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Perspectives: Qualitative computing and NVivo

Perspective influences the way we approach any new experience – including the way we approach the use of software for qualitative analysis. The history of qualitative data analysis software (QDAS) has influenced the current trajectory of software development, and this history is also linked to current researcher perceptions of advantages and disadvantages of software. Depending on when current qualitative research experts chose to adopt (and in some cases subsequently abandon) QDAS, they have different understandings of the purpose and applicability of software tools. Many of us who use, teach and write about QDAS encounter both positive and negative claims regarding the software that are obsolete but have survived as part of the discourse among qualitative methods instructors and scholars. In this chapter we place some of the claims and counterclaims in perspective before providing you with a brief exploration of how NVivo, as one example of QDAS, can assist analysis of qualitative data.

In this chapter:

- Discover how the use of software can support you in doing qualitative research.
- Understand the historical context and ongoing development of this type of software.
- Consider issues and objections people have raised about the use of software for qualitative research.
- Begin with a tour of an existing database to understand the overall composition of the software.



Qualitative research purposes and NVivo

Researchers engage in projects involving interpretation of unstructured or semi-structured data for a variety of reasons. These might include exploration, description, comparison, pattern analysis, theory testing, theory building, or evaluation. Methodologists routinely urge researchers to assess the fit between purpose and method, with the choice to use a qualitative approach being determined by the research question and purpose, rather than by prior preference of the researcher (Maxwell, 2013; Richards & Morse, 2012). Qualitative methods will be chosen in situations where a detailed understanding of a process or experience is wanted, where more information is needed to determine the boundaries or characteristics of the issue being investigated, or where the only information available is in non-numeric (e.g., text or visual) form. Such investigations typically necessitate gathering intensive and/or extensive information from a purposively derived sample.

How NVivo supports qualitative analysis

QSR International, the developers of NVivo, promise only to provide you with a set of tools that will *assist* you in undertaking an analysis of qualitative data. The use of a computer is not intended to supplant time-honoured ways of learning from data, but to increase the effectiveness and efficiency of such learning. NVivo was developed by researchers, and continues to be developed with extensive researcher feedback to support researchers in the varied ways they work with data. The efficiencies afforded by software release some of the time used to simply 'manage' data and allow an increased focus on ways of examining the meaning of what is recorded. The computer's capacity for recording, sorting, matching and linking can be harnessed by researchers to assist in answering their research questions from the data, without losing access to the source data or contexts from which the data have come. In some instances, researchers reported that the software opened up new ways of seeing their data they missed when managing the information without software.¹

The average user of any software program typically accesses only a small portion of its capabilities; this is no doubt true for users of NVivo also. If you are using NVivo for a small descriptive project, you can work without having

¹ Examples include exploring multiple meanings in the data (L. Richards, 2002), challenging researcher assumptions and first impressions of the data (Garcia-Horta & Guerra-Ramos, 2009), becoming aware of gaps in the collected data (Wickham & Woods, 2005), revisiting data with a new conceptual lens (Sin, 2007), fending off an uncritical reification of method (Ozkan, 2004), reflecting on the social construction of evidence (Kaczynski & Kelly, 2004), and unpacking some of the tacit views of research transparency among qualitative researchers (Jackson, 2009).

to learn complex procedures, but if you are undertaking complex analytical tasks, you can find the additional tools you need. Choices about what tools to use and how to use them are entirely up to you.

Using NVivo during the analysis of qualitative data will help you:

- Manage data – to organize and keep track of the many messy records that go into making a qualitative project. These might include not just raw data files from interviews, questionnaires, focus groups or field observations, but also published research, images, diagrams, audio, video, web pages, other documentary sources, rough notes and ideas jotted into memos, information about data sources, and conceptual maps of what is going on in the data.
- Manage ideas – to organize and provide rapid access to conceptual and theoretical knowledge generated in the course of the study, as well as the data that support it, while at the same time retaining ready access to the context from which those data have come.
- Query data – to ask simple or complex questions of the data, and have the program retrieve from your database all information relevant to determining an answer to those questions. Results of queries are saved to allow further interrogation, and so querying or searching becomes part of an ongoing enquiry process.
- Visualize data – to show the content and/or structure of cases, ideas, concepts, sampling strategies, timelines, etc., at various stages of the interpretive process, and to visually represent the relationships among these items in a range of (often interactive) displays.
- Report from the data – using contents of the qualitative database, including information about and in the original data sources, the ideas and knowledge developed from them, and the process by which these outcomes were reached.

There is a widely held perception that use of a computer helps to ensure rigour in the analysis process. In so far as computer software will find and include in a query procedure, for example, every recorded use of a term or every coded instance of a concept, it ensures a more complete set of data for interpretation than might occur when working manually. There are procedures that can be used, too, to check for completeness, and use of a computer makes it possible to test for negative cases (where concepts are *not* related). Perhaps using a computer simply ensures that the user is working more methodically, more thoroughly, more attentively. In these senses, then, it can be claimed that the use of a computer for qualitative analysis can contribute to a more rigorous analysis. Even so, human factors are always involved, and computer software cannot turn sloppy work into sound interpretations, nor compensate for limited interpretive capacity by the researcher. As much as 'a poor workman cannot blame his tools', good tools cannot make up for poor workmanship.

If you are coming to NVivo without first meeting qualitative methodology or methods, then you are strongly advised to read some general texts such as Bazeley (2013), Flick (2009), Maxwell (2013), Patton (2002), Richards (2009), Richards and Morse (2012), or introductory texts from within your own discipline. Then use the

recommended reading lists in those texts to further explore the methodological choices available to you. Qualitative methods are a rich, diverse, and complex sphere of knowledge and practice. Be careful about adopting the first approach you encounter (e.g., ethnography or phenomenology) as the only approach, or assuming that because you are working from data up that you are doing grounded theory. Learn about the relevant methodological debates regarding data collection, management and interpretation before fully framing your research.

Perhaps surprisingly, the tools described in this book are 'method-free', in so far as the software does not prescribe a method but rather supports a wide range of methodological approaches. Different tools will be selected or emphasized and used in alternative ways for a variety of methodological purposes.

We reiterate that no single software package can be made to perform qualitative data analysis in and of itself. The appropriate use of software depends on appreciation of the kind of data being analyzed and of the analytic purchase the researcher wants to obtain on those data. (Coffey & Atkinson, 1996: 166)

There are, nevertheless, some common principles regarding the most effective use for many of the tools, regardless of methodological choices. For example, the labels used for coding categories will vary depending on the project and the methods chosen, but the principles employed in structuring those categories into a branching coding system are common to many methods where coding takes place. These common principles allow us to describe in general how you might use the various tools. It is then your task to decide how you might apply them to your project.

The evolution of qualitative data analysis software

Alongside the various strands of qualitative methods applied and refined in the 1980s, university faculty from Australia, Germany, and North America began independently developing software programs to facilitate the analysis of qualitative data. The developers of these software programs believed that a primary purpose of their enterprise was to facilitate data management and promote the rigour of qualitative research.²

Initially, these early developers were working in isolation, unaware of parallel developments by other researchers (Davidson & di Gregorio, 2011; Fielding, 2008). After networks of researchers began informally sharing their experiences with software in qualitative analysis, the first Surrey Research Methods conference was held at the University of Surrey in the UK in 1989. This

² For detailed discussions on the purpose and evolution of NUD*IST and NVivo, see Richards and Richards (1994) and T. Richards (2002).

conference established a dialogue between developers and early users (Fielding & Lee, 2007).

By 1990, Renata Tesch was able to catalogue over 26 qualitative analysis software packages. These were mostly MS-DOS or Unix based at the time, although she also discussed other platforms. She framed their capabilities in terms of the qualitative approaches they were intended to support – structural analysis, content analysis, interpretational analysis, text retrieval, and theory-building. In the conclusion to her book, Tesch candidly acknowledged that the rapid pace of software development (combined with the time that elapses between conceptualizing and distributing a book) meant her book was already out of date.

This sentiment helps explain the creation, in 1994, of the Computer Assisted Qualitative Data Analysis (CAQDAS) networking project in the UK (<http://caqdas.soc.surrey.ac.uk>). By establishing an internet presence and a location where more recent advancements could be posted without the delays of paper publishing, the CAQDAS site became a cutting-edge source of information about qualitative software, without formal financial ties to any developer. This project was funded for many years by the UK Economic and Social Research Council (ESRC). Shortly thereafter, Weitzman and Miles (1995) produced comprehensive comparison tables of the range of tools provided in 24 programs available at the time.

Common tools across current programs include the ability to write memos and track ideas, index or code data with thematic or conceptual labels, add demographic or other categorical information for the purpose of comparing subgroups, run searches to examine constellations or patterns, develop visual models or charts, and generate reports or output from the data. Lewins and Silver (2007) provided a good overall map of these common tools and the common research activities they support.

These software programs became collectively known as qualitative data analysis (QDA) software (Yuen & Richards, 1994), also commonly referred to as QDAS.³ For the most part, program developers promoted and sold their own products via their own start-up companies, and they offered training in how to use the software. Although the early presence of these programs represented a great diversity of features, purposes and software platforms, the software development trajectory since then has become fairly typical (Norman, 1998). The early diversity of programs and their notable limitations in handling only a narrow methodological approach or data type gave way to programs containing more features. This allowed for more diverse applications through any one

³ Because the acronym CAQDAS often conflates the collaborative networking project in the UK with the genre of software, we prefer the term QDA software or QDAS to refer to the software and we reserve CAQDAS for the collaborative network.

software program. A few products took the lead around 2005, some have fallen by the wayside, and as of today the CAQDAS networking site provides reviews of only nine qualitative analysis programs.

To more fully investigate the influence that different QDAS options have on the research process, and to re-examine whether the choice of one of the current programs over another has an influence over the research findings, organizers of the Netherlands Association for Qualitative Research (KWALON) designed a comparative investigation (Evers, Silver, Mruck, & Peeters, 2011). Experts in several of these software packages (ATLAS.ti, Cassandre, MAXQDA, NVivo, and Transana) independently analysed a common set of data. These participants were in widespread agreement that they came up with very similar conclusions regarding the primary research questions and that the impact of a particular QDAS in analysing the data was negligible. This corroborates the claims by Gilbert, di Gregorio, and Jackson (2013) that over the last 20 years QDAS software has simultaneously become more comprehensive, more applicable to a diverse range of methodologies, and more homogeneous.

Issues raised by using software for qualitative data analysis

'Tools extend and qualitatively change human capabilities' (Gilbert, 2002: 222). Users of NVivo's tools can face opposition from those who express doubts about using software for analysis of qualitative data, or who simply have an aversion to technological solutions. Nonetheless, the development of software tools (and technology in general) has a significant impact on how research is done. The constantly expanding use of the web to provide access to data is now extending and changing the range of qualitative source data as well as the structure of surveys and survey samples. The advent of social networking will have an as yet unknown influence on social research and method. Historically, the widespread use of tape recorders in interpretive research changed both the level and kind of detail available in raw material for analysis, and as video recording became more common, data and method changed again.

Given this context, it is dangerous to adopt a simplistic understanding of the role of QDAS. Tools range in purposes, power, breadth of functions, and skill demanded of the user. The effectiveness with which you can use tools is partly a software design issue because software can influence your effectiveness by the number or complexity of steps required to complete a task, or by how information is presented to the user. It is also a user issue because the reliability (or trustworthiness) of results obtained depends on the skill of the user in both executing method and using software. The danger for novices using a sophisticated tool is that they can 'mess up' without realizing they have done so (Gilbert, 2002).

Historically, the use of QDAS has facilitated some activities (such as coding) and limited others (such as seeing a document as a whole or scribbling memos alongside text). In so doing, early computer programs somewhat biased the way qualitative data analysis was done. Historically, also, qualitative researchers were inclined to brand all 'code-and-retrieve' software as supporting grounded theory methodology – a methodology which has become rather ubiquitously (and inaccurately) associated with any data-up approach – with the implication that if you wanted to take any other kind of qualitative approach, software would not help.⁴

Concerns about the impact of computerization on qualitative analysis have most commonly focused around four issues:

- the concern that computers can distance researchers from their data;
- the dominance of code-and-retrieve methods to the exclusion of other analytic activities;
- the fear that use of a computer will mechanize analysis, making it more akin to quantitative or 'positivist' approaches; and
- the misperception that computers support only grounded theory methodology, or worse, create their own approach to analysis.

Closeness and distance

Early critiques of QDAS suggested that users of software lost closeness to data through poor screen display, segmentation of text, and loss of context, thereby risking alienation from their data. Despite enormous changes in technology and in software, these attitudes persist in some communities of practice. The alternative argument is that the combination of full transcripts and software can give too much closeness, and so users become caught in 'the coding trap', bogged down in their data, and unable to see the larger picture (Gilbert, 2002; Johnston, 2006).

Qualitative software was designed on the assumption that researchers need both closeness and distance (Richards, 1998): closeness for familiarity and appreciation of subtle differences, but distance for abstraction and synthesis, and the ability to switch between the two. Closeness to data – at least as much as can be had using manual methods – is assisted by enlarged and improved screen display, improved management of and access to multiple sources and

⁴ Kelle (1997) traced the assumption that programs were written to support grounded theory to the need for a methodological underpinning for analysis, and grounded theory is one of the few methodologies where authors have been prepared to be explicit about what it is they actually do in analysis – although, as Kelle goes on to point out, 'a closer look at the concepts and procedures of Grounded Theory makes clear that Glaser, Strauss and Corbin provide the researcher with a variety of useful heuristics, rules of thumb and a methodological terminology rather than with a set of precise methodological rules' (1997: paragraph 3.4).

types of data, rapid retrieval of coded text and easy ability to view retrieved segments of text in their original context. Other tools are designed to provide distance, for example, tools for modelling ideas, interrogating the database to generate and test theory, or summarizing results. These take the researcher beyond description to more broadly applicable understanding. Tacking back and forth between the general and the specific, exploiting both insider and outsider perspectives, is characteristic of qualitative methods and contributes to a sophisticated analysis.

Domination of code and retrieve as a method

The development of software for textual data management began when qualitative researchers discovered the potential for text storage and retrieval offered by computer technology. Hence, early programs became tools for data storage and retrieval rather than tools for data analysis, because that was what computers were best able to do. The few programs that went beyond retrieval to facilitate asking questions about the association of categories in the data, particularly non-Boolean associations such as whether two concepts occurred within a specified level of proximity to each other, were less rather than more common, and in these early stages were given special status as second-generation 'theory-building' programs (Tesch, 1990).

Computers removed much of the drudgery from coding (cutting, labelling and filing); they also removed the boundaries which limited paper-based marking and sorting of text.

When recoding data involves laborious collation of cut-up slips and creation of new hanging folders, there is little temptation to play with ideas, and much inducement to organize a tight set of codes into which data are shoved without regard to nuance. When an obediently stupid machine cuts and pastes, it is easier to approach data with curiosity – asking 'what if I cut it this way?', knowing that changes can be made quickly. (Marshall, 2002: 67)

Simply making coding more efficient was not, in itself, a conceptual advance from manual methods of data sorting. Criticism that segments of text were removed from the whole, creating a loss of perspective, was frequently levelled at computer software (apparently without recognition that cutting up paper did the same thing, with even greater risk of not having identified the source of the segment). Fears were expressed that computers would stifle creativity and reduce variety as code and retrieve became the dominant approach to working with data.

Most problematically, the facility for coding led to what Lyn Richards commonly referred to as 'coding fetishism' – a tendency to code to the exclusion of other analytic and interpretive activities, which biases the way qualitative

research is done, and which often contributes to a report that comprises only 'themes from the data'. Prior to the development of computer software for coding, more emphasis was placed on reading and rereading the text as a whole, on noting ideas that were generated as one was reading, on making links between passages of text, on reflecting on the text and recording those reflections in journals and memos, and on drawing connections seen in the data in 'doodles' and maps. Improvements in the memoing, linking, and modelling tools within current qualitative software now provide ample capacity for these approaches to analysis, allowing the user to strike a balance between coding and reflecting and linking as they work with data.

Computers and mechanization

Fears that the computer, like HAL in Arthur C. Clarke's *Space Odyssey* series, might take over the decisions and start controlling the process of analysis stem in part from the historical association of computers with numeric processing. Adding to that concern is the computer's capacity to automate repetitive processes or to produce output without making obvious all the steps in the process.

There are software programs designed to automate the coding process entirely, using complex dictionaries and semantic rule books to guide that process, but these are specifically designed for quantitative purposes, and the results of their coding are generally interpreted through the use of statistics with minimal recourse to the original text. Keyword searches within *qualitative* analysis will almost always be preliminary to or supplemental to interactive coding of the data, if they are used at all.

Automated coding processes have a place in handling routine tasks (such as identifying the speakers in a focus group, or what question was being answered), in facilitating initial exploration of texts, or in checking thoroughness of coding. These remove drudgery without in any way hindering the creativity or interpretive capacity of the researcher. They do not substitute for interpretive coding that still needs to be done interactively (live on screen).

One of the goals of this book is to ensure that researchers using NVivo understand what the software is doing as they manipulate their data, and the logic on which its functions are based – just as artisans need to understand their tools. Such metacognitive awareness ensures researchers remain in control of the processes they are engaging in and are getting the results they think they asked for (Gilbert, 2002). More aware, creative, and adventurous users can experiment with new ways of using NVivo's tools to work with their data, just as the good artisan knows how to make his or her tools 'sing' to produce a creative piece of work.

Homogenization of qualitative approaches to analysis

Primarily in the early literature on QDAS, software was talked about as if it promoted a narrow view of qualitative methodology (Coffey, Holbrook, & Atkinson, 1996). Some current scholars express their concern that unguided novices might still view software as having its own method (Hutchison, Johnston, & Breckon, 2009; Johnston, 2006), while software experts critique the simplified views of software portrayed by individuals without QDAS expertise (Carvajal, 2002; Gilbert et al., 2013; Jackson, 2003; MacMillan & Koenig, 2004).

The oversimplification of qualitative methods has occurred and continues to occur whether software is involved or not. Researchers talk about 'doing qualitative' as if to imply there is just one general approach to the analysis of qualitative data. While there are some generally accepted emphases, different approaches to qualitative analysis are shaped by differences in foundational philosophies and understandings of the nature of social reality, the nature of the questions being asked, and the methodological approaches adopted. Researchers must integrate their chosen perspective and conceptual framework into their choices regarding what tools they will use, what and how they might code, and what questions to ask of the data. *This is the role of the researcher whether or not they use software.*

Exploring an NVivo project

Throughout this book we will be illustrating the principles and activities being discussed with examples from a number of our own projects, those undertaken by colleagues or students, projects from the literature, and some practice-informed vignettes. To give you an overview of the tools available for working in an NVivo project and of what you might be working towards, we will start by taking a look at the sample project that comes with the software. Because this is a moderately mature project, these instructions are not designed to show you how to make a start on working in your NVivo project, but rather what will become possible as you progress through your analysis.

As you read these instructions and others in later chapters, you will encounter a number of special icons:

- ▶ indicates these are steps (**actions**) for you to follow.
- ✓ indicates a **tip** or series of tips – handy hints to help you through.
- ! indicates a **warning** – ignore at your peril!
- ? indicates where to find this topic or tool in the **Help** files. Access NVivo Help by clicking on the question mark near the top right-hand side of the screen when NVivo is open. NVivo Help also provides a glossary, should you come across unfamiliar terms (you might also check for these in the index of this book as it will point you to where they are described).

In presenting instructions, we have adopted a number of conventions:

- Ribbon tabs are in **bold italic text**. Group names within the ribbon are in *italic text*.
- The three main views in the interface (*Navigation*, *List*, and *Detail*) are in *italic text*.
- Source names and node names are written in *italics*.
- Words that are copied from the screen as part of a click instruction are in **bold**.

Installing the software

If you don't already have the software on your computer, then your first step to using NVivo will be to install either a fully licensed or a trial version on your computer. These are available through the QSR website: www.qsrinternational.com.⁵ Use the free *Getting Started* guide to find minimum computer requirements and detailed instructions for installing the software. Basically, insert a disk or double-click the downloaded software and follow the steps as they appear on screen after launch. It is likely that you will be required, as part of this process, to install several supporting programs prior to installing NVivo itself: the installation wizard will guide you through the necessary steps.

Once you have completed the installation, if you own the software, or your institution has a site licence, you will need to have available the licence number that came with your software or is available through your institution. Whether you are using a licensed version or the 30-day trial (a fully functional version of the program that operates on your computer for 30 days without a licence key), you will need to activate the software before you can begin to use it. Activation can be done via the internet, or, if necessary, by phone or email. In addition, the first time you launch the software after installation, you will be asked for your name and initials. This prompt for the current user occurs once only, unless you change the default option to always 'Prompt for user on launch' (**File > Options > Prompt for user on launch**). More about the potential need to change this default is in Chapter 12 on teamwork.

- ✓ In order to keep using NVivo beyond the 30-day trial period, you do not need to uninstall the trial and reinstall the software. All you will need is to enter and activate a new licence key to extend your existing version. (Click **File > Help > Extend License** to enter your new licence key.)
- ✓ Unless you just downloaded the software from the QSR website, you might also go to **File > Help > Check for Software Updates** to ensure you have the latest version on your computer.
- ✓ If you have an earlier version of NVivo on your computer, you do not need to remove it before installing the latest version of NVivo. If, however, you have more than one

⁵ Our instructions regarding installation, user passwords, etc. pertain to the standalone version of the software; if you are using NVivo Server you should access the NVivo Help files for alternative installation instructions.

version of NVivo on your system, your computer will default to open the most recent software, even if you launch from a project created in an earlier version. NVivo will then walk you through the steps to convert your older project so it can be used in the new version. As a result, you will have two copies of the same project in two different versions of the software; naming them carefully will help avoid confusion later.

- ! If you convert a project to the new version of NVivo, you cannot reopen or resave that copy of the project in an earlier version of the software.
- ? When you first open the software, view the video tutorials, accessed via **File > Help > NVivo Tutorials**. These provide a demonstration of the various elements in an NVivo project, using data from the *Environmental Change* sample project.
- ▶ Alternatively (or as well), work through the instructions below as an introduction to NVivo using the *Environmental Change* data.

The *Environmental Change Down East* project

The *Environmental Change Down East* project explores the attitudes of individuals in 13 communities in an area of North Carolina known as 'Down East'. The goal of the data collection and analysis was to foster dialogue among stakeholders (residents, land developers, legislators, business owners, etc.) regarding community planning, land use, and sustainable development.

Throughout the book, you will find illustrative examples drawn from the *Environmental Change Down East* project (referred to here as the *Environmental Change* project) and from Pat's *Researchers* project. These sample projects provide material on which you can explore the software and practise using it. The *Environmental Change* project accompanies every licence as an embedded sample project and is installed (by default) in Public Documents\NVivo Samples. It is available also for download from the QSR International website via a link from the companion website for this book. The *Researchers* project is also available from the companion website. It comprises focus groups, extracts from interviews, and some other sources designed to help answer the questions of what brings people to engage in research, and what it is about their experience that keeps them researching.

Open a project

When you double-click on the NVivo icon to open the software, NVivo opens to the Welcome window, with options (at the left of the window) to create a new project or to open an existing project. The **My Recent Projects** list contains the five most recently opened projects on your computer. If you want to open a project that is on your computer, but not on the list, you will need to click on **Open Project** and then navigate to locate the project. Opening a project takes you into the project workspace from which you can access all the software tools.

- ▶ Open the *Environmental Change* project by clicking on its title in the Welcome screen, or, if it isn't listed, go to **Open Project** and look for it in the NVivo Samples folder in your Public Documents library.

The project workspace

Figure 1.1 illustrates the workspace and its components for the *Environmental Change* project.

A *ribbon* with nine standard tabs (formerly known as menus) spans the top horizontal position in NVivo (e.g., *Home*, *Create*, *External Data*), with supplementary tabs that open when the researcher is active in media, modelling, or any other special purpose tool. Items available in the ribbon can be available or greyed out, depending on which part of a project is active. Within each tab of the ribbon, groups help to organize the many options. For instance, if you select the *Home* tab, you will find group names in grey text along the bottom of the ribbon, including *Workspace*, *Item*, *Clipboard*. We will direct you to a group within a ribbon to help you quickly identify the correct icon or option.

Within the main screen, there are three areas, or views, where you will begin working, depending on your task.

- From the *Navigation View* you can choose which component (Sources, Nodes, Classifications, etc.) of the project you wish to access. Here, in addition to the subfolders provided in the software, you can further organize items in your project into folders and subfolders.
- The *List View* provides a list of the contents in a selected folder. Most importantly, items such as an interview transcript can be accessed from this view, and new contents such as a focus group transcript or an image can be added in this view.
- The *Detail View* shows the actual content of an opened item, so that you can work with it by examining, coding, linking, memoing, etc.



Figure 1.1 The NVivo workspace showing the ribbon, and *Navigation*, *List* and *Detail Views*

In each of these views, a context-sensitive menu can be accessed by right-clicking.

- ✓ Whenever you're not sure what to do or where to look for an action when you are working in NVivo, ensure your mouse pointer is pointing directly to the relevant item on your screen, and try right-clicking as a first option to find what you want. Right-click options change, depending on what you are pointing to.

As you explore NVivo using the *Environmental Change* project, you will gain some appreciation of how NVivo can assist with organizing and analysing your data. Sources are neatly filed; cases are identified with demographic and other details; ideas are recorded and appropriately linked to their sources; descriptive material and evidence for emerging understanding and ideas are captured using codes; codes are organized to facilitate querying the data so that research questions might be clarified, developed and answered; and for those who like to work visually, emerging understanding can be explored in models and charts.

Explore sources in NVivo

The workspace will first open to show **Sources** in the *Navigation View*, and will default to the **Internals** folder. There are several types of Internals stored in the *Environmental Change* project: these are organized into subfolders designed to assist with data management. The following activities show you how to open and look at the materials, but it is simply a gentle tour. Instructions are provided later in the book regarding the steps needed to import, edit, code, and link your sources.

View an internal document (the project description)

- ▶ The top-level folder for *Internals* is already selected. In *List View*, double-click on *Overview of Sample Project* to open it in *Detail View*. Read this for additional detail about the sample data.
- ▶ Note the use of heading styles in this (and other) sources. The level of heading is indicated in the **Home** ribbon, *Styles* group. Heading styles can be added or changed at different levels.
- ▶ Click on the first line of the document. You will see this is in Heading 1 style.
- ▶ Click on the line that says *Introduction* and you will see this is in Heading 2 style.
- ✓ Headings break the text into parts. If you are unfamiliar with headings, you can learn more about them in Microsoft Word or NVivo Help files. You can ask NVivo to code across (or within) your sources to collect all the data marked by a particular heading level.

View a project interview recorded as video

- ▶ In *Navigation View*, expand the **Internals** folder (click on the +) to see further folders for various document sources (e.g., Area and Township, Interviews, and News Articles).

- ▶ To see the list of project interviews, select **Sources > Internals > Interviews**.
- ▶ In *List View*, select any interview and double-click to open it in *Detail View*.
- ▶ Double-click on *Betty and Paul* to see a video record of an interview.
- ▶ From the **Media** ribbon, you can select **Play** to hear and watch the video. Click **Stop** after you look at a sample of the file.
- ▶ To close *Betty and Paul* (and any other interviews you opened) click on the × next to their names in the tab.

View an internal dataset

A **dataset** is a table that holds the kind of information you would generate from a structured survey with both open and closed questions.

- ▶ In *Navigation View*, select **Sources > Internals > Survey**.
- ▶ In *List View*, double-click on *Survey Responses*.
- ▶ This dataset was imported from an Excel file. As you scroll across it, you will see it contains some columns with nominal, ordinal or interval data, and several columns with open-ended responses.
- ▶ Use the tab on the right margin of the *Detail View* to see the data in **Form** view rather than **Table** view.

NVivo allows you to automatically code much of the information in a dataset. You can then, additionally, interactively code the detail within people's open-ended responses.

View an internal picture

- ▶ In *Navigation View*, select **Sources > Internals > Area and Township**.
- ▶ In *List View*, double-click on *Competing water uses*.
- ▶ To the right of the picture, click on the number 1 next to the first row of text to illuminate the part of the image associated with this observation.
- ✓ If you need to enlarge the image in the *Detail View*, try using the zoom tool at the bottom right-hand side of the screen (within the NVivo window).
- ▶ If you need more room, go to **View** ribbon, *Window* group and uncheck **Docked**. Wait, and the *Detail View* will open in a new window. This is especially helpful if you have two monitors (you can view your project on one screen, and whatever is in *Detail View* on the other screen).

View social media data

- ▶ In *Navigation View*, select **Sources > Internals > Social Media**.
- ▶ In *List View*, double-click on *Cartaret County on Twitter*.

This dataset was collected with NCapture. NCapture is a browser extension for Internet Explorer or Google Chrome that accompanies NVivo. It is designed to

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capture data from Facebook, LinkedIn, YouTube and Twitter and convert these data sources for use in NVivo.

Closing items in *Detail View*

- To close any item you have opened during the tour so far, click on the × next to the name of the item in the *Detail View* tab.

Trace the links from internal sources

As you read through the Overview document, notice some of the text is coloured or highlighted (Figure 1.2). These markers indicate links to other items.

- Return to *Navigation View* > **Sources** > **Internals**, then to *List View* and double-click on the *Overview of Sample Project*.

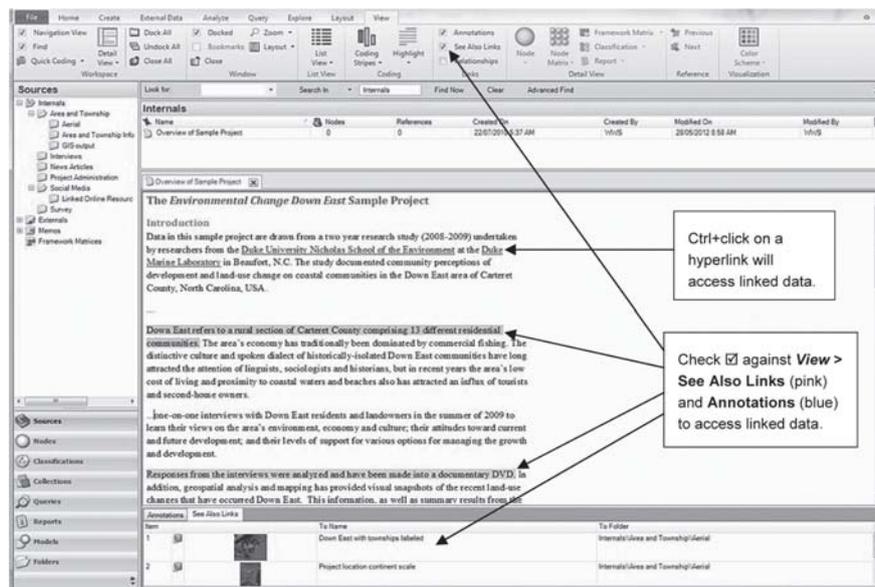


Figure 1.2 Viewing hyperlinks, 'see also' links, and annotations from an internal source

Hyperlinks to external items

- In the first paragraph of the *Overview*, blue underlined text indicates the presence of a **hyperlink** to an external item. Ctrl+click on [Duke Marine Laboratory](#) to access the linked webpage.

See also links to internal items

In the fourth paragraph of the *Overview*, a pink highlight indicates that a **see also link** has been created.⁶ See also links take you to other items (text, images, video, models) or to portions of internals that relate to the marked text.

- ▶ Go to the **View** ribbon, *Links* group > **See Also Links**. The linked items become visible at the bottom of the screen. In this instance, three aerial photographs of the region have been linked to the text.
- ▶ Click on the pink highlight, then double-click on the associated number to open the linked item.

Annotations on text

In the seventh paragraph, blue highlighting indicates an **annotation**. Annotations are comments, reminders, or reflections on the text.

- ▶ Go to the **View** ribbon, *Links* group > **Annotations**. The linked annotation is now visible at the bottom of the screen.
- ▶ Click on the blue highlight and the associated comment will be highlighted.
- ▶ Click on the number next to an annotation at the bottom of the screen, and the related passage will turn from a light blue to a darker teal.
- ▶ Close *Overview of Sample Project* and any associated items in *Detail View*.

Linked memos

Notes and thoughts related to a document (or node) are recorded in its linked **memo**.

- ▶ Return to *Navigation View* > **Sources** > **Internals** > **Interviews**.

The names of the people who were interviewed will show in *List View*. An icon to the right of the document name in *List View* indicates that the document has a linked memo (e.g., for *Ken* in the *Interviews* folder). 

- ▶ Hover (hold the mouse pointer) over the document name, right-click and select **Memo Link** > **Open Linked Memo**, or use **Ctrl+Shift+M** on your keyboard.

There are further memos stored in the **Memos** folder under *Navigation View* > **Sources**.

Explore nodes and coding

Nodes provide the storage areas in NVivo for references to coded text. Each node serves as a container for everything that is known about one particular concept or category. Nodes can be used also as a tool to organize qualitative data in particular ways, to be discussed later.

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⁶ We recognize, but have learned to live with, the awkward grammatical construction 'see also links' creates. We hope you will be able to as well!

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Nodes for concepts and categories coded from the data

- ▶ In *Navigation View*, click on **Nodes**. The *List View* will open to display nodes stored at the top level in the Nodes folder. This top-level folder contains, in general terms, the kinds of categories, concepts and themes that the researcher deems important within the data.
- ▶ In *List View* click on the + next to one of these top-level nodes to expand it to show the subnodes below.
- ▶ Double-click on a subnode to see the coded data in the *Detail View* below (Figure 1.3). The source of each passage is identified.
- ▶ View the context from which a selected passage came using the right-click menu: **Right-click > Coding Context > Broad**; or **Right-click > Open Referenced Source** (Figure 1.3).
- ▶ Create a new node by selecting some text from a source or an existing node: **Right-click > Code Selection > Code Selection At New Node (Ctrl+F3)**,

The screenshot displays the NVivo interface. At the top, a table lists various nodes with columns for Name, Sources, References, Created On, Created By, Modified On, and Modified By. The 'Local identity' node is selected and expanded, showing sub-nodes like 'Local knowledge'. Below the table, the 'Detail View' for 'Local identity' is shown, displaying a list of references with their coverage percentages. A context menu is open over the 'Local identity' node, showing options like 'Open Referenced Source', 'Export Node...', 'Print...', 'Copy', 'Paste As See Also Link', 'Select All', 'Code Selection', 'Code In vivo', 'Unicode Selection', 'Spread Coding', 'Links', 'Coding Context', and 'Node Properties'. The 'Coding Context' sub-menu is open, showing options: None, Narrow, Broad (selected), Custom..., Entire Source, and Select...

Name	Sources	References	Created On	Created By	Modified On	Modified By
Altitude	17	992	16/05/2010 6:05 AM	WWS	30/06/2010 7:31 AM	WWS
Balance	6	16	18/05/2010 12:57 AM	WWS	30/08/2010 4:14 PM	WWS
Community	18	101	16/05/2010 5:38 AM	WWS	26/08/2010 2:18 PM	WWS
Community change	18	62	16/05/2010 6:20 AM	WWS	30/08/2010 4:14 PM	WWS
Connection to Down East	13	35	16/05/2010 5:38 AM	WWS	30/08/2010 4:14 PM	WWS
Local identity	14	43	29/05/2010 6:25 AM	WWS	10/05/2012 2:36 PM	WWS
Local knowledge	5	7	26/06/2010 11:20 PM	WWS	23/07/2010 12:29 AM	WWS
Economy	25	303	16/05/2010 5:38 AM	WWS	16/03/2011 2:16 PM	WWS
Memorable quotes	5	16	01/06/2010 9:47 PM	EDR	23/07/2010 12:22 AM	WWS
Natural environment	24	325	16/05/2010 5:39 AM	WWS	10/05/2012 12:20 PM	WWS
Policy, management	14	38	16/06/2010 4:47 AM	HGP	10/05/2012 2:12 PM	WWS

Local identity [x]

Internals\Interviews\Barbara> - \$ 3 references coded [3.49% Coverage]

Reference 1 - 2.71% Coverage

My family moved here when I was two years old in 1969. My parents still live h
down in Gloucester. But I was raised in Beaufort, in town, and went to Beaufort
and middle school and high school, then moved away for college. So I've lived
my life although I've moved away.

References 2-3 - 0.78% Coverage

Yeah. And I'm definitely not considered a local. Even though I feel kind of like

Internals\Interviews\Charles> - \$ 6 references coded [14.70% Coverage]

References 1-2 - 1.10% Coverage

The people make it special. Most of the folks here are native people, you know and they
tolerate the dingbatters like me. It's the fact that commercial fishermen make up the fiber and
the backbone of this community. It's the fact that you have little bungalows like this instead
of the McMansions that we find mandated, practically, over on the beach. So it's still, it's a
sense of community. You know, we got a school right down the road. The kids, you know
they're my neighbors, they come down and play on my critters in the yard, come see the
peacocks. And you know, I mean I get that kind of quality of life.

References 3-4 - 6.85% Coverage

Figure 1.3 Nodes, with referenced text and context menu, and showing retrieved (Broad) context for Charles's statement about local identity

name the new node and click **OK**. Your new node will show at the top level of the node hierarchy (double-click on your new node to see the passage you coded).

Tracing links from nodes

- ▶ Note that the node *Community\Connection to Down East\Local identity* has a memo symbol next to it. **Right-click > Memo Link > Open linked memo** (or **Ctrl+Shift+M**) to see the notes made about the way people talked about local identity.
- ▶ Note also that many of the notes are shaded pink, indicating the presence of see also links. If you click on the **View** ribbon, *Links* group > **See Also Links**, you will be able to read the specific passages that prompted the researchers' comments.

Nodes to organize and manage data

In *Navigation View*, the subfolders under **Nodes** organize and manage data. These include *Places and People* where all data for each individual location and for each separate person in the project are stored, and *Autocoded Responses* for everyone's responses to each question asked.

- ▶ From the *Navigation View*, select **Nodes > Places and People**, and from the *List View*, select **Interview Participants** to see the list of people who were interviewed. Double-click on *Barbara* and see all the qualitative data she contributed to the project. If Barbara was interviewed twice, you would first see the content of Barbara's initial interview, and then the contents of her second interview as you scrolled down the page.
- ▶ While in the *Detail View* for this case, go to the **View** ribbon and choose **Coding Stripes > Nodes Most Coding** to see the nodes coded most often for this case.
- ▶ Hover over the coding density bar (the vertical stripe with segments in different shades of grey) to see a list of nodes coding the adjacent text (Figure 1.4).

The heading styles used in the interview transcripts made it possible to auto code everyone's responses to the structured questions asked in these interviews.

- ▶ Select **Nodes > Autocoded Responses**, and in *List View*, **expand + Autocoded Interview Questions**.
- ▶ Double-click on *Q.1. Connection to Down East*. All of the exchanges in response to Question 1, throughout the interview data, have been gathered here, based on auto coding the questions.

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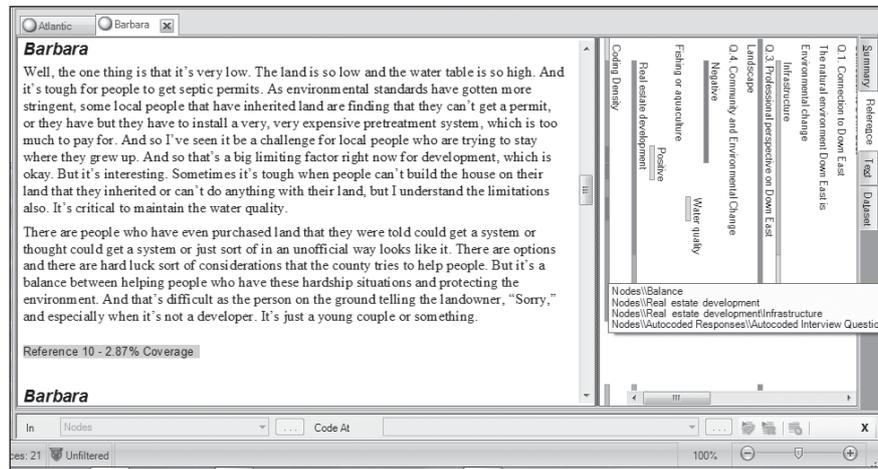


Figure 1.4 Coding density and coding stripes showing nodes coded on Barbara's text

Explore classifications and attributes

Participants have **attribute values**, that is, a record of demographic and quantitative data known about them that is relevant to everything they say. This is recorded separately from coding of passages within their text. Attribute values are used primarily to assist in comparing data across subgroups in your research.

- ▶ View the attribute values linked to a participant by going to the *Navigation View* and selecting **Nodes > Places and People**.
- ▶ In *List View*, expand + **Interview Participants > Barbara**. **Right-click > Node Properties** (or **Ctrl+Shift+P**). Click on the **Attribute Values** tab in the Node Properties dialogue to see the assigned values.

Classifications help to organize the structure of your attributes and values. You can have different types of cases, and in this sample data we see *people* as well as *places*. Some attributes will pertain to people (e.g., age, gender) and some will pertain to places (e.g., median parcel size, total population). The classifications area organizes these different attributes and values according to the kinds of cases for which they are relevant. Remember that information about the cases (people and places) has been stored in nodes, to allow for multiple sources of information for any particular case.

- ▶ In *Navigation View*, go to **Classifications > Node Classifications**. You will see data organized in two ways: by participant (Person) and by Places (sites where participants lived).
- ▶ Expand + **Person** to see a list of attributes relevant to participants. Double-click on an attribute (e.g., **Township**) and then on the **Values** tab to see how an attribute is set up.

Attribute values for all participants can be viewed (and modified) in the **Classification Sheet**. They can be entered one at a time, or they can be imported from a spreadsheet or created from a dataset.

- ▶ Select **Person, Right-click > Open Classification Sheet**. To change a value in any cell, choose from the drop-down list for that cell.

View sets (in Collections)

Sets in NVivo contain shortcuts to any nodes and/or any documents, as a way of holding those items together without actually combining (merging) their content. They are used primarily as a way of gathering items for use in handling queries, reports or models, or simply as a way of indicating that these items 'hang together' in some way (perhaps conceptually or theoretically).

- ▶ In *Navigation View*, select **Collections** to see a list of **Sets**. Click on *Nodes for coding comparison* to see the items in the set shown in *List View*.⁷

Review queries

Queries store questions you want to ask of your data. Queries might be about the occurrence of a word or words, about patterns of coding, comparison of groups, or some combination of these elements. They can be created and run once, or stored to use again with more data, or with a variation. **Results** hold the data found by the query to help you answer your questions; they can be stored alongside the queries.

- ▶ In *Navigation View*, select **Queries**.
- ▶ In *List View*, **Right-click** on *Word Frequency Query in interviews > Query Properties* to see how a simple word frequency query was set up.
- ▶ Click on **Run**. The results will open in *Detail View*.
- ▶ Click on the tabs at the very right-hand margin of your screen (**Summary, Tag Cloud, Tree Map, Cluster Analysis**) to see different ways of viewing these results.
- ▶ Double-click a word from the **Summary** tab to see all instances of this word found by the query.
- ▶ Now look at a more complex query. In *List View*, **Right-click** on *Attitude about environment by longevity Down East > Query Properties* to see how it was set up, and click on **Run**. The results will appear as a matrix with counts of passages coded (coding references) in each cell. Double-click a cell to see the text. Later you will learn how to obtain other kinds of information from the matrix result.

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⁷ In this project, sets were used in a very limited way only.

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Check some predefined reports

Reports provides predefined output types. It is also possible to customize a report. Many of the reports provide a topographical view of the data only, such as a list of nodes. Some provide content.

- ▶ In *Navigation View*, select **Reports**.
- ▶ In *List View*, double-click on **Node Summary Report**.
- ▶ Check next to **Node Hierarchical Name** (Figure 1.5), then **Select > Balance > OK > OK**.

The report will show various statistics about how often the node was used to code text.

- ▶ In *List View* double-click on **Coding Summary by Node Report**.
- ▶ Check the first filter option, **Select > Balance > OK > OK**.

The report will contain all text coded at that node.

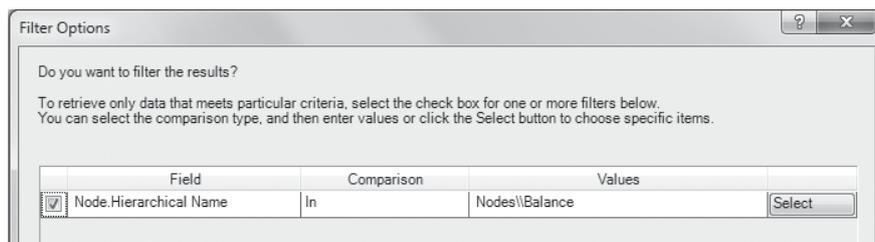


Figure 1.5 Filter options for a report

Explore models and visualizations

And finally (for now), **models and visualizations** display ideas about the relationships between project items.

View a model

- ▶ In *Navigation View*, select **Models**. Double-click on **Geographic units used in this project**.
- ▶ To obtain a fuller view of the model on a separate screen, go to the **View** ribbon and uncheck **Docked**, or use your zoom tool on the bottom right-hand side of the NVivo window.

Experiment with visualizations

- ▶ Go back to **Nodes** in *Navigation View*. Click and drag to select all the nodes under *Natural environment*. **Right-click > Visualize > Cluster Analysis of Nodes**.

The visual shows which nodes are most similar based on words used in the coded text. Change the number of clusters to 4, and experiment with other ways of visualizing this information from the options in the **Cluster Analysis** ribbon.

Save changes

While you were looking at the sample project, you were warned that it was 15 minutes since the project was last saved, and asked if you wanted to save changes made to the project. This is NVivo's way of making sure you are regularly saving changes to your project, in case of power failure or freezing. When you are working on your own project, it is strongly recommended that you save each time you are asked, unless you are simply experimenting, do not want to save your changes, or you are in the middle of an Undo operation.

Close the project by selecting **File > Close** or, if you want to quit working in NVivo for the time being, choose to **Exit**.

Overview: what's in an NVivo project?

An NVivo project typically comprises:

- data records (e.g., transcriptions, field notes, other documents, video, audio, photographs, web pages);
- records of your thinking about the data (memos);
- nodes to store coded references to your data (so you can retrieve all you know about a topic, idea, case or relationship);
- variable-type information (attribute values) relating to sources or cases in your study (e.g., demographic details, responses to categorical or scaled questions, dates);
- records of and results from interrogative queries conducted on your data; and
- models showing relationships between items in your project.

All of these are held in a single database-style file, which, if the file location options have not been changed, will be located in the **Documents** area of your computer.