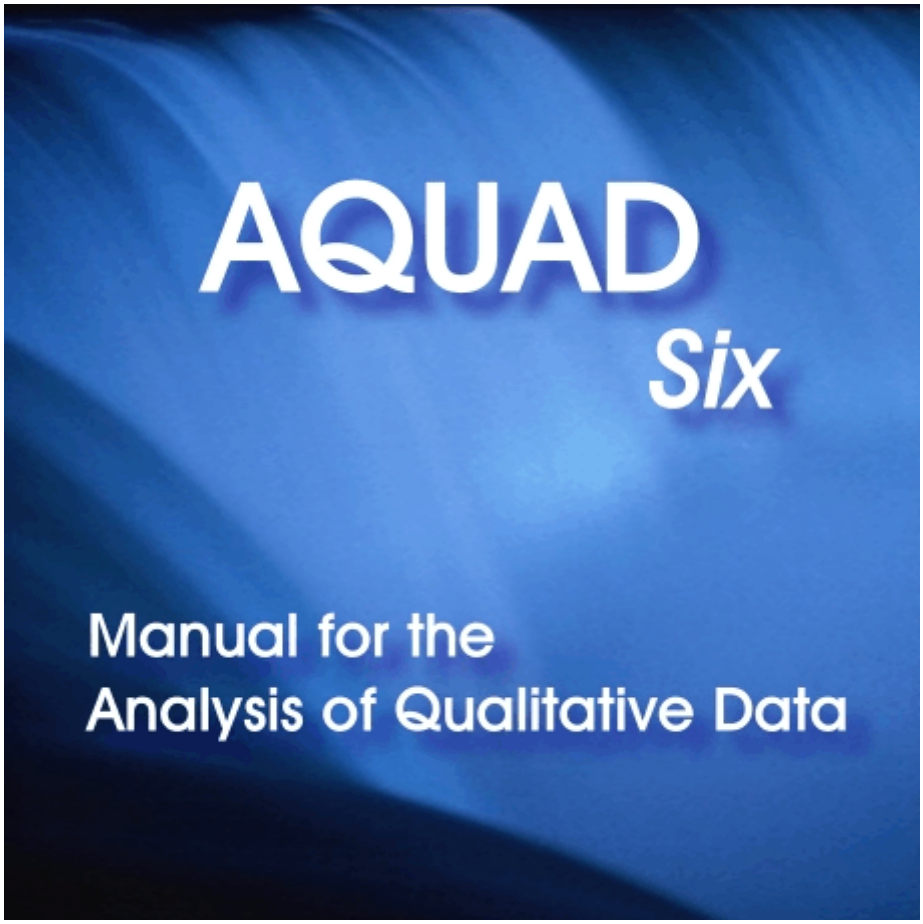

Günter L. Huber
Leo Gürtler

Ingeborg
Huber
Verlag

German Library Cataloguing-in-Publication Data

The complete title for this publication is available from the Deutsche Bibliothek:
http://db.ddb.bn

Copyright Notice

Warranty

The publisher warrants the software package AQUAD, which is described in this manual and available on the accompanying disks, to be free of defects in workmanship and materials when shipped. If you notify the publisher or distributor of defects upon receiving the program, the defective disks will by replaced. The author, publisher and distributor specifically disclaim all other warranties, expressed or implied.

In this book registered trade-marks are used:

Athlon is a trade-mark of *Advanced Micro Devices, Inc.*
Delphi is a trade-mark of *Borland, Inc.*
DivX is the trade-mark of *DIVXNETWORKS, Inc.*
Pentium is a trade-mark of *Intel, Inc.*
Windows and Word are trade-marks of *Microsoft Corporation*
WordPerfect is a trade-mark of *Corel Corporation*
SPSS is the trade-mark of *SPSS, Inc.*

In addition, there are references to products of the following companies:

ATI Technologies, Inc.,
Brooktree/Conexant Systems, Inc.
Elecard, Inc., and
Koninklijke Philips Electronics N.V.

1. Edition 2004

Authors: Günter L. Huber und Leo Gürtler

© Ingeborg Huber Verlag , Viktor-Renner-Str. 39, 72074 Tübingen, Germany
Phone/Fax +49 7071 885147
e-mail: Ingeborg.Huber@t-online.de

ISBN 3-9806975-8-4

Content

Introduction 9

Chapter 1
What you need to know before you start 11

1.1 AQUAD and your computer 11
1.2 Some basic principles of AQUAD 12
1.2.1 Modules and menues 12
1.2.2 Individual files and file catalogs 14
1.2.3 Paper print-outs and result transferability 14
1.2.4 How to get out of AQUAD 15
1.3 How AQUAD facilitates categorization 16
1.4 Word retrieval and word frequencies 18
1.5 Tables or matrices 19
1.6 Exploration of regularities and linkages 20
1.7 How AQUAD deals with the exploration of causality 22

Chapter 2
How to get AQUAD ready for your analysis 23

2.1 Installation of AQUAD 24
2.1.1 The installation program 25
2.1.2 Starting AQUAD for the first time 28
2.2 How to set up a new project 29
2.2.1 Project name + files 29
2.2.2 Paths 30
2.3 How to change a project's settings 32

Chapter 3
How to get texts ready for analysis 33

3.1 Format your text documents 34
3.2 Provide the proper file names 35
3.3 Convert the data files into RTF (Rich Text Format) 36
3.4 Prepare a list of all data files (one or more "file catalogs") 38
3.5 Import RTF texts 39

Chapter 4
How to prepare multimedia files for your analysis in AQUAD 41
(Leo Gürtler)

4.1 Pictures and graphics as data 42
4.2 Audio recordings as data 43
4.3 Video recordings as data 45
4.4 How to convert DV to AVI (DivX/MP3) 47
4.4.1 Which hard- and software you need 47
4.4.2 How to work with VirtualDub 47

4.5 How to convert analog video data to AVI (DivX/MP3) 55
4.5.1 Capturing via TV-card and VirtualDub 56
4.5.2 Capturing via graphic card with Video-IN entry and software MPEG-2 encoding 60
4.6 How to apply the software Graphedit 67
4.7 Digressions 71
4.7.1 The DivX codec 71
4.7.2 Versions of WINDOWS with file administration FAT32 71
4.7.3 De-Interlacing 72
4.8 New developments in the fields of audio- and video-storage 73
4.8.1 MP3 encoding with LameDrop 74
4.8.2 OGG encoding with OGGDrop(XP) 75
4.8.3 The XviD codec, applied under VirtualDubMod 76
4.8.4 An alternative container format: AVI ->> OGM 79
4.9 References and links 81

Chapter 5
How to conduct a qualitative analysis 83

5.1 Which are the steps in qualitative analysis? 84
5.2 How to reduce qualitative data 85
5.3 Scheme of the process of data analysis 87
5.4 How to find codes for units of meaning 91
5.4.1 How to find categorial codes 91
Applying pre-determined category systems 91;
Hypothesis-based categorization 92;
Categories by theory-building 93
5.4.2 How to find sequential codes 94
Looking for simple sequences 94;
Looking for complex patterns of sequences 95
5.4.3 How to find thematic codes 95
5.5 How to re-construct systems of meaning 96
5.5.1 Reconstruction from the context of particular data 96
5.5.2 Reconstruction by testing particular relations 96
5.6 How to compare relations of meaning 97

Chapter 6
How to code data 99

6.1 Types of codes 100
6.2 Loading AQUAD and maneuvring to the module "Coding" 102
6.3 How to choose text files for coding 105
6.4 What to do if the text lines are too long ... 106
6.5 One-step coding 107
6.5.1 How to enter codes in one-step coding 107
6.5.2 How to delete or replace codes in one-step coding 108
6.5.3 How to get an overview on codes 110
6.5.4 How to add some comments to your codes 113
6.5.5 In case a little help is necessary 114
6.5.6 Why not have AQUAD do more work: semi-automatic coding 114
6.5.7 Adding numerical codes 115
6.6 Two-step coding 116
6.6.1 Printing line-numbered texts 116
6.6.2 Manual coding on paper 116
6.6.3 Creating a code list from your manual coding 117
6.6.4 Representing codes in their sequential context 119
6.7 If you want to read code files from the screen or from a print-out 121

6.8 What is a master code file - and why would you want to delete it? 122
6.9 How to code graphic data 123
6.9.1 Principles 123
6.9.2 How to code text in graphic format (JPG) 124
6.9.3 How to ZOOM segments vs. viewing pictures in original size 125
6.10 How to code audio data 127
6.10.1 Managing the mediaplayer 127
6.10.2 A general strategy for coding audio data 128
6.10.3 Transcribing important data segments 129
6.11 How to code video data 130

Chapter 7
How to edit texts and codings 131

7.1 How to edit texts 131
7.2 How to edit codes 132
7.3 If some editing is not enough: producing meta-codes 133
7.3.1 Modify files: add meta-codes 134
7.3.2 Modify files: replace codes by meta-codes 135
7.3.3 Reconstruct previous codings 135
7.4 Insert multiple codes 136

Chapter 8
How to handle researcher memos 137

8.1 What are memos good for? 137
8.2 How to write memos within AQUAD 139
8.2.1 Memoing during coding 139
8.2.2 Memoing started from the main menu 140
8.3 How to retrieve memos 141
8.3.1 Retrieving memos during coding 141
8.3.2 Retrieving memos from the main menu 142

Chapter 9
When words are important 143

9.1 Searching for words in the data texts 144
9.2 Searching for key words within their context 145
9.3 Searching for key words in memos 147
9.4 Counting words 148
9.5 Counting suffixes 149
9.6 How to exclude parts of a text from word analyses 150

Chapter 10
How to retrieve codings 151

10.1 How to retrieve coded text segments and particular codings 151
10.2 How to retrieve coding structures 154
10.2.1 Nested codes 154
10.2.2 Overlapping codes 155
10.2.3 Multiple codes 155
10.2.4 Sequence of codes 156
10.2.5 Repetition of sequences 157
10.3 Digression: Distance between data segments 158
10.4 How to learn about unused codes 160
10.5 How to retrieve codes, count them and enter their frequencies into tables 161

Chapter 11
How to assemble coded data segments and examine how codes are associated with each other 163

11.1 Associations within the context of unconditioned categories: Searching for codes 165
11.2 Associations within the context of conditioned categories: Table analysis 166
11.2.1 How to design a table 167
11.2.2 How to edit a table 169
11.2.3 How to run a table analysis 170
11.3 Associations in form of simple sequences of codes: Checking linkages 171
11.4 Which linkage structures are available in AQUAD? 172
11.4.1 General sequences of codes 172
11.4.2 Examples 174
Linkage 1 174; Linkage 2 175; Linkage 3 176;
Linkage 4 177; Linkage 5 178; Linkage 6 178
11.5 How to compare codes of two speakers 181
11.5.1 Particular linkages 181
11.5.2 Examples 182
11.6 How to create and apply sequence codes 186

Chapter 12
How to construct linkages 187

12.1 How to construct a linkage hypothesis 188
12.2 Linkage construction step by step 191
12.2.1 Theoretical background 191
12.2.2 Data collection and analysis 191
12.3 How to create and apply sequence codes 194

Chapter 13
How to compare configurations of codes 197

13.1 How to write a data table 198
13.2 How to transform scores into truth values 200
13.3 How to examine implicants of "positive" and "negative" criteria 201
13.4 What else can you do with implicants? 203
13.5 Functions of implicants in the process of theory building 205

Chapter 14
How to combine qualitative and quantitative analyses 207

14.1 Qualitative versus quantitative methods of research? 207
14.2 "Mixed methods" - slogan or strategy of research? 210
14.2.1 Implicit combinations of methods 211
14.2.2 Explicit combinations of methods 211
14.2.3 Combinations of methods in research designs 213
Macro-sequences of combinations 213;
Simultaneous use of qualitative and quantitative methods 214;
Micro-sequences of combinations 215
14.3 Frequencies of words 216
14.4 Frequencies of codes 222
14.5 Example: Combination of methods in a study on humor 229
14.5.1 Linkage hypotheses based on analyses of variance 229
14.5.2 How to identify types by quantitatively based analysis of implicants 233

Chapter 15
What are the AQUAD tools good for? 235

15.1 How to convert codes from AQUAD 5 into the format of AQUAD 6 236
15.2 Tools for work groups: How to merge code files 237
15.3 Tools for work groups: How to eliminate multiple codes 238
15.4 How to apply automatically linkage constructions and insert sequence codes 239
15.5 How to convert frequency lists into tables (export as CSV files) 240
15.6 How to modify codes of graphic files 241
15.6.1 Converting picture codes (x/y) into text codes (y) 241
15.6.2 Computing and coding width and height of picture segments 242

References 243

Subject Index 247

Author Index 251

About the authors 253

Introduction

The first version of AQUAD (**A**nalysis of **Qua**litative **D**ata) was developed in Germany in 1987 to compensate for a shortage in manpower in a research project. At this time several programs for qualitative analysis had been in existence for a number of years. Simpler types of software tools were using the search function of available word processors or database programs. Some were already designed for the special demands of qualitative analysis, although they did not offer more than simple counting and retrieval functions. A much higher level of functionality was realized just by one program, the American software package Qualog written by Anne Shelly and Ernest Sibert for a mainframe computer. This program made use of the rich potential of so called "logical programming", and it was the stimulus and model for AQUAD.

A particular goal in developing AQUAD was to support the reconstruction of linkages of meaning within the data base as described, for instance, by methodological approaches like "grounded theory" (Glaser & Strauss, 1967). In addition, AQUAD tries to incorporate methodological ideas for text analysis like Miles and Huberman's table or matrix analysis (Miles & Huberman, 1994) and Ragin's comparsion of configurations of meaning (Ragin, 1987). The more elementary functions of other programs like managing code entries and retrieving coded text segments are of course available in AQUAD, too.

The actual version 6 of AQUAD allows for the first time to analyze qualitative data without costly and time consuming transcription of the initial data base. Of course, AQUAD still offers rich possibilities to analyze written texts. Altogether, the following types of data files can be imported into the program and analyzed directly:

- Texts formatted as *.txt (plain ANSI format) or *.rtf;
- audio recordings as sound files formatted as *.wav or *mp3;
- video recordings formatted as *.avi (in various compressions);
- graphic files (pictures, drawings, photos, etc.) formatted as *.jpg.

The logic of data handling and internal processing of codes is almost the same for all of these data types. Therefore, do not experience difficulties when switching from one data type to another in their projects. Above all, there are no fundamental differences of operating the program between version 6 and version 5. Available files from projects run under AQUAD 5 can be converted without any problems for further use in AQUAD 6.

In all qualitative analyses the main task is to reduce the usually wordy and redundant descriptions, explanations, justifications, field notes, protocols of observations, etc., that comprise the researcher's data texts to some kind of systematic description of the meaning of the data. The procedures used to accomplish that purpose have been very individualistic and, naturally, dependent on the ultimate purpose of the type of qualitative research at hand. However, one invariant can be found in all but the most artistic / phenomenological types of analysis: the classification or categorization of text passages. Categories can be thought of as "containers" for organizing data according to their meaning. Either the reduction of the data is carried out deductively with an *a priori* designed system of categories, usually developed from existing theories; or categories are established on the basis of central research questions, hypotheses, or important constructs that have been introduced earlier during the collection of data (see Glaser & Strauss, 1979). Inductively, they can be created in an initial perusal process with a sample of data texts, or as a reconstruction of the subjective "categories" used by the research subjects and in this way they faithfully mirror the subjects' view of the matter. AQUAD supports the deductive as well as the inductive process, and also a combination of both.

The special characteristic of AQUAD is its ability not only to categorize and then to assemble the data for each category, but to allow the researcher drawing conclusions by relating categories to each other, i.e., by exploring the occurrence of typical and repeated configurations of category representations in the data. Once such repetitions are surmised, a researcher may wish to confirm the hunch by systematically surveying the data or, with Miles & Huberman (1994), Shelly & Sibert (1985) and Shelly (1986) by "testing the hypotheses." A positive outcome (the claim that particular combinations of statements show up in the texts in a systematically combined form is found to be "true") would validate the conclusion.

The configurations mentioned above can take on various forms. For instance, during the development of AQUAD the program was used for research studies in which scholars explored sequences, clusters, correlational, and hierarchical or dimensional structures. (Examples will be provided later in this manual.)

AQUAD contains special facilities that allow the user working with all of these forms of "hypotheses." In addition, the user may postulate other types of hypotheses just by clicking on codes and logical links in a list and use AQUAD to test them (for details see chap. 11).

This is the point where the computer ceases to be merely a useful convenience and becomes an essential tool for qualitative analyses. It is extremely time-consuming to locate all combinations of occurrences manually, and it is impossible to guarantee accuracy and completeness. Only the computer can do the latter. The human mind would be vastly overextended by it. Consequently, researchers can now pursue avenues of analysis that were previously closed to them. The computer has helped to change the ways qualitative analysis can be done, and AQUAD is a pioneer in the process.

The place of strongest impact of the computer may be in postulating causal relations. Since causal hypotheses have been the main concern of experimental and statistical procedures, they have been shunned in qualitative research. Ragin (1987) reminds us, however, that qualitative causal analysis has a tradition that goes back to John Stuart Mills (Ragin, 1987, p. 36f.), and that its methods may be superior to quantitative analysis in certain respects, since generality is not given precedence over complexity (Ragin, 1987, p. 54). A detailed treatment of Ragin's argument is beyond the scope of this manual (the reader is referred to Ragin's book, 1987), but the method itself, called the "Boolean method of qualitative comparison" by Ragin, is explained later in chapter 13. This qualitative comparative method integrates – not simply combines – features of experimental and interpretational design by treating the existence of a certain "condition" in a set of data that represents one "case" (the occurrence of a code signifying a category) as a dichotomous categorical variable. The evidence or "condition" either exists or does not exist in a given piece of data. Causes are always seen as complex combinations of conditions that are associated with a particular "outcome." All data are searched for the presence and absence of all forms of possible combinations and the results are entered into a table, with each cell containing either a zero or a one, signifying the absence or presence of the condition. Using algebraic procedures developed by the mathematician Boole, called "combinatorial logic", "minimization," and the use of "implicants," conclusions are drawn from the table about the one or several combination(s) of conditions that result(s) in the occurrence of the outcome being investigated. AQUAD contains a separate program module that facilitates this Boolean method of qualitative comparison.

AQUAD, in summary, is a program for the generation of theory on the basis of qualitative data. Since theory-building and hypothesis-testing have been traditionally the domain of researchers who work with quantitative data, theoretical notions based on qualitative data are easily distrusted. Although we acknowledge (and have no desire to claim otherwise) that qualitatively developed statements do not achieve the same degree of generalization as statistically tested statements, it is important to make sure qualitatively developed conclusions are based on as rigorous a verification process as possible. Therefore, special emphasis is placed in AQUAD on objectivity, reliability, and validity. The researcher is encouraged to use procedures such as the repeated interpretation of the same text by the same analyst or by different analysts over time, or to pay attention to issues of internal validity such as whether the categories have been used consistently, whether their defined range of meaning has been maintained, whether the meanings represented by specific categories indeed correspond to the content of the text passages that are sorted into them, etc. (Huber, 1989). More about these issues will be presented later in this manual.

Finally, two more attributes of AQUAD deserve attention. Unlike many other qualitative analysis programs, AQUAD supports some versions of conventional content analysis or linguistic analysis by allowing the user not only searching for words and phrases that occur in the data text and examine their frequency, but the program can extract words together with their context (key word in context – KWIC – indexes, see Weber, 1985). Furthermore, AQUAD provides for the attachment of researcher memos to text segments. You will find more about memos, as well as word searches, in chapters 8, 9, and 14.

Principally empirical research follows a path towards discovery that starts from descriptive or categorial analyses and leads via postulating or observing regularities to statements, which explain these connections at least tentatively. No matter whether an analysis results in a taxonomic, correlative or causal order of the phenomena under study, the process of research is focused on reduction, that is reducing concrete details and moving to higher levels of abstraction and generalization. We will be able to see the essentials, if we abstract away "... all coincidental elements of the real world" (Galtung, 1980, p. 98). AQUAD tries to contribute to this goal, but is at the same time able to keep open the way back to the manifold, concrete, and colorful details of the original data base.