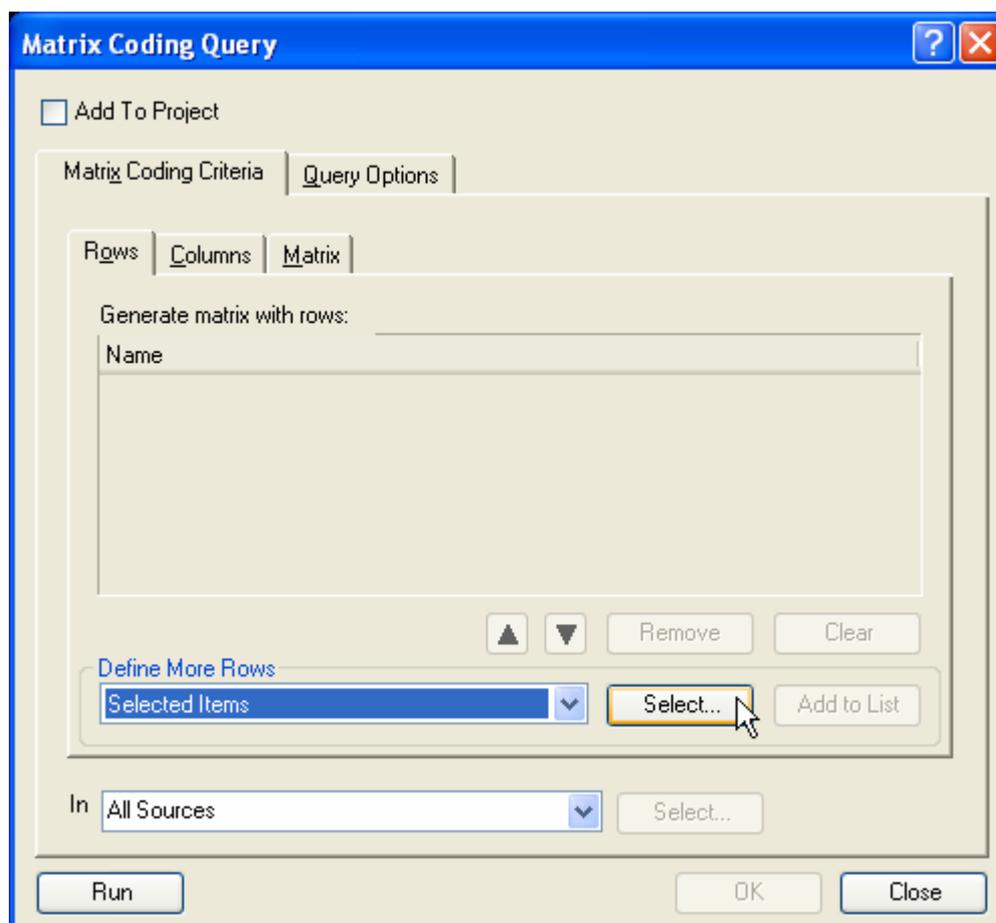
And the result, the table, is also nodes. A new node is created for each cell in the matrix. You can open the node and explore all the material gathered there.

## 1. Making a matrix

1. In Navigation View , click on **Queries**. Click in the **List View**
2. Use the **New** button, or from the **Project** menu, **Context** menu, select to make a **New Query.> Matrix Coding**.



The **Matrix Coding Query** dialog box is displayed with the **Matrix Coding Criteria** tab in focus. This dialog is different from those in the previous tutorial because a matrix has rows and columns – and a relation between them.



## To set Rows and Columns

In the tabs for **Rows** and **Columns**, you specify the items to display as headers in your matrix.

In the **Matrix** tab, you will specify how these are to be related. Click through the tabs to get familiar with this process.

1. In the **Rows** tab, you will define the items to be displayed as row headers, and click **Add to List**.
2. In the **Columns** tab, you will define the items to be displayed as column headers, and click **Add to List**.

*(See below for advice on selecting the nodes for rows and columns.)*

3. In the **Matrix** tab, you will specify the relationship between rows and columns.

Finally, as in every query, you can set a scope. Select to search **In** all Sources or just selected items or folders.

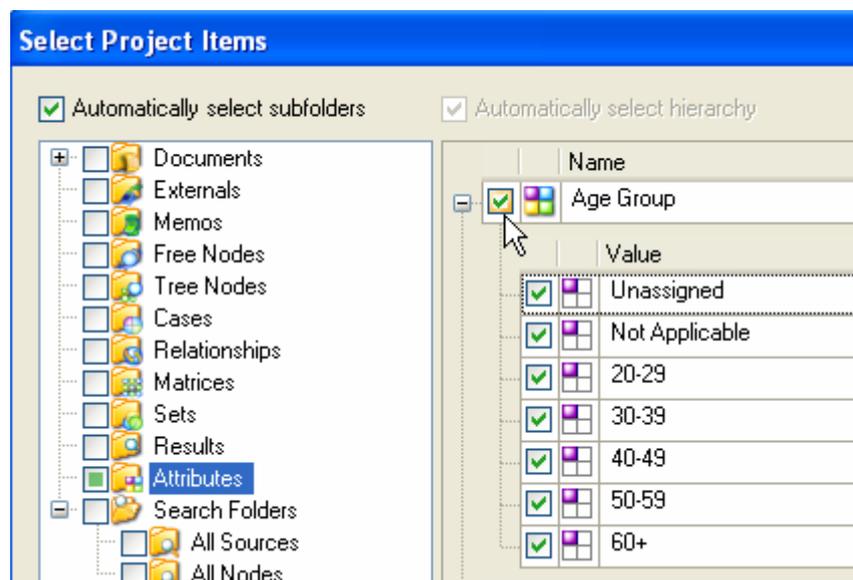
4. As for other queries, to save it, you can click the **Add to Project box** and the **General** tab will appear for you to name the query and add a Description.
5. Then to run the matrix, you click the **Run** button. The matrix will be displayed in **Detail View**.

Now that you know the steps to a matrix, here's how to specify what will appear in the rows and column headers.

## To specify attribute values

You can choose from two ways:

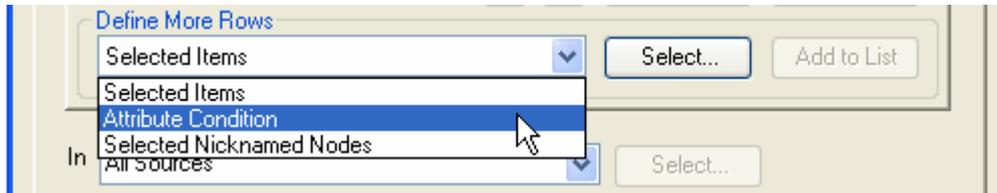
1. In the **Matrix Coding Criteria** window, for either rows or columns, choose **Selected Items** from the dropdown list and click **Attributes** in the **Select Project Items** window.
2. Click the box beside the attribute whose values you want as rows or columns. *All* values of that attribute are selected. Unclick any you don't want.



3. Click **OK**.
4. Back in the **Matrix Coding Criteria** window, click **Add to List**.

Note, if you don't want all the values, it may be quicker to select them individually:

1. In the **Matrix Coding Criteria** window, for either rows or columns, choose **Attribute Condition** from the drop-down box then click Select.

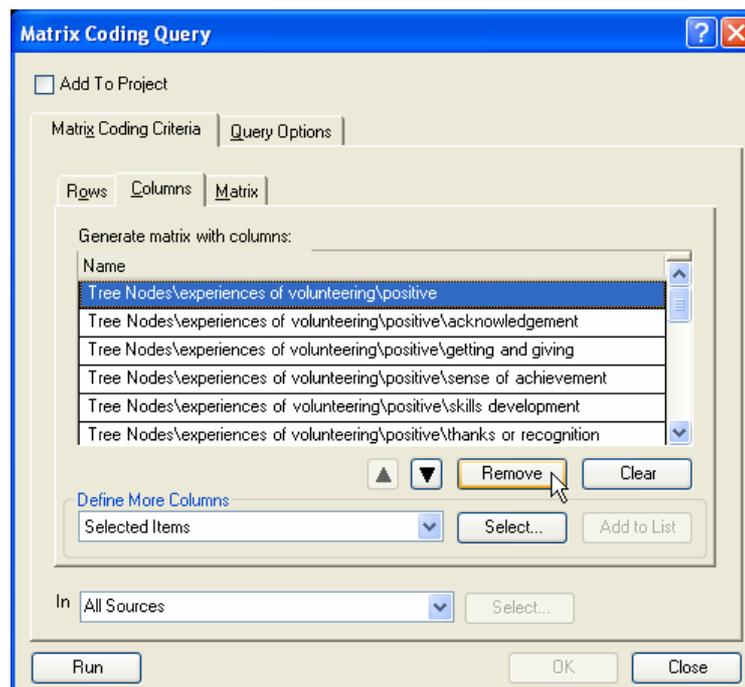


2. Choose in turn each value of an attribute you want as a row or column, and **Add to List**.

Note the wording: in the example below I am asking for *content coded by any case where Education=primary*.

### To specify Tree or Free Nodes

1. In the **Matrix Coding Criteria** window, for either rows or columns, choose **Selected Items** from the dropdown list.
2. Click **Select**, and then select the nodes you want.
3. To select all the nodes in a tree or subtree –click **Automatically select hierarchy then select the parent node and all the descendants will be automatically selected**. You can then unclick any child nodes you don't want, or Remove them from the **Matrix Coding Query** list.
4. Click **OK**.
5. In the **Matrix Coding Criteria** window, click **Add to List**.

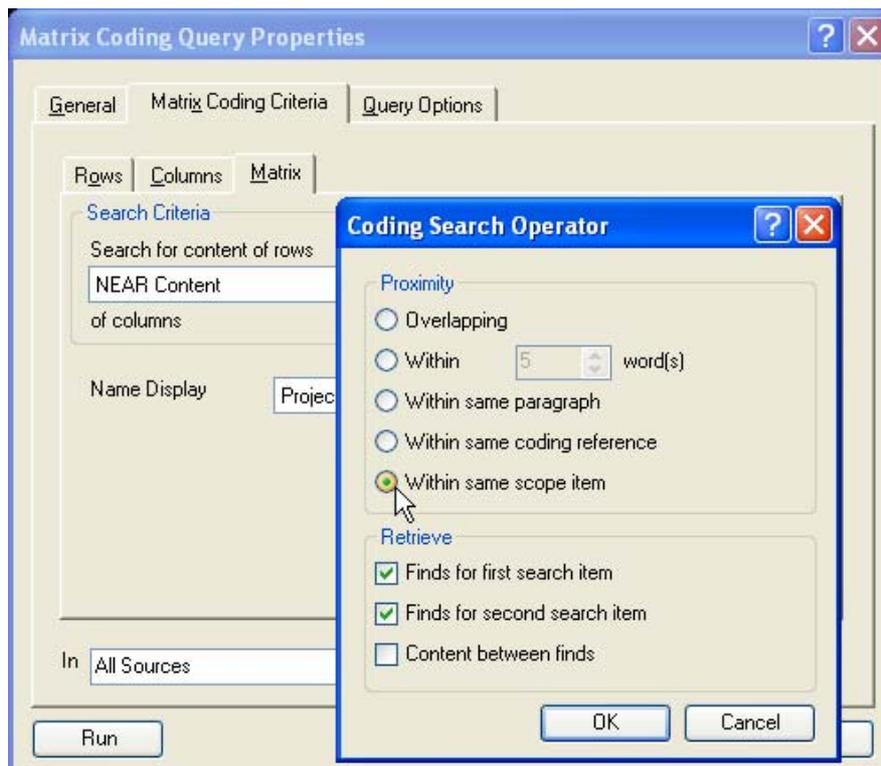


## To specify the relation between rows and columns

1. In the **Matrix** tab, set the **Search Criteria**. For example, **Search for content of rows AND of columns** if you want the intersection of the two.

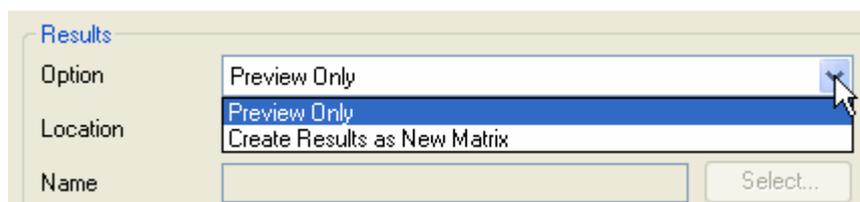
You can choose from three Boolean operators – **AND**, **OR** and **NOT** and three proximity operators – **NEAR**, **PRECEEDING** and **SURROUNDING**.

2. If you chose a proximity operator, select from the Options – e.g. how near is **NEAR**? Below, the specification is **Within same scope item**. It will find for example, for each cell everything coded at the row item if there is something coded at the column item in the same document or node if they are part of the scope you specified.



## To set Query Options

1. Click the second tab, **Query Options**. As for any Query it provides options to preview or save. But for Matrix, there is only one save option.
2. Select whether you will preview or **Create Results as New Matrix**.



A matrix is saved as a node for each cell. If you create results as a new matrix, it will appear in the **Results** folder. You can move it to the **Matrices** folder in **Nodes** if you wish to keep it. Or if you wish to alter the nodes that code the cells separately, move it to the **Trees** area.

## 2. Using your matrix.

For most qualitative research, the critical purpose of building such a table is to return to the data and try to understand and interpret the pattern.

### To save a previewed Matrix

If in the **Query Options** tab, you asked to **Create Results as New Matrix**, it was saved either in **Results** or in the **Matrices** folder of **Nodes**. But if you selected **Preview Only**, and now wish to create the matrix, it is not lost.

1. In the **Detail View** of the matrix, right mouse and select **Store Query Results**.
2. Locate and name the matrix and if relevant, store a description.

### To work with the matrix

1. In the **Detail View**, first adjust the table so that the row and column headings can be seen. (Go to Help for advice.)
2. Right mouse click and select **Matrix Cell Shading**. The matrix appears with shading indicating density of coding.
3. Now explore the options to show in the cells – number of sources, or cases, words, or coding passages represented there, and a choice of percentages. Select the one appropriate to your purpose – the shading changes.
4. Right-click on a selected cell. Remember, it is a node, so you can open it in the **Detail View** to see all the content coded at that cell's node.

	A : acknowledgement	B : getting and giving	C : sense of achievement	D : recognition	E : emotions
1 : Country = Aust	1	4	5	6	3
2 : Country = US	1	2	1	3	2

Thus the cell being opened in the illustration above will show you everything coded at “sense of achievement” if it was said by a participant from Australia.

country by pos atts - Results Pre

<Documents\Interviews\Bernadette> - § 1 reference coded [100.00% Coverage]

Reference 1 - 100.00% Coverage

*In an “ordinary” week, how do you currently spend your time?  
(What takes most time, how much time spent on work, family, leisure etc... ?)*

Work? I'm retired now. But no, I guess I see my volunteer work as work

Family? Now my children have all grown up my family responsibilities are fairly small. All my grandchildren live in other cities, so I'm not roped into baby sitting and the like. Yes – there's still shopping, housework etc – keeping a home. But I'm not too fussy about that. Maybe amounts to 1 – 1.5 days per week.

Leisure? Well now I have two free days a week just to do whatever I want. A lot of reading,

### Q.1 Current use of time

*In an “ordinary” week, how do you currently spend your time?*

*(What takes most time, how much time spent on work, family, leisure etc... ?)*

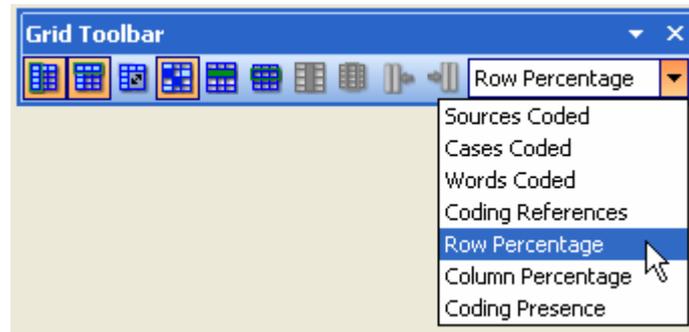
Work? I'm retired now. But no, I guess I see my volunteer work as work

Family? Now my children have all grown up my family responsibilities are fairly small. All my grandchildren live in other cities, so I'm not roped into baby sitting and the like. Yes – there's still shopping, housework etc – keeping a home. But I'm not too fussy about that. Maybe amounts to 1 – 1.5 days per week.

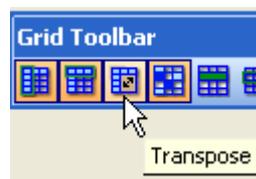
Leisure? Well now I have two free days a week just to do whatever I want. A lot of reading,

The contents are coded at a node for that cell, and you can code on from it just as you would in any other node.

- Now, another toolbar. The **Grid** toolbar allows you to use buttons for common tasks in any grid or table. As for any toolbar, check what the buttons offer and tailor it if you wish. Or look for them on the right mouse button Context menu.



In the example below, the table is transposed, so attributes are columns.



The toolbar option to hide columns is being used to hide cases with primary education, whilst the researcher concentrates on the difference between what is said by the more numerous secondary and tertiary educated participants.

The image shows a data grid titled 'Images of Volunteer'. The grid has columns for 'A: Education ...' and 'B: Ed'. The rows list various attributes and their counts. A context menu is open over the grid, showing options like 'Export Result...', 'Copy', 'Transpose', and 'Hide'. The 'Hide' option is highlighted.

	A: Education ...	B: Ed	
1: adventurous	1		
2: commitme...	2		
3: community ...	3		
4: elderly, reti...	4		
5: energetic	1		
6: financially ...	1		
7: free of com...	1		
8: have spare...	3		
9: helping the...	2		
10: lonely	3		
11: outgoing	0		
12: passionate	2		
13: politically i...	1		
14: privileged	0		
15: respected	0	0	0
16: self indulg...	3	0	3
17: social tour...	2	0	1
18: young	3	0	1

### 3. Saving and exporting the matrix

Like Results nodes, Matrix nodes can't be altered by you – to do this would be to falsify the matrix. A matrix remains unalterable whether it's in Results folder or the Matrices folder of Nodes.

But if you move it to Matrices, this is a way of ensuring it is safe in your project. Like any nodes, it can have a linked memo to describe the pattern you are seeing.

If you are interested in any cell or cells, and want to keep working with them as nodes, copy them and paste into the Trees area, where they become “ordinary” tree nodes, and you can code more at them or delete coding from them.

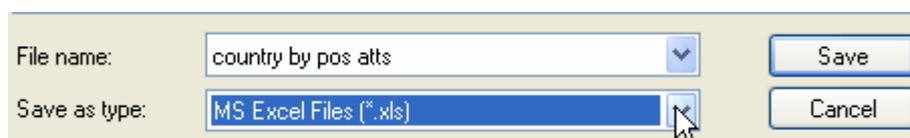
#### Using the matrix in reports

As you move through the processes of “seeing” the project, matrices may be very important. You can keep them as nodes in your project, and view them on the screen at any time. But you also can copy and paste them into a word processor report or PowerPoint presentation.

- To view and use the content coded at any matrix cell, you can copy or print it from the Detail View, or make a report on it as for any node.
- To print the whole matrix, from the **File** menu select **Print**. (Check first the dimensions of this table: you might waste a lot of paper on a long thin table.)
- If you want to include it in a written report or a PowerPoint presentation, or to import this data into another package, simply copy all the content and paste into a Word document. you need to Export the matrix. In your class report or project write-up, you can include this table since it can be opened in Word or Excel.

#### To export a matrix

1. Select the node that contains the matrix (either in **Results** or **Matrices** folder, as you specified) or select the matrix in the Detail View
2. Right-click and select the mode of export you wish (a text file or an Excel spreadsheet file). The file will be saved where you specify.



3. Open the file in Word or Excel to use as you wish.

	A	B	C	D	E	F	G
1		acknowledgement	getting and giving	sense of achievement	skills development	thanks or recognition	emotions
2	Country = Aust	5%	20%	25%	5%	30%	15%
3	Country = US	10%	20%	10%	10%	30%	20%
4							



You can very quickly build up a large node system by running matrix searches, since each cell in a matrix is a node!

Ensure that you do some node housekeeping after running these searches. A good habit is to move all matrices out of **Results** and into the folder for **Matrices** in **Nodes** if they are of lasting value - and delete them if they are not.

This concludes Tutorial 9.

For more on showing and interpreting patterns in your data, go to Chapter 9 of *Handling Qualitative Data*.

The final tutorial covers other aspects of reporting, ways of getting the results of your analysis “out” of NVivo and into the report.