Research Methods in Education

8TH EDITION

LOUIS COHEN,
LAWRENCE MANION
AND KEITH MORRISON

COMPANION WEBSITE

ROUTLEDGE

Very much still the key text for 'all' education students and researchers. Cohen *et al*. continue to update *Research Methods in Education*, with new theoretical, ethical, virtual and mixed methods information. It's worth noting the impressive web page and links to materials for all chapters which is still the benchmark when looking at the competition for books in this area of social and education research.

Dr Richard Race, Senior Lecturer in Education, Roehampton University, UK

A clear enhancement on the already well-established text. The new edition addresses an important need to explain research design and question setting in more detail, helping guide the newcomer through the research process from inception through analysis to reporting.

David Lundie, Associate Professor of Education, University of St Mark & St John, UK

Research Methods in Education is a unique book for everybody who has to undertake educational research projects. The book gives an in depth understanding of quantitative and qualitative research designs and offers a practical guide for data collection and data analysis. It is an essential 'friend' for teachers and students from various disciplines who are not familiar with social science research.

Dr Ellen P. W. A. Jansen, Associate Professor, Teacher Education, University of Groningen, The Netherlands

Research Methods in Education continues to offer an excellent route map, a well-structured and inspiring travel guide, for students engaging in research. It works across levels, and while it provides clarity for the beginning researcher there is plenty here to aid the seasoned researcher with an open mind to new approaches and emerging practices. A superb text that provides guidance for my own research as well as for students and partners in research projects.

Peter Shukie, Lecturer in Education Studies and Academic Lead in Digital Innovation,
University Centre at Blackburn College, UK

Research Methods in Education is, besides being my personal favorite research methods book, a deep as well as a broad handbook useful both for undergraduate teacher education students as well as researchers and PhD students within educational sciences. In this new edition, new chapters are added emphasising both quantitative and qualitative methods in combination with thought-through discussions about how to mix them. The book can be used when planning a project and then throughout the whole research process and is therefore a complete methods book.

Karolina Broman, Senior Lecturer in Chemistry Education, Umeå University, Sweden

Comprehensive, well written and relevant: the eighth edition of *Research Methods in Education* offers the background for methods courses at different levels. The new edition keeps the strong focus on education studies. Excellent extensions will make the book an even more popular basis for classes on both qualitative and quantitative methods.

Felix Weiss, Assistant Professor for Sociology of Education, Aarhus University, Denmark

Research Methods in Education, Eighth Edition is an up-to-date, one-stop shop, taking education research students from conceptualization to presentation. With this book on your library shelf, you are good to go.

Dr Fiona McGarry, Lecturer in Research Methods, University of Dundee, UK

The eighth edition of *Research Methods in Education* contains a wealth of up-to-the-minute information and guidance on educational research which will be of immense value to researchers at all stages of their careers and across the education domain from early years settings to higher education. As research and education move into increasingly fluid and complex dimensions, *Research Methods in Education* will support students, researchers and practitioners in charting a course through these changing waters as they seek to create new knowledge about effective teaching and deepen our understanding of how learners learn.

Julia Flutter, A Director of the Cambridge Primary Review Trust, Faculty of Education,
University of Cambridge, UK

As a doctoral supervisor I know that my students routinely return to *Research Methods in Education* as they develop their own research projects. This text has always been a mainstay on our reading lists but this new edition now features additional research topics and new perspectives on a wider range of research methods. As with previous editions this book is clearly organised and well written and appeals to a wide audience of experienced and novice researchers alike.

Dr Val Poultney, Associate Professor, University of Derby, UK

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Research Methods in Education

This thoroughly updated and extended eighth edition of the long-running bestseller *Research Methods in Education* covers the whole range of methods employed by educational research at all stages. Its five main parts cover: the context of educational research; research design; methodologies for educational research; methods of data collection; and data analysis and reporting. It continues to be the go-to text for students, academics and researchers who are undertaking, understanding and using educational research, and has been translated into several languages. It offers plentiful and rich practical advice, underpinned by clear theoretical foundations, research evidence and up-to-date references, and it raises key issues and questions for researchers planning, conducting, reporting and evaluating research.

This edition contains new chapters on:

- Mixed methods research
- The role of theory in educational research
- Ethics in Internet research
- Research questions and hypotheses
- Internet surveys
- Virtual worlds, social network software and netography in educational research
- Using secondary data in educational research
- Statistical significance, effect size and statistical power
- Beyond mixed methods: using Qualitative Comparative Analysis (QCA) to integrate cross-case and within-case analyses.

Research Methods in Education is essential reading for both the professional researcher and anyone involved in educational and social research. The book is supported by a wealth of online materials, including PowerPoint slides, useful weblinks, practice data sets, downloadable tables and figures from the book, and a virtual, interactive, self-paced training programme in research methods. These resources can be found at: www.routledge.com/cw/cohen.

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Keith Morrison

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Contents

List of figures xiv
List of tables xvi
List of boxes xix
List of contributors xxi
Preface to the eighth edition xxii
Acknowledgements xxv

PART 1

The context of educational research 1

1 The nature of enquiry: setting the field 3
- 1.1 Introduction 3
- 1.2 The search for understanding 3
- 1.3 Conceptions of social reality 5
- 1.4 Paradigms 8
- 1.5 Positivism 10
- 1.6 The assumptions and nature of science 10
- 1.7 The tools of science 12
- 1.8 The scientific method 13
- 1.9 Criticisms of positivism and the scientific method 14
- 1.10 Post-positivism 16
- 1.11 Alternatives to positivistic and post-positivist social science: naturalistic and interpretive approaches 17
- 1.12 A question of terminology: the normative and interpretive paradigms 19
- 1.13 Phenomenology, ethnomethodology, symbolic interactionism and constructionism 20
- 1.14 Criticisms of the naturalistic and interpretive approaches 23
- 1.15 Postmodernism and post-structuralist perspectives 24
- 1.16 Subjectivity and objectivity in educational research 25
- 1.17 The paradigm of complexity theory 27
- 1.18 Conclusion 29

2 Mixed methods research 31
- 2.1 Introduction 31
- 2.2 What is mixed methods research? 32
- 2.3 Why use mixed methods research? 33
- 2.4 The foundations of mixed methods research 34
- 2.5 Working with mixed methods approaches 38
- 2.6 Stages in mixed methods research 48
- 2.7 Conclusion 48

3 Critical educational research 51
- 3.1 Critical theory and critical educational research 51
- 3.2 Criticisms of approaches from critical theory 54
- 3.3 Participatory research and critical theory 55
- 3.4 Feminist research 58
- 3.5 A note on post-colonial theory and queer theory 63
- 3.6 Value-neutrality in educational research 63
- 3.7 A summary of three major paradigms 65

4 Theory in educational research 68
- 4.1 What is theory? 68
- 4.2 Why have theory? 71
- 4.3 What makes a theory interesting? 71
- 4.4 Types of theory 72
- 4.5 Where does theory come from? 76
- 4.6 Questions about theory for researchers 77
- 4.7 Conclusion 77

5 Evaluation and research 79
- 5.1 Similarities and differences between research and evaluation 79
- 5.2 Evaluation research and policy making 82
- 5.3 Research, evaluation, politics and policy making 83

6 The search for causation 87
- 6.1 Introduction 87
- 6.2 Causes and conditions 87
- 6.3 Causal inference and probabilistic causation 88
- 6.4 Causation, explanation, prediction and correlation 92
- 6.5 Causal over-determination 94
- 6.6 The timing and scope of the cause and the effect 95
- 6.7 Causal direction, directness and indirectness 96
- 6.8 Establishing causation 96
- 6.9 The role of action narratives in causation 98
- 6.10 Researching causes and effects 99
- 6.11 Researching the effects of causes 101
- 6.12 Researching the causes of effects 103
- 6.13 Conclusion 107

PART 2

Research design 109

7 The ethics of educational and social research 111
- 7.1 Introduction 111
- 7.2 Ethical principles and the nature of ethics in educational research 112
- 7.3 Sponsored research 114
- 7.4 Regulatory contexts of ethics 115
- 7.5 Choice of research topic and research design 120
- 7.6 Informed consent 122
- 7.7 Non-maleficence, beneficence and human dignity 127
- 7.8 Privacy 128
- 7.9 Anonymity 129
- 7.10 Confidentiality 130
- 7.11 Against privacy, confidentiality and anonymity 130
- 7.12 Deception 132
- 7.13 Gaining access and acceptance into the research setting 134
- 7.14 Power and position 136
- 7.15 Reciprocity 137
- 7.16 Ethics in data analysis 137
- 7.17 Ethics in reporting and dissemination 139
- 7.18 Responsibilities to sponsors, authors and the research community 141
- 7.19 Conclusion 141

8 Ethics in Internet research 144
- 8.1 What is Internet research? 144
- 8.2 What are key ethical issues in Internet research? 144
- 8.3 Informed consent 145
- 8.4 Public and private matters 146
- 8.5 Confidentiality and anonymity 148
- 8.6 Ethical codes for Internet research 149
- 8.7 Conclusion 152

9 Choosing a research project 153
- 9.1 Introduction 153
- 9.2 What gives rise to the research project? 153
- 9.3 The importance of the research 156
- 9.4 The purposes of the research 157
- 9.5 Ensuring that the research can be conducted 158
- 9.6 Considering research questions 160
- 9.7 The literature search and review 161
- 9.8 Summary of key issues in choosing a research topic or project 162

10 Research questions 165
- 10.1 Why have research questions? 165
- 10.2 Where do research questions come from? 165
- 10.3 What kinds of research question are there? 166
- 10.4 Devising your research question(s) 167
- 10.5 Making your research question answerable 169
- 10.6 How many research questions should I have? 172
- 10.7 A final thought 172

11 Research design and planning 173
- 11.1 Introduction 173
- 11.2 Approaching research planning 174
- 11.3 Research design and methodology 175
- 11.4 From design to operational planning 177
- 11.5 A framework for planning research 177
- 11.6 Conducting and reporting a literature review 181
- 11.7 Searching for literature on the Internet 183
- 11.8 How to operationalize research questions 185
- 11.9 Distinguishing methods from methodologies 186
- 11.10 Data analysis 186
- 11.11 Presenting and reporting the results 186
- 11.12 A planning matrix for research 188

11.13 Managing the planning of research 194
11.14 A worked example 196
11.15 Ensuring quality in the planning of research 201

12 Sampling 202
12.1 Introduction 202
12.2 The sample size 203
12.3 Sampling error 209
12.4 Statistical power and sample size 211
12.5 The representativeness of the sample 212
12.6 The access to the sample 213
12.7 The sampling strategy to be used 214
12.8 Probability samples 214
12.9 Non-probability samples 217
12.10 Sampling in qualitative research 223
12.11 Sampling in mixed methods research 224
12.12 Planning a sampling strategy 225
12.13 Conclusion 226

13 Sensitive educational research 228
13.1 Introduction 228
13.2 What is sensitive research? 228
13.3 Sampling and access 230
13.4 Ethical issues in sensitive research 233
13.5 Effects of sensitive research on the researcher 236
13.6 Researching powerful people 237
13.7 Researching powerless and vulnerable people 240
13.8 Asking questions 242
13.9 Conclusion 243

14 Validity and reliability 245
14.1 Defining validity 245
14.2 Validity in quantitative research 246
14.3 Validity in qualitative research 247
14.4 Validity in mixed methods research 250
14.5 Types of validity 252
14.6 Triangulation 265
14.7 Ensuring validity 267
14.8 Reliability 268
14.9 Reliability in quantitative research 268
14.10 Reliability in qualitative research 270
14.11 Validity and reliability in interviews 271
14.12 Validity and reliability in experiments 276
14.13 Validity and reliability in questionnaires 277
14.14 Validity and reliability in observations 278
14.15 Validity and reliability in tests 279
14.16 Validity and reliability in life histories 283
14.17 Validity and reliability in case studies 284

PART 3

Methodologies for educational research 285

15 Qualitative, naturalistic and ethnographic research 287
15.1 Foundations of qualitative, naturalistic and ethnographic inquiry 288
15.2 Naturalistic research 292
15.3 Ethnographic research 292
15.4 Critical ethnography 294
15.5 Autoethnography 297
15.6 Virtual ethnography 299
15.7 Phenomenological research 300
15.8 Planning qualitative, naturalistic and ethnographic research 301
15.9 Reflexivity 302
15.10 Doing qualitative research 303
15.11 Some challenges in qualitative, ethnographic and naturalistic approaches 320

16 Historical and documentary research 323
JANE MARTIN
16.1 Introduction 323
16.2 Some preliminary considerations: theory and method 323
16.3 The requirements and process of documentary analysis 325
16.4 Some problems surrounding the use of documentary sources 325
16.5 The voice of the past: whose account counts? 326
16.6 A worked example: a biographical approach to the history of education 328
16.7 Conclusion 332

17 Surveys, longitudinal, cross-sectional and trend studies 334
17.1 Introduction 334
17.2 What is a survey? 334
17.3 Advantages of surveys 334
17.4 Some preliminary considerations 336
17.5 Planning and designing a survey 337
17.6 Survey questions 340
17.7 Low response, non-response and missing data 341
17.8 Survey sampling 345
17.9 Longitudinal and cross-sectional surveys 347
17.10 Strengths and weaknesses of longitudinal, cohort and cross-sectional studies 349

17.11 Postal, interview and telephone surveys 352
17.12 Comparing methods of data collection in surveys 357

18 Internet surveys 361
18.1 Introduction 361
18.2 Advantages of Internet surveys 361
18.3 Disadvantages of Internet surveys 362
18.4 Constructing Internet-based surveys 363
18.5 Ethical issues in Internet-based surveys 367
18.6 Sampling in Internet-based surveys 372
18.7 Improving response rates in Internet surveys 372
18.8 Technological advances 374

19 Case studies 375
19.1 What is a case study? 375
19.2 Types of case study 377
19.3 Advantages and disadvantages of case study 378
19.4 Generalization in case study 380
19.5 Reliability and validity in case studies 381
19.6 Planning a case study 382
19.7 Case study design and methodology 384
19.8 Sampling in case studies 386
19.9 Data in case studies 387
19.10 Writing up a case study 388
19.11 What makes a good case study researcher? 389
19.12 Conclusion 390

20 Experiments 391
20.1 Introduction 391
20.2 Randomized controlled trials 391
20.3 Designs in educational experiments 401
20.4 True experimental designs 402
20.5 Quasi-experimental designs 406
20.6 Single-case ABAB design 408
20.7 Procedures in conducting experimental research 409
20.8 Threats to internal and external validity in experiments 411
20.9 The timing of the pre-test and the post-test 412
20.10 The design experiment 413
20.11 Internet-based experiments 415
20.12 *Ex post facto* research 418
20.13 Conclusion 425

21 Meta-analysis, systematic reviews and research syntheses 427
HARSH SURI
21.1 Introduction 427
21.2 Meta-analysis 428
21.3 Systematic reviews 430
21.4 Methodologically inclusive research syntheses 431
21.5 Conclusion 439

22 Action research 440
22.1 Introduction 440
22.2 Defining action research 441
22.3 Principles and characteristics of action research 443
22.4 Participatory action research 444
22.5 Action research as critical praxis 445
22.6 Action research and complexity theory 448
22.7 Procedures for action research 448
22.8 Reporting action research 452
22.9 Reflexivity in action research 453
22.10 Ethical issues in action research 454
22.11 Some practical and theoretical matters 454
22.12 Conclusion 456

23 Virtual worlds, social network software and netography in educational research 457
STEWART MARTIN
23.1 Introduction 457
23.2 Key features of virtual worlds 457
23.3 Social network software 458
23.4 Using virtual worlds and social media in educational research 458
23.5 Netography, virtual worlds and social media network software 459
23.6 Opportunities for research with virtual worlds, social network software and netography 461
23.7 Ethics 463
23.8 Guidelines for practice 464
23.9 Data 465
23.10 Conclusion 467

PART 4

Methods of data collection 469

24 Questionnaires 471
24.1 Introduction 471
24.2 Ethical issues 471
24.3 Planning the questionnaire 472

24.4 Types of questionnaire items 475
24.5 Asking sensitive questions 489
24.6 Avoiding pitfalls in question writing 490
24.7 Sequencing questions 492
24.8 Questionnaires containing few verbal items 493
24.9 The layout of the questionnaire 493
24.10 Covering letters/sheets and follow-up letters 495
24.11 Piloting the questionnaire 496
24.12 Practical considerations in questionnaire design 498
24.13 Administering questionnaires 501
24.14 Processing questionnaire data 504

25 Interviews 506
25.1 Introduction 506
25.2 Conceptions of the interview 507
25.3 Purposes of the interview 508
25.4 Types of interview 508
25.5 Planning and conducting interviews 512
25.6 Group interviewing 527
25.7 Interviewing children 528
25.8 Interviewing minority and marginalized people 531
25.9 Focus groups 532
25.10 Non-directive, focused, problem-centred and in-depth interviews 533
25.11 Telephone interviewing 535
25.12 Online interviewing 538
25.13 Ethical issues in interviewing 540

26 Observation 542
26.1 Introduction 542
26.2 Structured observation 545
26.3 The need to practise structured observation 550
26.4 Analysing data from structured observations 550
26.5 Critical incidents 551
26.6 Naturalistic and participant observation 551
26.7 Data analysis for unstructured observations and videos 555
26.8 Natural and artificial settings for observation 555
26.9 Video observations 556
26.10 Timing and causality with observational data 558
26.11 Ethical considerations in observations 558
26.12 Reliability and validity in observations 560
26.13 Conclusion 562

27 Tests 563
27.1 Introduction 563
27.2 What are we testing? 563
27.3 Parametric and non-parametric tests 565
27.4 Diagnostic tests 565
27.5 Norm-referenced, criterion-referenced and domain-referenced tests 565
27.6 Commercially produced tests and researcher-produced tests 567
27.7 Constructing and validating a test 568
27.8 Software for preparation of a test 583
27.9 Devising a pre-test and post-test 583
27.10 Ethical issues in testing 584
27.11 Computerized adaptive testing 585

28 Using secondary data in educational research 586
28.1 Introduction 586
28.2 Advantages of using secondary data 587
28.3 Challenges in using secondary data 588
28.4 Ethical issues in using secondary data 589
28.5 Examples of secondary data analysis 589
28.6 Working with secondary data 589
28.7 Conclusion 592

29 Personal constructs 593
RICHARD BELL
29.1 Introduction 593
29.2 Strengths of repertory grid technique 594
29.3 Working with personal constructs 595
29.4 Grid analysis 599
29.5 Some examples of the use of the repertory grid in educational research 600
29.6 Competing demands in the use of the repertory grid technique in research 604
29.7 Resources 605

30 Role-play and research 606
CARMEL O'SULLIVAN
30.1 Introduction 606
30.2 Role-play pedagogy 607
30.3 What is role-play? 608
30.4 Why use role-play in research? 610
30.5 Issues to be aware of when using role-play 612
30.6 Role-play as a research method 616

30.7 Role-play as a research method: special features 616
30.8 A note of caution 617
30.9 How does role-play work? 617
30.10 Strategies for successful role-play 618
30.11 Examples of research using role-play 623
30.12 A note on simulations 626

31 Visual media in educational research 628
31.1 Introduction 628
31.2 Who provides the images? 630
31.3 Photo-elicitation 630
31.4 Video and moving images 633
31.5 Artefacts 634
31.6 Ethical practices in visual research 636

PART 5

Data analysis and reporting 641

32 Approaches to qualitative data analysis 643
32.1 Elements of qualitative data analysis 643
32.2 Data analysis, thick description and reflexivity 647
32.3 Ethics in qualitative data analysis 650
32.4 Computer assisted qualitative data analysis (CAQDAS) 650

33 Organizing and presenting qualitative data 657
33.1 Tabulating data 657
33.2 Ten ways of organizing and presenting data analysis 661
33.3 Narrative and biographical approaches to data analysis 664
33.4 Systematic approaches to data analysis 665
33.5 Methodological tools for analysing qualitative data 666

34 Coding and content analysis 668
34.1 Introduction 668
34.2 Coding 668
34.3 Concerns about coding 673
34.4 What is content analysis? 674
34.5 How does content analysis work? 675
34.6 A worked example of content analysis 680
34.7 Reliability in content analysis 684

35 Discourses: conversations, narratives and autobiographies as texts 686
35.1 Discourse analysis and critical discourse analysis 686
35.2 A conversational analysis 688
35.3 Narrative analysis 694
35.4 Autobiography 698
35.5 Conclusion 700

36 Analysing visual media 702
36.1 Introduction 702
36.2 Content analysis 704
36.3 Discourse analysis 705
36.4 Grounded theory 706
36.5 Interpreting images 707
36.6 Interpreting an image: a worked example 708
36.7 Analysing moving images 712
36.8 Conclusion 713

37 Grounded theory 714
37.1 Introduction 714
37.2 Versions of grounded theory 715
37.3 Stages in generating a grounded theory 717
37.4 The tools of grounded theory 717
37.5 The strength of the grounded theory 721
37.6 Evaluating grounded theory 721
37.7 Preparing to work in grounded theory 722
37.8 Some concerns about grounded theory 722

38 Approaches to quantitative data analysis 725
38.1 Introduction 725
38.2 Scales of data 725
38.3 Parametric and non-parametric data 727
38.4 Descriptive and inferential statistics 727
38.5 Kinds of variables 728
38.6 Hypotheses 730
38.7 One-tailed and two-tailed tests 732
38.8 Confidence intervals 733
38.9 Distributions 733
38.10 Conclusion 737

39 Statistical significance, effect size and statistical power 739
39.1 Introduction 739
39.2 Statistical significance 739
39.3 Concerns about statistical significance 742
39.4 Hypothesis testing and null hypothesis significance testing 744
39.5 Effect size 745
39.6 Statistical power 749
39.7 Conclusion 752

40 Descriptive statistics 753
40.1 Missing data 753
40.2 Frequencies, percentages and crosstabulations 754

- 40.3 Measures of central tendency and dispersal 762
- 40.4 Taking stock 765
- 40.5 Correlations and measures of association 765
- 40.6 Partial correlations 772
- 40.7 Reliability 774

41 Inferential statistics: difference tests 776

- 41.1 Measures of difference between groups 776
- 41.2 The t-test 777
- 41.3 Analysis of Variance 781
- 41.4 The chi-square test 789
- 41.5 Degrees of freedom 792
- 41.6 The Mann-Whitney and Wilcoxon tests 794
- 41.7 The Kruskal-Wallis and Friedman tests 797
- 41.8 Conclusion 801

42 Inferential statistics: regression analysis and standardization 802

- 42.1 Regression analysis 802
- 42.2 Simple linear regression 803
- 42.3 Multiple regression 805
- 42.4 Standardized scores 814
- 42.5 Conclusion 817

43 Factor analysis, cluster analysis and structural equation modelling 818

- 43.1 Conducting factor analysis 818
- 43.2 What to look for in factor analysis output 826
- 43.3 Cluster analysis 828
- 43.4 A note on structural equation modelling 833
- 43.5 A note on multilevel modelling 836

44 Choosing a statistical test 839

- 44.1 Introduction 839
- 44.2 Sampling issues 839
- 44.3 The types of data used 841
- 44.4 Choosing the right statistic 841
- 44.5 Assumptions of tests 841

45 Beyond mixed methods: using Qualitative Comparative Analysis (QCA) to integrate cross-case and within-case analyses 847

BARRY COOPER AND JUDITH GLAESSER

- 45.1 Introduction 847
- 45.2 Starting from a ‘quantitative’ stance 848
- 45.3 Starting from a ‘qualitative’ stance 850
- 45.4 Qualitative Comparative Analysis (QCA) 850
- 45.5 QCA: sufficiency 852
- 45.6 Conclusion 853

Bibliography 855
Index 907

Figures

1.1 The subjective-objective dimension 6
2.1 Mixed methods research typologies 40
3.1 Steps in an 'ideal' participatory research approach 57
3.2 Positivist, interpretive and critical paradigms in educational research 67
6.1 Two unrelated factors caused by a third factor 92
6.2 Positive and negative causes on an effect (1) 97
6.3 Positive and negative causes on an effect (2) 100
11.1 A planning sequence for research 195
11.2 Theoretical framework for investigating low morale in an organization 197
11.3 Understanding the levels of organizational culture 198
12.1 Distribution of sample means showing the spread of a selection of sample means around the population mean 209
12.2 Snowball sampling 222
15.1 Five stages in critical ethnography 296
15.2 Stages in the planning of naturalistic, qualitative and ethnographic research 302
15.3 Elements of a qualitative research design 303
15.4 Seven steps in qualitative data analysis 317
17.1 Stages in planning a survey 338
17.2 Types of survey 349
20.1 The 'true' experiment 393
20.2 Interaction effects in an experiment 405
20.3 Two groups receiving both conditions (repeated measures) 406
20.4 The ABAB design 408
20.5 An ABAB design in an educational setting 409
20.6 Four types of *ex post facto* research 420
20.7 Two causes and two effects 421
22.1 A framework for action research 451
24.1 Stages in questionnaire design 472
24.2 A flow chart for the planning of a postal questionnaire 504
25.1 Methods of administering interviews 540
26.1 Continua of observation 545
29.1 Simple grid layout 594
29.2 Completed grid 596
29.3 Grid summary measures 600
29.4 Grid cluster representation 601
29.5 Self-identity plot 602
29.6 Spatial representation of elements and constructs 603
32.1 Organizing data in NVivo (Version 10) 651
32.2 A sample memo on observation in NVivo (Version 10) 652
32.3 Annotated NVivo image file (Version 10) 653
34.1 NVivo (Version 10) coded text for the code on organizational culture, from several files collated into a single file 670
36.1 Picture file for analysing picture data in NVivo (Version 10) 703
36.2 An early twentieth century photograph of children in an art lesson 708
36.3 Matching the viewer's field of vision and the shape of the main part of a photograph 710
38.1 Test scores of two groups 732
38.2 The predictions of a one-tailed test that predicts a higher score 732
38.3 The predictions of a one-tailed test that predicts a lower score 732
38.4 The predictions of a two-tailed test 733
38.5 The normal curve of distribution 734
38.6 Skewed distributions 734
38.7 How well learners are cared for, guided and supported 735
38.8 Staff voluntarily taking on coordination roles 735
38.9 Types of kurtosis 735
39.1 Balancing alpha, beta and statistical power 750
39.2 Setting the alpha, beta and power size 751
40.1 Bar chart of distribution of discrete stress levels among teachers (SPSS output) 755
40.2 Boxplot of mathematics test scores in four schools (SPSS output) 756
40.3 Scatterplot with line of best fit (SPSS output) 757
40.4 A line graph of test scores 763

40.5 Distribution around a mean with an outlier 764
40.6 A platykurtic distribution of scores 764
40.7 A leptokurtic distribution of scores 764
40.8 Correlation scatterplots 768
40.9 A line diagram to indicate curvilinearity 770
40.10 Visualization of correlation of 0.65 between reading grade and arithmetic grade 771
41.1 Graphic plots of two sets of scores on a dependent variable 787
42.1 A scatterplot with the regression line (SPSS output) 803
42.2 Multiple regression to determine relative weightings 806
42.3 Normal probability plot for testing normality, linearity and homoscedasticity (SPSS output) 810
42.4 Scatterplot to check the distributions of the data (SPSS output, with horizontal and vertical lines added) 810
42.5 Standardizing scores 816
43.1 A scree plot (SPSS output) 821
43.2 Three dimensional rotation 822
43.3 Cluster analysis using average linkage (SPSS output) 831
43.4 Cluster analysis using ‘nearest neighbour’ single linkage (SPSS output) 832
43.5 Path analysis modelling with AMOS (AMOS output) 834
43.6 Path analysis with calculations added (AMOS output) 835
43.7 A structural equation model of homework motivation and worry on homework achievement 836
43.8 A structural equation model 837
44.1 Choosing statistical tests for parametric and non-parametric data 842

Tables

1.1 Alternative bases for interpreting social reality 7
3.1 Habermas's knowledge-constitutive interests and the nature of research 53
3.2 Differing approaches to the study of behaviour 66
6.1 Mill's method of agreement 89
6.2 Mill's method of difference 90
6.3 Mill's method of agreement and difference 90
6.4 Mill's method of concomitant variation 91
6.5 Mill's method of residues 91
6.6 Science choices of secondary school males and females 93
6.7 Science choices of male and female secondary students with Teacher A or B 93
6.8 Further science choices of male and female secondary students with Teacher A or B 94
11.1 Purposes and kinds of research 174
11.2 Three examples of planning for time frames for data collection in mixed methods research 181
11.3 Elements of research designs 187
11.4 A matrix for planning research 189
11.5 A planning matrix for research 196
12.1 Sample size, confidence levels and confidence intervals for random samples 206
12.2 Sample sizes for categorical and continuous data 207
12.3 Minimum sample sizes at power level 0.80 with two-tailed test 212
12.4 Types of sample 227
14.1 Comparing validity in quantitative and qualitative research 249
14.2 Comparing reliability in quantitative and qualitative research 272
17.1 Maximum variation for low response rates in a yes/no question for a 50/50 distribution 343
17.2 The characteristics, strengths and weaknesses of longitudinal, cross-sectional, trend analysis and retrospective longitudinal studies 353
17.3 Advantages and disadvantages of data-collection methods in surveys 358
18.1 Problems and solutions in Internet-based surveys 368
19.1 Continua of data collection, types and analysis in case study research 383
21.1 Research syntheses with different epistemological orientations 433
24.1 Crosstabulation of responses to two key factors in effective leadership 474
24.2 A marking scale in a questionnaire 486
24.3 Potential problems in conducting research 488
25.1 Summary of relative merits of interview versus questionnaire 509
25.2 Strengths and weaknesses of different types of interview 510
25.3 The selection of response mode 517
26.1 A structured observation schedule 546
26.2 Structured, unstructured, natural and artificial settings for observation 556
27.1 A matrix of test items 571
27.2 Compiling elements of test items 571
29.1 Laddering dialogue 598
30.1 Examples of the use of role-play in the literature 624
33.1 The effectiveness of English teaching 658
33.2 The strengths and weaknesses of English language teaching 658
33.3 Teaching methods 659
33.4 Student-related factors 659
34.1 Tabulated data for comparative analysis 673
38.1 Extreme values in the Shapiro-Wilk test (SPSS output) 737
38.2 Tests of normality (SPSS output) 737
38.3 Frequently used Greek letters in statistics 738
39.1 Type I and Type II errors 744
39.2 Effect sizes for difference and association 746
39.3 Mean and standard deviation in an effect size (SPSS output) 747
39.4 The Levene test for equality of variances (SPSS output) 748
39.5 Mean and standard deviation in a paired sample test (SPSS output) 748

39.6 Difference test for a paired sample (SPSS output) 748
39.7 Effect size in Analysis of Variance (SPSS output) 748
40.1 Frequencies and percentages of general stress level of teachers 755
40.2 Frequencies and percentages for a course evaluation (SPSS output) 757
40.3 Crosstabulation by totals (SPSS output) 758
40.4 Crosstabulation by row totals (SPSS output) 759
40.5 Rating scale of agreement and disagreement 759
40.6 Satisfaction with a course 760
40.7 Combined categories of rating scales 760
40.8 Representing combined categories of rating scales 760
40.9 A bivariate crosstabulation (SPSS output) 761
40.10 A bivariate analysis of parents' views on public examinations 761
40.11 A trivariate crosstabulation 761
40.12 Distribution of test scores (SPSS output) 762
40.13 Common measures of relationship 766
40.14 Percentage of public library members by their social class origin 767
40.15 A Pearson product moment correlation (SPSS output) 769
40.16 Correlation between score on mathematics test and how easy the students find mathematics (SPSS output) 773
40.17 Correlation between score on mathematics test and how easy the students find mathematics, controlling for students' interest in mathematics (SPSS output) 773
40.18 Correlation between score on mathematics test and how easy the students find mathematics, controlling for students' liking of mathematics (SPSS output) 773
40.19 Identifying unreliable items in Cronbach's alpha (SPSS output) 775
41.1 Means and standard deviations for a t-test (SPSS output) 778
41.2 The Levene test for equality of variances in a t-test (SPSS output) 778
41.3 A t-test for leaders and teachers (SPSS output) 779
41.4 The Levene test for equality of variances between leaders and teachers (SPSS output) 779
41.5 Means and standard deviations in a paired samples t-test (SPSS output) 780
41.6 The paired samples t-test (SPSS output) 780
41.7 Descriptive statistics for Analysis of Variance (SPSS output) 782
41.8 SPSS output for one-way Analysis of Variance (SPSS output) 782
41.9 The Tukey test (SPSS output) 783
41.10 Homogeneous groupings in the Tukey test (SPSS output) 784
41.11 Means and standard deviations in a two-way Analysis of Variance (SPSS output) 786
41.12 The Levene test of equality of variances in a two-way analysis of variance (SPSS output) 786
41.13 Between-subject effects in two-way Analysis of Variance (SPSS output) 787
41.14 A 2 × 3 contingency table for chi-square 791
41.15 A 2 × 5 contingency table for chi-square 791
41.16 A crosstabulation for a Mann-Whitney U test (SPSS output) 794
41.17 SPSS output on rankings for the Mann-Whitney U test (SPSS output) 795
41.18 The Mann-Whitney U value and significance level (SPSS output) 795
41.19 Frequencies and percentages of variable one in a Wilcoxon test (SPSS output) 796
41.20 Frequencies and percentages of variable two in a Wilcoxon test (SPSS output) 796
41.21 Ranks and sums of ranks in a Wilcoxon test (SPSS output) 796
41.22 Significance level in a Wilcoxon test (SPSS output) 797
41.23 Crosstabulation for the Kruskal-Wallis test (SPSS output) 798
41.24 Rankings for the Kruskal-Wallis test (SPSS output) 798
41.25 Significance levels in a Kruskal-Wallis test (SPSS output) 799
41.26 Frequencies for variable one in the Friedman test (SPSS output) 800
41.27 Frequencies for variable two in the Friedman test (SPSS output) 800
41.28 Frequencies for variable three in the Friedman test (SPSS output) 800
41.29 Rankings for the Friedman test (SPSS output) 800
41.30 Significance level in the Friedman test (SPSS output) 801
42.1 A summary of the R, R square and adjusted R square in regression analysis (SPSS output) 804
42.2 Significance level in regression analysis (SPSS output) 805
42.3 The beta coefficient in a regression analysis (SPSS output) 805

42.4 A summary of the R, R square and adjusted R square in multiple regression analysis (SPSS output) 807
42.5 Significance level in multiple regression analysis (SPSS output) 807
42.6 The beta coefficients in a multiple regression analysis (SPSS output) 807
42.7 Coefficients table for examining collinearity through Tolerance and the Variance Inflation Factor (VIF) (SPSS output) 809
42.8 Checking for outliers (SPSS output) 811
42.9 Casewise diagnostics (outlier cases) (SPSS output) 811
42.10 Relative beta weightings of independent variables on teacher stress (SPSS output) 812
42.11 Altered weightings in beta coefficients (SPSS output) 813
42.12 Further altered weightings in beta coefficients (SPSS output) 814
42.13 Extract from area under the normal curve of distribution 816
43.1 Initial SPSS output for Principal Components Analysis (SPSS output) 821
43.2 The rotated components matrix in Principal Components Analysis (SPSS output) 824
43.3 Checking the correlation table for suitability of the data for factorization (SPSS output) 827
43.4 Checking the suitability of the data for factor analysis (SPSS output) 828
43.5 Checking the variance explained by each item (SPSS output) 829
43.6 Extraction of two factors (SPSS output) 830
43.7 Pattern matrix (SPSS output with markings added) 830
44.1 Identifying statistical tests for an experiment 840
44.2 Statistical tests to be used with different numbers of groups of samples 840
44.3 Types of statistical tests for four scales of data 841
44.4 Statistics available for different types of data 843
44.5 Assumptions of statistical tests 845
45.1 Dataset where condition is sufficient but not necessary for the outcome 851
45.2 Dataset where condition is necessary but not sufficient for the outcome 851
45.3 Truth table for U = f(HA, HC), using 0.8 threshold for consistency with sufficiency 852
45.4 Full truth table for U = f(HA, HC, ME, M), using 0.8 threshold for consistency with sufficiency 853

Boxes

1.1 The functions of science 11
1.2 The hypothesis 13
1.3 Stages in the development of a science 13
1.4 An eight-stage model of the scientific method 14
1.5 A classroom episode 18
7.1 The costs/benefits ratio 113
7.2 Absolute ethical principles in social research 114
7.3 Guidelines for reasonably informed consent 122
7.4 Conditions and guarantees proffered for a school-based research project 135
7.5 Negotiating access checklist 136
7.6 Ethical principles for the guidance of action researchers 139
7.7 Ethical principles for educational research (to be agreed *before* the research commences) 142
9.1 Issues to be faced in choosing a piece of research 163
11.1 The elements of research design 178
11.2 Types of information in a literature review 183
11.3 A checklist for planning research 200
13.1 Issues of sampling and access in sensitive research 233
13.2 Ethical issues in sensitive research 235
13.3 Researching powerful people 240
13.4 Researching powerless and vulnerable groups 241
13.5 Key questions in considering sensitive educational research 244
14.1 Principal sources of bias in life history research 283
17.1 Advantages of cohort over cross-sectional designs 352
19.1 Possible advantages of case study 379
19.2 Nisbet and Watt's (1984) strengths and weaknesses of case study 379
19.3 The case study and problems of selection 388
20.1 The effects of randomization 394
24.1 Example of a covering letter 496
24.2 A second example of a covering letter 497
24.3 A guide for questionnaire construction 498
25.1 Attributes of ethnographers as interviewers 507
25.2 Guidelines for the conduct of interviews 521
26.1 Non-participant observation: a checklist of design tasks 547
30.1 A role-playing exercise 609
30.2 The Stanford Prison experiment 613
30.3 Managing role-play effectively 619
30.4 Practical points when setting up a multiple role-play procedure 622
31.1 Approaching image-based research 639
31.2 Using the image in the interview 639
31.3 Data analysis with image-based research 640
31.4 Ethics and ownership of images 640
35.1 Transcript of a conversation in an infant classroom 689
38.1 SPSS command sequence for calculating skewness and kurtosis 736
38.2 SPSS command sequence for the Shapiro-Wilk and the Kolmogorov-Smirnov tests of normality 736
40.1 SPSS command sequence for crosstabulations 761
40.2 SPSS command sequence for descriptive statistics 765
40.3 SPSS command sequence for correlations 766
40.4 SPSS command sequence for partial correlations 774
40.5 SPSS command sequence for reliability calculation 775
41.1 SPSS command sequence for independent samples t-test 781
41.2 SPSS command sequence for t-test for related (paired) samples 781
41.3 SPSS command sequence for one-way ANOVA with the Tukey test 785
41.4 SPSS command sequence for repeated measure ANOVA with the Tukey test 785
41.5 SPSS command sequence for two-way ANOVA 788
41.6 SPSS command sequence for MANOVA 788

41.7 SPSS command sequence for univariate chi-square 790
41.8 SPSS command sequence for bivariate chi-square with crosstabulations 792
41.9 SPSS command sequence for bivariate chi-square with aggregated data 793
41.10 SPSS command sequence for the Mann-Whitney statistic 795
41.11 SPSS command sequence for the Wilcoxon test 797
41.12 SPSS command sequence for the Kruskal-Wallis statistic 799
41.13 SPSS command sequence for the Friedman test 801
42.1 SPSS command sequence for simple regression 806
42.2 SPSS command sequence for multiple regression 808
42.3 SPSS command sequence for logistic regression 815
42.4 SPSS command sequence for calculating z-scores 817
43.1 SPSS command sequence for Principal Components Analysis 826
43.2 SPSS command sequence for hierarchical cluster analysis 833

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Preface to the eighth edition

We are indebted to Routledge for the opportunity to produce an eighth edition of our book *Research Methods in Education*. The book continues to be received very favourably worldwide; it is the standard text for many courses in research methods and has been translated into several languages.

The eighth edition contains much new material, including entirely new chapters on:

- Paradigms in educational research
- Mixed methods research
- The role of theory in educational research
- Ethics in Internet research
- Research questions and hypotheses
- Historical and documentary research
- Internet surveys
- Meta-analysis, research syntheses and systematic reviews
- Virtual worlds, social network software and netography in educational research
- Using secondary data in educational research
- Statistical significance, effect size and statistical power
- Beyond mixed methods: using Qualitative Comparative Analysis (QCA) to integrate cross-case and within-case analyses.

Whilst retaining the best features of the former edition, the reshaping, updating and new additions undertaken for this new volume now mean that the book covers a greater spread of issues than the previous editions, and in greater depth, catching the contemporary issues and debates in the field. In particular, the following new material has been included:

Part 1:

- Post-positivism, post-structuralism and postmodernism
- Constructionism in educational research
- Subjectivity and objectivity in educational research
- Mixed methods research
- Paradigms, ontology and epistemology in mixed methods research
- Working with mixed methods research
- Stages in mixed methods research
- Value-neutrality in educational research
- The role of theory in educational research
- Types and meanings of theory
- Worked examples of causation in educational research

Part 2:

- Regulatory contexts of ethics
- Sponsored research
- Ethical codes and their limitations
- Ethics and the quality of research
- Power and position

- Reciprocity
- Ethics in data analysis, reporting and dissemination
- Key ethical issues in Internet research
- Challenges to privacy and informed consent in Internet research
- Public and private matters in Internet research
- Ethical codes in Internet research
- Choosing a research project
- Deriving and devising research questions
- Different kinds of research question
- Organizing research questions
- The need for warrants in educational research
- Statistical power in sampling issues
- Sampling in mixed methods research
- Effects of sensitive research on the researcher

Part 3:

- Autoethnography
- Virtual ethnography
- Reflexivity
- Historical and documentary research
- Survey questions
- Low response, non-response and missing data in surveys
- Constructing Internet-based surveys
- Ethical issues in Internet-based surveys
- Typology of case studies
- Generalization in case study
- What makes a good case study researcher?
- Randomized controlled trials
- The importance of randomization
- Concerns about randomized controlled trials
- The limits of averages in randomized controlled trials
- Null hypothesis significance testing
- Participatory action research
- Ethical issues in action research

Part 4:

- Considering the demands on the respondent in questionnaire construction
- Administering questionnaires
- Planning and conducting interviews
- Prompts and probes in interviews
- Interviewing children
- Group interviewing
- Telephone interviewing
- Online interviewing
- Key issues in observations
- Video observations
- Using secondary data in educational research
- Sources and types of secondary data
- Advantages of, and challenges in, using secondary data
- Ethical issues in using secondary data
- Examples of secondary data analysis
- Working with secondary data
- Photo-elicitation

- Provision of images in educational research
- Video and moving images in educational research
- Ethical practices in visual research

Part 5:

- Elements of qualitative data analysis
- Making sense of qualitative data
- Computer Assisted Qualitative Data Analysis (CAQDAS)
- Examples of CAQDAS
- Reflexivity in CAQDAS
- Strengths and weaknesses of CAQDAS
- Advances in CAQDAS
- Ways of organizing and presenting qualitative data analysis
- Examples of coding qualitative data with software (CAQDAS)
- Concerns about coding
- Content analysis with software (CAQDAS)
- Worked examples of using software in analysing visual data (CAQDAS)
- Challenges in interpreting visual images
- Analysing moving images
- Versions of, stages in and concerns about grounded theory
- Moderator and mediator variables
- Confidence intervals
- Concerns about statistical significance
- Hypothesis testing and null hypothesis significance testing
- Statistical power
- Coping with missing data
- 'Safety checks' and assumptions when using statistics (for all the statistics addressed)
- Command sequences for running statistics in the Statistical Package for the Social Sciences (SPSS)
- Reporting statistical analysis
- Cluster analysis
- What to look for in factor analysis output
- Additions to guidance charts when choosing statistics
- Using Qualitative Comparative Analysis (QCA) to integrate cross-case and within-case analyses
- Starting from quantitative and qualitative stances in QCA
- Ragin's QCA
- Worked examples of QCA

A signal feature of this edition is the inclusion of very many extensively worked examples and more figures, diagrams and graphics to illustrate and summarize key points clearly. Several of the tables in Part 5 include SPSS and NVivo output, so that readers can check their own SPSS and NVivo analysis against the examples provided.

To accompany this volume, a companion website provides a comprehensive range of materials to cover all aspects of research (including summaries of every chapter on PowerPoint slides), exercises and examples, explanatory material and further notes, website references, SPSS data files, QSR NVivo data files, together with further statistics and statistical tables. These are indicated in the book.

This book stands out for its practical advice that is securely rooted in theory and up-to-date discussion from a range of sources. We hope that it will continue to constitute the first 'port of call' for educational researchers and continue to be the definitive text in its field.

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Part 1

The context of educational research

This part introduces readers to different research traditions, with the advice that ‘fitness for purpose’ must be the guiding principle: different research paradigms for different research purposes. A major message in this part is that the nature and foundations of educational research have witnessed a proliferation of paradigms over time. From the earlier days of either quantitative or qualitative research have arisen the several approaches introduced here.

This part commences by introducing positivist and scientific contexts of research and some strengths and weaknesses of these for educational research, followed by post-positivist views of research. As an alternative paradigm, the cluster of approaches that can loosely be termed interpretive, naturalistic, phenomenological, interactionist and ethnographic are brought together, and their strengths and weaknesses for educational research are examined. Postmodernist and post-structuralist approaches are also introduced, and these lead into an introduction to complexity theory in educational research. The paradigm of mixed methods research is introduced, and its foundations, strengths, weaknesses, contribution to and practices in educational research are discussed.

Critical theory as a paradigm of educational research is discussed, and its implications for the research are indicated in several ways, resonating with curriculum research, participatory research, feminist research, post-colonial research and queer theory. These are concerned not only with understanding a situation or phenomenon but with *changing* it, often with an explicit political agenda. Critical theory links the conduct of educational research with politics and policy making, and this is reflected in the discussions of research and evaluation, noting how some educational research has become evaluative in nature.

This part includes a new chapter on the role of theory in educational research, indicating its several meanings, its origins and roles in educational research, and what makes a theory interesting and useful. It also includes the discussion of causation in educational research and key elements in understanding and working with causation.

The term *research* itself has many meanings. We restrict its usages here to those activities and undertakings aimed at developing a science of behaviour, the word *science* itself implying both normative and interpretive perspectives. Accordingly, when we speak of social research, we have in mind the systematic and scholarly application of the principles of a science of behaviour to the problems of people within their social contexts, and when we use the term educational research, we likewise have in mind the application of these same principles to the problems of teaching and learning within education and to the clarification of issues having direct or indirect bearing on these concepts.

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The nature of enquiry

Setting the field

CHAPTER 1

This large chapter explores the context of educational research. It sets out several foundations on which different kinds of empirical research are constructed:

- the search for understanding
- paradigms of educational research
- scientific and positivistic methodologies
- naturalistic and interpretive methodologies
- post-positivism, post-structuralism and postmodernism
- complexity theory in educational research

Educational researchers cannot simply 'read off' the planning and conduct of research as though one were reading a recipe for baking a cake. Nor is the planning and conduct of research the laboratory world or the field study of the natural scientist. Rather, it is to some degree an art, an iterative and often negotiated process and one in which there are typically trade-offs between what one would like to do and what is actually possible. This book is built on that basis: educational research, far from being a mechanistic exercise, is a deliberative, complex, subtle, challenging, thoughtful activity and often a messier process than researchers would like it to be. This book provides some tools for such deliberation and planning, and hopefully some answers, but beyond that it is for the researcher to consider how to approach, plan, conduct, validate and evaluate the research, how to develop and test theory, how to study and investigate educational matters, how to balance competing demands on the research, and so on. There is no one best way to plan and conduct research, just as there is no one single 'truth' to be discovered. Life is not that easy, unidimensional or straightforwardly understood, just as there are no simple dichotomies in educational research (e.g. quantitative *or* qualitative, objective *or* subjective). Rather, we live in a pluralistic world with many purposes and kinds of research, many realities and lived experiences to catch, many outcomes, theories and explanations, many discoveries to be made, and many considerations and often contradictions or sensitivities to be addressed in the planning and conduct of the research.

Whilst arguing against simple foundationalism, this chapter sets out some conceptions of research which researchers may find helpful in characterizing and deliberating about their studies. The chapter considers paradigms and their possible contribution to educational research, positivism, post-positivism, post-structuralism, postmodernism and interpretive approaches.

1.1 Introduction

Our analysis takes an important notion from Hitchcock and Hughes (1995, p. 21), who suggest that ontological assumptions (assumptions about the nature of reality and the nature of things) give rise to epistemological assumptions (ways of researching and enquiring into the nature of reality and the nature of things); these, in turn, give rise to methodological considerations; and these, in turn, give rise to issues of instrumentation and data collection. Added to ontology and epistemology is axiology (the values and beliefs that we hold). This view moves us beyond regarding research methods as simply a technical exercise to being concerned with understanding the world; this is informed by how we view our world(s), what we take understanding to be, what we see as the purposes of understanding and what is deemed valuable.

1.2 The search for understanding

People have long been concerned to come to grips with their environment and to understand the nature of the phenomena it presents to their senses. The means by which they set out to achieve these ends may be classified into three broad categories: *experience*, *reasoning* and *research* (Mouly, 1978). Far from being independent and mutually exclusive, however, these categories are complementary and overlapping, features most readily in evidence where solutions to complex problems are sought.

In our endeavours to come to terms with day-to-day living, we are heavily dependent upon experience and authority. However, as tools for uncovering ultimate truth, they have limitations. The limitations of personal experience in the form of common-sense knowing, for instance, can quickly be exposed when compared with features of the scientific approach to problem solving. Consider, for example, the striking differences in the way in which theories are used. Laypeople base them on haphazard events and use them in a loose and uncritical manner. When they are required to test them, they do so in a selective fashion, often choosing only that evidence which is consistent with their hunches and ignoring that which is counter to them. Scientists, by contrast, construct their theories carefully and systematically. Whatever hypotheses they formulate have to be tested empirically so that their explanations have a firm basis in fact. And there is the concept of control distinguishing the layperson's and the scientist's attitude to experience. Laypeople may make little or no attempt to control any extraneous sources of influence when trying to explain an occurrence. Scientists, on the other hand, only too conscious of the multiplicity of causes for a given occurrence, adopt definite techniques and procedures to isolate and test the effect of one or more of the alleged causes. Finally, there is the difference of attitude to the relationships among phenomena. Laypeople's concerns with such relationships may be loose, unsystematic and uncontrolled; the chance occurrence of two events in close proximity is sufficient reason to predicate a causal link between them. Scientists, however, display a much more serious professional concern with relationships and only as a result of rigorous experimentation, investigation and testing will they postulate a relationship between two phenomena.

People attempt to comprehend the world around them by using three types of reasoning: *deductive reasoning*, *inductive reasoning* and the *combined inductive-deductive* approach. Deductive reasoning is based on the syllogism, which was Aristotle's great contribution to formal logic. In its simplest form the syllogism consists of a major premise based on an a priori or self-evident proposition, a minor premise providing a particular instance, and a conclusion. Thus:

> All planets orbit the sun;
> The earth is a planet;
> Therefore the earth orbits the sun.

The assumption underlying the syllogism is that through a sequence of formal steps of logic, from the general to the particular, a valid conclusion can be deduced from a valid premise. Its chief limitation is that it can handle only certain kinds of statement. The syllogism formed the basis of systematic reasoning from the time of its inception until the Renaissance. Thereafter its effectiveness was diminished because it was no longer related to observation and experience and became merely a mental exercise. One of the consequences of this was that empirical evidence as the basis of proof was superseded by authority and the more authorities one could quote, the stronger one's position became.

The history of reasoning was to undergo a dramatic change in the 1600s when Francis Bacon began to lay increasing stress on the observational basis of science. Being critical of the model of deductive reasoning on the grounds that its major premises were often preconceived notions which inevitably bias the conclusions, he proposed in its place the method of inductive reasoning by means of which the study of a number of individual cases would lead to a hypothesis and eventually to a generalization. Mouly (1978) explains it by suggesting that Bacon's basic premise was that, with sufficient data, even if one does not have a preconceived idea of their significance or meaning, nevertheless important relationships and laws will be discovered by the alert observer.

Of course, there are limits to induction as the accumulation of a series of examples does not *prove* a theory; it only *supports* it. Just because all the swans that I have ever seen are white, it does not prove a theory that all swans are white – one day I might come across a black swan, and my theory is destroyed. Induction places limits on prediction. Discoveries of associations of regularities and frequent repetitions may have limited predictive value. We are reminded of Bertrand Russell's (1959) story of the chicken who observed that he was fed each day by the same man, and, because this had happened every day, it would continue to happen, i.e. the chicken had a theory of being fed, but, as Russell remarks, 'the man who has fed the chicken every day throughout its life at last wrings its neck instead' (p. 35), indicating the limits of prediction based on observation. Or, to put it more formally, theory is underdetermined by empirical evidence (Phillips and Burbules, 2000, p. 17). Indeed Popper (1980) notes that the essence of science, what makes a science a science, is the inherent falsifiability of the propositions (in contrast to the views of the method of science as being one of verifiability, as held by logical positivists).

This is not to discard induction: it is often the starting point for science. Rather, it is to caution against assuming that it 'proves' anything. Bacon's major contribution to science was that he was able to rescue it from the stranglehold of the deductive method whose abuse had brought scientific progress to a standstill. He thus directed the attention of scientists to nature for solutions to people's problems, demanding empirical evidence for verification. Logic and authority in themselves were no longer regarded as conclusive means of proof and instead became sources of hypotheses about the world and its phenomena.

Bacon's inductive method was eventually followed by the inductive-deductive approach which combines Aristotelian deduction with Baconian induction. Here the researcher is involved in a back-and-forth process of induction (from observation to hypothesis, from the specific to the general) and deduction (from hypothesis to implications) (Mouly, 1978). Hypotheses are tested rigorously and, if necessary, revised.

Although both deduction and induction have their weaknesses, their contributions to the development of science are enormous, for example: (1) the suggestion of hypotheses; (2) the logical development of these hypotheses; and (3) the clarification and interpretation of scientific findings and their synthesis into a conceptual framework.

A further means by which we set out to discover truth is *research*. This has been defined by Kerlinger (1970) as the systematic, controlled, empirical and critical investigation of hypothetical propositions about the presumed relations among natural phenomena. Research has three characteristics in particular, which distinguish it from the first means of problem solving identified earlier, namely, experience. First, whereas experience deals with events occurring in a haphazard manner, research is systematic and controlled, basing its operations on the inductive-deductive model outlined above. Second, research is empirical. The scientist turns to experience for validation. As Kerlinger puts it, subjective, personal belief must have a reality check against objective, empirical facts and tests. And third, research is self-correcting. Not only does the scientific method have built-in mechanisms to protect scientists from error as far as is humanly possible, but also their procedures and results are open to public scrutiny by fellow professionals. Incorrect results in time will be found and either revised or discarded (Mouly, 1978). Research is a combination of both experience and reasoning and, as far as the natural sciences are concerned, is to be regarded as the most successful approach to the discovery of truth (Borg, 1963).[1]

1.3 Conceptions of social reality

The views of social science that we have mentioned represent strikingly different ways of looking at social reality and are constructed on correspondingly different ways of interpreting it. We can perhaps most profitably approach these conceptions of the social world by examining the explicit and implicit assumptions underpinning them. Our analysis is based on the work of Burrell and Morgan (1979), who identified four sets of such assumptions.

First, there are assumptions of an ontological kind – assumptions which concern the very nature or essence of the social phenomena being investigated. Thus, the authors ask, is social reality external to individuals – imposing itself on their consciousness from without – or is it the product of individual consciousness? Is reality of an objective nature, or the result of individual cognition? Is it a given 'out there' in the world, or is it created by one's own mind? Is there a world which exists independent of the individual and which the researcher can observe, discovering relationships, regularities, causal explanations, and which can be tested empirically and repeatedly (i.e. under similar conditions) (cf. Pring, 2015, p. 64)? These questions spring directly from what philosophy terms the nominalist–realist debate. The former view holds that objects of thought are merely words and that there is no independently accessible thing constituting the meaning of a word. The realist position, however, contends that objects have an independent existence and are not dependent for it on the knower. The fact that I can see a dog is not simply because of my perception or cognition but because a dog exists independent of me.

The second set of assumptions identified by Burrell and Morgan are of an epistemological kind. These concern the very bases of knowledge – its nature and forms, how it can be acquired and how communicated to other human beings. How one aligns oneself in this particular debate profoundly affects how one will go about uncovering knowledge of social behaviour. The view that knowledge is hard, objective and tangible will demand of researchers an observer role, together with an allegiance to the methods of natural science; to see knowledge as personal, subjective and unique, however, imposes on researchers an involvement with their subjects and a rejection of the ways of the natural scientist. To subscribe to the former is to be positivist; to the latter, anti-positivist or post-positivist.

The third set of assumptions concern human nature and, in particular, the relationship between human beings and their environment. Since the human being is both its subject and object of study, the consequences for social science of assumptions of this kind are far-reaching. Two images of human beings emerge from such assumptions – the one portrays them as responding mechanically and deterministically to their environment, i.e. as products of the environment, controlled like puppets; the other, as initiators of their own actions with free will and creativity, producing their own environments. The difference is between *determinism* and *voluntarism* respectively (Burrell and Morgan, 1979), between *structure* and *agency*. Human action involves some combination of these two, polarized here for the sake of conceptual clarity.

It follows from what we have said so far that the three sets of assumptions identified above have direct implications for the methodological concerns of researchers, since the contrasting ontologies, epistemologies and models of human beings will, in turn, suggest different research methods. Investigators adopting an objectivist (or positivist) approach to the social world and who treat it like the world of natural phenomena as being real and external to the individual will choose from a range of options such as surveys, experiments and the like. Others favouring the more subjectivist (or anti-positivist) approach and who view the social world as being of a much more personal and humanly created kind will select from a comparable range of recent and emerging techniques – accounts, participant observation, interpretive approaches and personal constructs, for example.

Where one subscribes to the view which treats the social world like the natural world – as if it were an external and objective reality – then scientific investigation will be directed at analysing the relationships and regularities between selected factors in that world. It will be concerned with identifying and defining elements and discovering ways in which their relationships can be expressed. Hence, methodological issues, of fundamental importance, are thus the concepts themselves, their measurement and the identification of underlying themes in a search for universal laws which explain and govern that which is being observed (Burrell and Morgan, 1979). An approach characterized by procedures and methods designed to discover general laws may be referred to as *nomothetic*. Here is not the place to debate whether social life is ‘law-like’ (i.e. can be explained by universal laws) in the same way as that mooted in the natural sciences (but see Kincaid, 2004) or whether social life is quintessentially different from the natural sciences such that ‘law-like’ accounts are simply a search for the impossible and untenable.

However, if one favours the alternative view of social reality which stresses the importance of the subjective experience of individuals in the creation of the social world, then the search for understanding focuses upon different issues and approaches them in different ways. The principal concern is with an *understanding* of the way in which individuals and social groups create, modify and interpret the world in which they find themselves. As Burrell and Morgan (1979) observe, emphasis here is placed on explanation and understanding of the unique and the particular individual cases (however defined: see Chapter 19 on case study, in which emphasis is placed on the denotation of what is the case: an individual, a group, a class, an institution etc.) rather than the general and the universal. In its emphasis on the particular and individual case, this approach to understanding individual (however defined) behaviour may be termed *idiographic*.

In this review of Burrell and Morgan’s analysis of the ontological, epistemological, human and methodological assumptions underlying two ways of conceiving social reality, we have laid the foundations for a more extended study of the two contrasting perspectives evident in the practices of researchers investigating human behaviour and, by adoption, educational problems. Figure 1.1 summarizes these assumptions along a subjective/objective dimension. It identifies the four

A scheme for analysing assumptions about the nature of social science

The subjectivist approach to social science				The objectivist approach to social science
Nominalism	←	Ontology	→	Realism
Anti-positivism	←	Epistemology	→	Positivism
Voluntarism	←	Human nature	→	Determinism
Idiographic	←	Methodology	→	Nomothetic

FIGURE 1.1 The subjective-objective dimension

Source: Burrell and Morgan (1979)

sets of assumptions by using terms we have adopted in the text and by which they are known in the literature of social philosophy.

Each of the two perspectives on the study of human behaviour outlined above has profound implications for research in classrooms and schools. The choice of problem, the formulation of questions to be answered, the characterization of students and teachers, methodological concerns, the kinds of data sought and their mode of treatment, all are influenced by the viewpoint held. Some idea of the considerable practical implications of the contrasting views can be gained by examining Table 1.1, which compares them with respect to a number of critical issues within a broadly societal and

TABLE 1.1 ALTERNATIVE BASES FOR INTERPRETING SOCIAL REALITY

	Conceptions of social reality	
Dimensions of comparison	*Objectivist*	*Subjectivist*
Philosophical basis	Realism: the world exists and is knowable as it really is. Organizations are real entities with a life of their own.	Idealism: the world exists but different people construe it in very different ways. Organizations are invented social reality.
The role of social science	Discovering the universal laws of society and human conduct within it.	Discovering how different people interpret the world in which they live.
Basic units of social reality	The collectivity: society or organizations.	Individuals acting singly or together.
Methods of understanding	Identifying conditions or relationships which permit the collectivity to exist. Conceiving what these conditions and relationships are.	Interpretation of the subjective meanings which individuals place upon their action. Discovering the subjective rules for such action.
Theory	A rational edifice built by scientists to explain human behaviour.	Sets of meanings which people use to make sense of their world and behaviour within it.
Research	Experimental or quasi-experimental validation of theory.	The search for meaningful relationships and the discovery of their consequences for action.
Methodology	Abstraction of reality, especially through mathematical models and quantitative analysis.	The representation of reality for purposes of comparison. Analysis of language and meaning.
Society	Ordered. Governed by a uniform set of values and made possible only by those values.	Conflicted. Governed by the values of people with access to power.
Organizations	Goal oriented. Independent of people. Instruments of order in society serving both society and the individual.	Dependent upon people and their goals. Instruments of power which some people control and can use to attain ends which seem good to them.
Organizational pathologies	Organizations get out of kilter with social values and individual needs.	Given diverse human ends, there is always conflict among people acting to pursue them.
Prescription for change	Change the structure of the organization to meet social values and individual needs.	Find out what values are embodied in organizational action and whose they are. Change the people or change their values if you can.

Source: Adapted from Barr Greenfield (1975) organizational framework. Implications of the two perspectives for educational research unfolds in the course of the text.

1.4 Paradigms

Educational research has absorbed several competing views of the social sciences – the scientific view and an interpretive view – and several others that we explore in this book, including critical theory and feminist theory. Some views hold that the social sciences are essentially the same as the natural sciences and are therefore concerned with discovering natural and universal laws regulating and determining individual and social behaviour. The interpretive view, however, while sharing the rigour of the natural sciences and the concern of social science to describe and explain human behaviour, emphasizes how people differ from inanimate natural phenomena and, indeed, from each other. These contending views – and also their corresponding reflections in educational research – stem in the first instance from different conceptions of social realities and of individual and social behaviour. We examine these in a little more detail.

Since the groundbreaking work of Kuhn (1962), approaches to methodology in research have been informed by discussions of ‘paradigms’ and communities of scholars. A paradigm is a way of looking at or researching phenomena, a world view, a view of what counts as accepted or correct scientific knowledge or way of working, an ‘accepted model or pattern’ (Kuhn, 1962, p. 23), a shared belief system or set of principles, the identity of a research community, a way of pursuing knowledge, consensus on what problems are to be investigated and how to investigate them, typical solutions to problems, and an understanding that is more acceptable than its rivals.

A notable example of this is the old paradigm that placed the Earth at the centre of the universe, only to be replaced by the Copernican heliocentric model, as evidence and explanation became more persuasive of the new paradigm. Importantly, one has to note that the old orthodoxy retained its value for generations because it was supported by respected and powerful scientists and, indeed, others (witness the attempts made by the Catholic Church to silence Galileo in his advocacy of the heliocentric model of the universe). Another example is where the Newtonian view of the mechanical universe has been replaced by the Einsteinian view of a relativistic, evolving universe. More recently still, the idea of a value-free, neutral, objective, positivist science has been replaced by a post-positivist, critical realist view of science with its hallmarks of conjecture and refutation (Popper, 1980) and with the ability for falsification being the distinguishing feature of science. Further, social science has recognized the importance of the (subjective) value systems of researchers, phenomenology, subjectivity, the need for reflexivity in research (discussed later in this book), the value of qualitative and mixed methods approaches to research, and the contribution of critical theory and feminist approaches to research methodologies and principles.

Paradigms are not simply methodologies (Hammersley, 2013, p. 15); they are ways of looking at the world, different assumptions about what the world is like and how we can understand or know about it. This raises the question of whether paradigms can live together, whether they are compatible or, since they constitute fundamentally different ways of looking at the world, they are incommensurate (which raises questions for mixed methods research – see Chapter 2). At issue here is the significance of regarding approaches to research as underpinned by different paradigms, an important characteristic of which is their incommensurability with each other (i.e. one cannot hold two distinct paradigms simultaneously as there are no common principles, standards or measures).

As more knowledge is acquired to challenge an existing paradigm, such that the original paradigm cannot explain a phenomenon as well as the new paradigm, there comes about a ‘scientific revolution’, a paradigm shift, in which the new paradigm replaces the old as the orthodoxy – the ‘normal science’ – of the day. Kuhn’s (1962) notions of paradigms and paradigm shifts link here objects of study and communities of scholars, where the field of knowledge or paradigm is seen to be only as good as the evidence and the respect in which it is held by ‘authorities’.

Part 1 sets out several paradigms of educational research and these are introduced in Chapters 1 to 3.

Social science research is marked by paradigmatic pluralism and multiple ways of construing paradigms. For example, Pring (2015) contrasts two paradigms (pp. 63–74). The first paradigm espouses the view that there is an objective reality which exists independent of the individual and comprises causally interacting elements which are available for observation; that different sciences (e.g. social, physical) can be used to define that reality once consensus has been reached on what that objective reality is; that the research is replicable and cumulative, i.e. a scientifically rooted body of knowledge can be gathered and checked for correspondence to the world as it is (the correspondence theory of truth) (pp. 63–4). Such a view resonates with Hammersley’s (2013) summary of quantitative research which is characterized by hypothesis testing, numerical data, 'procedural objectivity', generalization, the identification of 'systematic patterns of association' and the isolation and control of variables (pp. 10–11).

The second paradigm, by contrast, espouses the view that the world consists of ideas, i.e. a social construction, and that researchers are part of the world which they are researching, that meanings are negotiated between participants (including the researcher), that an objective test of truth is replaced by a consensus theory of truth, that ideas of the world do not exist independently of those who hold them (i.e. require a redefinition of 'objective' and 'subjective'), that multiple realities exist and that what is being researched is context-specific (Pring, 2015, pp. 65–6). Such a view accords with Hammersley's definition of qualitative research as that which uses less structured data, which emphasizes the central place of subjectivity in the research process and which studies 'a small number of naturally occurring cases in detail' using verbal rather than statistical analysis (Hammersley, 2013, p. 12).

However, Pring's (2015) point is not simply to set out these two paradigms, but to argue that they constitute a false dualism that should be rejected, as they artificially compel the researcher to make an either/or choice of paradigms and, thereby, misrepresent the world as multiply meaningful and both independent of and part of the researcher, not only a social construction. He argues (p. 69) that, just as an independent physical world must exist in order for researchers to construe it, the same can be said of the social world – there must be independent actors and social worlds in order for apperception and social construction of it to make sense.

Pring cautions against adopting a priori either a quantitative or qualitative view of the world as this massively over-simplifies the real world, which is complex and complicated. Rather, how we pursue the research depends on what the research is about, and this recognizes that social constructions vary from social group to social group and humans can be both the object and subject of research (2015, p. 73).

Pring is not alone in characterizing different paradigms of educational research. For example, Creswell (2013) notes four 'philosophical worldviews' (pp. 7ff.): post-positivism, constructivism, advocacy/participatory and pragmatism. These are discussed in Chapters 2 and 3. Here we note that the advocacy/participatory paradigm concerns the disempowered and marginalized, and it studies oppression and lack of voice; this brings it under the umbrella of critical approaches which we discuss in Chapter 3, including gender, race, ethnicity, disability, sexual orientation, socio-economic status and differentials of power that prop up inequality.

Lather (2004) sets out four paradigms: prediction (positivism); understanding (interpretive approaches); emancipatory (critical theoretical approaches); and deconstruction (post-structuralist). We discuss these in Chapters 1 to 3. Lukenchuk (2013) identifies six paradigms which, she notes, are not exhaustive (pp. 66ff.):

- Empirical-analytic (empiricist; scientific; concerned with prediction and control; quantitative; experimental; correlational; causal; explanatory; probabilistic; fallibilistic; concerned with warrants for knowledge claims; quantitative);
- Pragmatic (focus on 'what works'; trial and error; problem-centred; practical; experimental; action oriented; utility oriented; practitioner research; qualitative and quantitative);
- Interpretive (hermeneutic and existential understanding; meaning-making; phenomenological; qualitative; naturalistic; constructivist; interactionist; verstehen approaches; ethnographic; qualitative);
- Critical (ideology-critical; concerned with analysis of power and ideology; consciousness-raising; emancipatory and concerned with advocacy/participatory approaches; transformatory; politically oriented and activist; qualitative and quantitative);
- Post-structuralist (anti-foundation knowledge; deconstructionist; interpretation of life as discourse and texts; transformative; qualitative);
- Transcendental (asserts reason, intuition, mysticism, revelation as ways of knowing: mind, body, soul and spirit; life as directed by an 'internal moral compass'; foundational; qualitative).

This is not to say that paradigms necessarily *drive* the research, as research is driven by the purposes of the research. Indeed we can ask whether we need paradigmatic thinking at all in order to do research. Rather, it is to say that the purposes and nature of the research may be clarified by drawing on one or more of these paradigms; the paradigms can clarify and organize the thinking about the research. Further, it is not to say that these paradigms each have an undisputed coherence, unity or unproblematic singularity of conception. Rather, they are characterizations, ideal types, typifications and simplifications for ease of initial understanding, recognizing that this blurs the many variations that lie within each of them, and, indeed, may overlook the overlaps between them; each paradigm is not all of a single type and they are by no means mutually exclusive. To consider them as mutually exclusive is to prolong the unnecessary 'paradigm wars' to which Gage (1989) alluded so compellingly.

Because of its significance for the epistemological basis of social science and its consequences for educational research, we devote discussion in this chapter to the debate on positivism and anti-positivism/post-positivism, and on alternative paradigms and rationales for understanding educational research.

1.5 Positivism

Although positivism has been a recurrent theme in the history of western thought from the Ancient Greeks to the present, it is historically associated with the nineteenth-century French philosopher, Auguste Comte, who was the first thinker to use the word for a philosophical position (Beck, 1979) and who gave rise to sociology as a distinct discipline. His positivism turns to observation and reason as means of understanding behaviour, i.e. empirical observation and verification; explanation proceeds by way of scientific description. In his study of the history of the philosophy and methodology of science, Oldroyd (1986) says that, in this view, social phenomena could be researched in ways similar to natural, physical phenomena, i.e. generating laws and theories that could be investigated empirically.

Comte's position was to lead to a general doctrine of positivism which held that all genuine knowledge is based on sensory experience and can only be advanced by means of observation and experiment: the scientific method. Following in the empiricist tradition, it limited enquiry and belief to what can be firmly established and in thus abandoning metaphysical and speculative attempts to gain knowledge by reason alone, the movement developed a rigorous orientation to social facts and natural phenomena to be investigated empirically (Beck, 1979). Taking account of this, matters of values were out of court for the positivist, as they were not susceptible to observation evidence, i.e. there is a separation between facts and values.

With its emphasis on observational evidence and the scientific method, positivism accords significance to sensory experience (empiricism), observational description (e.g. ruling our inferences about actors' intentions, thoughts or attitudes), operationalism, 'methodical control', measurement, hypothesis testing and replicability through the specification of explicit and transparent procedures for conducting research (Hammersley, 2013, pp. 23–4). Hammersley notes that the terms 'positivism' and 'empiricism' are often regarded as synonymous with each other (p. 23), but to equate positivism simply with quantitative approaches is misguided, as qualitative data are equally well embraced within empiricism. Indeed he notes that ethnographers and discourse analysts rely on careful observational data (pp. 24–5).

Though the term positivism is used by philosophers and social scientists, a residual meaning derives from an acceptance of natural science as the paradigm of human knowledge (Duncan, 1968). This includes the following connected suppositions, identified by Giddens (1975). First, the methodological procedures of natural science may be directly applied to the social sciences. Positivism here implies a particular stance concerning the social scientist as an observer of social reality. Second, the end-product of investigations by social scientists can be formulated in terms parallel to those of natural science. This means that their analyses must be expressed in laws or law-like generalizations of the same kind that have been established in relation to natural phenomena. Positivism claims that science provides us with the clearest possible ideal of knowledge.

Where positivism is less successful, however, is in its application to the study of human behaviour, where the immense complexity of human nature and the elusive and intangible quality of social phenomena contrast strikingly with the order and regularity of the natural world. This point is apparent in the contexts of classrooms and schools where the problems of teaching, learning and human interaction present the positivistic researcher with a mammoth challenge.

We now look more closely at some of the features of the scientific method that is underpinned by positivism.

1.6 The assumptions and nature of science

We begin with an examination of the tenets of scientific faith: the kinds of assumptions held by scientists, often implicitly, as they go about their daily work. First, there is the assumption of *determinism*. This means simply that events have causes; that events are determined by other circumstances; and science proceeds on the belief that these causal links can eventually be uncovered and understood. Moreover, not only are events in the natural world determined by other circumstances, but there is regularity about the way in which they are determined: the universe does not behave capriciously. It is the ultimate aim of scientists to formulate laws to account for the happenings in the world, thus giving them a firm basis for prediction and control.

The second assumption is that of *empiricism*, which holds that certain kinds of reliable knowledge can only derive from experience. This is an example of foundationalism. In this case, to quote the philosopher John

Locke (1959): 'whence has it [the mind] all the materials of reason and knowledge? To this, I answer, in one word, from experience. In that all knowledge is founded; and from that it ultimately derives itself' (p. 26). Experience means sensory experience, and this contrasts with the rationalist epistemology in which reason rules supreme. In empiricism, experience alone provides the warrant for, or justification of, a knowledge claim, which is brought to the scientific community for acceptance. Such empiricism gives rise to the need for the operationalization of concepts, for example, creativity, intelligence, ability (Phillips and Burbules, 2000, p. 10), in order for them to be observable. Empiricism (and positivism) does not preclude non-experimental studies, nor does it prescribe only quantitative research.

In practice, empiricism means scientifically that the tenability of a theory or hypothesis depends on the nature of the empirical evidence for its support. 'Empirical' here means that which is verifiable by observation, direct experience and evidence, data-yielding proof or strong confirmation, in probability terms, of a theory or hypothesis in a research setting.

Mouly (1978) identifies five steps in the process of empirical science:

1. *Experience* – the starting point of scientific endeavour at the most elementary level;
2. *Classification* – the formal systematization of otherwise incomprehensible masses of data;
3. *Quantification* – a more sophisticated stage where precision of measurement allows more adequate analysis of phenomena by mathematical means;
4. *Discovery of relationships* – the identification and classification of functional relationships among phenomena;
5. *Approximation to the truth* – science proceeds by gradual approximation to the truth.

The third assumption underlying the work of the scientist is the principle of *parsimony*. The basic idea is that phenomena should be explained in the most economical way possible. As Einstein was known to remark, one should make matters as simple as possible, but no simpler! The first historical statement of the principle was by William of Occam when he said that explanatory principles (entities) should not be needlessly multiplied ('Occam's razor'), i.e. that it is preferable to account for a phenomenon by two concepts rather than three; that a simple theory is to be preferred to a complex one.

The final assumption, that of *generality*, played an important part in both the deductive and inductive methods of reasoning. Indeed, historically speaking, it was the problematic relationship between the concrete particular and the abstract general that was to result in two competing theories of knowledge – the rational and the empirical. Beginning with observations of the particular, scientists set out to generalize their findings to the world at large. This is because they are concerned ultimately with explanation. Of course, the concept of generality presents much less of a problem to natural scientists working chiefly with inanimate matter than to human scientists who, of necessity having to deal with samples of larger human populations, must exercise great caution when generalizing their findings to the particular parent populations.

We come now to the core question: What is science? Kerlinger (1970) points out that in the scientific world itself two broad views of science may be found: the *static* and the *dynamic*. The *static* view, which has particular appeal for laypeople, is that science is an activity that contributes systematized information to the world. The work of the scientist is to uncover new facts and add them to the existing corpus of knowledge. Science is thus seen as an accumulated body of

BOX 1.1 THE FUNCTIONS OF SCIENCE

1. Its problem-seeking, question-asking, hunch-encouraging, hypotheses-producing function.
2. Its testing, checking, certifying function; its trying out and testing of hypotheses; its repetition and checking of experiments; its piling up of facts.
3. Its organizing, theorizing, structuring function; its search for larger and larger generalizations.
4. Its history-collecting, scholarly function.
5. Its technological side; instruments, methods, techniques.
6. Its administrative, executive and organizational side.
7. Its publicizing and educational functions.
8. Its applications to human use.
9. Its appreciation, enjoyment, celebration and glorification.

Source: Maslow (1954)

findings, the emphasis being chiefly on the present state of knowledge and adding to it.[2] The *dynamic* view, by contrast, conceives science more as an activity, as something that scientists *do*. According to this conception it is important to have an accumulated body of knowledge of course, but what really matter most are the discoveries that scientists make. The emphasis here, then, is more on the heuristic nature of science.

Contrasting views exist on the functions of science. We give a composite summary of these in Box 1.1. For professional scientists, however, science is seen as a way of comprehending the world; as a means of explanation and understanding, of prediction and control. For them the ultimate aim of science is theory, and we discuss this in Chapter 4.

We look now in more detail at two such tools which play a crucial role in science – the concept and the hypothesis.

1.7 The tools of science

Concepts express generalizations from particulars – anger, achievement, alienation, velocity, intelligence, democracy. Examining these examples more closely, we see that each is a word representing an idea: more accurately, a concept is the relationship between the word (or symbol) and an idea or conception. Whoever we are and whatever we do, we all make use of concepts. Naturally, some are shared and used by all groups of people within the same culture – child, love, justice, for example; others, however, have a restricted currency and are used only by certain groups, specialists or members of professions – idioglossia, retroactive inhibition, anticipatory socialization.

Concepts enable us to impose some sort of meaning on the world; through them reality is given sense, order and coherence. They are the means by which we are able to come to terms with our experience. How we perceive the world, then, is highly dependent on the repertoire of concepts that we have. The more we have, the more sense data we can pick up and the surer will be our perceptual (and cognitive) grasp of whatever is 'out there'. If our perceptions of the world are determined by the concepts available to us, it follows that people with differing sets of concepts will tend to view the 'same' objective reality differently – a doctor diagnosing an illness will draw upon a vastly different range of concepts from, say, the restricted and perhaps simplistic notions of the layperson in that context.

So where is all this leading? Simply to this: social scientists have likewise developed, or appropriated by giving precise meaning to, a set of concepts which enable them to shape their perceptions of the world in a particular way, to represent that slice of reality which is their special study. And collectively, these concepts form part of their wider meaning system which permits them to give accounts of that reality, accounts which are rooted and validated in the direct experience of everyday life, for example, the concept of social class which offers researchers 'a rule, a grid, even though vague at times, to use in talking about certain sorts of experience that have to do with economic position, lifestyle, life-chances, and so on' (Hughes, 1976, p. 34).

There are two important points to stress when considering scientific concepts. The first is that they do not exist independently of us: they are our inventions, enabling us to acquire some understanding of nature. The second is that they are limited in number and in this way contrast with the infinite number of phenomena they are required to explain.

A second tool of great importance to the scientist is the *hypothesis*. It is from this that much research proceeds, especially where cause-and-effect or concomitant relationships are being investigated. The hypothesis has been defined by Kerlinger (1970) as a conjectural statement of the relations between two or more variables, or 'an educated guess', though it is unlike an educated guess in that it is often the result of considerable study, reflective thinking and observation. Medawar (1972) writes of the hypothesis and its function as being speculative and imaginative preconceptions or conjectures about what might be true, which are subject to criticism to see if they really are like the phenomenon in question. As he remarks, scientific reasoning is a dialogue between the 'imaginative and the critical', the 'possible and the actual', between 'what might be true and what is in fact the case' (Medawar, 1972, p. 22).

Kerlinger (1970) has identified two criteria for 'good' hypotheses. The first is that hypotheses are statements about the relations between variables; and second, that hypotheses carry clear implications for testing the stated relations. To these he adds two ancillary criteria: that hypotheses disclose compatibility with current knowledge; and that they are expressed as economically as possible. Thus if we conjecture that social class background determines academic achievement, we have a relationship between one variable, social class, and another, academic achievement. And since both can be measured, the primary criteria specified by Kerlinger can be met. Neither do they violate the ancillary criteria he proposed (see also Box 1.2).

Kerlinger further identifies four reasons for the importance of hypotheses as tools of research. First, they organize the efforts of researchers. The relationship expressed in the hypothesis indicates what they should do. They enable them to understand the problem

BOX 1.2 THE HYPOTHESIS

Once one has a hypothesis to work on, the scientist can move forward; the hypothesis will guide the researcher on the selection of some observations rather than others and will suggest experiments. Scientists soon learn by experience the characteristics of a good hypothesis. A hypothesis that is so loose as to accommodate *any* phenomenon tells us precisely nothing; the more phenomena it prohibits, the more informative it is.

A good hypothesis must also have *logical immediacy*, i.e. it must provide an explanation of whatever it is that needs to be explained and not an explanation of other phenomena. Logical immediacy in a hypothesis means that it can be tested by comparatively direct and practicable means. A large part of the *art of the soluble* is the art of devising hypotheses that can be tested by practicable experiments.

Source: Adapted from Medawar (1981)

with greater clarity and provide them with a framework for collecting, analysing and interpreting their data. Second, they are, in Kerlinger's words, the working instruments of theory. They can be deduced from theory or from other hypotheses. Third, they can be tested, empirically or experimentally, resulting in confirmation or rejection. And there is always the possibility that a hypothesis, once supported and established, may become a law. And fourth, hypotheses are powerful tools for the advancement of knowledge because, as Kerlinger explains, they enable us to get outside ourselves. Hypotheses and concepts play a crucial part in the scientific method and it is to this that we now turn our attention.

1.8 The scientific method

If the most distinctive feature of science is its empirical nature, the next most important characteristic is its set of procedures which show not only how findings have been arrived at, but are sufficiently clear for fellow-scientists to repeat them, i.e. to check them out with the same or other materials and thereby test the results. As Cuff and Payne (1979) say: 'A scientific approach necessarily involves standards and procedures for demonstrating the "empirical warrant" of its findings, showing the match or fit between its statements and what is happening or has happened in the world' (Cuff and Payne, 1979, p. 4). For convenience we will call these standards and procedures 'the scientific method', though this can be somewhat misleading, as the combination of the definite article, adjective and singular noun risks conjuring up a single invariant approach to problem solving. Yet there is much more to it than this. The term in fact cloaks a number of methods which vary in their degree of sophistication depending on their function and the particular stage of development a science has reached.

The scientific method initially involves systematic observation, moving to interconnecting ideas coherently and without internal contradictions (creating a scientific model), which is then tested by further observations (Capra and Luisi, 2014). Box 1.3 sets out the sequence of stages through which a science normally passes in its development or, perhaps more realistically, that are constantly present in its progress and on which scientists may draw depending on the kind of information they seek or the kind of problem confronting them.

BOX 1.3 STAGES IN THE DEVELOPMENT OF A SCIENCE

1. Definition of the science and identification of the phenomena that are to be subsumed under it.
2. Observational stage at which the relevant factors, variables or items are identified and labelled; and at which categories and taxonomies are developed.
3. Correlational research in which variables and parameters are related to one another and information is systematically integrated as theories begin to develop.
4. The systematic and controlled manipulation of variables to see if experiments will produce expected results, thus moving from correlation to causality.
5. The firm establishment of a body of theory as the outcomes of the earlier stages are accumulated. Depending on the nature of the phenomena under scrutiny, laws may be formulated and systematized.
6. The use of the established body of theory in the resolution of problems or as a source of further hypotheses.

Of particular interest in our efforts to elucidate the term ‘scientific method’ are stages 2, 3 and 4. Stage 2 is a relatively uncomplicated point at which the researcher is content to observe and record facts and possibly arrive at some system of classification. Much research in the field of education is conducted in this way, for example, surveys and case studies. Stage 3 establishes relationships between variables within a loose framework of inchoate theory. Stage 4 is the most sophisticated stage and often the one that many people equate exclusively with the scientific method. In order to arrive at causality, as distinct from mere measures of association, researchers here design experimental situations in which variables are manipulated to test their chosen hypotheses. This process moves from early, inchoate ideas, to more rigorous hypotheses, to empirical testing of those hypotheses, thence to confirmation or modification of the hypotheses (Kerlinger, 1970).

Hitchcock and Hughes (1995, p. 23) suggest an eight-stage model of the scientific method that echoes Kerlinger. This is represented in Box 1.4.

The elements the researchers fasten on to will naturally be suitable for scientific formulation; this means simply that they will possess quantitative aspects. Their principal working tool will be the hypothesis which, as we have seen, is a statement indicating a relationship (or its absence) between two or more of the chosen elements and stated in such a way as to carry clear implications for testing. Researchers then choose the most appropriate method and put their hypotheses to the test.

1.9 Criticisms of positivism and the scientific method

In spite of the scientific enterprise’s proven success using positivism – especially in the field of natural science – its ontological and epistemological bases have been the focus of sustained and sometimes vehement criticism from some quarters. Beginning in the second half of the nineteenth century, the revolt against positivism occurred on a broad front. Essentially, it has been a reaction against the world picture projected by science which, it is contended, undermines life and mind. The precise target of the anti-positivists’ attack has been science’s mechanistic and reductionist view of nature which, by definition, regards life in measurable terms rather than inner experience, and excludes notions of choice, freedom, individuality and moral responsibility, regarding the universe as a living organism rather than as a machine (e.g. Nesfield-Cookson, 1987).

Here the putative objectivity of science is called into question, and objectivity is treated as problematic. Kettley (2012), for example, notes that objective knowledge is often treated as unproblematic and viewed through simplistic, unacceptably reductionist lenses in which empiricism is reduced to knowing through observation, positivism is viewed as Comte’s rebuttal of metaphysics, that there is a unity between the scientific method and Durkheim’s positivism, and realism is a synonym for undisputed existence (p. 71). However, he contends, objective knowledge is actually contested, subjective meanings affect or refract views of what are generally considered to be objective knowledge and objectivity (e.g. social facts) which do not necessarily reside in the phenomenon itself but in the subjective values of the researcher (p. 72), and that equating the scientific methods with positivism overlooks the important distinction between induction and deduction. Douglas (2004) notes that the very term ‘objective’ is fraught with definitional problems, and he gives several senses in which it is used, including, for example: manipulable, detached, procedural, value-neutral and value-free.

The point is well made: objectivity and objective knowledge are beset with problems, and researchers are well advised to avoid simple dichotomies or absolutist ideal types: objective or subjective, induction or deduction, quantitative or qualitative. Rather, there is no unified objectivist or subjectivist paradigm (Kettley,

BOX 1.4 AN EIGHT-STAGE MODEL OF THE SCIENTIFIC METHOD

Stage 1: Hypotheses, hunches and guesses
Stage 2: Experiment designed; samples taken; variables isolated
Stage 3: Correlations observed; patterns identified
Stage 4: Hypotheses formed to explain regularities
Stage 5: Explanations and predictions tested; falsifiability
Stage 6: Laws developed or disconfirmation (hypothesis rejected)
Stage 7: Generalizations made
Stage 8: New theories

2012, p. 76); objective reality is constructed subjectively; positivism is not a unified, singular, coherent tenet; hypothesis formation is a human act that derives in part from the subjective views of the researcher (and these subjective views can differ sharply); aggregated data do not override or negate the constructions and meanings accorded to a situation by individuals; and the assumption of linear relationships is frustrated by a non-linear world (pp. 76–7).

Another challenge to the claims of positivism came from Søren Kierkegaard, the Danish philosopher, one of the originators of existentialism. Kierkegaard was concerned with individuals and their need to fulfil themselves to the highest level of development. This realization of a person's potential was for him the meaning of existence which he saw as concrete and individual, unique and irreducible, not amenable to conceptualization (Beck, 1979). Features of the age in which we live – the ascendancy of scientific and technological progress – militate against the achievement of this end and contribute to the dehumanization of the individual. In his desire to free people from their illusions, the illusion Kierkegaard was most concerned about was that of objectivity. By this he meant the imposition of rules of behaviour and thought, and the making of a person into an observer set on discovering general laws governing human behaviour. The capacity for subjectivity, he argued, should be regained and retained. This he regarded as the ability to consider one's own relationship to whatever constitutes the focus of enquiry.

Also concerned with the dehumanizing effects of the social sciences is Ions (1977). While acknowledging that they can take much credit for throwing light in dark corners, he expresses serious concern at the way in which quantification and computation, assisted by statistical theory and method, are used. He argues that quantification is a form of collectivism, but that this runs the risk of depersonalization. His objection is not directed at quantification per se, but at quantification when it becomes an end in itself, replacing humane study which seeks to investigate and shed light on the human condition (Ions, 1977). This echoes Horkheimer's (1972) powerful critique of positivism as the mathematization of concepts about nature and of scientism – science's belief in itself as the only way of conducting research and explaining phenomena.

Another forceful critic of the objective consciousness has been Roszak (1970, 1972), who argues that science, in its pursuit of objectivity, is a form of alienation from our true selves and from nature. The justification for any intellectual activity lies in the effect it has on increasing our awareness and degree of consciousness, but this increase, some claim, has been retarded in our time by the excessive influence that the positivist paradigm has exerted on areas of our intellectual life. Holbrook (1977), for example, affording consciousness a central position in human existence and deeply concerned with what happens to it, condemns positivism and empiricism for their bankruptcy of the inner world, morality and subjectivity.

Hampden-Turner (1970) concludes that the social science view of human beings is a restricted image of humans when social scientists concentrate on the repetitive, predictable and invariant aspects of the person; on 'visible externalities' to the exclusion of the subjective world; and on the parts of the person in their endeavours to understand the whole.

Habermas (1972), in keeping with the Frankfurt School of critical theory (discussed in Chapter 3), provides a corrosive critique of positivism, arguing that the scientific mentality has been elevated to an almost unassailable position – almost to the level of a religion (scientism) – as being the only epistemology of the west. In this view all knowledge becomes equated with scientific knowledge. This neglects hermeneutic, aesthetic, critical, moral, creative and other forms of knowledge. It reduces behaviour to technicism.

Positivism's concern for control and, thereby, its appeal to the passivity of behaviourism and for instrumental reason is a serious danger to the more open-ended, creative, humanitarian aspects of social behaviour. Habermas (1972, 1974) and Horkheimer (1972) argue that scientism silences an important debate about values, informed opinion, moral judgements and beliefs. Scientific explanation seems to be the only means of explaining behaviour, and, for them, this seriously diminishes the very characteristics that make humans human. It makes for a society without conscience. Positivism is unable to answer many interesting or important areas of life (Habermas, 1972, p. 300), resonating with Wittgenstein's (1974) comment that when all possible scientific questions have been addressed, they have left untouched the main problems of life.

Other criticisms are commonly levelled at positivistic social science. One is that it fails to take account of our unique ability to interpret our experiences and represent them to ourselves. How we make sense of the social world resides in our distinctively human nature, and we have to take account of this in recognizing that the social world is not the same as an object of science (Pring, 2015, p. 115) (though Durkheim noted that there are 'social facts', i.e. those that transcend individuals' interpretations and constructions). We can, and do, construct theories about ourselves and our world, and we act on these theories. In failing to recognize this, positivistic social science is said to ignore the profound differences between itself and the natural sciences. Social science, unlike natural science, stands in a subject–subject rather than a subject–object relation to its field of study, and works in a pre-interpreted world in the sense that the meanings that subjects hold are part of their construction of the world (Giddens, 1976).

The difficulty in which positivism finds itself is that it regards human behaviour as passive, essentially determined and controlled, thereby ignoring intention, individualism and freedom, i.e. as suffering from the same difficulties that inhere in behaviourism (see Chomsky's (1959) withering criticism). This problem with positivism also rehearses the familiar problem in social theory, namely, the tension between agency and structure (Layder, 1994): humans exercise agency – individual choice and intention – not necessarily in circumstances of their own choosing, but nevertheless they do not behave simply or deterministically like puppets.

Finally, the findings of positivistic social science are often said to be so banal and trivial that they are of little consequence to those for whom they are intended, namely, teachers, social workers, counsellors, managers and the like. The more effort, it seems, that researchers put into their scientific experimentation in the laboratory by restricting, simplifying and controlling variables, the more likely they are to end up with a stripped down, artificial, deterministic view of the world as if it were a laboratory.[3]

These are formidable criticisms; but what alternatives are proposed by the detractors of positivistic social science?

1.10 Post-positivism

The positivist view of the world is of an ordered, controllable, predictable, standardized, mechanistic, deterministic, stable, objective, rational, impersonal, largely inflexible, closed system whose study yields immutable, absolute, universal laws and patterns of behaviour (a 'grand narrative', a 'metanarrative') and which can be studied straightforwardly through the empirical, observational means of the scientific method. It suggests that there are laws of cause and effect, often of a linear nature (a specific cause produces a predictable effect, a small cause (stimulus) produces a small effect (response) and a large cause produces a large effect), which can be understood typically through the application of the scientific method as set out earlier in this chapter. Like a piece of clockwork, there is a place for everything and everything is in its place. It argues for an external and largely singular view of an objective reality (i.e. external to, and independent of, the researcher) that is susceptible to scientific discovery and laws. However, as Lukenchuk (2013) notes, positivism has been discarded as a useful scientific paradigm as it has failed to provide a 'logically unified system of theoretical statements grounded in the certainty of sense experience' (p. 16) and has been superseded by post-positivism.

Post-positivists challenge the positivist view of the world. Here, following Popper (1968, 1980), our knowledge of the world is not absolute but partial, conjectural, falsifiable, challengeable, provisional, probabilistic and changing. Whilst still embracing the scientific method and the acceptance of an objective world, it recognizes that there is no absolute truth, or, at least, not one which is discoverable by humans, but, rather, probabilistic knowledge only. Secure, once-and-for-all foundational knowledge and grand narratives of a singular objective reality, discoverable through empiricism, positivism, behaviourism and rationalism, are replaced by tentative speculation in which multiple perspectives, claims and warrants are brought forward by the researcher (Phillips and Burbules, 2000). The world is multilayered, able to tolerate multiple interpretations, and in which – depending on the particular view of post-positivism that is being embraced – there exist multiple external realities; knowledge is regarded as subjective rather than objective. In short, the values, biographies, perceptions, theories, environment and existing knowledge of researchers influence what is being observed, and this undermines the foundationalism of empiricism with its claims to neutral sensory experience and observation (Phillips and Burbules, 2000, p. 17). As mentioned earlier, theory is underdetermined by evidence, as the same evidence can support several different theories.

Post-positivists argue that facts and observations are theory-laden and value-laden (Feyerabend, 1975; Popper, 1980; Reichardt and Rallis, 1994), facts and theories are fallible, different theories may support specific observations/facts, and social facts, even ways of thinking and observing, are social constructions rather than objectively and universally true (Nisbett, 2005).

Imagine that a researcher observes a class lesson and notices one student winking at the teacher. Is this student being cheeky (a theory of deviant or challenging behaviour), a sign of understanding (a theory of cognition/recognition), a physical problem (Tourette's syndrome), a sign of stress or happiness (a theory of emotional behaviour), a sign of friendliness (a theory of interpersonal non-verbal behaviour), or what? The observation on its own cannot tell us. There is a gap between an observed phenomenon and the explanation or theory of, or a hypothesis about, the phenomenon. As Phillips and Burbules (2000, pp. 18–19) remark, phenomena do not speak for themselves. This gap cannot be bridged by observed evidence alone, but needs help from outside that observed phenomenon, i.e. from non-sensory experience. What we see depends on our viewpoint. This is not to say that there is no correct answer or that multiple interpretations are acceptable (relativism), only that the observation alone is not sufficient to denote meaning.

Out goes foundational knowledge and in comes non-foundational, tentative, conjectural speculation and probabilistic, fallibilistic, imperfect, context-bound knowledge of multiple truths of a situation and multiple realities, whose validity has to be warranted whilst recognizing that such warrants may be overturned in light of future evidence. Here the separation of fact and value in positivism is unsustainable, and the foundationalism of empiricism is replaced by an admission that observation is theory-laden, and our values, perspectives, paradigms, conceptual schemes, even research communities determine what we focus on, how we research, what we deem to be important, what counts as knowledge, what research ‘shows’, how we interpret research findings and what constitutes ‘good’ research.

Post-positivism argues for the continuing existence of an objective reality, i.e. it rejects relativism, but it adopts a pluralist view of multiple, coexisting realities rather than a single reality. Imagine that two people are observing a classroom; one sits at the back of the room, and the other at the front. What they see may differ, but it is still the same classroom. Multiple views are not the same as relativism; multiple truths can coexist. There is an objective reality: the classroom, but there are different views of this, i.e. ‘truth’ is not simply what one of the observers takes it to be, and one frame of reference may differ from another. This raises the issue of bias and value-neutrality in educational research, which we discuss in Chapter 3.

Post-positivism recognizes that we know the world only probabilistically and imperfectly. Whilst not rejecting the value of the scientific method (e.g. experimentation), it argues for the reformulation of the strength of theories and claims made from the scientific method, namely, that their strengths are contingent on their ability to withstand ‘severe tests’ of their falsifiability and that their discoveries are subject to future falsification in the light of new evidence. Seen in this light, the gap between natural sciences and social science evaporates. In the post-positivist view of science, characterized by the theory-laden nature of observations, the underdetermination of theory by empirical evidence, the importance of the community of scholars in validating warrants for knowledge, the tentative, conjectural nature of conclusions, and the multiple nature of reality and ‘truths’, the researcher in the natural sciences is in no more or less a privileged position than the social science researcher.

1.11 Alternatives to positivistic and post-positivist social science: naturalistic and interpretive approaches

Although opponents of positivism within social science subscribe to a variety of schools of thought, each with its own different epistemological viewpoint, they are united by their common rejection of the belief that human behaviour is governed by general, universal laws and characterized by underlying regularities. Moreover, they would agree that the social world can only be understood from the standpoint of the individuals who are part of the ongoing action being investigated and that their model of a person is an autonomous one, not the version favoured by positivist researchers. Such a view is allied to constructivism (Creswell, 2013) and to interpretive approaches to social science (discussed below).

In rejecting the viewpoint of the detached, objective observer – a mandatory feature of traditional research – anti-positivists and post-positivists would argue that individuals’ behaviour can only be understood by the researcher sharing their frame of reference: understanding of individuals’ interpretations of the world around them has to come from the inside, not the outside. Social science is thus seen as a subjective rather than an objective undertaking, as a means of dealing with the direct experience of people in specific contexts, where social scientists understand, explain and demystify social reality through the eyes of different participants; the participants themselves define the social reality (Beck, 1979). This is not to say that understanding subjective meanings is the only route for the researcher. Rather it is both a question of emphasis and a recognition that there are external matters that impinge on subjective meaning-making and, indeed, that what constitutes ‘subjectivity’ is open to question and to multiple interpretations and consequences, rather than being a unified, coherent singularity (Kettley, 2012, pp. 78–9). Subjective meanings may be as empirically testable as objective statements.

The anti-positivist/post-positivist movement has many hues, for example, postmodernism, post-structuralism and Wittgenstein's work on language games. These have influenced areas of social science such as psychology, social psychology and sociology. In the case of psychology, for instance, a school of humanistic psychology has emerged alongside the coexisting behaviouristic and psychoanalytic schools. Arising as a response to the challenge to combat the growing feelings of dehumanization which characterize many social and cultural milieux, it sets out to study and understand the person as a *whole* (Buhler and Allen, 1972). Humanistic psychologists present a model of people that is positive, active and purposive, and at the same time stresses their own involvement with the life experience itself. They do not stand apart, introspective, hypothesizing. Their interest is directed at the intentional and creative aspects of the human being. The perspective adopted by humanistic psychologists is naturally reflected in their methodology. They are dedicated to studying the individual in preference to the group, and consequently prefer idiographic approaches to nomothetic ones. The implications of the movement's philosophy for education have been drawn by Carl Rogers (1942, 1945, 1969).

Comparable developments within social psychology may be perceived in the 'science of persons' movement. It is argued here that we must use ourselves as a key to our understanding of others and, conversely, our understanding of others as a way of finding out about ourselves, an anthropomorphic model of people. Since anthropomorphism means, literally, the attribution of human form and personality, the implied criticism is that social psychology as traditionally conceived has singularly failed, so far, to model people as they really are, and that social science should treat people as capable of monitoring and arranging their own actions, exercising their agency (Harré and Secord, 1972).

Social psychology's task is to understand people in the light of this anthropomorphic model. Proponents of this 'science of persons' approach place great store on the systematic and painstaking analysis of social episodes, i.e. behaviour in context. In Box 1.5 we give an example of such an episode taken from a classroom study. Note how the particular incident would appear on an interaction analysis coding sheet of a researcher employing a positivistic approach. Note, too, how this slice of classroom life can only be understood by knowledge of the specific organizational background and context in which it is embedded.

BOX 1.5 A CLASSROOM EPISODE

Walker and Adelman describe an incident in the following manner:

> In one lesson the teacher was listening to the boys read through short essays that they had written for homework on the subject of 'Prisons'. After one boy, Wilson, had finished reading out his rather obviously skimped piece of work the teacher sighed and said, rather crossly:
>
> T: Wilson, we'll have to put you away if you don't change your ways, and do your homework. Is that all you've done?
> P: Strawberries, strawberries. (Laughter)

Now at first glance this is meaningless. An observer coding with Flanders Interaction Analysis Categories (FIAC) would write down:

'7'	(teacher criticizes) followed by a,
'4'	(teacher asks question) followed by a,
'9'	(pupil irritation) and finally a,
'10'	(silence or confusion) to describe the laughter.

Such a string of codings, however reliable and valid, would not help anyone to *understand* why such an interruption was funny. Human curiosity makes us want to know *why* everyone laughs – and so, I would argue, the social scientist needs to know too. Walker and Adelman asked subsequently why 'strawberries' was a stimulus to laughter and were told that the teacher frequently said the pupils' work was 'like strawberries – good as far as it goes, but it doesn't last nearly long enough'. Here a casual comment made in the past has become an integral part of the shared meaning system of the class. It can only be comprehended by seeing the relationship as developing over time.

Source: Adapted from Delamont (1976)

The approach to analysing social episodes in terms of the ‘actors’ themselves is known as the ‘ethogenic method’.[4] Unlike positivistic social psychology which ignores or presumes its subjects’ interpretations of situations, ethogenic social psychology concentrates on the ways in which persons construe their social world. By probing their accounts of their actions, it endeavours to come up with an understanding of what those persons were doing in the particular episode.

As an alternative to positivist approaches, naturalistic, qualitative, interpretive approaches of various hue possess particular distinguishing features:

- people are deliberate and creative in their actions, they act intentionally and make meanings in and through their activities (Blumer, 1969);
- people actively construct their social world – they are not the ‘cultural dopes’ or passive dolls of positivism (Becker, 1970; Garfinkel, 1967);
- situations are fluid and changing rather than fixed and static; events and behaviour evolve over time and are richly affected by context – they are ‘situated activities’;
- events and individuals are unique and largely non-generalizable;
- a view that the social world should be studied in its natural state, without the intervention of, or manipulation by, the researcher (Hammersley and Atkinson, 1983);
- fidelity to the phenomena being studied is fundamental;
- people interpret events, contexts and situations, and act on the bases of those events (echoing Thomas’s (1928) famous dictum that if people define their situations as real then they are real in their consequences – if I believe there is a mouse under the table, I will act as though there is a mouse under the table, whether there is or not (Morrison, 1998));
- there are multiple interpretations of, and perspectives on, single events and situations;
- reality is multilayered and complex;
- many events are not reducible to simplistic interpretation, hence ‘thick descriptions’ (Geertz, 1973) are essential rather than reductionism; that is to say, thick descriptions representing the complexity of situations are preferable to simplistic ones;
- researchers need to examine situations through the eyes of participants rather than the researcher.

The anti-positivist/post-positivist movement in sociology is represented by three schools of thought – phenomenology, ethnomethodology and symbolic interactionism. A common thread running through the three schools is a concern with phenomena, that is, the things we directly apprehend through our senses as we go about our daily lives, together with a consequent emphasis on qualitative as opposed to quantitative methodology. The differences between them and the significant roles each phenomenon plays in educational research are such as to warrant a more extended consideration of them in the discussion below.

1.12 A question of terminology: the normative and interpretive paradigms

So far we have introduced and used a variety of terms to describe the numerous branches and schools of thought embraced by the positivist and anti-positivist viewpoints. As a matter of convenience and as an aid to communication, we clarify at this point two generic terms conventionally used to describe these two perspectives and the categories subsumed under each, particularly as they refer to social psychology and sociology. The terms in question are ‘normative’ and ‘interpretive’. The normative paradigm (or model) contains two major orienting ideas (Douglas, 1973): first, that human behaviour is essentially rule-governed; and second, that it should be investigated by the methods of natural science. The interpretive paradigm, in contrast to its normative counterpart, is characterized by a concern for the individual. Whereas normative studies are positivist, theories constructed within the context of the interpretive paradigm tend to be anti-positivist. As we have seen, the central endeavour in the context of the interpretive paradigm is to understand the subjective world of human experience. To retain the integrity of the phenomena being investigated, efforts are made to get inside the person and to understand from within. The imposition of external form and structure is resisted, since this reflects the viewpoint of the observer as opposed to that of the actor directly involved.

Two further differences between the two paradigms may be identified here: the first concerns the concepts of ‘behaviour’ and ‘action’; the second, the different conceptions of ‘theory’. A key concept within the normative paradigm, ‘behaviour’ refers to responses either to external environmental stimuli (e.g. another person, or the demands of society) or to internal stimuli (e.g. hunger, or the need to achieve). In either case, the cause of the behaviour lies in the past. Interpretive approaches, on the other hand, focus on action. This may be thought of as behaviour-with-meaning; it is intentional behaviour, and as such, future oriented. Actions are only meaningful to us insofar as we are able to ascertain the intentions of actors to share their experiences. A large number of our everyday interactions with one another rely on such shared experiences.

As regards theory (see also Chapter 4), normative researchers try to devise general theories of human behaviour and to validate them through the use of research methodologies which, some believe, push them further and further from the experience and understanding of the everyday world and into a world of abstraction. For them, the basic reality is the collectivity; it is external to the actor and manifest in society, its institutions and its organizations. The role of theory is to say how reality hangs together in these forms or how it might be changed so as to be more effective. The researcher's ultimate aim is to establish a comprehensive 'rational edifice', a universal theory, to account for human and social behaviour.

But what of the interpretive researchers? They begin with individuals and set out to understand their interpretations of the world around them. Indeed they use approaches such as '*verstehen*' ('understanding') and hermeneutic (uncovering and interpreting meanings) to try to see the social world through the eyes of the participants, rather than as an outsider. Here is a view which states that, unlike natural scientists, social scientists recognize that human behaviour is intentional, that people interpret situations through their own eyes and act on those interpretations and that the research has to take cognizance of this. People make sense of the world in their own terms, and such interpretation takes place in socio-cultural, socio-temporal and socio-spatial contexts (cf. Marshall and Rossman, 2016). In turn this requires researchers to suspend or forgo their own assumptions about people, cultures and contexts in favour of looking at a situation and its context in its own terms (cf. Hammersley, 2013, p. 27), to set aside the search for universal statements or causal laws, i.e. to adopt idiographic rather than the nomothetic research of the positivists. The nature of research, then, is exploratory in nature, to investigate the interpretations of the situation made by the participants themselves, to understand their attitudes, behaviours and interactions.

In interpretive research, theory is emergent and arises from particular situations; it is 'grounded' in data generated by the research (Glaser and Strauss, 1967) (see Chapter 37). Theory should not precede research but follow it. Investigators work directly with experience and understanding to build their theory on them. The data thus yielded will include the meanings and purposes of those people who are their source. Further, the theory so generated must make sense to those to whom it applies. The aim of scientific investigation for the interpretive researcher is to understand how this reality goes on at one time and in one place and compare it with what goes on in different times and places. Thus theory becomes sets of meanings which yield insight and understanding of people's behaviour. These theories are likely to be as diverse as the meanings and understandings that they seek to explain. From an interpretive perspective, the hope of a universal theory which characterizes the normative outlook gives way to multifaceted images of human behaviour as varied as the situations and contexts supporting them.

1.13 Phenomenology, ethnomethodology, symbolic interactionism and constructionism

There are many variants of qualitative, naturalistic, interpretive approaches (Hitchcock and Hughes, 1995). Marshall and Rossman (2016) identify several such 'genres' (pp. 17–41). Under 'major genres' they include those which: (a) focus on culture and society (e.g. ethnographic approaches); (b) focus on the lived experiences of individuals (phenomenological approaches); (c) focus on texts and talking (sociolinguistic approaches); (d) use grounded theory approaches; and (e) use case studies. Under 'critical genres' they include: (a) critical ethnography and autoethnography; (b) critical discourse analysis; (c) action research and participatory action research; (d) queer theory; (e) critical race theory; (f) feminist theory; (g) cultural studies; and (h) internet/virtual ethnography. We discuss critical theories in Chapter 3. Here we focus on four significant 'traditions' in the interpretive style of research – phenomenology, ethnomethodology, symbolic interactionism and constructionism.

Phenomenology

In its broadest meaning, phenomenology is a theoretical point of view that advocates the study of direct experience taken at face value and which sees behaviour as determined by the phenomena of experience rather than by external, objective and physically described reality (English and English, 1958). Although phenomenologists differ among themselves on particular issues, there is fairly general agreement on the following points identified by Curtis (1978), Hammersley (2013) and Marshall and Rossman (2016), which can be taken as distinguishing features of their philosophical viewpoint:

- A belief in the importance, and even the primacy, of subjective consciousness;
- The importance of documenting and describing immediate experiences;

- The significance of understanding how and why participants' knowledge of a situation comes to be what it is;
- The social and cultural situatedness of actions and interactions, together with participants' interpretations of a situation;
- An understanding of consciousness as active, as meaning bestowing;
- A claim that there are certain essential structures to consciousness of which we gain direct knowledge by a certain kind of reflection. Exactly what these structures are is a point about which phenomenologists differ.

Various strands of development may be traced in the phenomenological movement: we briefly examine two of them – the transcendental phenomenology of Husserl; and existential phenomenology, of which Schutz is perhaps the most characteristic representative.

Husserl, regarded by many as the founder of phenomenology, was concerned with investigating the source of the foundation of science and with questioning the common-sense, 'taken-for-granted' assumptions of everyday life (see Burrell and Morgan, 1979). To do this, he set about opening up a new direction in the analysis of consciousness. His catchphrase was 'back to the things!' which for him meant finding out how things appear directly to us rather than through the media of cultural and symbolic structures. In other words, we are asked to look beyond the details of everyday life to the essences underlying them. To do this, Husserl exhorts us to 'put the world in brackets' or free ourselves from our usual ways of perceiving the world. What is left over from this reduction is our consciousness, of which there are three elements – the 'I' who thinks, the mental acts of this thinking subject, and the intentional objects of these mental acts. His was a call to overcome the subjective–objective divide. The aim, then, of this method of *epoché*, as Husserl called it, is the dismembering of the constitution of objects in such a way as to free us from all preconceptions about the world.

Schutz was concerned with relating Husserl's ideas to the issues of sociology and to the scientific study of social behaviour. Of central concern to him was the problem of understanding the meaning structure of the world of everyday life. He sought the origins of meaning in the 'stream of consciousness' – basically an unbroken stream of lived experiences which have no meaning in themselves. One can only impute meaning to them retrospectively, by the process of turning back on oneself and looking at what has been going on. In other words, meaning can be accounted for here by the concept of reflexivity. For Schutz, the attribution of meaning reflexively is dependent on the people identifying the purpose or goal they seek (Burrell and Morgan, 1979).

According to Schutz, the way we understand the behaviour of others is dependent on a process of typification by means of which the observer makes use of concepts resembling 'ideal types' to make sense of what people do. These concepts are derived from our experience of everyday life and it is through them, claims Schutz, that we classify and organize our everyday world. In this respect he adhered to principles of empiricism. As Burrell and Morgan observe, we learn these typifications through our biographical locations and social contexts. Our knowledge of the everyday world inheres in social order and itself is socially ordered.

The fund of everyday knowledge by means of which we are able to typify other people's behaviour and come to terms with social reality varies from situation to situation. We thus live in a world of multiple realities, and social actors move within and between these, abiding by the rules of the game for each of these worlds.

Ethnomethodology

Like phenomenology, ethnomethodology is concerned with the world of everyday life, studying participants' circumstances, thoughts and commonplace daily lives as worthy of empirical study (Garfinkel, 1967, p. vii). Garfinkel maintains that students of the social world must doubt the reality of that world; and that in failing to view human behaviour more sceptically, sociologists have created an ordered social reality that bears little relationship to the real thing. He thereby challenges the basic sociological concept of order.

Ethnomethodology, then, is concerned with how people make sense of their everyday world. More especially, it is directed at the mechanisms by which participants achieve and sustain interaction in a social encounter – the assumptions they make, the conventions they utilize, and the practices they adopt. Ethnomethodology thus seeks to understand social accomplishments in their own terms; it is concerned to understand them from within (Burrell and Morgan, 1979).

In identifying the 'taken-for-granted' assumptions characterizing a social situation and the ways in which the people involved make their activities rationally accountable, ethnomethodologists use notions of 'indexicality' and 'reflexivity'. Indexicality refers to the ways in which actions and statements are related to the social contexts producing them, and to the way their meanings are shared by the participants but not necessarily stated explicitly. Indexical expressions are thus the designations imputed to a particular social occasion by the participants in order to locate the event in the sphere of reality. Reflexivity, on the other hand, refers to the way in which all accounts of social settings – descriptions, analyses, criticisms etc. – and the social settings occasioning them, are mutually interdependent.

One can distinguish between two types of ethnomethodologists: *linguistic* and *situational*. *Linguistic* ethnomethodologists focus upon the use of language and the ways in which conversations in everyday life are structured. Their analyses make much use of the unstated 'taken-for-granted' meanings, the use of indexical expressions and the way in which conversations convey much more than is actually said. *Situational* ethnomethodologists cast their view over a wider range of social activity and seek to understand the ways in which people negotiate the social contexts in which they find themselves. They are concerned to understand how people make sense of and order their environment. As part of their empirical method, ethnomethodologists may consciously and deliberately disrupt or question the ordered 'taken-for-granted' elements in everyday situations in order to reveal the underlying processes at work.

The substance of ethnomethodology thus largely comprises a set of specific techniques and approaches to be used in studying what Garfinkel has described as the 'awesome indexicality' of everyday life. It is geared to empirical study, and the stress which its practitioners place upon the uniqueness of the situation encountered projects its essentially relativist standpoint. A commitment to the development of methodology and fieldwork has occupied first place in the interests of its adherents, so that related issues of ontology, epistemology and the nature of human beings have received less attention than perhaps they deserve.

Symbolic interactionism

Essentially, the notion of symbolic interactionism derives from the work of Mead (1934). Although subsequently to be associated with such noted researchers as Blumer, Hughes, Becker and Goffman, the term does not represent a unified perspective in that it does not embrace a common set of assumptions and concepts accepted by all who subscribe to the approach. Here, however, it is possible to identify three basic postulates. These have been set out by Woods (1979) as follows. First, human beings act towards things on the basis of the meanings they have for them. Humans inhabit two different worlds: the 'natural' world wherein they are organisms of drives and instincts and where the external world exists independently of them, and the social world where the existence of symbols, like language, enables them to give meaning to objects. This attribution of meanings, this interpreting, is what makes them distinctively human and social. Interactionists therefore focus on the world of subjective meanings and the symbols by which they are produced and represented. This means not making any prior assumptions about what is going on in an institution, and taking seriously, indeed giving priority to, inmates' own accounts. Thus, if students appear preoccupied for too much of the time – 'being bored', 'having a laugh' etc. – the interactionist is keen to explore the properties and dimensions of these processes.

Second, this attribution of meaning to objects through symbols is a continuous process. Action is not simply a consequence of psychological attributes such as drives, attitudes or personalities, or determined by external social facts such as social structure or roles, but results from a continuous process of meaning attribution which is always emerging, in a state of flux and subject to change. The individual constructs, modifies, pieces together, weighs up the pros and cons, and bargains.

Third, this process takes place in a social context. Individuals align their actions to those of others. They do this by 'taking the role of the other', by making indications to themselves about others' likely responses. They construct how others wish to or might act in certain circumstances, and how they themselves might act. They might try to 'manage' the impressions others have of them, put on a 'performance', try to influence others' 'definition of the situation'.

Instead of focusing on the individual, then, and his or her personality characteristics, or on how the social structure or social situation causes individual behaviour, symbolic interactionists direct their attention at the nature of interaction, the dynamic activities taking place between people. In focusing on the interaction itself as a unit of study, the symbolic interactionist creates a more active image of the human being and rejects the image of the passive, determined organism. Individuals interact; societies are made up of interacting individuals. People are constantly undergoing change in interaction and society is changing through interaction. Interaction implies human beings acting in relation to each other, taking each other into account, acting, perceiving, interpreting, acting again. Hence, a more dynamic and active human being emerges rather than an actor merely responding to others. Woods (1983, pp. 15–16) summarizes key emphases of symbolic interaction thus:

- individuals as constructors of their own actions;
- the various components of the self and how they interact; the indications made to self, meanings attributed, interpretive mechanisms, definitions of the situation; in short, the world of subjective meanings, and the symbols by which they are produced and represented;
- the process of negotiation, by which meanings are continually being constructed;
- the social context in which they occur and whence they derive;
- by taking the 'role of the other' – a dynamic concept involving the construction of how others wish to or might act in a certain circumstance, and how individuals themselves might act – individuals align their actions to those of others.

Constructionism

In constructionism (also termed constructivism), in contrast to the argument that external objects and factors determine, shape, impress, print or fix themselves onto passive recipients (i.e. are 'givens' in society or individuals), people actively and agentically seek out, select and construct their own views, worlds and learning, and these processes are rooted in socio-cultural contexts and interactions. In other words, cognition is generative and active rather than receptive and passive respectively. Through such active cognition and deliberate perception we come to understand ourselves and how this affects the worlds we inhabit and the way in which we interact with the objects and people in them.

Hammersley (2013) notes that constructionism requires researchers to focus on the processes that lead to the construction, constitution and character given to independent objects and the relationships between them (pp. 35–6), i.e. how people collectively construct their social worlds (e.g. through discourse analysis) (p. 36). He gives an example of replacing the definition of a person as 'intelligent' with an examination of the 'discursive practices' which led to the construction of that person being intelligent and how this affects how that person operates in socio-cultural and institutional contexts (p. 36).

Social constructionism holds that individuals seek to make meaning of their social lives and that the researcher has to examine the situation in question through the multiple lenses of the individuals involved, to obtain their definition of the situation, to see how they make sense of their situation and to focus on interactions, contexts, environments and biographies. Indeed social constructionism emphasizes the social nature of learning, arguing that it is only through social interaction and communication that certain types of learning occur and certain views of the world are constructed.

A characteristic common to the phenomenological, ethnomethodological, symbolic interactionist and constructionist perspectives, which makes them attractive to the educational researcher, is the way they fit naturally to the kind of concentrated action found in classrooms and schools. Yet another shared characteristic is the manner in which they are able to preserve the integrity of the situation in which they are employed. Here the influence of the researcher in structuring, analysing and interpreting the situation is present to a much smaller degree than would be the case with a more traditionally oriented research approach.

1.14 Criticisms of the naturalistic and interpretive approaches

Critics have wasted little time in pointing out what they regard as weaknesses in these newer qualitative perspectives. They argue that while it is undeniable that our understanding of the actions of our fellow-beings necessarily requires knowledge of their intentions, this, surely, cannot be said to constitute *the* purpose of a social science. As Rex observed:

> Whilst patterns of social reactions and institutions may be the product of the actors' definitions of the situations there is also the possibility that those actors might be falsely conscious and that sociologists have an obligation to seek an objective perspective which is not necessarily that of any of the participating actors at all.… We need not be confined purely and simply to that … social reality which is made available to us by participant actors themselves.
>
> (Rex, 1974)

While these more recent perspectives have presented models of people that are more in keeping with common experience, some argue that anti-positivists/post-positivists have gone too far in abandoning scientific procedures of verification and in giving up hope of discovering useful generalizations about behaviour. Are there not dangers in rejecting the approach of physics in favour of methods more akin to literature, biography and journalism? Some specific criticisms of the methodologies are well directed, for example Argyle (1978) questions whether, if carefully controlled interviews such as those used in social surveys are inaccurate, then the less controlled interviews carry even greater risks of inaccuracy. Indeed Bernstein (1974) suggests that subjective reports may be incomplete and misleading.

I may believe that the teacher does not like me, and, therefore, act as though the teacher does not like me (a self-fulfilling prophecy), but, in fact, all the time the teacher actually does like me; my perception is wrong.

Bernstein's criticism is directed at the overriding concern of phenomenologists and ethnomethodologists with the meanings of situations and the ways in which these meanings are negotiated by the actors involved. What is overlooked about such negotiated meanings, observes Bernstein, is that the very process whereby one interprets and defines a situation is itself a product of the circumstances in which one is placed. One important factor in such circumstances that must be considered is the power of others to impose their own definitions of situations upon participants. Doctors' consulting rooms and headteachers' studies are locations in which inequalities in power are regularly imposed upon unequal participants. The ability of certain individuals, groups, classes and authorities to persuade others to accept their definitions of situations demonstrates that while – as ethnomethodologists insist – social structure is a consequence of the ways in which we perceive social relations, it is clearly more than this.

Conceiving of social structure as external to ourselves helps us include its self-evident effects upon our daily lives into our understanding of the social behaviour going on about us. Here is rehearsed the tension between agency and structure of social theorists (Layder, 1994); the danger of interactionist and interpretive approaches is their relative neglect of the power of external – structural – forces to shape behaviour and events. There is a risk in interpretive approaches that they become hermetically sealed from the world outside the participants' theatre of activity – they put artificial boundaries around subjects' behaviour. Just as positivistic theories can be criticized for their macro-sociological persuasion, so interpretive and qualitative theories can be criticized for their narrowly micro-sociological perspectives.

1.15 Postmodernist and post-structuralist perspectives

It is not only post-positivists who challenge the modernist, positivist conception of the world. For modernists the world is available to be studied objectively and, by using scientific methods, to arrive at secure, rigorous, scientific, discipline-based explanations of observed phenomena – 'grand narratives' which are redolent of the Enlightenment project of providing foundationalist and absolute knowledge. Postmodernism challenges each of these. Whilst it is perhaps invidious to try to characterize postmodernists (as they would argue against any singular or all-embracing definitions), in a seminal text Jameson (1991) argues that postmodernism does have several distinguishing hallmarks, including, for example:

- the absence of 'grand narratives' (metanarratives) and grand designs, laws and patterns of behaviour (thereby, ironically, eclipsing the status of their own narrative);
- the valorization of discontinuity, difference, diversity, pluralism, variety, uniqueness, subjectivity, distinctiveness and individuality;
- the importance of the local, the individual and the particular;
- the 'utter forgetfulness of the past' and the 'autoreferentiality' of the present (Jameson, 1991, p. 42);
- the importance of temporality and context in understanding phenomena: meanings are rooted in time, space, cultures, societies and are not universal across these;
- the celebration of depthlessness, multiple realities (and, as Jameson argues, multiple superficialities) and the rectitude of individual interpretations and meanings rather than an appeal to a singular or universal rationalism;
- relativism rather than absolutism in deciding what constitutes worthwhile knowledge, research and their findings;
- the view of knowledge as a human, social construct;
- multiple, sometimes contradictory, yet co-existent interpretations of the world, in which the researcher's interpretation is only one out of several possible interpretations, i.e. the equal value of different interpretations and the reduction in the authority of the researcher, yet, simultaneously, the privileging of some interpretations of the world to the neglect of others (i.e. the nexus between knowledge and power, a feature of critical theory, discussed in Chapter 3);
- the recognition that researchers are part of the world that they are researching;
- the emancipatory potential of according value to individual views, values, perspectives and interpretations (see Chapter 3).

Pring (2015) adds to this the point that postmodernism is characterized by a revolt against thought control and cultural control, by an assertion of multiple forms of cultural expression, an abandonment of certainty, a replacement of 'authority' (as in 'authoritative') by multiple voices and negotiated meanings, and a blurring of artificial boundaries (disciplines) of knowledge, a questioning of received wisdoms and a recognition of fallibilism, all of which he sees as the function of the ‘perennial philosophical tradition’ and not one given birth to by postmodernism (pp. 134–7). In one sense postmodernism supports the interpretive paradigm set out earlier in this chapter. In another sense it supports complexity theory as discussed below, and in a third sense it supports critical theory as set out in Chapter 3. Postmodernism has a chameleon-like nature in this respect.

Post-structuralism, like postmodernism, has many different interpretations (we will not discuss here the interpretation that relates to semiology). Here we take a necessarily selective interpretation, to focus on those features that are relevant to the foundations and conduct of educational research. Here post-structuralism can be regarded as a counter to those structural-functionalists who adopt a systems view of society (e.g. Marxism, or functionalist anthropologists such as Lévi-Strauss) or behaviour as a set of interrelated parts which, in law-like fashion, pattern themselves and fit together neatly into a fixed view of the world and its operations and in which individual behaviour is largely determined by given, structural features of society (e.g. social class, position in society, role in society). In post-structuralist approaches, data (e.g. conversations, observations) and even artefacts can be regarded as texts (Burman and Parker, 1993), as discourses that are constructed and performed through discourses (see Chapter 35), open to different meaning and interpretations (Francis, 2010, p. 327).

Post-structuralists (e.g. Foucault, Derrida) argue that individual agency has prominence; individuals are not simply puppets of a given system; people are diverse and different, indeed they may carry contradictions and tensions within themselves (e.g. in terms of class, ethnicity, gender, employment, social group, family membership and tasks, and so on); they are not simply the decentred bearers of given roles. Individuals have views of themselves, and one task of the researcher is to locate research findings within the views of the self that the participants hold, and to identify the meanings which the participants accord to phenomena. Hence not only do the multiple perspectives of the participants have to be discerned, but also those of the researchers, the audiences of the research and the readers of research. The task of the research is to ‘deconstruct’, to expose, the different meanings, layers of meanings and privileging of meanings inherent in a phenomenon or piece of research. There is no single, ‘essential’ meaning, but many, and one task of research is to understand how meanings and knowledge are produced, legitimized and used. (This links post-structuralism to critical theory, though some critical theorists, e.g. Habermas (1987), argue against critical theory’s affinity to postmodernism or post-structuralism.)

One can detect affinities between post-positivism, postmodernism and post-structuralism in underpinning interpretive and qualitative approaches to educational research, complexity theory and critical theory, and the significance given to individual and subjective accounts in the research process, along with reflexivity on the part of the researcher. (That said, many post-positivists, postmodernists and post-structuralists would reject such a simple affinity, or even the links between their views and, for example, phenomenology and interpretivism. We do not explore this here.) One can suggest that post-positivism, postmodernism and post-structuralism argue for multiple interpretations of a phenomenon to be provided, to accord legitimacy to individual voices in research, and to abandon the search for deterministic, simple cause-and-effect laws of behaviour and action.

1.16 Subjectivity and objectivity in educational research

The preceding overview has alluded to the sympathies between some paradigms and objectivity in research and other paradigms and subjectivity in research. To make such an exclusive separation is a chimera, a false dichotomy. With regard to objectivity, to say, for instance, that objectivity inheres in positivist and post-positivist approaches overlooks not only the several interpretations of positivism and post-positivism but what it means to be subjective. Objectivity is refracted through the researcher’s eyes and the generation, construction and testing of hypotheses draw on personal understandings and formulations. In other words, objectivity cannot escape some subjective roots. Taken to an extreme, it leads to a rejection of the idea that the researcher can ever be objective, just as there is a rejection of the idea that there is an objective reality or ‘truth’ about a phenomenon (Hammersley, 2011, p. 89). Objectivity here is defined as intersubjectivity (as opposed to subjectivity), reliability and freedom from bias (Risjord, 2014, p. 22). Risjord illustrates the difference between intersubjectivity and subjectivity thus (p. 23): I feel hungry (subjective) so I eat a sandwich (intersubjective, in that it can be seen by an observer, i.e. is open to critical scrutiny).

On the other hand, subjectivity cannot turn its back on what is ‘out there’ in terms of overriding the social, societal and institutional social facts, which have an existence independent of the participant. Subjectivity cannot lay claim to being a privileged discourse without risking relativism.

Subjectivity and objectivity are frequently placed at the poles of different continua (cf. Hammersley, 2011, p. 90), for example:

Subjective		*Objective*
Internal	… … … … . .	External
Private	… … … … . .	Public
Positivist	… … … … . .	Interpretive
Idiographic	… … … … . .	Nomothetic
Judgement	… … … … . .	Technical application (e.g. of statistics)
Individual	… … … … . .	Shared
Personal	… … … … . .	Impersonal
Particular	… … … … . .	General
Relative	… … … … . .	Absolute
Opinion	… … … … . .	Proof
Experimental	… … … … . .	Interactionist
Biased	… … … … . .	Bias-free
Unobservable	… … … … . .	Observable
Idiosyncratic	… … … … . .	Regular
Uncertain	… … … … . .	Certain
Unpredictable	… … … … . .	Predictable
Unreliable	… … … … . .	Reliable
Imprecise	… … … … . .	Explicit
Questionable	… … … … . .	Conclusive
Unverifiable	… … … … . .	Checkable
Prone to error	… … … … . .	Secure
Complex	… … … … . .	Straightforward
Opaque	… … … … . .	Transparent

Source: Adapted from Barr Greenfield (1975)

However, this creates false dichotomies, and look how easily one can create biases in the pejorative terms used: many of the items in the left-hand column are presented as the shabby, less respectable end of research, whilst the right-hand column seems much more clean and respectable. This can overlook the risk of bias and errors that researchers might commit in working in the right-hand column and the authenticity, correctness and truth of the left-hand column. Both subjective and objective views have to face judgements of plausibility, validity, reliability, meaningfulness and credibility.

However, more fundamentally, as Hammersley (2011) remarks, we depend on personal knowledge and judgement in making meaning of phenomena and data, be those data numbers, words, pictures or sounds. We rely on our senses in making observations. Following objective procedures requires a personal commitment. We rely on our judgement in raising hypotheses, making inferences and drawing conclusions. However, simply amassing subjective data from participants does not ensure that the data are true or reliable, but stating objective procedures does not ensure identical practices, not least as, in the social world, researchers – consciously or not – adjust their practices to the situation and the people who are participating in the research; standardizing practice has to extend to participants.

Medical research is a good example here: whilst there might be an objective, standardized procedure for patients taking medicine in a randomized controlled trial, that does not guarantee that patients will follow it: they might refuse to take the medicine, forget to take it, take it at the wrong time of day, take some but not all of it, take the wrong dose (too little or too much), misread the instructions, and so on. Intention does not match actuality.

The claims we make from knowledge, be they from the left-hand or right-hand columns here, do not constitute absolute truth: the same data can, and do, sustain multiple interpretations, claims and conclusions. Further, is it really possible or desirable to set aside one's own biography, values and assumptions, however reflexive one might be? Reflexivity is not the same as objectivity. Is it not the case, anyway, that knowledge, particularly of the social world, is a socio-temporal construction rather than the clean world of the objectivist, and to pretend otherwise is simply naive or deceitful (Hammersley, 2011, p. 96)? Or is this giving in to the relativists and the postmodernists, in the knowledge that relativism is, by its own definition, only relative, and that the postmodernists cannot lay claim to their views as having any status at all as to do so would be to acknowledge that metanarratives exist – a claim which postmodernists proscribe as an article of faith.

Hammersley (2011) is clear that errors may stem from the researcher's own social or individual characteristics and their influence on their research, but that it is unnecessary and, indeed, undesirable to assume that the researcher can stand out completely from his or her social and individual characteristics. Further, error does not automatically follow from an acknowledgement of the researcher's own social and individual characteristics.

The task, then, is to protect the research from negative effects of subjectivity (2011, p. 101), though Hammersley acknowledges that what constitutes 'error' is not always clear. However, he offers researchers some advice here, cautioning them to be on their guard against preconceptions, prior assumptions, preferences and biases that are 'external to the pursuit of knowledge' (p. 102), i.e. which are goals that are separate from the research itself. Objectivity, in this case, means adhering to the 'epistemic virtue' of keeping *only* to the canons and requirements of the research itself, setting aside any extraneous personal convictions or subordinating the research to any other goals outside the research (p. 103). Given this, objectivity and the suppression of personal, subjective beliefs, values, commitments or agendas have a key role to play in educational research. The objective reliability of the research does not depend on the political, valuative or moral motivations of the researcher (cf. Risjord, 2014, p. 23).

Similarly, value-neutrality in educational and social science research leaves unsaid any comment on what *ought* or *ought not* be done; that is for policy makers. Rather, educational research confines itself to facts; that is, the scientific enterprise. Saying that teachers should not assault students is an evaluative statement and not a matter for social science research, as it does not rest on empirical data alone, though reporting incidents of assault and its effects surely is a matter for research.

Whether researchers should have a 'committed' position is a matter that we return to in Chapter 3 on critical theory, which explicitly disavows value-free positions, and argues for partisan positions in research as contributing to the greater good of an emancipated society in freeing itself from that ideology which conceals oppression and unjust subordination and power differentials of social groups, and which transforms society to equality, democracy and social justice. Fact and value reunite.

1.17 The paradigm of complexity theory

An emerging paradigm in educational research is that of complexity theory (Medd, 2002; Morrison, 2002a, 2008; Radford, 2006, 2007, 2008; Kuhn, 2007; Byrne and Callaghan, 2014; Boulton *et al*., 2015), as schools can be regarded as 'complex adaptive systems' (Kaufmann, 1995). Complexity theory looks at the world in ways which break with simple cause-and-effect models, simple determinism and linear predictability (Morrison, 2008) and a dissection/atomistic approach to understanding phenomena (Radford, 2007, 2008; Byrne and Callaghan, 2014), replacing them with organic, non-linear and holistic approaches (Santonus, 1998, p. 3). Relations within interconnected, dynamic and changing networks are the order of the day (Wheatley, 1999, p. 10), and there is a 'multiplicity of simultaneously interacting variables' (Radford, 2008, p. 510). Here key terms are feedback, recursion, emergence, connectedness and self-organization. Out go the simplistic views of linear causality (Radford, 2007; Morrison, 2009; Byrne and Callaghan, 2014; Boulton *et al*., 2015), the ability to predict, control and manipulate, to apply reductive techniques to research, and in come uncertainty, networks and connection, holism self-organization, emergence over time through feedback and the relationships of the internal and external environments, and survival and development through adaptation and change.

In complexity theory, a self-organizing system is autocatalytic and possesses its own unique characteristics and identity (Kelly and Allison, 1999, p. 28) which enable it to perpetuate and renew itself over time – it creates the conditions for its own survival. This takes place through engagement with others in a system (Byrne and Callaghan, 2014; Boulton *et al*., 2015). The system is aware of its own identity and core properties, and is self-regenerating (able to sustain that identity even though aspects of the system may change, e.g. staff turnover in a school).

Through feedback, recursion, perturbance, autocatalysis, connectedness and self-organization, higher levels of complexity and differentiated, new forms of life, behaviour and systems arise from lower levels of complexity and existing forms. These complex forms derive from often comparatively simple sets of rules – local rules and behaviours generating emergent complex global order and diversity (Waldrop, 1992, pp. 16–17; Lewin, 1993, p. 38). General laws of emergent order can govern adaptive, dynamical processes (Waldrop, 1992, p. 86; Kauffman, 1995, p. 27).

The interaction of individuals feeds into the wider environment which, in turn, influences the individual units of the network; they co-evolve, shaping each other (Stewart, 2001), and co-evolution requires connection, cooperation and competition: competition to force development and cooperation for mutual survival. The behaviour of a complex system as a whole, formed from its several elements, is greater than the sum of the parts (Byrne and Callaghan, 2014; Boulton *et al*., 2015).

Feedback occurs between the interacting elements of the system. Negative feedback is regulatory (Marion, 1999, p. 75), for example learning that one has failed a test. Positive feedback brings increasing returns and uses information to change, grow and develop (Wheatley, 1999, p. 78); it amplifies small changes (Stacey, 1992, p. 53). Once a child has begun to read she is gripped by reading, she reads more and learns at an exponential rate.

Connectedness, a key feature of complexity theory, exists everywhere. In a rainforest ants eat leaves, birds eat ants and leave droppings, which fertilize the soil for growing trees and leaves for the ants (Lewin, 1993, p. 86). In schools, children are linked to families, teachers, peers, societies and groups; teachers are linked to other teachers, support agencies (e.g. psychological and social services), policy-making bodies, funding bodies, the legislature, and so on. The child (indeed the school) is not an island, but is connected externally and internally in several ways. Disturb one element and the species or system must adapt or die; the message is ruthless.

Emergence is the partner of *self-organization*. Systems possess the ability for self-organization, which is not according to an a priori grand design – a cosmological argument – nor a teleological argument; complexity is neither. Further, self-organization emerges, it is internally generated; it is the opposite of external control. As Kauffman (1995) suggests, order comes for free and replaces control. Order is not imposed; it emerges; in this way it differs from control. Self-organized order emerges of itself as the result of the interaction between the organism and its environment, and new structures emerge that could not have been predicted; that emerged system is, itself, complex and cannot be reduced to those parts that gave rise to the system. As Davis and Sumara (2005, p. 313) write: 'phenomena have to be studied at their level of emergence', i.e. at their present overall state, not in terms of the elements present in the pre-metamorphosed state.

Stacey (2000) suggests that a system can only evolve, and evolve spontaneously, where there is diversity and deviance (p. 399) – a salutary message for command-and-control teachers who exact compliance from their pupils. The future is largely unpredictable. At the point of 'self-organized criticality' (Bak, 1996), a tipping point, the effects of a single event are likely to be very large, breaking the linearity of Newtonian reasoning wherein small causes produce small effects; the straw that breaks the camel's back.

Complexity theories argue against the linear, deterministic, patterned, universalizable, stable, atomized, modernistic, objective, mechanist, controlled, closed systems of law-like behaviour which may be operating in the laboratory but which do not operate in the social world of education. These features of complexity theories seriously undermine the value of experiments and positivist research in education (e.g. Waldrop, 1992; Lewin, 1993).

Complexity theory replaces these with an emphasis on networks, linkages, holism, feedback, relationships and interactivity in context (Byrne and Callaghan, 2014), emergence, dynamical systems, self-organization and an open system (rather than the closed world of the experimental laboratory). Even if one could conduct an experiment, its applicability to ongoing, emerging, interactive, relational, open situations, in practice, is limited (Morrison, 2001). It is misconceived to hold variables constant in a dynamical, evolving, fluid, open situation. What is measured is history.

Complexity theory challenges randomized controlled trials – the 'gold standard' of research. Classical experimental methods, abiding by the need for replicability and predictability, may not be particularly fruitful since, in complex phenomena, results are never clearly replicable or predictable: As Heraclitus noted, we never jump into the same river twice. Complexity theory suggests that educational research should concern itself with: (a) how multivalency and non-linearity feature in education; (b) how voluntarism and determinism, intentionality, agency and structure, lifeworld and system, divergence and convergence interact in learning (Morrison, 2002a, 2005); (c) how to both use, but transcend, simple causality in understanding the processes of education (Morrison, 2012); (d) how viewing a system holistically, as having its own ecology of multiple interacting elements, is more powerful than an atomized approach. Complexity theory suggests that phenomena must be looked at holistically; to atomize phenomena into measurable variables and then to focus only on certain of these is to miss synergy, the dynamic interaction of several parts (Morrison, 2008) and the significance of the whole. Measurement, however acute, may tell us little of value about a phenomenon; one can measure every observable variable of a person to an infinitesimal degree, but his/her nature, what makes him/her who he or she is, eludes atomization and measurement.

These should merge, so that in complexity theory the unit of analysis becomes a web, network or ecosystem (Capra, 1996, p. 301; Morrison, 2012), focused on, and arising from, a specific topic or centre of interest (a 'strange attractor'). Individuals, families, students, classes, schools, communities and societies exist in symbiosis; complexity theory tells us that their relationships are necessary, not contingent, and analytic, not synthetic. This is a challenging prospect for educational research, and complexity offers considerable leverage into understanding societal, community, individual and institutional change theory (Radford, 2006; Morrison, 2008); it provides the nexus between macro- and micro-research in understanding and promoting change.

In addressing holism, complexity theory suggests the need for case study methodology, narrative approaches, action research and participatory forms of research, premised in many ways on interactionist, qualitative accounts, i.e. looking at situations through the eyes of as many participants or stakeholders as possible (e.g. Byrne and Callaghan, 2014; Boulton *et al.*, 2015). This enables multiple causality, multiple perspectives and multiple effects to be charted (Morrison, 2012). Self-organization, a key feature of complexity theory, argues for participatory, collaborative and multi-perspectival approaches to educational research. This is not to deny 'outsider' research; it is to suggest that, if it is conducted, outsider research has to take in as many perspectives as possible.

In educational research terms, complexity theory stands against methodologies based on linear views of causality, arguing for multiple causality, multi-directional causes and effects and networks of causes (Morrison, 2012) at a host of different levels and in a range of diverse ways. No longer can one be certain that a simple cause brings a simple or single effect, or that a single effect is the result of a single cause, or that the location of causes will be in single fields only, or that the location of effects will be in a limited number of fields (Morrison, 2009, 2012). Researching causality becomes a search for networked, multi-causality and multi-stranded causality (Morrison, 2012).

Complexity theory not only questions the values of positivist research and experimentation, but it also underlines the importance of educational research to catch the deliberate, intentional, agentic actions of participants and to adopt interactionist and constructivist perspectives. (In this respect it has sympathies, perhaps, with posthumanism, though it is a very different animal from posthumanism.) Kuhn (2007, pp. 172–3) sets out a series of axioms for complexity-based research: (a) reality is dynamic, emergent and self-organizing, requiring multiple perspectives to be addressed (see also Medd, 2002); (b) the relationship between the knower and the known is, itself, dynamic, emergent and self-organizing; (c) hypotheses for research must relate to time and context (cf. Medd, 2002; Radford, 2006); (d) it is impossible to distinguish cause from effect, as entities are mutually shaping and influencing (co-evolution); (d) inquiry is not value-free.

Addressing complexity theory's argument for self-organization, the call is for the teacher-as-researcher movement to be celebrated, and complexity theory suggests that research in education could concern itself with the symbiosis of internal and external researchers and research partnerships. Just as complexity theory suggests that there are multiple views of reality, so this accords not only with the need to catch several perspectives on a situation (using multi-methods), but resonates with those tenets of critical research which argue for different voices, views and interpretations to be heard, incorporated and understood respectively. Heterogeneity is the watchword.

Complexity theory provides not only a powerful challenge to conventional approaches to educational research, but it suggests both a substantive agenda and also a set of methodologies, arguing for methodological, paradigmatic and theoretical pluralism. For example, Byrne and Callaghan (2014) and Boulton *et al*. (2015) suggest that research should study the processes of emergence over time and critical incidents in evolving situations. In addressing holism, complexity theory suggests the need for case study methodology, qualitative research and participatory, multi-perspectival and collaborative (self-organized), partnership-based forms of research, premised on interactionist, qualitative and interpretive accounts (e.g. Lewin and Regine, 2000).

1.18 Conclusion

This chapter has argued that planning and conducting educational research cannot follow simple recipes but is a complex, deliberative and iterative process in which ontological and epistemological matters have to be considered and in which many different kinds of understanding feature. In addressing this, the chapter has introduced several paradigms and their possible contribution to educational research, including: positivism, post-positivism, post-structuralism, postmodernism and complexity theory. It has commented on different views of social reality and a range of approaches to understanding that reality: deductive and inductive; empirical and rationalist; nomothetic and idiographic; subjective and objective; the scientific method; and alternatives in naturalistic, interpretive, phenomenological, interactionist and constructionist approaches.

The argument through the chapter has suggested that foundationalism and the quest for absolute knowledge in educational research is questionable. In this it has indicated the expanding range of approaches, of which, for example, postmodernism, post-structuralism and complexity theory are examples. Complexity theory challenges conceptions of simple cause-and-effect, experimental approaches to research and it advocates attention to context and holism in educational research.

In recognizing the many and expanding number of paradigms and approaches to educational research, the chapter has argued for methodological, paradigmatic and theoretical pluralism, indeed mixed methods (Chapter 2). These set the ground for the many approaches, designs, methodologies and methods set out in the remainder of the book. Simple recipe-following is out, and deliberation, fitness for purpose and fitness of purpose are key watchwords here.

The companion website to the book provides additional material and PowerPoint slides for this chapter, which list the structure of the chapter and then provide a summary of the key points in each of its sections. This resource can be found online at: www.routledge.com/cw/cohen.

Notes

1 We are not here recommending, nor would we wish to encourage, exclusive dependence on rationally derived and scientifically provable knowledge for the conduct of education – even if this were possible. There is a rich fund of traditional and cultural wisdom in teaching (as in other spheres of life) which we would ignore to our detriment. What we are suggesting, however, is that total dependence on the latter has tended in the past to lead to an impasse, and that for further development and greater understanding to be achieved education must needs resort to the methods of science and research.

2 A classic statement opposing this particular view of science is that of Kuhn (1962), *The Structure of Scientific Revolutions*. Kuhn's book, acknowledged as an intellectual tour de force, makes the point that science is not the systematic accumulation of knowledge as presented in textbooks; that it is a far less rational exercise than generally imagined. In effect, 'it is a series of peaceful interludes punctuated by intellectually violent revolutions … in each of which one conceptual world view is replaced by another'.

3 The formulation of scientific method outlined earlier has come in for strong and sustained criticism. Mishler (1990), for example, describes it as a 'storybook image of science', out of tune with the actual practices of working scientists who turn out to resemble craftspersons rather than logicians. By craftspersons, Mishler is at pains to stress that competence depends upon 'apprenticeship training, continued practice and experienced-based, contextual knowledge of the specific methods applicable to a phenomenon of interest rather than an abstract "logic of discovery" and application of formal "rules" '. The knowledge base of scientific research, Mishler contends, is largely tacit and unexplicated; moreover, scientists learn it through a process of socialization into a 'particular form of life'. The discovery, testing and validation of findings is embedded in cultural and linguistic practices and experimental scientists proceed in pragmatic ways, learning from their errors and failures, adapting procedures to their local contexts, making decisions on the basis of their accumulated experiences. See, for example, Mishler (1990).

4 Investigating social episodes involves analysing the accounts of what is happening from the points of view of the actors and the participant spectator(s)/investigator(s). This is said to yield three main kinds of interlocking material: images of the self and others, definitions of situations, and rules for the proper development of the action. See Harré (1976).

Companion Website

The companion website to the book includes PowerPoint slides for this chapter, which list the structure of the chapter and then provide a summary of the key points in each of its sections. In addition there is further information on complexity theory. These resources can be found online at **www.routledge.com/cw/cohen**.

Mixed methods research

CHAPTER 2

This chapter introduces:

- definitions of mixed methods research
- why use mixed methods research
- the foundations of mixed methods research
- paradigms and the commensurability problem in mixed methods research
- working with mixed methods approaches
- mixed methods designs and data
- reliability and validity in mixed methods research
- mixed methods research questions
- sampling in mixed methods research
- mixed methods data analysis
- timing and writing up the data analysis in mixed methods research
- stages in mixed methods research

2.1 Introduction

When we look at a phenomenon, do we suddenly don a quantitative hat, or a qualitative hat? Surely not. In viewing our world we naturally integrate rather than separate; we use all the means and data at our disposal to understand a situation. We use mixed methods to find out about something. So it can be in educational research. Mixed methods research (MMR) is not new (Denscombe, 2014, p. 159), but its new-found ascendancy and prominence, and indeed its title, have captured the world (cf. de Lisle, 2011). Claims made for MMR are not modest. The rise of MMR has been meteoric to the extent that it has been called the 'third methodological movement' (Johnson *et al*., 2007; Teddlie and Tashakkori, 2009), the 'third research paradigm' (Johnson and Onwuegbuzie, 2004; Johnson *et al*., 2007, p. 112; Denscombe, 2008) and the 'third path' (Gorard and Taylor, 2004), whilst Fetters and Freshwater (2015) suggest that the synergy of quantitative plus qualitative offers more than the individual components ('1+1=3' (p. 116)).

The 'paradigm wars' (Gage, 1989), in which one stood by one's allegiances to quantitative or qualitative methodologies, and which sanctioned the rise of qualitative methods and the partial eclipse of solely numerical methods (Denzin, 2008, p. 316), have given way to MMR (Gorard and Taylor, 2004; Gorard and Smith, 2006; Teddlie and Tashakkori, 2009). This recognizes that there is a need for greater rapprochement and less confrontational approaches to be adopted between different research paradigms (Denzin, 2008, p. 322), greater convergence between the two (Brannen, 2005), and a greater dialogue to be engaged between them and their proponents.

The placement of this chapter on MMR after the opening chapter in this book is deliberate, to acknowledge that, for many writers, MMR has its own paradigm, its own foundational views on social reality and research, its own ontology and epistemology, its own axiologies and methodologies. MMR already has a major place in research. It constitutes an approach, a methodology and a view of designs and methods (which we also set out in this chapter for the sake of fidelity to the principle of pragmatism that underlines MMR as well as for the sake of coherence and practical implications). The argument that we raise in this chapter is that, by virtue of its theoretical roots in pragmatism, its ontology and epistemology, its axiological premises, it is well located in Part 1. We also recognize that the later parts of this chapter could also sit comfortably in Parts 2 and 3, but this would be to fragment unnecessarily the discussion of MMR and lose the coherence to which MMR stakes an important claim.

The attention given to MMR is evidenced in the *Journal of Mixed Methods Research*, the *International Journal of Multiple Research Approaches*, an exponential increase in the number of key texts in the field and the launching of the Mixed Methods International Research Association (http://mmira.wildapricot.org).

MMR recognizes, and works with, the fact that the world is not exclusively quantitative or quantitative; it is not an either/or world, but a mixed world, even though the researcher may find that the research has a predominant disposition to, or requirement for, numbers or qualitative data. We see the world in multiple ways, some of which may or may not agree with each other. MMR encourages us not only to look at the world in different ways but to share those multiple, different views in making sense of the world, discussing our views and values in it.

MMR not only relates to data collection, but concerns philosophical bases of research, paradigms which guide research and assumptions which inform the design and conduct of research. Creswell and Plano Clark (2011) observe that MMR brings together quantitative and qualitative data in a single research study or series of research studies (p. 5), the intention of which is to give a greater understanding of the topic or problem in question than either a quantitative or qualitative approach on its own would provide.

MMR focuses on collecting, analysing and mixing both quantitative and qualitative data in a single study or series of studies. Its central premise is that the use of quantitative and qualitative approaches, in combination, provides a better understanding of research problems and questions than either approach on its own. This is, in part, because research problems are not exclusively quantitative or qualitative, hence using only one kind of data (quantitative or qualitative), one methodology, one paradigm, one way of looking at the problem or one way of conducting the research, may not do justice to the issue in question (cf. Creswell and Plano Clark, 2011, p. 10; Creswell, 2012, p. 535). Further, a piece of research may have more than one phase, and MMR may take place both within and across phases. However, MMR is not only about data types; its reach extends much further, into ways of viewing the world, ontologies, epistemologies, axiologies, methodologies and a range of other areas which are introduced in this chapter.

2.2 What is mixed methods research?

Mixed methods research defies simple or single definitions, as the following references indicate.

Creswell and Plano Clark (2011, p. 4) offer an introductory definition in suggesting that MMR typifies research undertaken by one or more researchers which combines various elements of both quantitative and qualitative approaches (e.g. with regard to perspectives, data collection and data analysis) to research, together with the nature of the inferences made from the research (p. 4), the purposes of which are to give a richer and more reliable understanding (broader and deeper) of a phenomenon than a single approach would yield. Leech and Onwuegbuzie (2009, p. 265) suggest that conducting MMR involves data collection (both quantitative and qualitative), analysis and interpretation of studies that, singly or together, address a particular phenomenon.

However, MMR is not confined simply to methods, nor to methodology; rather it has a much wider embrace. MMR has many different definitions (Tashakkori and Teddlie, 2003). Johnson *et al.* (2007, pp. 119–21) give nineteen definitions that vary according to what is being mixed, where and when the mixing takes place, the breadth and scope of the mixing, the reasons for the mixing, and the orientation of the research. Greene (2008, p. 20) suggests that a mixed method way of thinking recognizes that there are many legitimate approaches to social research and that, as a corollary, a single approach on its own will only yield a partial understanding of the phenomenon being investigated.

As an example of its definitional pluralism, Tashakkori and Teddlie (2003) indicate that varieties of meanings of MMR lie in six major domains: (a) basic definitions; (b) utility of MMR; (c) paradigmatic foundations of MMR; (d) design issues; (e) drawing inferences; and (f) logistical issues in conducting MMR. Teddlie and Tashakkori (2006, 2009) set out seven dimensions in organizing different views of MMR:

- the number of methodological approaches used;
- the number of strands or phases in the research;
- the type of implementation process in the research;
- the stage(s) at which the integration of approaches occur(s);
- the priority given to one or more methodological approaches (e.g. quantitative over qualitative or vice versa, or of equal emphasis;
- the purpose and function of the research study;
- the theoretical perspective(s) in the research.

Creswell and Tashakkori (2007) set out four different realms of MMR which address what is being mixed: (a) methods (quantitative and qualitative methods for the research and data types); (b) methodologies (mixed methods as a distinct methodology that integrates world views, research questions, methods, inferences and conclusions); (c) paradigms (philosophical foundations and world views of, and underpinning, MMR); and (d) practice (mixed methods procedures in research). Clearly MMR operates at all stages and levels of research.

Greene (2008, pp. 8–10) organized discussion of MMR into four domains:

- philosophical assumptions and stances (assumptions about ontology – the nature of the world – and epistemology – how we understand and research the world, and the warrants we use in validating our understanding);

- inquiry logics (e.g. purposes and research questions, designs, methodologies of research, sampling, data collection and analysis, reporting and writing);
- guidelines for practice (how to mix methods in empirical research and in the study of phenomena);
- socio-political commitment (what and whose interests, purposes and political stances are being served).

Hesse-Biber and Johnson (2013) note that MMR applies to different paradigms, axiologies, stakeholders, levels of analysis (micro, meso, macro) and research cultures and practices (p. 103), recognizing that it is the research question that is central and critical in the design of the MMR and that research problems often require plural methodologies, cross-disciplinary approaches and multiple philosophical perspectives.

A mixed methods approach can apply to all the stages and areas of research: philosophical foundations and paradigms; ontologies, epistemologies, axiologies; methodology, research questions and design; instrumentation, sampling, validity, reliability, data collection; data analysis and interpretation; reporting; and outcomes and uses of the research (cf. Creswell and Tashakkori, 2007; Bergman, 2011a). This echoes Yin (2006, p. 42), who argues that the stronger the mix of methods and their integration at all stages, the stronger the benefit of mixed methods approaches (p. 46).

Clearly, even at the definitional and scoping stages, challenges are raised concerning what MMR is, how it can be conceptualized and organized, what it comprises and how it is conducted.

2.3 Why use mixed methods research?

It is claimed that MMR enables a more comprehensive and complete understanding of phenomena to be obtained than single methods approaches and answers complex research questions more meaningfully, combining particularity with generality, 'patterned regularity' with 'contextual complexity', insider *and* outsider perspectives (*emic* and *etic* research), focusing on the whole *and* its constituent parts, and the causes of effects (discussed in Chapter 6). Creswell and Plano Clark (2011) note that MMR can yield insights into, and explanations of, the processes at work in a phenomenon and the multiple views of the phenomenon (p. 61), thereby increasing the usefulness and credibility of the results found, indeed affording the opportunity for unexpected results to be found.

Denscombe (2014, p. 147) suggests that MMR can provide a more complete picture of the phenomenon under study than would be yielded by a single approach, thereby overcoming the weaknesses and biases of single approaches (the benefits of 'complementarity' and 'completeness' (Creswell and Plano Clark, 2011, p. 61)). Denscombe (2014) also suggests that MMR can increase the accuracy of data and reliability through triangulation, reduce bias in the research, provide a 'practical, problem-driven approach to research' (p. 160) and enable compensation between strengths and weaknesses of research strategies.

Day and Sammons (2008) indicate how a mixed method approach can provide more nuanced and authentic accounts (than single methods approaches) of the complexities of phenomena under investigation. Greene (2005, p. 207) argues for a mixed methods approach that welcomes multiple methodological traditions, as these catch diversity and difference and are 'anchored in values of tolerance, acceptance, respect' and democracy (p. 208). Mertens (2007) and Greene (2008) argue that, in seeking social justice, MMR operates in a 'transformative paradigm' (see Chapter 3).

Care has to be taken to separate 'complementarity' from 'supplementarity' in MMR. Whilst 'complementarity' suggests that one method may make up for the shortcomings of another, 'supplementary' is simply additive (cf. Bergman, 2011a), and, in itself, is not a sufficient justification for MMR, as any addition would meet this requirement. The researcher has to decide whether one method is being used to complement or supplement the research. If it is the former, then what is absent that the complementarity must rectify, and if it is the latter, what is being added or supplemented that renders it important for such addition or supplementation to be included? Further, unless the research question or problem unequivocally requires MMR, it is for the researcher to demonstrate that MMR in principle is preferable to a mono-method approach (p. 274).

In considering whether or not to employ MMR, and in addressing fitness for purpose, researchers can ask:

- What is gained/lost by looking/not looking at the world in mixed ways, i.e. using/not using MMR in terms of philosophical foundations, paradigms, ontologies, epistemologies, axiologies, methodologies, designs, research questions, sampling, data types, instrumentation, data analysis, data interpretation, drawing conclusions and reporting?
- What does researching objectively and subjectively, scientifically and interpretively, quantitatively and qualitatively, by numbers and by qualitative approaches, tell us?

- What is it about a piece of research that requires MMR, such that not to use MMR is to diminish the quality, validity, reliability and utility of the research?

2.4 The foundations of mixed methods research

Paradigms and pragmatism

Mixed methods research has several foundations (cf. de Lisle, 2011, pp. 91–2). For example, quantitative approaches may have their roots in positivism, post-positivism and the scientific paradigm. Qualitative methods may have their roots in the interpretive paradigm. Transformative approaches may appeal to critical theory with its political and ideological agenda of empowerment, emancipation, equality and social justice. The foundations of MMR have multiple allegiances, and these allegiances determine and embrace world views (what the world is like and how to look at the world), ontologies (views of reality), epistemologies (ways of understanding, knowing about and researching that reality) and axiologies (values and value systems, e.g. value-free or value-laden research). These are brought together in different ways in different paradigms.

A paradigm, following Kuhn (1962), defines 'the set of practices that define a scientific discipline at any particular period of time' (p. 175): what is to be observed and scrutinized; the kinds of research questions to be asked and problems to be investigated; how to structure such research questions; what predictions can be made by the primary theory in that discipline; the ways of working; and how to interpret results. A paradigm embodies the values and beliefs of a group (in Kuhn's case it was scientists), such that one set of views and beliefs may be incommensurable with another, abiding by different philosophical assumptions, ontologies, epistemologies and axiologies. Mertens (2012) suggests that paradigms are 'philosophical frameworks that delineate assumptions about ethics, reality, knowledge, and systematic inquiry' (p. 256). Paradigms include how we look at the world, the conceptual frameworks in which we work in understanding the world, the community of scholars who are working within that framework and who define what counts as worthwhile knowledge and appropriate methodology in it, how we research the world, what the key concepts are, what counts as relevant knowledge and how we validate and consider that knowledge.

Given that a 'paradigm' embraces a 'world view', to define a paradigm in terms of quantitative, qualitative or mixed methods is misleading, as these refer largely or only to kinds of data (Biesta, 2010a), and a paradigm has a much wider embrace than this which includes a world view, an epistemological stance, shared beliefs and model examples (Freshwater and Cahill, 2013, p. 50). MMR concerns not only mixing data but mixing paradigms, ontologies, epistemologies and axiologies in order to give a fair, rounded picture of the phenomenon under investigation.

Creswell and Plano Clark (2011, p. 40) identify four paradigms or world views (see also Chapter 1):

- Post-positivism (quantitative research), in which emphasis is placed on the identification of causality and its effects, focusing on variables and their manipulation (e.g. isolation and control of variables in a reductionist world), careful observation and measurement, and hypothesis testing in a world characterized by a singular view of reality and in which the researcher imposes the research on the phenomenon (i.e. top-down).
- Constructivism (qualitative research), in which the objective of the research is to understand a phenomenon as it is seen and interpreted by the participants themselves, individually (e.g. Piagetian constructivism) or socially (e.g. Vygotskyian constructivism) in a world characterized by a multiple view of reality and in which the researcher works with the world as it is construed by its participants (i.e. bottom-up).
- Participatory/transformative (qualitative research), in which the research has a deliberate agenda of seeking to improve the situation of its participants, focusing, thereby, on issues of: agentic control of one's life; power, empowerment, social justice, marginalization and oppression; voice and action, all in a world characterized by a political, negotiated view of reality and in which the researcher works collaboratively with participants to improve the life situation of disempowered groups and individuals.
- Pragmatism (quantitative and qualitative), in which the research focuses on framing and answering the research question or problem, which is eclectic in its designs, methods of data collection and analysis, driven by fitness for purpose and employing quantitative and qualitative data as relevant, i.e. as long as they 'work' – succeed – in answering the research question or problem, and in which the researcher employs both inductive and deductive reasoning to investigate the multiple, plural views of the problem and the research question.

Mertens (2012) identifies three paradigms in MMR: 'dialectical pluralism', lodged between constructivism and post-positivism (p. 256); 'pragmatism' and the 'transformative' paradigm (p. 256). She argues that these paradigms in MMR have 'different sets of philosophical assumptions' (p. 256), though it is questionable where the incommensurability question is actually answered here, as incommensurability does not evaporate by making different data types available in a single piece of research. This rehearses the differences between mixing data, methods and world views in MMR.

Morgan (2007) argues against the use of the term 'paradigm' in MMR, suggesting its replacement by 'approach', particularly in his advocacy of the pragmatic approach. In MMR, methodological pluralism is the order of the day as this enables errors in single approaches to be identified and rectified (Johnson *et al*., 2007, p. 116). It also enables meanings in data to be probed, corroborated and triangulated, rich(er) data to be gathered and new modes of thinking to emerge where paradoxes between two individual data sources are found (p. 115; Sechrest and Sidana, 1995). For example, one can adopt a constructivist approach in developing a research problem or question, and then adopt a pragmatic, post-positivist or transformative paradigm for investigating it (Flick *et al*., 2012). At issue here is whether commencing in one paradigm frames a research question or problem in a way that would be different if one had commenced in a different paradigm. A paradigm affects how we think about a problem or issue (Mertens and Hesse-Biber, 2012).

Much MMR works beyond quantitative and qualitative exclusivity or affiliation, and instead operates in a 'pragmatist paradigm' (Onwuegbuzie and Leech, 2005; Ercikan and Roth, 2006; Johnson *et al*., 2007, p. 113; Teddlie and Tashakkori, 2009, p. 4; Gorard, 2012, p. 8) which draws on, and integrates, both numeric and narrative approaches and data, quantitative and qualitative methods where relevant, to meet the needs of the research rather than the allegiances or preferences of the researcher, and in order to answer research questions fully. Whereas post-positivist approaches are premised on scientific, objectivist ontologies (how we construe reality) and epistemologies (how we understand, come to know about or research reality), and whereas interpretive approaches are premised on humanistic and existential ontologies and epistemologies, by contrast, MMR is premised on pragmatist ontologies and epistemologies.

Quantitative approaches are not all of one kind, and neither are all qualitative approaches. In this respect, Onwuegbuzie and Leech (2005, p. 377) argue that not all quantitative approaches are positivist and not all qualitative approaches are hermeneutic. For example, quantitative approaches can catch opinions, perceptions, probabilistic causality and process approaches (e.g. structured observation), and qualitative approaches can feature in experiments, identifying causality, surveys and patterns of, and trends in, data (e.g. Miles and Huberman, 1984, 1994).

Onwuegbuzie and Leech (2005, p. 376) argue that MMR recognizes similarities between different philosophies and epistemologies (in quantitative and qualitative traditions), rather than the differences that keep them apart, and that there are far more similarities than differences between the two approaches, as both use observational data, both describe data, and construct explanations and speculations about the reasons why observed outcomes are as they are (p. 379). Both concern corroboration and elaboration; both complement each other and identify important conflicts, where they arise, between findings from the two kinds of data (cf. Brannen, 2005, p. 176).

Hammersley (2013) suggests that the terms 'quantitative research' and 'qualitative research' are no longer useful categories (p. 99), as there are major variants of each, and he suggests, rather, that in conducting research it is preferable to use a range of strategies that lend themselves to 'research practice' (p. 99). Methodological puritanism should give way to methodological pragmatism in addressing research questions (cf. Caracelli and Greene, 1993; Greene, 2008; Creswell, 2009).

A commonly given basis of MMR is pragmatism. This is loosely interpreted to be 'what works', i.e. if the methods of research and the data collected – be they numerical or qualitative – address the research purposes, problems or questions then they are acceptable. In other words, the research is driven by the research question. Biesta (2012) contrasts a pragmatic approach with a principled approach (p. 147), though this is contestable, as pragmatism is no less a principle or a philosophical position than, say, post-positivism or constructivism. The principle underpinning pragmatism is that thought should lead to action, to prediction and problem solving.

Pragmatists such as James, Peirce and Dewey consider thought to be an instrument or tool for accurate prediction, problem solving and action, i.e. philosophy is not merely a contemplative exercise but is judged by its practical outcomes, success in practice, ability to solve problems and the everyday use-value of philosophizing. What is 'true' and what is valuable is 'what works'. As Ulysse and Lukenchuk (2013, p. 18) remark, in pragmatism one is less concerned with the truth or falsehood of an idea and more concerned with whether the idea can make a difference (they quote William James's comment that pragmatism concerns its 'cash value'). Similarly they note that Peirce's pragmatism concerned less a theory of truth and more whether a solution can be found to a problem.

Pragmatism is essentially practical rather than idealistic; it is 'practice-driven' (Denscombe, 2008, p. 280). It argues that there may be both singular and multiple versions of the truth and reality, sometimes subjective and sometimes objective, sometimes scientific and sometimes humanistic. It is a matter-of-fact approach to life, oriented to the solution of practical problems in the practical world. It prefers utility, practical consequences, outcomes and heurism over the pursuit of a single, particular kind of accuracy in representing 'reality'. Rather than engaging in the debate over qualitative or quantitative affiliations, it gets straight down to the business of judging research by whether it has found out what the researcher want to know, regardless of whether the data and methodologies are quantitative or qualitative (Feilzer, 2010, p. 14).

In pragmatism, what something 'means' is manifested in its practical, observable consequences and success in practices, with its links to experience, rather than, for example, abstract theory with little practical import, or ideology, or dogmatic adherence to a particular value system or epistemology. Theories are to be judged by their practical utility rather than being ends in themselves; they are instruments for coping with, understanding and living with 'reality'. Hence a 'good' theory pulls its weight in its practical utility; values and beliefs denote rules for action.

Working in this vein argues against any privileged, distinctive method of enquiry; 'what works' is what helps us to understand, research and solve a problem. Our frames of reference, conceptual schemes, categories for understanding the world, are not immutable or eternal, but are our creations, our artefacts, useful insofar as they solve practical problems. Which frameworks, categories, theories, conceptual schemes and ways of viewing a problem we use are decided by their practical utility and applicability in solving a particular problem. Knowledge and action are closely connected and mutually informing.

Clearly pragmatism is no less value-based than other 'principles'; it is simply that its values differ from others. Pragmatism adopts a methodologically eclectic, pluralist approach to research, drawing on positivist, post-positivist and interpretive epistemologies based on the criteria of fitness for purpose and applicability, and regarding 'reality' as both objective and socially constructed (Johnson and Onwuegbuzie, 2004). No longer is one a slave to methodological loyalty and a particular academic community or social context (Oakley, 1999). Denscombe (2008) argues for the mixed methods paradigm to be defined in terms of a new 'community of practice' of those like-minded researchers who adopt the principles of MMR; regarding MMR in terms of a 'community of practice' respects the pragmatic underpinning of this approach.

Pragmatism suggests that 'what works' to answer the research questions is the most useful approach to the investigation, be it a combination of experiments, case studies, surveys or whatever, as such combinations enhance the quality of the research (e.g. Suter, 2005). Indeed Chatterji (2004) argues that mixed methods are unavoidable if one wishes to discover 'what works'. Pragmatism is not an 'anything goes', sloppy, unprincipled approach; it has its own standards of rigour, and these are that the research must answer the research questions and 'deliver' useful, practicable, reliable and valid answers to questions put by the research.

Paradigms and the commensurability problem in mixed methods research

Mixed methods research has to grapple with the issue of 'commensurability': is it possible to mix methods which have distinct and incompatible roots and views of the world, and how we should research and understand it, what should we look for and look at, and how should we make sense of the world?

Whether paradigms are or are not incommensurable, whether they can coexist alongside each other or can be integrated, is an immense open, philosophical question. Bergman (2011a, 2011b) comments that the recourse to pragmatism is no solution to, or resolution of, the incompatibility problem; it still exists and will continue to exist as it is illogical to try to seek coherence of such incoherence in a single research design (2011a, p. 101) (see also Denzin, 2012), even if it 'works' in practice. Hammersley (2013) argues that quantitative and qualitative approaches are irreconcilable as their rationales are very different (p. 97), such that mixing quantitative and qualitative methods means, in effect, 'abandoning key assumptions' of qualitative research (p. 97). Indeed Borge (2012, p. 15) notes that there are times when, rather than trying to mix methods, it may be helpful to have different specialisms and division of labour in quantitative and qualitative terms: we need specialists to give us expert advice on particular aspects of a phenomenon.

Biesta (2012, p. 148) identifies seven levels of 'mixing', and he raises challenging questions for those working with MMR:

1 '*Ontologies*', questioning whether and how it is possible combine different ontologies (e.g. views of the nature of reality).

2 ‘*Epistemologies*’, questioning whether and how it is possible to combine different epistemologies (ways of knowing).
3 ‘*Research purposes*’, questioning whether and how it is possible to combine the wish to have research which seeks causal explanations with that which seeks understanding and interpretation.
4 ‘*Practical orientation*’, questioning whether and how it is possible for research to be directed both towards producing ‘solutions, techniques and technologies’ (p. 148) and towards developing ‘critical understanding’.
5 ‘*Designs*’, questioning whether and how it is possible to combine interventionist designs, such as experiments, with non-interventionist designs, such as naturalistic research.
6 ‘*Data*’, questioning whether and how it is possible to combine text and numbers.
7 ‘*Methods*’, questioning whether and how it is possible to combine different methods of collecting and/or analysing data.

Biesta’s view goes to the heart of the dilemma of MMR, questioning whether a piece of research can genuinely ‘mix’ different elements (as in mixing water and milk to form a new liquid) or simply combine them but keep them separate (as in combining the separate pieces of a jigsaw to make a complete picture). We return to ‘commensurability’ and incommensurability later in this chapter.

Bergman (2011a) notes that even the term ‘mixing’ is inappropriate because one cannot mix that which cannot be mixed, and he argues that MMR designs are unable to bridge incompatible ontological, epistemological and axiological positions (p. 273). How, he asks, can one combine a subjectivist foundation with an objectivist one, or research that separates the researcher from the research with that which binds them together? He argues that more suitable terms than ‘mixed’ might be ‘blended’, ‘meshed’ and ‘combined’ (p. 272). Similarly Creswell and Plano Clark (2011, p. 277) comment that mixed methods differ from multi-methods, in that multi-methods do not necessarily imply that they will be mixed. In terms of educational research this suggests the need to identify the benefits of each approach (e.g. quantitative and qualitative) in terms of the overall research purpose, problem or question.

Consider the analogy: was it possible for scientists to work in two distinct paradigms – the geocentric view which put the Earth at the centre of the universe (a Ptolemaic model) or a heliocentric view with the sun at the centre (the Copernican view)? Surely these two are fundamentally incompatible? Applying this analogy to MMR calls into question whether, in fact, it is fitting to call MMR a paradigm at all. For example, in what sense can I combine an atheistic view of the world with a theistic view of the world and then call this a new paradigm? The two have fundamentally different and irreconcilable starting positions, rationales, values, foundations and ways of looking at the world, and to bring them together under a convenient label of a ‘paradigm’ is a misnomer; it does not ‘mix’ them at all, it just puts them side by side and draws on each as appropriate in answering a research question or problem. In this instance we have two paradigms, not one. Maybe MMR is just a convenient shorthand for something that we understand but which has different and incompatible premises, and which is not actually a single paradigm, or, more generously, is a paradigm based on compatibility – each party living in comfort alongside the other – rather than mixing, i.e. a marriage rather than a metamorphosis into a single organism.

Putting together quantitative and qualitative designs and data may be difficult, as the two may be incommensurate in terms of the paradigms, ontologies, epistemologies, methodologies, axiologies, data types, etc. The analogy may be made with trying to mix oil and water, which stay separate, rather than milk and water, which mix. Recognizing such differences may not be a problem as, together, complementarily, they can yield a complete picture of the phenomenon in question. Oil and water may not mix but they give more than oil alone or water alone.

Further, neither is quantitative nor qualitative research all of one type. For example, not all quantitative research is large scale and not all qualitative research is small scale (cf. Miles and Huberman, 1984, 1994). ‘Quantitative’ and ‘qualitative’ are umbrella terms, each covering a multitude of research types. Hence, in designing MMR, specificity is necessary about what kind of research is planned with respect to the quantitative and qualitative elements.

In relation to the issues of the incommensurability of paradigms (Howe, 1988; Denzin, 2008; Creswell, 2009, p. 102; Trifonas, 2009, p. 297), MMR argues for their compatibility, or at least their ability to live alongside each other and to work together to solve a research problem. These same authors suggest the power of integrating different approaches, ways of viewing a problem, and types of data in conducting research, induction and deduction in answering research questions, in strengthening the inferences that can be made from research and data and in generating theory. Indeed Reams and Twale (2008, p. 133) argue that mixed methods are necessary and important in addressing information and perspectives, and that they ‘increase corroboration of the data, and render less biased and more accurate conclusions'. Maybe that leaves behind the problem of whether MMR constitutes a paradigm, whether quantitative and qualitative approaches can be brought into a single overarching paradigm, or whether each is incommensurable with the other. In other words, whether or not we recognize commensurability and incommensurability actually doesn't matter that much, if at all, in the 'real world' of practical utility in MMR.

Researchers need not become mired in the paradigm debate; as long as we know what we are dealing with in MMR then this may suffice. Mertens and Hesse-Biber (2012) suggest it is time to move beyond the commensurability/incommensurability question (p. 75). We still have not resolved the incompatibility thesis, but that does not mean that we are unable to move forward in MMR (Bergman, 2011b) or to conduct MMR research.

2.5 Working with mixed methods approaches

There are no blueprints for how to work with MMR; each piece of research is unique and the researcher has to decide how to design and implement the research, based on its own purposes, foci, merits and characteristics. What follows, then, are considerations in coming to these decisions in terms of design issues, research questions, sampling, data collection and analysis, and writing up the data analysis. We leave behind the issue of paradigms and their commensurability, and move to planning 'what works', as this accords with the pragmatic roots of MMR.

Mixed methods research designs and data

A research design is the plan for, and foundations of, approaching, operationalizing and investigating the research problem or issue; setting out the approach, theory/ies and methodology/ies to be employed; the types of data required, how they will be collected (instrumentation) and from whom (the population and/or sample); how the data will be analysed, interpreted and reported; the warrants to be adduced to defend the conclusions drawn and the degree of trust that can be placed in the validity and reliability of each element of the research; and the sequence of the research.

In MMR the kinds and methods of research and its several stages or phases are driven by the research questions or research problem, with 'fitness for purpose' as a guiding principle. There must be a clear matching of the research question to the research problem and to the methods used for answering that research inquiry. For MMR this means providing a reasoned and reasonable justification for mixing whatever elements of the research design are, indeed, to be mixed (e.g. world views, views of reality, paradigms, rationales, theories, methodologies and approaches, data types and instrumentation, sampling, data analysis, interpretation and reporting, types of validity and reliability), stages and phases of the research, conclusions, outcomes and consequences of the research.

In approaching MMR designs, key decisions have to be taken on several issues (cf. Teddlie and Tashakkori, 2009, p. 141; Creswell and Plano Clark, 2011, pp. 64–7):

- Why used a mixed methods approach? What will a mixed methods approach provide that a non-mixed methods approach does not?
- What, actually, will be mixed, and why, for example, paradigms, ontologies, epistemologies, theories and theoretical frameworks, designs, research purposes and questions, methodologies, populations and samples, data types, data-collection instruments and their contents, data analysis, interpretation and reporting?
- Why, where, at what level(s), in what areas and how will this 'mixing' occur, how will it be done, adhering to what principles, procedures and processes?
- When, where, why and how will the designs and data be mixed, merged, integrated, connected, adhering to what principles, procedures and processes, and how will the quantitative designs and data relate to qualitative designs and data, and vice versa? How and why will one design be embedded in another?
- What methodologies will be used, where, when, why and how?
- How many strands, levels, stages and phases will there be in the research, and where, how and why do quantitative and qualitative approaches feature in these? What will be the relative priority accorded to the quantitative and qualitative strands, for example, will they have equal priority/importance, will one take priority over the other, and, if so, at which stages or phases of the research, and why?
- What will be the level and type of interaction between the quantitative and qualitative strands of the research, for example, will they be independent, separate, integrated, combined, parallel, interactive?
- What will be the timing and/or sequence of the quantitative and qualitative strands in the research, for example, will they be concurrent/parallel and/or sequential in a time sequence within and between phases, and why?
- What ethical issues does MMR present?

Teddlie and Tashakkori (2009) suggest different designs in MMR. ‘*Parallel mixed designs*’ (p. 26) (also termed ‘concurrent designs’) are those in which both qualitative and quantitative approaches run simultaneously but independently in addressing research questions, akin to the familiar notion of triangulation of method, theory, methodologies, investigators, perspectives and data, discussed later in this book. ‘*Sequential mixed designs*’ (p. 26) are those in which one or other of quantitative and qualitative approaches run one after the other, as the research requires, and in which one strand of the research or research approach determines the subsequent strand or approach and in which the major findings from all strands are subsequently synthesized. ‘*Quasi-mixed designs*’ (p. 142) are those in which both quantitative and qualitative data are gathered but which are not integrated in answering a particular research question, i.e. quantitative data might answer one research question and qualitative data another research question, even though both research questions are included in the same piece of research. ‘*Conversion mixed designs*’ (p. 151) are those in which data are transformed (qualitative to quantitative and vice versa, e.g. in a parallel mixed design) (the issues of quantitizing qualitative research and qualitizing quantitative research are discussed below). ‘*Multilevel mixed designs*’ (in parallel or sequential research designs) (p. 151) (also termed ‘hierarchical’ research designs) are those where different types of data (both quantitative and qualitative) are integrated and/or used at different levels of the research (e.g. student, class, school, district, region), for instance numerical data may be used at one level (students) and qualitative data used at another level (school). ‘*Fully integrated mixed designs*’ (p. 151) are those in which mixed methods are used at each and all stages (perhaps iteratively: where one stage influences the next) and levels of the research.

Creswell and Plano Clark (2011) identify six MMR designs in which timing and sequence feature strongly. They contend that there must be a valid warrant or justification for the sequence and design chosen, and note that samples and sample sizes may vary with each kind of data and at different stages of the research. Their *convergent parallel design* (pp. 69–79) has both quantitative and qualitative data which are collected independently and in parallel with each other, and then they converge, yielding triangulation of data and offering complementary data on the question, problem, issue or topic in question. Quantitative and qualitative data are collected and analysed separately and then put together, for example they may be compared and contrasted, looking for similarity, difference and complementarity. The overall, combined or integrated results are reported.

In an *explanatory sequential design* (pp. 82–4), quantitative data are usually collected first, followed by qualitative data to explain the quantitative data. It is important for the researcher to identify which parts of the quantitative data need to be explained and how they can be explained (and with which sample(s)).

Their *exploratory sequential design* (pp. 86–7) reverses the sequence of data collection in the explanatory sequential design; qualitative data are usually collected first (typically with a small sample), with quantitative data from a larger sample used to generalize the findings.

Their *embedded design* (pp. 90–2) recognizes that each research question requires both quantitative and qualitative data, and qualitative data may be added to, embedded in or supplemented by quantitative data (e.g. in an experiment) or vice versa (e.g. a case study) in this design. In the former (the experiment), the qualitative data may be used to explain and interpret the quantitative data, whilst in the latter (the case study) the quantitative data may provide additional, more generalized data on the case (e.g. frequencies). The authors note that one type of data tends to have priority over another in this design: for example, qualitative data may be embedded within a largely quantitative study or quantitative data may feature within a mainly qualitative study. The authors also note that quantitative and qualitative data tend to be kept separate. It is important to decide when, and in what sequence, to collect the data: for example, concurrently and/or sequentially. In discussing an embedded design, Creswell and Plano Clark introduce a widely used notation:

QUAN = Quantitative data which have priority over qualitative data
Quan = Quantitative data which are subordinate to qualitative data
QUAL = Qualitative data which have priority over quantitative data
Qual = Qualitative data which are subordinate to quantitative data

They also introduce other symbols in outlining notation in designs (pp. 108–10):

+	(the methods – quantitative and qualitative – occur simultaneously);
()	(one method is embedded within another);
→	(a linear sequence, where one stage informs the next or is kept separate);
→←	(the methods are used recursively);

[] (mixed methods operate within a single study or a series of studies);
= (the outcome of the mixing).

For example, a case study may be characterized as '(QUAL and Quan)', whereas an experiment may be characterized as '(QUAN and Qual)'. The authors indicate the sequence of the quantitative/qualitative methodology, data collection and analysis by a simple arrow (→). We outline some conceptual MMR designs using these (Figure 2.1).

In their *transformative design* (pp. 96–7), as in critical theory, there is an explicitly political or ideological, social intention or agenda, to advance the social justice for the group or groups under study. In this collaborative, participatory type of research, the authors suggest

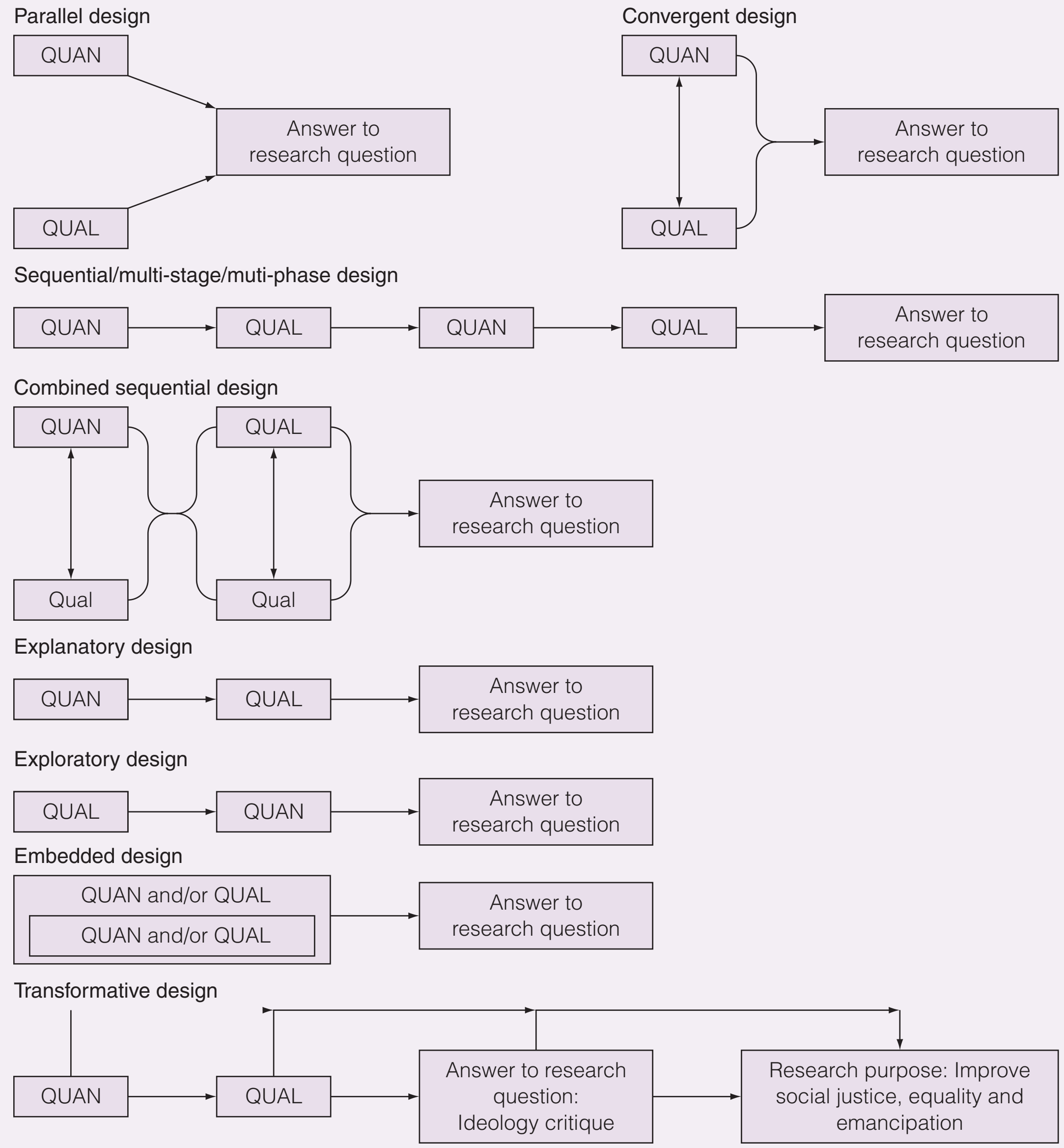
Parallel design
QUAN
QUAL
Answer to research question
Convergent design
QUAN
QUAL
Answer to research question
Sequential/multi-stage/muti-phase design
QUAN
QUAL
QUAN
QUAL
Answer to research question
Combined sequential design
QUAN
QUAL
Qual
Qual
Answer to research question
Explanatory design
QUAN
QUAL
Answer to research question
Exploratory design
QUAL
QUAN
Answer to research question
Embedded design
QUAN and/or QUAL
QUAN and/or QUAL
Answer to research question
Transformative design
QUAN
QUAL
Answer to research question: Ideology critique
Research purpose: Improve social justice, equality and emancipation

FIGURE 2.1 Mixed methods research typologies

that quantitative data precede qualitative data. However, in this design it is less the data types and sequence that are important as the overall purpose of the research, i.e. the research has a political/ideological agenda (whether this is the legitimate concern of researchers is another matter, for example Hammersley (2014, chapter 3) questions whether researchers should concern themselves with what uses are made of their data and, rather, should concentrate on ensuring that their research is conducted rigorously and without bias). As we argue in Chapter 3, the methodologies of research in the critical theory approaches are ideology critique and action research (Carr and Kemmis, 1986).

Finally, in their *multi-phase design* (Creswell and Plano Clark, 2011, pp. 100–11) the quantitative and qualitative data can be concurrent and/or sequential, depending on the phase of the research in which they are being used. At issue here is the need to identify the key phases of the research as it unfolds, and then decide which kind of data are needed in each phase. The point here is that the progress of the research is incremental and cumulative: one phase builds on, and is informed and influenced by, the preceding phase in addressing the overall purposes of the research. Hence the decision of which kinds of data are required at each stage is an iterative one, and it is important that each phase of the research is connected clearly. The authors comment that this kind of research is often characterized as a series of 'mini-studies' leading towards the overall answer to the research question or problem.

These are suggested models; clearly there are very many variants on these designs, as there may be enormous variety of: timing; number of stages/phases; sequence; data types in the sequence and within each stage; the priority/weights given to data types; interaction/independence of data (de Lisle (2011) provides a useful summary of these). It is for each research study to plan its own design. Even though mixed methods may be used, in some research the numerical approach may predominate – with its own sampling implications – whilst in others qualitative data may predominate, with an emphasis on purposive and non-probability sampling (cf. Teddlie and Yu, 2007, p. 85).

The designs set out above are not exhaustive, nor are they discrete, nor do they indicate the levels (other than data) at which the quantitative and qualitative aspects operate (e.g. paradigms; world views; ontologies; epistemologies; axiologies; methodologies; instrumentation; sampling; data types, collection, analysis, interpretation, reporting etc.). There is no single methodological approach in MMR (Hesse-Biber and Johnson, 2013). Rather, the typologies set out above are ideal types and typifications for the sake of heuristic clarity, designed to alert researchers to different kinds of MMR. It is for each research study to plan its own design. The design types set out above identify key issues to be addressed (e.g. Ivankova *et al*., 2006, pp. 9–11; Greene, 2008, pp. 14–17):

- *The paradigm dimension*: which paradigms are operating in the research, and why? For example, Creswell and Plano Clark (2011) align post-positivism with quantitative research, constructivism with qualitative research, transformative research with the transformative design, and pragmatism with those designs which are directed to answering the research question or problem regardless of which data types are used. This is not to argue that research is, or must be, paradigm-driven; rather it is to say that different kinds of design may be present within an overall study, and that the logic of each design type should be integrated into the overall logic of the entire study.
- *The methodology dimension*: which methodologies/approaches will be used (e.g. survey; experiment; case study; ethnography, interpretive and interactionist approaches; action research; historical study), which will impact on the research design, sampling, instrumentation, data analysis, ethics?
- *The time dimension*: when and where will the quantitative and qualitative elements be present in the study – in what sequence and/or concurrence or simultaneity? Should the quantitative and qualitative data be analysed together or separately?
- *The priority dimension*: which and what has priority (if any), where and when – quantitative and qualitative (e.g. paradigms, methodologies, data types, data analysis)?
- *The relationship dimension*: will the research types and data types be independent, interactive, complementary, additional to each other? What are the relationships between different types of data at different points in the research, both within-phase/within-stage and cross-phase/cross-stage?
- *Integration*: where and when – at which stages – and why do the integration of quantitative and qualitative methods and data occur?
- *Independence, the obverse of integration*: where, when and why will methods and data be kept concurrent, separate, interactive or independent?
- *Differentiation*: will mixed methods and data be used to address the same issue or different issues?
- *Matching*: which kinds of data are required for which stages of the research?
- *Issues in question*: around what issues do the mixed methods occur, for example, at the levels of

constructs, variables, research questions, purposes of the research?

- *Transformative intention*: does the research have an explicitly political agenda?
- *Scope*: does the mixing of methods occur within a single study or across more than one study in a set of coordinated studies within a single programme of research?
- *Strands*: how many different strands are mixed in the study (Greene, 2008, p. 14)?

In reality, the cleanness of the designs set out above may not catch the reality of conducting research, which, in many cases, is characterized by multiple iterations, modifications and emergence rather than a pre-figured design. Indeed Creswell and Plano Clark (2011, p. 105) note that designs may be fixed from the very beginning or may emerge as the study unfolds. For example, there is no golden rule which states that such-and-such a design or data type should precede or succeed another or that data can only be analysed or mixed at such-and-such a point or points in time; the decision is taken on fitness for research purpose and fitness for research question. We present different designs in Figure 2.1.

Kettley (2012) questions the usefulness of delineating an unending host of different designs of MMR at all, deeming such attempts to be 'unproductive labour' (p. 85). This is uncharitable, as such delineation can stimulate and clarify, without shackling, the deliberative process needed in deciding what is to be the appropriate design for a given piece of research. Typologies have heuristic value, and, indeed may indicate the relative importance of the quantitative or qualitative elements (Denscombe, 2014, p. 151). Pluralism and fitness for purpose, rather than slavish adherence to a single pre-fixed design, are the order of the day. Indeed research designs may change and emerge over the course of a study; the process is an emergent part of a dynamical system. Each design is different and must be decided by the research in hand.

There must be a defensible reason for mixing data types. For example, qualitative data may be used to develop instruments (e.g. a pre-pilot); to understand the context of research and the participants in it; to validate the quantitative data; to understand participants' views of the research and what is being studied; to gain feedback on an intervention; to identify the effects and impact of an intervention and its unanticipated effects and risks; to understand the processes of an intervention and the changes in participants over time; to identify intervening factors; to explain cause and effect; to explain, understand and triangulate the quantitative data.

On the other hand, quantitative data may be used for generalizing the outcomes of research or an intervention; providing 'hard' data; measuring effects of an intervention; refining data-collection instruments (e.g. removing unreliable items or items which too strongly correlate with other items); gaining an overall picture and patterns of response; identifying, measuring and modelling correlations and relationships, differences, key underlying factors; and suggesting cause and effect.

The mixed methods researcher has the same battery of instruments available for data collection as for mono-methods research. These are set out in the several chapters of this book. Of concern here are the implications of the 'mixed' nature of MMR for mixing data. Whilst this is taken up in the prior discussion of MMR designs, at issue here is whether, how and where to mix data, the warrants that attach to each, and ensuring the validity and reliability of the resultant mix. Underpinning this is the point that a genuine 'mix' means fidelity not only to the different nature and warrants of quantitative and qualitative data but also to the fact that both types must be demonstrably relevant to answering a given research question and must be fit for purpose.

Timing is an important dimension of the research design in respect of data types in MMR. Qualitative data may be useful *before* an experiment/trial commences, for example for: ensuring that the research meets a need; instrument development; gaining informed consent; understanding more about the participants; and gaining baseline data. This differs from the use of qualitative data *during* an experiment/trial, which here may be for: data validation and triangulation; impact analysis; gaining participants' perceptions of and opinions on what is occurring; understanding what is happening and why; identifying resource needs; identifying emerging issues and factors affecting the process. In turn, this differs from the use of qualitative data *after* an experiment/trial, which may be to gain participants' perceptions of and opinions and feedback on what had happened; to determine outcomes, effects and impact; to suggest explanations of or reasons for what had happened; and to compare before-and-after situations.

MMR addresses both the 'what' (numerical and quantitative data) and 'how or why' (qualitative) types of research questions. This is particularly important if the intention of the researcher is really to understand different explanations of outcomes. For example, let us say that the researcher has found that a hundred people decide that schools are like prisons. This might be an interesting finding in itself, but it might be that forty of the respondents thought they were like prisons because they restricted students' freedom and had very harsh, controlling discipline. Twenty respondents might say that schools were like prisons because they were overcrowded; fifteen might say that schools were like prisons because the food was awful; ten might say that schools were like prisons because there was a lot of violence and bullying; ten might say schools were like prisons because they were 'total institutions' (Goffman, 1968); and another five might say that schools were like prisons because students had an easy life as long as they obeyed the rules. Here the reasons given for the simple statistic are very different from each other, and it is here that qualitative data can shed a lot of useful light on a simple statistic.

Reliability and validity in mixed methods research

Including quantitative and qualitative data may offer greater *reliability*. Within quantitative and qualitative approaches this includes a range of elements (see Chapter 14): for example, respondent validation, credibility of results, replicability, equivalence, stability, internal consistency and Cronbach alphas, dependability, credibility, accuracy, fidelity to context etc. These ensure reliability *within* each approach (quantitative and qualitative). Further, reliability-as-triangulation includes *between methods* approaches: for example, instruments, data types, researchers, time, participants, perspectives (people and approaches: objective and subjective, inductive and deductive (Morgan, 2007; Torrance, 2012); theories; methodologies; paradigms; axiologies; designs). Denscombe (2014, pp. 154–5) suggests that triangulation can be: (a) *methodological* (between methods), enabling researchers to study a phenomenon from a variety of perspectives and using dissimilar methods; (b) *methodological* (within methods), i.e. those methods which are similar to each other; (c) *data triangulation* (using contrasting sources of information, e.g. from different people, at different times, in different locations); (d) *investigator* (different researchers); and (e) *theory* (different theoretical positions).

Combining quantitative and qualitative data may also strengthen the *validity* of the research and the inferences that can be drawn from it in: the rigour of the design and its fitness for purpose in meeting the research purposes and research questions; methodological rigour; consistency of findings and conclusions with the evidence presented; defensible and credible inferences drawn; and the quality of the synthesis of data.

Validity *within* an approach is required, and Chapter 14 addresses this. Validity in quantitative and qualitative approaches have their own canons of rigour. In ensuring validity *between* approaches, Teddlie and Tashakkori (2009) argue that 'meta-inferences' assess the extent and degree to which the sets of inferences from quantitative and qualitative approaches are credible (cf. Ivankova, 2013), and that credible research requires such meta-inferences to be addressed and to be legitimate. Validity in MMR requires: designs that are appropriate for the research questions, methodologies and sampling; consistency with all the components of the study; procedures employed for analysing data to be appropriate to answer the research questions; and the different strands or elements of the MMR to be connected appropriately (Ivankova, 2013).

Ivankova (2013, p. 48) sets out a three-step process of validation of meta-inferences in MMR which employ a QUAN → QUAL design:

Step 1: Using a systematic process for selecting which participants to include in a qualitative follow-up;
Step 2: Elaborating, following up on and probing unexpected results from the quantitative data and their analysis;
Step 3: Observing and reporting on interactions between quantitative and qualitative strands of the study.

At issue here is the point that reliability and validity within each element/stage/data type of the research must be complemented by reliability and validity when combining the different elements/stages/data types of the research. We refer the reader here to Chapter 14, which includes more discussion of reliability and validity in mixed methods research.

Mixed methods research questions

In MMR the research is driven by the research questions (which require both quantitative and qualitative data to answer them). Greene (2008, p. 13) comments that methodology follows from the purposes and questions in the research rather than vice versa, and that different kinds of MMR designs follow from different kinds of research purposes: for example, hypothesis testing, understanding, explanation, democratization (see the discussion of critical theory in Chapter 3). Such purposes can adopt probability and non-probability samples (see Chapter 12), multiple instruments for data collection, and a range of data analysis methods, both numerical and qualitative.

In considering whether to adopt an MMR study, it is important for researchers to look at the research question or problem and ask themselves whether a single method on its own is appropriate or sufficient to answer or address this respectively. If the answer is ‘yes’, then why consider MMR? If the answer is ‘no’, then what is needed from the quantitative and qualitative elements in order to answer the question or problem, and where should they be mixed or kept separate?

Tashakkori and Creswell (2007, p. 207) write that ‘a strong mixed methods study starts with a strong mixed methods research question’, and they suggest that such a question could ask ‘what and how’ or ‘what and why’ (p. 207), i.e. the research question, rather than requiring *only* numerical or qualitative data, is a ‘hybrid’ (p. 208). The research question, in fact, might be broken down into separate sub-questions, each of which could be either quantitative or qualitative, as in ‘parallel’ or concurrent mixed methods designs (see above) or in ‘sequential mixed designs’ (see above), but which converge into a combined, integrated answer to the research question (see also Chapter 10). Bryman (2007a, p. 13) goes further, to suggest not only that qualitative and quantitative data must be mutually informing, but that the research design itself has to be set up in a way that ensures that integration will take place, i.e. so that it is not biased to, say, a numerical survey.

Such research questions could be, for example: ‘What are the problems of staff turnover in inner city schools, and why do they occur?’ Here qualitative data might provide an indication of the problems and a range of reasons for these, whilst numerical data might provide an indication of the extent of the problems. Here qualitative data subsequently might be ‘quantitized’ into the numbers of responses expressing given reasons, or the quantitative data subsequently might be ‘qualitized’ in a narrative case study.

Sampling in mixed methods research

The material here does not rehearse the chapter on sampling, and readers are referred to Chapter 12. Here we confine ourselves to issues of sampling in MMR. Teddlie and Yu (2007) and Teddlie and Tashakkori (2009, pp. 180–1) indicate that it is commonplace for MMR to use more than one kind of sample (probability, non-probability) and to use samples of different sizes, scope and types (cases: people; materials: written, oral observational; other elements in social situations: locations, times, events etc.) within the same piece of research.

In MMR, sampling in quantitative approaches should address issues and criteria that are relevant to such quantitative approaches: for example, sampling strategy, probability and non-probability sampling, sample size calculation (with references to confidence intervals, confidence levels, sampling error and statistical power), choice of sample, representativeness, and access to the sample. In other words, sampling in quantitative approaches should abide by the canons of sampling principles for quantitative studies. This is not to say naively that samples in quantitative approaches should be large; they may be large, small and/or variable, depending on fitness for purpose, research questions and research design.

Similarly, qualitative approaches should abide by the canons of sampling in qualitative research, which address similar issues as quantitative approaches but have different decisions made on, or answers given to, those issues, for example on sampling strategy, purposive sampling, representativeness, access, size. This is not to say naively that samples in qualitative research should be small; they may be small, large and/or variable.

However, given the specifically *mixed* nature of MMR, consideration should be given to the implications of this for sampling, for example:

- What sampling strategies will be used for which elements of the research and will the same or different samples be used in both the quantitative and qualitative elements, for example, to ensure ‘carry-through’ and consistency of people, as having different samples may bring inconsistencies and undue divergence (Ivankova, 2013, p. 42)?
- Will the qualitative sample be drawn from the sample used in the quantitative element (i.e. some ‘carry-through’ of the sample, with the qualitative sample becoming, in effect, a sample of the quantitative sample), and will the qualitative sample include, but add to, the sample used in the quantitative element? If the qualitative sample is drawn from the quantitative sample, i.e. a sample of the sample, how will the qualitative sample be chosen?
- Will the quantitative sample be drawn from the sample used in the qualitative element (i.e. some ‘carry-through’ of the sample, with the quantitative sample becoming, in effect, a sample of the qualitative sample), and will the quantitative sample include, but add to, the sample used in the qualitative element? If the quantitative sample is drawn from the qualitative sample, i.e. a sample of the sample, how will the quantitative sample be chosen?
- At what point in the research will the samples be drawn, i.e. when will you decide whom the sample will comprise?
- Will the samples for the quantitative and qualitative elements be of the same or different sizes?
- Will the same or different samples be used for the same research question(s) and issues under study?

In some MMR studies it may be possible to decide the exact members of the sample(s) in advance of commencing the entire research, whereas in others it may be that choosing members of the sample may not be possible until a particular stage of the research has taken place. However, this does not mean that the *principles* for the sampling at different stages or for different elements of the research may not be decided in advance, only that the actual members for every stage of element may be unknown in advance.

For example, it may be that an initial quantitative survey in an MMR study may yield 'average' responses together with outliers, and that the qualitative element of the same overall study is designed to conduct follow-up interviews with some respondents whose responses were 'average' and others whose responses were outliers, i.e. to include in the qualitative sample members whose responses to the quantitative survey showed maximum variation. We do not know in advance who they will be, but we know the *principle* on which the qualitative sample will be selected.

An example of this is given by Ivankova (2013). She reports an MMR study of an online research methods training course which commenced with a quantitative survey (N = 119), and, following the statistical analysis of the numerical data, a sample of those from the quantitative survey was drawn for follow-up qualitative telephone interviews (N = 13). The sample for the qualitative interviews was purposive, chosen to be able to help the explanation and elaboration of the quantitative data (including unexpected results), and was based on the principles of seeking to reduce potential bias and socially desirable responses.

As another example, an MMR study might commence with a small-scale qualitative, exploratory set of interviews which raise issues to be included in a larger-scale quantitative survey which will require a random stratified sample, stratified according to characteristics that emerge in the initial interviews. Again, we do not know in advance who will be targeted for inclusion in the quantitative survey, but we know the *principle* on which the quantitative sample will be selected.

A major decision will concern whether to have entirely independent samples in the quantitative and qualitative approaches – different members in each sample – or whether to have any overlap of members. Decisions on this matter may depend on fitness for purpose. For example, Monteiro and Morrison (2014) report a study of undergraduate collaborative blended learning in which an initial large-scale survey was conducted on a population of students in one university, followed by a targeted quasi-experiment with a sample of students from one year-group of this population, gathering both quantitative and qualitative data from a purposive sample drawn from high-, medium- and low-performing students, using classroom observations, learning logs and interviews. This 'carry-through' of students for the quantitative and qualitative elements of the research enabled comparisons to be made between the survey data and the qualitative data, using the large-scale survey as a context in which the quasi-experiment was embedded.

Teddlie and Tashakkori (2009, pp. 185–91) provide a useful overview of different mixed methods sampling (see also Chapter 12). This includes *parallel mixed methods sampling*, *sequential mixed methods sampling*, *multilevel mixed methods sampling*, *stratified purposive sampling*, *purposeful random sampling* and *nested sampling designs*. Each of these, with examples, is addressed in Chapter 12, and we refer readers to that chapter. In the same chapter we note that the sampling strategy should derive logically from the research questions or hypotheses being investigated/tested. It should also be faithful to the assumptions on which the sampling strategies are based (e.g. random allocation, even distributions of characteristics in the population etc.). Each sample should generate sufficient qualitative and quantitative data in order to answer the research questions and enable clear inferences to be drawn from both the numerical and qualitative data. Sampling, of course, must abide by ethical principles and be practicable and efficient. Researchers should also consider whether the data will enable generalizability of the results to be addressed and to whom the results are generalizable. Further, the sampling should be reported at a level of detail that will enable other researchers to understand it and perhaps use it in the future.

Mixed methods data analysis

It is a truism to say that analysing quantitative and qualitative data must be faithful to the canons of quantitative and qualitative analysis respectively, and these are addressed in different chapters of this book (Part 5). These operate when treating quantitative and qualitative data separately. However, MMR asks for the integration of, and connection between, quantitative and qualitative data.

Quantitative and qualitative data can be analysed separately and independently, as, for example, in parallel or sequential designs (e.g. quantitative to qualitative or vice versa), and they can also be mutually informing. For example, Ivankova (2013) reports how, after she had conducted her quantitative data analysis and then proceeded to her qualitative data analysis, her qualitative data analysis suggested that she needed to go back and conduct further statistical analysis of her numerical data. The process of data analysis in MMR is iterative, not necessarily a once-and-for-all event for each element or stage of the research. The researcher will need to decide:

- the purposes of data analysis both during and after the research process;
- which tools to use for analysis (e.g. numbers, words, graphics), what kind of analysis is most suitable for what kinds of data, what to look for in different kinds of data (e.g. do the different kinds of data focus on the same issue or different issues?), how to present different kinds of data analysis (e.g. in prose, tables, graphics), how to analyse the quantitative and qualitative data (see Part 5), and how to apply 'constant comparison' (see Chapter 37) to compare them, looking for similarities, differences, contrasts, additions, refinements, extensions, contradictions, mutual reinforcements, supplements, complements etc.;
- whether and why to analyse quantitative and qualitative data separately, independently or together, i.e. what, if any, is the relationship between the data types and their analysis?;
- the sequence and timing of the data analysis: when to analyse each kind of data, whether, why – and, if appropriate, how – to use the analysis of one kind of data to inform subsequent data collection and analysis and whether, when, where, why and how to relate, connect, merge and/or integrate data and data types;
- whether, where, how and why to quantitize qualitative data and to qualitize quantitative data, how to combine, compare and represent different types of data in answering a research question (e.g. analyse quantitative data and then qualitative data, or vice versa, and then draw key messages/themes from them together);
- which data in the data analysis have greater priority, and why, and how to represent and address this;
- what to do if the results from the analysis of one kind of data contradict, support, refine, qualify, extend those of another kind of data, what to do if re-analysis of earlier data is required, and what to do if inadequate, insufficient or weak data are found;
- how to combine data if they derive from different sampling strategies and different, unequal sample sizes, types and people.

Some kinds of research require 'progressive focusing' (Parlett and Hamilton, 1976), in which a study commences with a broad field of view and analyses data on this broad picture in order to identify key features. These features are then investigated further, in closer detail, moving from a wide view to a much narrower, focused set of issues. In MMR, for example, this lends itself to the analysis of large-scale quantitative data identifying patterns and key features, similarities and differences, which are then explored, for example in focus groups, observational data or semi-structured qualitative interviews. The point here is that one set of data analysis both precedes and informs what comes next.

MMR can combine data types (numerical and qualitative) in answering research questions and also convert data (Bazeley, 2006, p. 66). Caracelli and Greene (1993) suggest four strategies for integrating and converting data in MMR (see also Creswell and Plano Clark, 2011, p. 213): (a) data transformation (discussed below); (b) typology development (where classifications from one set or type of data are applied to the other set or type of data); (c) extreme case analysis (where outliers found in one set of data are explored using different data and methods); and (d) data consolidation/merging (where new variables are created by merging data).

'Data conversion' ('transformation') (Teddlie and Tashakkori, 2009, p. 27) is where qualitative data are 'quantitized' (converted into numbers, typically nominal or ordinal; see Chapter 38) (e.g. Miles and Huberman, 1994). This can be done, for example, by giving frequency counts of certain responses, codes, data or themes in order to establish regularities or peculiarities, or rating scales of intensity of those responses, data, codes or themes (Sandelowski *et al.*, 2009, p. 210; Teddlie and Tashakkori, 2009, p. 269). Software can also assist the researcher in providing frequency counts of qualitative data (e.g. Bazeley, 2006). 'Data conversion' can also take place where numerical data are 'qualitized' (converted into narratives and then analysed using qualitative data analysis processes).

It is misguided to imagine that different types of data can somehow be truly mixed, as if their different nature simply disappears. MMR recognizes that data are different, but that is not the issue. Rather, the issue is how they can be combined, related and merged. In this, the answer is both simple and difficult: be guided by the research question. It is the logic of the research question that impacts on the data analysis. In answering the research question, both quantitative and qualitative data might be adduced, each calls on its own warrants and claims to validity and reliability. The differences are intrinsic; oil is not water, and that is the beauty of each of them, but that does not mean we cannot draw on both in addressing an issue.

Timing and writing up the data analysis in mixed methods research

Bryman (2007a, p. 8) indicates a signal feature of MMR that distinguishes it from the simple usage of quantitative and qualitative research separately within a single piece of research; here mixed methods researchers write up their research in 'such a way that the quantitative and qualitative components are mutually illuminating'. This criterion of 'mutually illuminating' not only argues for the fully integrated mixed design but it also calls for research purposes and questions to *require* such integration, i.e. that the research question cannot be answered sufficiently by drawing only on one or the other of quantitative or qualitative methods, but that it requires both types of data.

The researcher is faced with several decisions in writing up the data analysis: for example, when to conduct and/or write up the data analysis (e.g. during or after the research, at the end of each stage or phase of the research in a sequential study); how to organize the presentation/write-up to answer each research question (e.g. by sample and sub-sample, individuals, theme, topic, research question, instrument, data type, stage/phase of the research etc.; see Part 5); whether one data type or stage of the research influences another data type or stage of the research (e.g. do the findings from quantitative data influence the qualitative data at that stage, or are they kept independent; whether the findings from one stage (e.g. quantitative stage) influence what happens in the next, qualitative stage); and how to organize the write-up of the data analysis in each stage or phase.

A major question here is whether one stage of the research influences the subsequent stage, even if, within each stage, mixed methods are being used. For example, in an explanatory design the quantitative data might suggest areas that the subsequent qualitative data should explain; in an exploratory design the qualitative data might suggest areas to be explored in the subsequent quantitative data. In these instances the timing of the data analysis is critical, as it is impossible to proceed to the next stage until the preceding data analysis is completed.

In a *parallel design*, with quantitative and qualitative data kept separate until the point of convergence, it would seem appropriate to organize the writing-up of the data analysis by the research question. But then the researcher has to decide, when writing up the data analysis in answering the research question, whether to present the data analysis separately by data type (e.g. qualitative and quantitative), or by different themes in answering the research question (with relevant quantitative and qualitative data integrated in addressing each theme), or by sample/sub-sample or instrument.

In a *sequential design* (e.g. quantitative followed by qualitative) it might be more appropriate to organize the data analysis and write-up first by stage/phase of the research and then draw this all together at the end of the data analysis to answer the research question. At each phase the researcher faces a similar set of decisions as in a parallel design, i.e. how to organize the write-up of the data analysis: by sample and sub-sample, individuals, theme, topic, research question, instrument or data type.

In an *explanatory sequential design* the qualitative data collection may come after the quantitative data. Here, for clarity, it may be useful to follow the same sequence in presenting the data analysis, with the quantitative data preceding the qualitative data, followed by a section which draws together the two data types in answering the research question. In an exploratory sequential design the sequence is reversed, with the quantitative data collection coming after the qualitative data. Here, for clarity, it may be useful to follow the same sequence in presenting the data analysis, with the qualitative data preceding the quantitative data, followed by a section which draws together the two data types in answering the research question.

In an *embedded design* one kind of data is subordinate to, or embedded within, another major data type. In this situation the main data may be presented first, with the supplementary data ensuing. It may be that the write-up of the data analysis takes the form of a case study, in which the quantitative and qualitative data are integrated in a narrative that 'tells the story' of the case. This latter can also apply to transformative designs.

The above designs are only typologies. As mentioned earlier, there are no blueprints for how and when to conduct and write up the data analysis. Each piece of research suggests its own most suitable designs, and these may be iterative and emergent, with several stages which move from quantitative to qualitative data and vice versa and their consequent own suitable ways of presenting the data analysis and the timing of these. Fitness for purpose is complemented by the need for clarity, relevance and ease in understanding the data and how they answer the research question. Indeed, in many cases the text of the write-up is exactly that – a text – in which both numbers and words appear as appropriate.

Consider, for example, a case study of an intervention to improve school attendance. Here overall school figures on attendance and absence may be addressed at the start of, or even before, the intervention. Quantitative and qualitative data may give rise to the research (e.g. frequency of absence from school), leading to qualitative and quantitative data from analysis of records, followed by analysis of further quantitative data, followed by exploratory interviews, followed by re-analysis of qualitative and qualitative data, and so on. Each stage of the research is driven by the data analysis at the preceding stage, and the researcher in this MMR design has to decide when is the appropriate time to conduct and use the data analysis. The logic of each stage of the design and the research question decides where, when and how to combine the quantitative and qualitative data, and indeed the overall write-up of the research may be a narrative which draws freely on both numbers and words.

2.6 Stages in mixed methods research

Creswell (2012, pp. 554–7) sets out a seven-step process in MMR planning and conduct:

Step 1: Determine whether a mixed methods study is practicable and feasible.
Step 2: Set out the rationale for mixing methods (justify the use of MMR and justify the model of MMR being used).
Step 3: Set out the data-collection strategy (consider the priority, sequence and kinds of qualitative and quantitative data required).
Step 4: Develop quantitative, qualitative and mixed methods questions.
Step 5: Collect quantitative and qualitative data.
Step 6: Analyse data separately, concurrently or both.
Step 7: Write the report as a one- or two-phase or a multi-phase study.

However, this overlooks a more exact indication of what is to be mixed. Hence we suggest a twelve-step process:

Step 1: Decide the purpose of the research.
Step 2: Decide the nature of the phenomenon or problem that you wish to research, such that MMR is the most appropriate approach.
Step 3: Decide the research questions, ensuring that they can only be answered fully by the provision and analysis of mixed data.
Step 4: Decide what is to be 'mixed' in the MMR: ontologies (views of reality); paradigms (world views, lenses through which to define the problem and how to consider the research, and commensurate ways of working in the research); epistemologies; axiologies; theories and theoretical frameworks; research designs; methodologies and approaches; data types; data-collection instruments and methods; sampling; data; data analysis, interpretation and reporting; types of validity, validation and reliability.
Step 5: Decide the stages and phases of the research, where the 'mixing' will occur in these stages/phases and which kinds of methodologies and data are pre-eminent at each stage or phase.
Step 6: Decide the data collection (quantitative and qualitative and their interrelations), what (kind of) data are required from whom, when and at what stage(s) and phase(s).
Step 7: Design the data-collection instruments and the sampling.
Step 8: Collect the data.
Step 9: Plan the data analysis including: the function of the data analysis (e.g. formative, summative, an ongoing record), which data have priority, when and where, the timing (e.g. ongoing, at the end of each phase, at the end of the entire project) and sequence of data analysis.
Step 10: Conduct the data analysis, being clear on which data, from whom, and when the data and their analysis will be mixed, related, kept separate, interactive, when the analysis will commence overall and by stage or phase.
Step 11: Decide how to organize and write the research report, for example, by phase, by data types, where to integrate data types, where to comment on the points in Step (4).
Step 12: Write the research report.

Clearly in a multi-phase research design several of these steps will be repeated, or the sequence altered (e.g. Step 9 may precede Step 8).

As can be seen here, the research question (Step 3), though it may drive the MMR, is itself the consequence of prior considerations (Steps 1 and 2), and MMR must be able to justify itself in terms of addressing these prior considerations. As Biesta (2012, p. 149) remarks, the research question, far from being the first step in the research, is itself the operationalized consequence of the research purposes and problems.

2.7 Conclusion

This chapter has suggested that MMR constitutes an important way of looking at the social and educational world that is informed by a pragmatic paradigm of practicality in answering research purposes and research question – 'what works' in planning, conducting and reporting the research – which rests on a range of ontological, epistemological and axiological foundations. For many years pragmatism has emerged as a prevailing principle to guide researchers. In order to give coherence to the discussion, the chapter then moved from the material on paradigms, principles, ontologies and epistemologies, to a practical account of its implications for the practice of research, thereby embodying the 'practicality' spirit of pragmatism that underpins MMR. In this spirit the chapter discussed matters of research designs, research questions, sampling, methodologies, reliability and validity, data types, data collection and analysis, and reporting.

The chapter also raised some challenges for MMR, for example, whether it really constitutes a new paradigm and how it addresses the problem of commensurability and incommensurability of the paradigmatic roots that underpin quantitative and qualitative research. Further, on the one hand, the advocates of MMR hail it as an important approach that is rooted in pragmatism, which: (a) yields real answers to real questions; (b) is useful in the real world; (c) avoids mistaken allegiance to either quantitative or qualitative approaches on their own; (d) enables rich data to be gathered which address the triangulation that has been advocated in research for many years; (e) respects the mixed, messy real world; and (f) increases validity and reliability; in short, that 'delivers' 'what works'. MMR possesses the flexibility in usage that reflects the changing and integrated nature of the world and the phenomenon under study. Further, it draws on a variety of ways of working and methodologies of enquiry, ontology, epistemology and values. It is a way of thinking, in which researchers see the world as integrated and in which they have to approach research from a standpoint of integrated purposes and research questions. As has been argued in this chapter, MMR enters into all stages of the research process: (a) philosophical foundations, paradigms, ontologies, world views, epistemologies and axiologies; (b) research purposes and research questions; (c) research design, methodology, sampling, data types, instrumentation and data collection, validity and reliability; (d) data analysis; (e) data interpretation; (f) conclusions and reporting results.

On the other hand, MMR has been taking place for years, before it was given the cachet of a new paradigm; it is not unusual for different methods to be used at different stages of a piece of research or even at the same stage, or with different samples within a single piece of research. It does not really have the novelty that seems to be claimed for it. Further, underneath MMR are still existing quantitative and qualitative paradigms, and they are different in world views, ontologies, epistemologies and axiologies, so to mix them by bringing them under a single sobriquet of 'mixed methods research' may be a disingenuous sleight of hand. There is also the matter of the perceptions which reveal underlying sympathies to paradigms and/or views of combining research types: imagine that we mix water with wine; is the liquid which results from such mixing 'fortified water' or 'diluted wine' – strengthened or weakened?

Giddings (2006), Giddings and Grant (2007) and Hesse-Biber (2010) question whether there is suppressed, or covert, support for positivism or quantitative approaches residing within MMR. Further, can one call a paradigm new simply because it brings together two previous paradigms and makes a case for thinking in a mixed method way of answering research questions by different types of data? The jury is still out, though this book underlines the importance of combining methods where necessary and relevant in planning and doing research, and we return to MMR throughout the book, as an indication of its importance.

Denscombe (2014, p. 161) notes that MMR might entail increasing the time costs of the research and will require researchers who are skilled in more than one method. One can add to his point that there is an additional skill required in being able to combine methods. Further, MMR might give rise to problems if data from different methods do not corroborate each other, requiring the researcher to explore why this might be (de Lisle (2011, p. 106) notes that qualitative findings might provide contradictory rather than complementary data). MMR might misinterpret the philosophy of pragmatism to be expediency rather than principled action (e.g. 'anything goes') (Denscombe, 2014, p. 161).

In a wide-ranging review, Creswell (2011) identifies eleven key controversies in MMR:

1. What actually MMR is in a context of shifting and widening definitions of MMR (method, methodology, orientation, philosophy, world view, a way of seeing).
2. The usefulness of quantitative and qualitative descriptors (i.e. that the binary nature of these two terms does not hold in practice and is unnecessarily limiting).
3. Whether MMR is as new as some of its claimants might propose.

4 What really drives the interest in MMR (including the interests of funding agencies).
5 The relevance and usefulness of debates on paradigms and whether they can actually be mixed.
6 The putative privileging of post-positivism in MMR, and the consequent diminishing status of qualitative approaches, for example, in ‘embedded’ designs.
7 Whether there is a ‘fixed discourse’ in mixed methods, who controls it and whether mixed methods is becoming a new metanarrative.
8 Whether MMR should adopt a ‘bilingual language’ for its terms, i.e. whether a language should move beyond the vocabulary which might favour quantitative or qualitative approaches to a new, non-partisan glossary of terms.
9 The usefulness of a plethora of designs and typologies, which become confusing and betray the complexity of the phenomena under study.
10 Whether MMR is ‘misappropriating’ designs and methodologies from other fields of, and approaches to, research, and whether MMR might be ‘a subordinate procedure within ethnography’ (p. 280).
11 What the added value of MMR is, i.e. what it offers by way of understanding a research issue better than either quantitative or qualitative approaches alone offer.

These suggest that, though MMR has been around for decades, there are still many questions to be answered. Hesse-Biber and Johnson (2013) suggest that MMR still has ‘gaps and opportunities’, including, for example: ethical issues and team approaches in MMR; ‘retooling’ ‘methods and traditions’ whose origins lie in quantitative or qualitative research to bring them into MMR; implications of web-based developments; and big data and analytics for MMR.

Whilst there is a powerful case for MMR, the argument here has been that the researcher has to decide whether and how to use MMR, and that these decisions must be driven by fitness for purpose.

The companion website to the book provides PowerPoint slides for this chapter, which list the structure of the chapter and then provide a summary of the key points in each of its sections. This resource can be found online at: www.routledge.com/cw/cohen.

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Critical educational research

CHAPTER 3

This chapter sets out key features of critical theory as they apply to educational research, and then it links these to:

- critical theory and critical educational research
- participatory action research
- feminist theory
- value-neutrality in educational research

It recognizes that other approaches can be included under the umbrella of critical theory (e.g. post-colonial theory, queer theory), and, whilst the chapter includes a note on these, it does not develop them. Indeed critical theory embraces a range of other theories, for example, critical race theory, critical pedagogy, critical disability theory.

3.1 Critical theory and critical educational research

Positivist and interpretive paradigms are essentially concerned with understanding phenomena through two different lenses. Positivism strives for objectivity, measurability, predictability, controllability, patterning, the construction of laws and rules of behaviour, and the ascription of causality; interpretive paradigms strive to understand and interpret the world in terms of its actors. In the former, observed phenomena are important; in the latter, meanings and interpretations are paramount. Giddens (1976) describes this latter as a 'double hermeneutic', where people strive to interpret and operate in an already interpreted world; researchers have their own values, views and interpretations, and these affect their research, and, indeed, that which they are researching is a world in which other people act on their own interpretations and views.

It was suggested in Chapter 2 that mixed methods research has an affinity with equity, social justice and a 'transformative paradigm' (Mertens, 2007), and it is to this that we turn now. This paradigm of *critical educational research* regards the two previous paradigms of positivism and interpretivism as presenting incomplete accounts of social behaviour when they neglect the political and ideological contexts of educational research. Positivistic and interpretive paradigms are seen as preoccupied with technical and hermeneutic knowledge respectively (Grundy, 1987; Gage, 1989). The paradigm of critical educational research is influenced by the early work of Habermas and, to a lesser extent, his predecessors in the Frankfurt School, most notably Adorno, Marcuse, Horkheimer and Fromm. Here the expressed intention is deliberately political – the emancipation of individuals and groups in an egalitarian society.

Critical theory is explicitly prescriptive and normative, entailing a view of what behaviour in a social democracy *should* entail (Fay, 1987; Morrison, 1995a). Its intention is not merely to give an account of society and behaviour but to realize a society that is based on equality and democracy for all its members. Its purpose is not merely to understand situations and phenomena but to change them. In particular it seeks to emancipate the disempowered, to redress inequality and to promote individual freedoms within a democratic society. In doing so it focuses not only on individuals and groups, but also on society and its institutions and social arrangements, and it uses both evaluative and descriptive concepts (Hammersley, 2013, p. 30) such as exploitation, empowerment, class division, emancipation, justice, interests and suchlike, with the intention of bringing about specific political aims: equality, social justice, democracy, freedom from oppression and exploitation, and the transformation of society to an emancipated democracy within which people are empowered to take control over their own lives and life choices.

In this enterprise, critical theory identifies the 'false' or 'fragmented' consciousness (Eagleton, 1991) that has brought an individual or social group to relative powerlessness or, indeed, to power, and it questions the legitimacy of this. It holds up to the lights of legitimacy and equality issues of repression, voice, ideology, power, participation, representation, inclusion and interests. It argues that much behaviour (including research behaviour) is the outcome of particular illegitimate, dominatory and repressive factors, illegitimate in the sense that they do not operate in the general interest – one person's or group's freedom and power is bought at the price of another's freedom and power. Hence critical theory seeks to uncover the *interests* at work in particular situations and to interrogate the legitimacy of those interests, identifying the extent to which they are legitimate in their service of equality and democracy. Its intention is *transformative*: to change society and individuals to social democracy. In this respect the purpose of critical educational research is intensely practical and political, to bring about a more just, egalitarian society in which individual and collective freedoms are practised, and to eradicate the exercise and effects of illegitimate power. The pedigree of critical theory in Marxism is not difficult to discern. For critical theorists, researchers can no longer claim neutrality and ideological or political innocence.

Critical theory and critical educational research have their substantive agenda: for example, examining and interrogating the relationships between school and society; how schools perpetuate or reduce inequality; the social construction of knowledge and curricula, who defines worthwhile knowledge; what ideological interests schools serve and how this reproduces inequality in society; how power is produced and reproduced through education; whose interests are served by education and how legitimate these are (e.g. rich, white, middle-class males rather than poor, non-white females); how different groups in society fare (e.g. by social class, gender, race, physical features, ethnicity, disability, sexuality) and how political goals might be achieved; in other words, the emancipation of all social groups regardless of social class, gender, race, physical features, ethnicity, disability, sexuality etc. Researchers, then, have an obligation to promote certain political views and to achieve certain political goals.

The significance of critical theory for research is immense, for it suggests that much social research is comparatively trivial in that it *accepts* rather than *questions* given agendas for research, compounded by the funding for research, which underlines the political dimension of research sponsorship (discussed later) (e.g. Norris, 1990). Critical theorists would argue that the positivist and interpretive paradigms are essentially technicist, seeking to understand and render more efficient an existing situation, rather than to question or transform it.

Critical approaches recognize that peoples, social groups, institutions and societies operate on the basis of 'interests' which are allied to ideologies and values. Habermas's early work (1972) offers a useful tripartite conceptualization of 'interests'. He suggests that knowledge – and hence research knowledge – serves different interests. Interests, he argues, are socially constructed, and are 'knowledge-constitutive', because they shape and determine what counts as the objects and types of knowledge. Interests have an ideological function (Morrison, 1995a), for example, a 'technical interest' (discussed below) can have the effect of keeping the empowered in their empowered position and the disempowered in their powerlessness, reinforcing and perpetuating the status quo. An 'emancipatory interest' (discussed below) threatens the status quo. In this view, knowledge – and research knowledge – is not neutral (see also Mannheim, 1936). What counts as worthwhile knowledge is determined by the social and positional power of the advocates of that knowledge. The link here between objects of study and communities of scholars echoes Kuhn's (1962) notions of paradigms and paradigm shifts, discussed in Chapters 1 and 2. Knowledge and definitions of knowledge reflect the interests of the community of scholars who operate in particular paradigms. Habermas (1972) constructs the definition of worthwhile knowledge and modes of understanding around three cognitive interests:

i prediction and control;
ii understanding and interpretation;
iii emancipation and freedom.

He names these the '*technical*', '*practical*' and '*emancipatory*' interests respectively. The technical interest characterizes the scientific, positivist method, with its emphasis on laws, rules, prediction and control of behaviour, with passive research objects: instrumental knowledge. The practical interest, an attenuation of the positivism of the scientific method, is exemplified in the hermeneutic, interpretive methodologies outlined in qualitative approaches. Here research methodologies seek to clarify, understand and interpret the communications of 'speaking and acting subjects' (Habermas, 1974, p. 8).

Hermeneutics focuses on interaction and language; it seeks to understand situations through the eyes of the participants, echoing the *verstehen* approaches of Weber (Ringer, 1997) and premised on the view that reality is socially constructed (Berger and Luckmann, 1967). Indeed Habermas (1988, p. 12) suggests that sociology must understand social facts in their cultural significance and as socially determined. Hermeneutics involves recapturing the *meanings o*f interacting others, recovering and reconstructing the *intentions* of the other actors in a situation. Such an enterprise involves the analysis of *meaning in a social context* (Held, 1980). Gadamer (1975, p. 273) argues that the hermeneutic sciences (e.g. qualitative approaches) involve the *fusion of horizons* between participants. Meanings rather than phenomena take on significance here.

The emancipatory interest subsumes the previous two paradigms; it requires them but goes beyond them (Habermas, 1972, p. 211). It is concerned with *praxis* – action that is informed by reflection with the aim of emancipation. The twin intentions of this interest are to expose the operation of power and to bring about social justice, as domination and repression act to prevent the full existential realization of individual and social freedoms (Habermas, 1979, p. 14). The task of this knowledge-constitutive interest, indeed of critical theory itself, is to restore to consciousness those suppressed, repressed and submerged determinants of unfree behaviour with a view to their dissolution (Habermas, 1984, pp. 194–5). This is a transformative agenda, concerned to move from oppression and inequality in society to the bringing about of social justice, equity and equality. These concern fairness in the egalitarian distribution of opportunities for, uptake of, processes in, participation in and outcomes of education and its impact on society, together with distributive justice, social justice and equality.

Mertens (2007, p. 213) argues that a transformative paradigm enters into every stage of the research process, because it concerns an interrogation of power. A transformative paradigm, she avers (pp. 216, 224), has several 'basic beliefs':

- Ontology (the nature of reality or of a phenomenon): politics and interests shape multiple beliefs and values, as these beliefs and values are socially constructed, privileging some views of reality and under-representing others;
- Epistemology (how we come to know these multiple realities): influenced by communities of practice which define what counts as acceptable ways of knowing, and affecting the relationships between the researcher and the communities who are being researched, such that partnerships are formed that are based on equality of power and esteem;
- Methodology (how we research complex, multiple realities): influenced by communities of practice which define what counts as acceptable ways of researching, and in which mixed methods can feature, as they enable a qualitative dialogue to be established between the participants in the research;
- Axiology (principles and meanings in conducting research, and the ethics that govern these): beneficence, respect and the promotion of social justice (see Chapter 7).

Mertens (p. 220) argues for mixed methods in a transformative paradigm (discussed later), as they reduce the privileging of powerful voices in society, and she suggests that participatory action research is a necessary, if not sufficient, element of a transformative paradigm, as it involves people as equals.

From Habermas's early work we conceptualize three research styles: the scientific, positivist style; the interpretive style; and the emancipatory, ideology critical style. Not only does critical theory have its own research agenda, but it also has its own research methodologies, in particular ideology critique and action research. The three methodologies, then, aligned to Habermas's knowledge-constitutive interests, are set out in Table 3.1.

With regard to ideology critique, a particular reading of ideology is being adopted here, as the 'suppression of generalizable interests' (Habermas, 1976, p. 113), where systems, groups and individuals operate in

TABLE 3.1 HABERMAS'S KNOWLEDGE-CONSTITUTIVE INTERESTS AND THE NATURE OF RESEARCH

Interest	*Methodology*	*Characteristics*
Technical interest	Scientific testing and proof	Scientific methodology; positivist (e.g. surveys, experiments); hypothesis testing; quantitative.
Practical interest	Hermeneutic; interpretive, understanding	Interactionist; phenomenological; humanistic; ethnographic; existential; anthropological; naturalistic; narratives; qualitative.
Emancipatory interest	Ideology critique	Political agenda, interrogation of power, transformative potential: people gaining control over their own lives; concern for social justice and freedom from oppression and from the suppression of generalizable interests; research to change society and to promote democracy.

rationally indefensible ways because their power to act relies on the disempowering of other groups, i.e. their principles of behaviour cannot be generalized.

Ideology – the values and practices emanating from particular dominant groups – is the means by which powerful groups promote and legitimate their particular – sectoral – interests at the expense of disempowered groups. Ideology critique exposes the operation of ideology in many spheres of education, the working out of vested interests under the mantle of the general good. The task of ideology critique is to uncover the vested interests at work that may be occurring consciously or subliminally, revealing to participants how they may be acting to perpetuate a system which keeps them either empowered or disempowered (Geuss, 1981), i.e. which suppresses a ‘generalizable interest’. Explanations for situations might be other than those ‘natural’, taken for granted, explanations that the participants might offer or accept. Situations are not natural but problematic (Carr and Kemmis, 1986). They are the outcomes or processes wherein interests and powers are protected and suppressed; one task of ideology critique is to expose this (Grundy, 1987). The interests at work are uncovered by ideology critique, which, itself, is premised on reflective practice (Morrison, 1995a, 1995b, 1996a). Habermas (1972, p. 230) suggests that ideology critique through reflective practice can be addressed in four stages:

Stage 1: a description and interpretation of the existing situation – a hermeneutic exercise that identifies and attempts to make sense of the current situation (echoing the *verstehen* approaches of the interpretive paradigm).

Stage 2: a presentation of the reasons that brought the existing situation to the form that it takes – the causes and purposes of a situation and an evaluation of their legitimacy, involving an analysis of interests and ideologies at work in a situation, their power and legitimacy (both in micro- and macro-sociological terms). Habermas’s early work (1972) likens this to psychoanalysis as a means for bringing into the consciousness of ‘patients’ those repressed, distorted and oppressive conditions, experiences and factors that have prevented them from having a full, complete and accurate understanding of their conditions, situations and behaviour, and that, on such exposure and examination, will be liberating and emancipatory. Critique here reveals to individuals and groups how their views and practices might be ideological distortions that, in their effects, perpetuate a social order or situation that works against their democratic freedoms, interests and empowerment (see also Carr and Kemmis, 1986, pp. 138–9).

Stage 3: an agenda for altering the situation – in order for moves to an egalitarian society to be furthered (the ‘transformative paradigm’ mentioned earlier).

Stage 4: an evaluation of the achievement of the situation in practice.

In the world of education, Habermas’s stages are paralleled by Smyth (1989), who also denotes a four-stage process: *description* (what am I doing?); *information* (what does it mean?); *confrontation* (how did I come to be like this?); and *reconstruction* (how might I do things differently?). Ideology critique here has both a reflective, theoretical side and a practical side to it; without reflection it is blind and without practice it is empty.

As ideology is not mere theory but impacts directly on practice (Eagleton, 1991), there is a strongly practical methodology implied by critical theory, which articulates with action research (Callawaert, 1999). Action research (see Chapter 22), as its name suggests, is about research that impacts on, and focuses on, practice. In its espousal of practitioner research, for example, teachers in schools, participant observers and curriculum developers, action research recognizes the significance of *contexts* for practice – locational, ideological, historical, managerial, social. Further, it accords power to those who are operating in those contexts, for they are both the engines of research and of practice. The claim is made that action research is strongly empowering and emancipatory in that it gives practitioners a ‘voice’ (Carr and Kemmis, 1986; Grundy, 1987), participation in decision making and control over their environment and professional lives. Whether the strength of the claims for empowerment are as strong as their proponents would hold is another matter, for action research might be relatively powerless in the face of mandated changes in education and might be more concerned with intervening in existing practice to ensure that mandated change is addressed efficiently and effectively.

3.2 Criticisms of approaches from critical theory

Morrison (1995a) suggests that critical theory, because it has a practical intent to transform and empower, can – and should – be examined and perhaps tested empirically. For example, critical theory claims to be empowering; that is a testable proposition. Indeed, in a departure from some of his earlier writing, Habermas (1990) acknowledges this, arguing for the need to find ‘counter examples’ (p. 6), for ‘critical testing’ (p. 7) and empirical verification (p. 117). He acknowledges that his views have only ‘hypothetical status’ (p. 32) that need to be checked against specific cases (p. 9). One could suggest, for instance, that the effectiveness of his critical theory can be examined by charting the extent to which: (a) equality, freedom, democracy, emancipation, empowerment have been realized by his theory; (b) transformative practices have been addressed or occurred as a result of his theory; (c) subscribers to his theory have been able to assert their agency; and (d) his theories have broken down the barriers of instrumental rationality. The operationalization and testing (or empirical investigation) of his theories clearly is a major undertaking. Without this, critical theory, a theory that strives to improve practical living, runs the risk of becoming merely contemplative.

There are several criticisms that have been voiced against critical approaches. Morrison (1995a) suggests that there is an artificial separation between Habermas's three interests – they are drawn far too sharply (Hesse, 1982; Bernstein, 1983, p. 33). For example, one has to bring hermeneutic knowledge to bear on positivist science and vice versa in order to make meaning of each other and in order to judge their own status. Further, the link between ideology critique and emancipation is neither clear nor proven, nor a logical necessity (Morrison, 1995a, p. 67) – whether a person or society can become emancipated simply by the exercise of ideology critique or action research is an empirical rather than a logical matter (Morrison, 1995a; Wardekker and Miedama, 1997). Indeed one can become emancipated by means other than ideology critique; emancipated societies do not necessarily demonstrate or require an awareness of ideology critique. Moreover, it could be argued that the rationalistic appeal of ideology critique actually obstructs action designed to bring about emancipation. Roderick (1986, p. 65), for example, questions whether the espousal of ideology critique is itself as ideological as the approaches that it proscribes. Habermas, in his allegiance to the social construction of knowledge through 'interests', is inviting the charge of relativism.

Whilst the claim to there being three forms of knowledge has the epistemological attraction of simplicity, one has to question this very simplicity (e.g. Keat, 1981, p. 67); there are a multitude of interests and ways of understanding the world and it is simply artificial to reduce these to three. Indeed it is unclear whether Habermas, in his three knowledge-constitutive interests, is dealing with a conceptual model, a political analysis, a set of generalities, a set of transhistorical principles, a set of temporally specific observations, or a set of loosely defined slogans (Morrison, 1995a, p. 71) that survive only by dint of their ambiguity (Kolakowsi, 1978). Lakomski (1999) questions the acceptability of the consensus theory of truth on which Habermas's work is premised (pp. 179–82); she argues that Habermas's work is silent on social change, and is little more than speculation and idealism, a view echoed by Fendler's (1999) criticism of critical theory as inadequately problematizing subjectivity and ahistoricity.

More fundamental to a critique of this approach is the view that critical theory has a deliberate political agenda, and that the task of the researcher is not to be an ideologue or to have an agenda, but to be dispassionate, disinterested and objective (Morrison, 1995a). Of course, critical theorists would argue that the call for researchers to be ideologically neutral is itself ideologically saturated with laissez-faire values which allow the status quo to be reproduced, i.e. that the call for researchers to be neutral and disinterested is just as value-laden as is the call for them to intrude their own perspectives. The rights of the researcher to move beyond disinterestedness are clearly contentious, though the safeguard here is that the researcher's is only one voice in the community of scholars (Kemmis, 1982). Critical theorists as researchers have been hoisted by their own petard, for if they are to become more than merely negative Jeremiahs and sceptics, berating a particular social order that is dominated by scientism and instrumental rationality (Eagleton, 1991; Wardekker and Miedama, 1997), they have to generate a positive agenda, but in so doing they are violating the traditional objectivity of researchers. Because their focus is on an ideological agenda, they themselves cannot avoid acting ideologically (Morrison, 1995a).

Claims have been made for the power of action research to empower participants as researchers (e.g. Carr and Kemmis, 1986; Grundy, 1987). This might be over-optimistic in a world in which power often operates through statute; the reality of political power seldom extends to teachers. That teachers might be able to exercise some power in schools but with little effect on society at large was caught in Bernstein's famous comment (1970) that 'education cannot compensate for society'. Giving action researchers a small degree of power (to research their own situations) has little effect on the *real* locus of power and decision making, which often lies outside the control of action researchers. Is action research genuinely and full-bloodedly empowering and emancipatory? Where is the evidence?

3.3 Participatory research and critical theory

The call to action in research, particularly in terms of participatory action by and with oppressed, disempowered, underprivileged and exploited groups, finds its research voice in terms of participatory research (PR) (e.g. Freire, 1972; Giroux, 1989). Here the groups (e.g. community groups) themselves establish and implement interventions to bring about change, development and improvement to their lives, acting collectively rather than individually.

PR, an instance of critical theory in research, breaks with conventional ways of construing research, as it concerns doing research *with* people and communities rather than doing research *to* or *for* people and communities. It is premised on the view that research can be conducted by everyday people rather than an elite group of researchers, and that ordinary people are entirely capable of reflective and critical analysis of their situation (Pinto, 2000, p. 7). It is profoundly democratic, with all participants as equals; it strives for a participatory rather than a representative democracy (Giroux, 1983, 1989). PR regards power as shared and equalized, rather than as the property of an elite, and the researcher shares his or her humanity with the participants (Tandon, 2005a, p. 23). In PR, the emphasis is on research for change and development of communities; emphasis is placed on knowledge that is useful in improving lives rather than for the interests of, and under the control of, the academic or the researcher. It is research with a practical intent, for transforming lives and communities; it makes the practical more political and the political more practical (cf. Giroux, 1983). As Tandon (2005a, p. 23) writes: ‘the very act of inquiry tends to have some impact on the social system under study’.

Campbell (2002, p. 20) suggests that PR arose as a reaction to those researchers and developers who adopted a ‘top-down’ approach to working with local communities, neglecting and relegating their local knowledge and neglecting their empowerment and improvement. Rather, PR is emancipatory (p. 20), eclectic and, like mixed methods research, adopts whatever research methodology will deliver the results that enable action and local development to follow. As with mixed methods research and action research, it is pragmatic, and, if necessary, sacrifices ‘rigorous control, for the sake of “pragmatic utility”’ (Brown, 2005a, p. 92). PR challenges the conventional distance between researchers and participants; *together* they work for local development. It focuses on micro-development rather than macro-development, using knowledge to pursue well-being (Tandon, 2005b, p. ix; Brown, 2005a, p. 98).

PR respects the indigenous, popular knowledge that resides in communities rather than the relatively antiseptic world and knowledge of the expert researcher. Like Freire’s work it is itself educative. Local community knowledge is legitimized in PR (Pinto, 2000, p. 21), and participants are active and powerful in the research rather than passive subjects. Local people can transform their lives through knowledge and their use of that knowledge; knowledge is power, with local community members collectively being active and in control. Researchers are facilitators, catalysts and change agents rather than assuming dominatory or controlling positions (Pinto, 2000, p. 13). The agenda of PR is empowerment of all and liberation from oppression, exploitation and poverty. Research here promotes both understanding and change. As one of its proponents, Lewin (1946, p. 34), wrote: ‘if you want truly to understand something, try to change it’. PR blends knowledge and action (Tandon, 2005c, p. 49).

PR recognizes the centrality of power in research and everyday life, and has an explicit agenda of wresting power from those elites who hold it, and returning it to the grass roots, the communities, the mainstream citizenry. As Pinto (2000, p. 13) remarks, a core feature that runs right through all stages of PR is the nagging question of ‘who controls?’.

PR has as its object the betterment of communities, societies and groups, often the disempowered, oppressed, impoverished and exploited communities, groups and societies, the poor, the ‘have-nots’ (Hall, 2005, p. 10; Tandon, 2005c, p. 50). Its principles concern improvement, group decision making, the need for research to have a practical outcome that benefits communities and in which participants are agents of their own decisions (Hall, 2005, p. 10; INCITE, 2010). It starts with problems as experienced in the local communities or workplace, and brings together into an ongoing working relationship both researchers and participants. As Bryeson *et al*. (2005, p. 183) remark, PR is a ‘three-pronged activity’ in which the investigation has the full and active participation by the community in question, involves action for development and which is an ‘educational process of mobilization for development’, and in which these three elements are interwoven. These features enter all stages of the research, from identification of problems to the design and implementation of the research, data analysis, reporting and catalysed changes and developments in the community. Empowerment and development are both the medium and the outcome of the research. Tandon (2005c, p. 30) sets out a sequence for PR (Figure 3.1).

Whilst conventional approaches to data collection may have their value (e.g. surveys, interviews), too often these are instruments that regard people solely as sources of information rather than as participants in their own community development (Hall, 2005, p. 13). Indeed Tandon (2005d, p. 106) reports that, in many

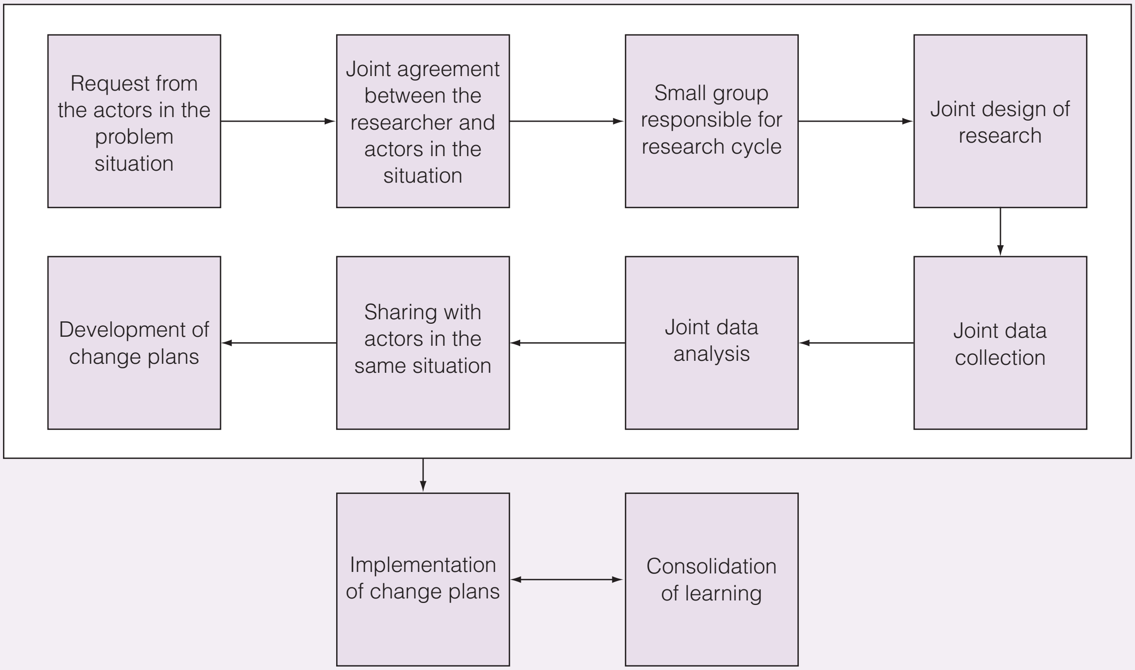
Request from the actors in the problem situation
Joint agreement between the researcher and actors in the situation
Small group responsible for research cycle
Joint design of research
Joint data collection
Joint data analysis
Sharing with actors in the same situation
Development of change plans
Implementation of change plans
Consolidation of learning

FIGURE 3.1 Steps in an 'ideal' participatory research approach

Source: Tandon (2005c, p. 30), reproduced with permission of Mosaic Books, New Delhi

cases, surveys are entirely irrelevant to the communities involved in the research, and alternative forms of collecting data have to be used, for example, dialogue (Tandon, 2005e), enumeration such as census data (though clearly these are used in conventional research) (Batliwala and Patel, 2005), and popular theatre for consciousness-raising (Khot, 2005). Hall (2005) cites the example of the UNESCO evaluation of the Experimental World Literacy Programme, in which local expertise was neglected, which over-simplified the phenomena under investigation and disempowered the very communities under review. Such research is alienating rather than empowering. Rather, he avers, researchers should respect, and take seriously, resident knowledge (he gives the example of adult learning).

Hall (2005, pp. 17–19) sets out several principles for PR:

> **1** A research project – both process and results – can be of immediate and direct benefit to a community (as opposed to serving merely as the basis of an academic paper of obscure policy analysis).
> **2** A research project should involve the community in the entire research project, from the formulation of the problem and the interpretation of the findings to planning corrective action based upon them.
> **3** The research process should be seen as part of a total educational experience which serves to determine community needs, and to increase awareness of problems and commitment to solutions within the community.
> **4** Research should be viewed as a dialectic process, a dialogue over time, and not a static picture of reality at one point in time.
> **5** The object of research, like the object of education, should be the liberation of human creative potential and the mobilization of human resources for the solution of social problems.
> **6** Research has ideological implications.… First is the re-affirmation of the political nature of all we do.… Research that allows for popular involvement and increased capacities of analysis will also make conflictual action possible, or necessary.
>
> (Hall, 2005, pp. 17–19)

In PR the problem to be investigated originates in, and is defined by, the community or workplace. It members are involved in the research and have control over it, and the research leads to development and improvement of their lives and communities (Brown and Tandon, 2005, p. 55). Brown and Tandon (p. 60) recognize the challenge (and likely resistance) that these principles might pose for the powerful, specific dominant interest groups, but they argue that this is unavoidable, as the researcher typically mobilizes community groups to action (p. 61). Hence PR has to consider the likely responses of the researchers, the participants and their possible opponents (p. 62); as Giroux avers (1983), knowledge is not only powerful, but dangerous, and participants may run substantial risks (Brown and Tandon, 2005, p. 65) in conducting this type of research, for it upsets existing power structures in society and the workplace.

PR has some affinity to action research (INCITE, 2010), though it is intensely more political than action research. It is not without its critics. For example, Brown (2005b) argues that participatory action research is ambiguous about:

a its research objectives (e.g. social change, raising awareness, development work, challenging conventional research paradigms);
b the relationships between the researcher and participants (e.g. over-emphasizing similarities and neglecting differences between them);
c the methods and technologies that it uses (e.g. being over-critical of conventional approaches which might serve the interests of participatory research, and the lack of a clear method for data collection); and
d the outcomes of participatory research (e.g. what these are, when these are decided, and who decides).

Notwithstanding these, however, PR is a clear instance of the tenets of critical theory, transformative action and empowerment put into practice.

3.4 Feminist research

It is no mere coincidence that feminist research should surface as a serious issue at the same time as ideology-critical paradigms for research; they are closely connected. Usher (1996) sets out several principles of feminist research that resonate with the ideology critique of the Frankfurt School:

- the acknowledgement of the pervasive influence of gender as a category of analysis and organization;
- the deconstruction of traditional commitments to truth, objectivity and neutrality;
- the adoption of an approach to knowledge creation which recognizes that all theories are perspectival;
- the utilization of a multiplicity of research methods;
- the inter-disciplinary nature of feminist research;
- involvement of the researcher and the people being researched;
- the deconstruction of the theory/practice relationship.

Her suggestions build on the recognition of the significance of addressing the 'power issue' in research ('whose research', 'research for whom', 'research in whose interests') and the need to address the emancipatory element of educational research: research should be empowering to all participants. Critical theory questions the putative objective, neutral, value-free, positivist, 'scientific' paradigm for the sundering of theory and practice and for its reproduction of asymmetries of power (reproducing power differentials in the research community and for treating participants/respondents instrumentally, as objects).

Robson (1993, p. 64) suggests seven sources of sexism in research:

- *androcentricity*: seeing the world through male eyes and applying male research paradigms to females;
- *overgeneralization*: when a study generalizes from males to females;
- *gender insensitivity*: ignoring gender as a possible variable;
- *double standards*: using male criteria, measures and standards to judge the behaviour of women and vice versa (e.g. in terms of social status);
- *sex appropriateness*: for example, that child-rearing is women's responsibility;
- *familism*: treating the family, rather than the individual, as the unit of analysis;
- *sexual dichotomism*: treating the sexes as distinct social groups when, in fact, they may share characteristics.

Feminist research challenges the legitimacy of research that does not empower oppressed and otherwise invisible groups – women. Ezzy (2002, p. 20) writes of the need to replace a traditional masculine picture of science with an emancipatory commitment to knowledge that stems from a feminist perspective, since, if researchers analyse women's experiences 'using only theories and observations from the standpoint of men, the resulting theories oppress women' (p. 23). Gender, as Ezzy writes (p. 43), is 'a category of experience'.

Positivist research serves a given set of power relations, typically empowering the white, male-dominated research community at the expense of other groups whose voices are silenced. Feminist research seeks to demolish and replace this with a different substantive agenda of empowerment, voice, emancipation, equality and representation for oppressed groups. In doing so, it recognizes the necessity for foregrounding issues of power, silencing and voicing, ideology critique and a questioning of the legitimacy of research that does not emancipate hitherto disempowered groups. In feminist research, women's consciousness of oppression, exploitation and disempowerment becomes a focus for research and ideology critique.

Far from treating educational research as objective and value-free, feminists argue that this is merely a smokescreen that serves the existing, disempowering status quo, and that the subject and value-laden nature of research must be surfaced, exposed and engaged (Haig, 1999, p. 223). Supposedly value-free, neutral research perpetuates power differentials. Indeed Jayaratne and Stewart (1991) question the traditional, exploitative nature of much research in which the researchers receive all the rewards whilst the participants remain in their – typically powerless – situation, i.e. in which the status quo of oppression, underprivilege and inequality remain undisturbed. Scott (1985, p. 80) writes that 'we may simply use other women's experiences to further our own aims and careers' and questions how ethical it is for a woman researcher to interview those who are less privileged and more exploited than she herself is. Creswell (1998, p. 83), too, suggests that feminist research strives to establish collaborative and non-exploitative relationships.

Researchers, then, must take seriously issues of reflexivity, the effects of the research on the researched and the researchers, the breakdown of the positivist paradigm, and the raising of consciousness of the purposes and effects of the research. Ezzy (2002, p. 153) notes that an integral element of the research is the personal experience of the researcher himself/herself, reinforcing the point that objectivity is a false claim by researchers.

Denzin (1989), Mies (1993), Haig (1999) and De Laine (2000) argue for several principles in feminist research:

- the asymmetry of gender relations and representation must be studied reflexively as constituting a fundamental aspect of social life (which includes educational research);
- women's issues, their history, biography and biology, feature as a substantive agenda/focus in research – moving beyond mere perspectival/methodological issues to setting a research agenda;
- the raising of consciousness of oppression, exploitation, empowerment, equality, voice and representation is a methodological tool;
- the acceptability and notion of objectivity and objective research must be challenged;
- the substantive, value-laden dimensions and purposes of feminist research must be paramount;
- research must empower women;
- research need not only be undertaken by academic experts;
- collective research is necessary – women need to collectivize their own individual histories if they are to appropriate these histories for emancipation;
- there is a commitment to revealing core processes and recurring features of women's oppression;
- an insistence on the inseparability of theory and practice;
- an insistence on the connections between the private and the public, between the domestic and the political;
- a concern with the construction and reproduction of gender and sexual differences;
- a rejection of narrow disciplinary boundaries;
- a rejection of the artificial subject/researcher dualism;
- a rejection of positivism and objectivity as male mythology;
- the increased use of qualitative, introspective biographical research techniques;
- a recognition of the gendered nature of social research and the development of anti-sexist research strategies;
- a review of the research process as consciousness and awareness raising and as fundamentally participatory;
- the primacy of women's personal subjective experience;
- the rejection of hierarchies in social research;
- the vertical, hierarchical relationships of researchers/research community and research objects, in which the research itself can become an instrument of domination and the reproduction and legitimation of power elites, must be replaced by research that promotes the interests of dominated, oppressed, exploited groups;
- the recognition of equal status and reciprocal relationships between subjects and researchers;
- the need to change the status quo, not merely to understand or interpret it;
- the research must be a process of conscientization, not research solely by experts for experts, but to empower oppressed participants.

Webb *et al*. (2004) set out six principles for a feminist pedagogy in the teaching of research methodology:

1. reformulation of the professor–student relationship (from hierarchy to equality and sharing);

2. empowerment (for a participatory democracy);
3. building community (through collaborative learning);
4. privileging the individual voice (not only the lecturer's);
5. respect for diversity of personal experience (rooted, for example, in gender, race, ethnicity, class, sexual preference);
6. challenging traditional views (e.g. the sociology of knowledge).

Gender shapes research agendas, the choice of topics, foci, data-collection techniques and the relationships between researchers and researched. Several methodological principles flow from a 'rationale' for feminist research (Denzin, 1989; Mies, 1993; Haig, 1997, 1999; De Laine, 2000):

- the replacement of quantitative, positivist, objective research with qualitative, interpretive, ethnographic reflexive research, as objectivity in quantitative research is a smokescreen for masculine interests and agendas;
- collaborative, collectivist research undertaken by collectives – often of women – combining researchers and researched in order to break subject/object and hierarchical, non-reciprocal relationships;
- the appeal to alleged value-free, neutral, indifferent and impartial research has to be replaced by conscious, deliberate partiality – through researchers identifying with participants;
- the use of ideology-critical approaches and paradigms for research;
- the spectator theory or contemplative theory of knowledge in which researchers research from ivory towers must be replaced by a participatory approach – for example, action research – in which all participants (including researchers) engage in the struggle for women's emancipation – a liberatory methodology;
- the need to change the status quo is the starting point for social research;
- the extended use of triangulation, multiple methods (including visual techniques such as video, photography and film), linguistic techniques such as conversational analysis and of textual analysis such as deconstruction of documents and texts about women;
- the use of meta-analysis to synthesize findings from individual studies (see Chapter 21);
- a move away from numerical surveys and a critical evaluation of them, including a critique of question wording.

Edwards and Mauthner (2002, pp. 15, 27) characterize feminist research as that which concerns a critique of dominatory and value-free research, the surfacing and rejection of exploitative power hierarchies between the researcher and the participants, and the espousal of close – even intimate – relationships between the researcher and the researched. Positivist research is rejected as per se oppressive (Gillies and Alldred, 2002, p. 34) and inherently unable to abide by its own principle of objectivity; it is a flawed epistemology. Research and its underpinning epistemologies are rooted in, and inseparable from, interests (Habermas, 1972).

The move is towards 'participatory action research' which promotes empowerment and emancipation and which is an involved, engaged and collaborative process (e.g. De Laine, 2000, pp. 109ff.). Participation recognizes imbalances of power and the imperative to 'engage oppressed people as agents of their own change' (Ezzy, 2002, p. 44), whilst action research recognizes the value of utilizing the findings from research to inform decisions about interventions (p. 44). As De Laine (2000, p. 16) writes, the call is for 'more participation and less observation, of *being with* and *for* the other, not *looking at*', with relations of reciprocity and equality rather than impersonality, exploitation and power/status differentials between researcher and participants.

The relationship between the researcher and participant, De Laine argues, must break a conventional patriarchy. The emphasis is on partnerships between researchers and participants (p. 107), with researchers as participants rather than outsiders and with participants shaping the research process as co-researchers (p. 107), defining the problem, methods, data collection and analysis, interpretation and dissemination. The relationship between researchers and participants is one of equality, and outsider, objective, distant, positivist research relations are off the agenda; researchers are inextricably bound up in the lives of those they research. That this may bring difficulties in participant and researcher reactivity is a matter to be engaged rather than built out of the research.

Thapar-Björkert and Henry (2004) argue that the conventional, one-sided and unidirectional view of the researcher as powerful and the research participants as less powerful, with the researcher exploiting and manipulating the researched, could be a construction by western white researchers. They report research that indicates that power is exercised by the researched as well as the researchers, and is a much more fluid, shifting and negotiated matter than conventionally suggested, being dispersed through both the researcher and the researched. Indeed they show how the research participants can, and do, exercise considerable power over the researchers, both before, during and after the research process. They provide a fascinating example of interviewing women in their homes in India, where, far from being a location of oppression, the home was a site of their power and control.

With regard to methods of data collection, Oakley (1981) suggests that interviewing women in the standardized, impersonal style which expects a response to a prescribed agenda and set of questions may be a 'contradiction in terms', as it implies an exploitative relationship. Rather, the subject/object relationship should be replaced by a guided dialogue. She criticizes the conventional notion of 'rapport' in conducting interviews (p. 35), arguing that such interviews are instrumental, non-reciprocal and hierarchical, all of which are masculine traits. Rapport in this sense, she argues, is not genuine in that the researcher is using it for scientific rather than human ends (p. 55). Here researchers are 'faking friendship' for their own ends (Duncombe and Jessop, 2002, p. 108), equating 'doing rapport' with trust, and, thereby, operating a very 'detached' form of friendship (p. 110) (see also Thapar-Björkert and Henry, 2004).

Duncombe and Jessop (2002, p. 111) question whether, if interviewees are persuaded to take part in an interview by virtue of the researcher's demonstration of empathy and 'rapport', this is really giving informed consent. They suggest that informed consent, particularly in exploratory interviews, has to be continually renegotiated and care has to be taken by the interviewer not to be too intrusive. Personal testimonies, oral narratives and long interviews also figure highly in feminist approaches (De Laine, 2000, p. 110; Thapar-Björkert and Henry, 2004), not least in those which touch on sensitive issues. These, it is argued (Ezzy, 2002, p. 45), enable women's voices to be heard, to be close to lived experiences, and avoid unwarranted assumptions about people's experiences.

The drive towards collective, egalitarian and emancipatory qualitative research is seen as necessary if women are to avoid colluding in their own oppression by undertaking positivist, uninvolved, dispassionate, objective research. Mies (1993, p. 67) argues that for women to undertake this latter form of research puts them into a schizophrenic position of having to adopt methods which contribute to their own subjugation and repression by ignoring their experience (however vicarious) of oppression and by forcing them to abide by the 'rules of the game' of the competitive, male-dominated academic world. In this view, argue Roman and Apple (1990, p. 59), it is not enough for women simply to embrace ethnographic forms of research, as this does not necessarily challenge the existing and constituting forces of oppression or asymmetries of power. Ethnographic research, they argue, has to be accompanied by ideology critique; indeed they argue that the transformative, empowering, emancipatory potential of research is a critical standard for evaluating the research.

This latter point resonates with the call by Lather (1991) for researchers to be concerned with the political consequences of their research (e.g. consequential validity), not only the conduct of the research and data analysis itself. Research must lead to change and improvement for women (Gillies and Alldred, 2002, p. 32). Research is a political activity with a political agenda (p. 33; see also Lather, 1991). Research and action – praxis – must combine: 'knowledge *for*' as well as 'knowledge *what*' (Ezzy, 2002, p. 47). As Marx reminds us in his *Theses on Feuerbach*: 'the philosophers have only interpreted the world, in various ways; the point, however, is to change it'. Gillies and Alldred (2002, p. 45), however, point out that 'many feminists have agonized over whether politicizing participants is necessarily helpful', as it raises awareness of constraints on their actions without being able to offer solutions or to challenge their structural causes. Research, thus politicized but unable to change conditions, may actually be disempowering and, indeed, patronizing in its simplistic call for enlightenment and emancipation. It could render women more vulnerable than before. Emancipation is a struggle.

Several of these views of feminist research and methodology are contested by other feminist researchers. For example, Jayaratne (1993, p. 109) argues for 'fitness for purpose', suggesting that an exclusive focus on qualitative methodologies might not be appropriate either for the research purposes or, indeed, for advancing the feminist agenda (see also Scott, 1985, pp. 82–3). Jayaratne refutes the argument that quantitative methods are unsuitable for feminists because they neglect the emotions of the people under study. Indeed she argues for beating quantitative research on its own grounds (1993, p. 121), suggesting the need for feminist quantitative data and methodologies in order to counter sexist quantitative data in the social sciences. She suggests that feminist researchers can accomplish this without 'selling out' to the positivist, male-dominated academic research community. Indeed Oakley (1998) suggests that the separation of women from quantitative methodology may have the unintended effect of perpetuating women as the 'other', and, thereby, discriminating against them. Finch (2004) argues that, whilst qualitative research might have helped to establish the early feminist movement, it is important to recognize the place of both quantitative and qualitative methods as the stuff of feminist research.

De Laine (2000, p. 1132) reports work that suggests that close relationships between researchers and participants may be construed as being as exploitative, if disguised, as conventional researcher roles, and that they may bring considerable problems if data that were revealed in an intimate account between friends (researcher and participant) are then used in public research. The researcher is caught in a dilemma: if she is a true friend then this imposes constraints on the researcher, and yet if she is only pretending to be a friend, or limiting that friendship, then this provokes questions of honesty and personal integrity. Are research friendships real, ephemeral or impression management used to gather data?

De Laine (p. 115) suggests that it may be misguided to privilege qualitative research for its claim to non-exploitative relationships. Whilst she acknowledges that quantitative approaches may perpetuate power differentials and exploitation, there is no guarantee that qualitative research will not do the same, only in a more disguised way. Qualitative approaches too, she suggests, can create and perpetuate unequal relations, not least simply because the researcher is in the field qua researcher rather than a friend; if it were not for the research then the researcher would not be present. Stacey (1988) suggests that the intimacy advocated for feminist ethnography may render exploitative relationships *more* rather than *less* likely. We refer readers to Chapter 13 on sensitive educational research for a further discussion of these issues. Ezzy (2002, p. 44) reports that, just as there is no single feminist methodology, both quantitative and qualitative methods are entirely legitimate. Indeed Kelly (1978) argues that a feminist commitment should enter research at the stages of formulating the research topic and interpreting the results, but it should be left out during the stages of data collection and conduct of the research.

Gillies and Alldred (2002, pp. 43–6) suggest that action research, an area strongly supported by some feminist researchers, is itself problematic. It risks being an intervention in people's lives (i.e. a potential abuse of power), and the researcher typically plays a significant, if not central, role in initiating, facilitating, crystallizing and developing the meanings involved in, or stemming from, the research, i.e. the researcher is the one exercising power and influence.

Thapar-Björkert and Henry (2004) indicate that the researcher being an outsider might bring more advantages than if she were an insider. For example, being a white female researching non-white females may not be a handicap, as many non-white women might disclose information to white women that they would not disclose to a non-white person. Similarly, having interviewers and interviewees of the same racial and ethnic background does not mean that non-hierarchical relationships will not still be present. They also report that the categories of 'insider' and 'outsider' are much more fuzzy than exclusive. Researchers are both 'subject' and 'object', and those being researched are both 'observed' and 'observers'.

De Laine (2000, p. 110) suggests that there is a division among feminists between those who advocate closeness in relationships between researchers and subjects – a human researching fellow humans – and those who advocate 'respectful distance' between researchers and those being studied. Duncombe and Jessop (2002, p. 111) comment that close relationships may turn into quasi-therapeutic situations rather than research, yet it may be important to establish closeness in reaching deeper issues, and they question how far close relationships lead to reciprocal and mutual disclosure (p. 120). The debate is open: should the researcher share, be close and be prepared for more intimate social relations – a 'feminist ethic of care' (p. 111) – or keep those cool, outsider relations which might objectify those being researched? It is a moral as well as a methodological matter.

The issue runs deep: the suggestion is that emotions and feelings are integral to the research, rather than to be built out of the research in the interests of objectivity (Edwards and Mauthner, 2002, p. 19). Emotions should not be seen as disruptive of research or as irrelevant (De Laine, 2000, pp. 151–2), but central to it, just as they are central to human life; indeed emotional responses are essential in establishing the veracity of inquiries and data, and the 'feminist communitarian model' which De Laine outlines (pp. 212–13) values connectedness at several levels: emotions, emotionality and personal expressiveness, empathy. The egalitarian feminism that De Laine (2000) and others advocate suggests a community of insiders in the same culture, in which empathy, reciprocity and egalitarianism are hallmarks (p. 108).

Swantz (1996, p. 134) argues that there may be some self-deception by the researcher in adopting a dual role as a researcher and one who shares the situation and interests of the participants. She questions the extent to which the researcher may be able to be genuinely involved with the participants in other than a peripheral way and whether, simply because the researcher may have 'superior knowledge', a covert power differential may exist. De Laine (2000, p. 114) suggests that such superior knowledge may stem from the researcher's own background in anthropology or ethnography, or simply more education. The primary purpose of the researcher is research, and that is different from the primary purpose of the participants.

The researcher's desire for identification and solidarity with her research subjects may be pious but unrealistic optimism, not least because she may not share the same race, ethnicity, background, life chances, experiences or colour as those being researched. Indeed Gillies and Alldred (2002, pp. 39–40) raise the question of how far researchers can, or should, try to represent groups to which they themselves do not belong, including those groups without power or voice, as this itself is a form of colonization and oppression. Affinity, they argue (p. 40), is no authoritative basis for representative research. Even the notion of affinity becomes suspect when it overlooks or underplays the significance of difference, thereby homogenizing groups and their particular experiences. In response to this, some feminist researchers (p. 40) suggest that researchers only have the warrant to confine themselves to their own immediate communities, though this is a contentious issue. There is value in speaking for others, not least for those who are silenced and marginalized, and in not speaking for others for fear of oppression and colonization. They also question the acceptability and appropriateness of, and fidelity to, the feminist ethic, if one represents and uses others' stories (p. 41).

3.5 A note on post-colonial theory and queer theory

Under the umbrella of critical theory also fall post-colonial theory, queer theory and critical race theory. Whilst this chapter does not unpack these, it notes them as avenues for educational researchers to explore. For example, post-colonial theory, as its name suggests, with an affinity to postmodernism, addresses the experiences (often through film, literature, cultural studies, political and social sciences) of post-colonial societies and the cultural legacies of colonialism. It examines the after-effects, or continuation, of ideologies and discourses of imperialism, domination and repression, value systems (e.g. the domination of western values and the delegitimization of non-western values), their effects on the daily lived experiences of participants, i.e. their materiality, and the regard in which peoples in post-colonial societies are held (e.g. Said's (1978) work on orientalism and the casting down of non-western groups as the 'other'). It also discusses the valorization of multiple voices and heterogeneity in post-colonial societies, the resistance to marginalization of groups within them (Bhabha, 1994, p. 113) and the construction of identities in a post-colonial world.

Queer theory builds on, but moves beyond, feminist theory and gay/lesbian/LGBTI studies to explore the social construction and privileging or denial of identities, sexual behaviour, deviant behaviour and the categorizations and ideologies involved in such constructions. It deconstructs 'social categories and binary identities' (Marshall and Rossman, 2016, p. 26) in striving to demonstrate that such categories are, in reality, more fluid and transparent than is often assumed or bounded. Identity, for queer theorists, is not singular, fixed and firm, but multiple, unstable and fluid, and that when applied to commonly held categories such as heterosexuality, it reveals such fluidity.

Halperin (1997) writes that queer theory focuses on whatever is 'at odds with the normal, the legitimate, the dominant' (p. 62). Its task is to explore, problematize and interrogate gender, sexual orientation and also their mediation by, and intersection with, other characteristics or forms of oppression, for example, social class, ethnicity, colour, disability, nationality, age, able-ness (Marshall and Rossman, 2016, p. 27). However, it does not confine itself to matters of sexuality but makes 'queer' a range of commonly held categories. It rejects simplistic categorizations of individuals, and argues for the respect of their individuality and uniqueness. Queer theory does not adhere to a single research method but advocates multiple methods which promote collaborative understandings and reflexivity on the part of research participants and researchers.

3.6 Value-neutrality in educational research

Lather (1986a) argues that, as neither education nor research is neutral, researchers do not need to apologize for undertaking clearly ideological research and its intention to change the status quo of inequality (p. 67). However, the case is made that research should be disinterested and objective, that value-neutrality is an ideal and that research should concern itself only with the pursuit and production of facts and knowledge and not play politics, but that this does not preclude value-relevant research, i.e. topics that may be of concern to certain parties. Politics and research are not the same and it is illegitimate for the researcher to let a political agenda enter into – to bias – the conduct of, and conclusions from, research.

However, it is argued that developments in the philosophy of science indicate that researchers make all kinds of assumptions about the world, both factual and evaluative, and that these shape the research (Hammersley, 2000, p. 3), i.e. that there is no such thing as objective knowledge but only knowledge that is socio-culturally situated. This is the argument brought forward by post-positivism, postmodernism and post-structuralism, though Hammersley notes that, whilst values might, indeed maybe should, determine what is considered to be value-relevant research (i.e. what topics to focus on), and that this is completely within the scope of factual research, nevertheless 'research must necessarily be committed to value neutrality simply because it cannot validate value conclusions' (p. 32).

Should researchers be objective, value-neutral, non-partisan, unbiased and strictly disinterested, simply providing a service in bringing forward factual evidence, data and explanations on such-and-such a matter, or is it acceptable for them to declare their values, biases and interests and then proceed from there, acting on those commitments? Should researchers have a political or social agenda that colours their research? Should they be 'committed' or should they be disinterested? Hammersley's (2000) comments on 'standpoint epistemology' feature here (pp. 6–7), where he notes that, in Marxism, the working class is in a privileged position in understanding capitalist society and how it should be and can be transformed. Similarly he gives the example of women as oppressed or marginalized groups in patriarchal societies and he questions whether this might give them a position on and understanding of oppression and power that is simply not available to men (Hammersley, 2011, pp. 97–9).

Do we only ask white males about the experience of being a non-white woman, or do we only ask non-white women about their experiences, or do we ask both groups, since their perspectives and knowledge might differ? Is there any guarantee that any of these groups will see 'reality' clearly (cf. Hammersley, 2011, p. 99)? What warrant can be brought forward to justify the privileging of one group's views over those of another?

If a researcher happens to believe in democracy, social justice and equality, or free-market neo-liberalism, or communism, or is African-American or a white working-class female, should that affect how he or she conducts research and the conclusions and prescriptions that he or she draws from it? Should researchers push their own or others' political or social agendas?

Hammersley (2000) unpicked dangers of partisanship, 'committed' positions and 'privileged' discourse on the part of researchers as this can 'encourage the idea that research can, by itself, tell us what is desirable and undesirable, and what should be done; thereby obscuring the value judgements involved in policy and practice' (Hammersley, 2011 p. 87). He focuses on critical social science, particularly critical realism, noting that whilst value argument is important, indeed is essential to politics, social scientists 'have no distinctive authority to determine what is good or bad about the situations they seek to describe and explain; or what, if anything, should be done about them' (2014, p. 94). He argues (p. 94) that they, among other parties, have the authority of expertise concerning matters of fact but not to matters of value.

This echoes Weber's (1949) comment that an empirical science should not be committed to providing 'binding norms and ideals from which directives for immediate practical activity can be derived' (p. 52). Researchers may have their own political agendas or interests and these might determine their choice of areas of research, but that is an entirely different matter from saying that they will or should push their own views and personal political agendas, making prescriptions that emanate from their research for their own partisan agendas (cf. Pawson's (2013, pp. 61ff.) critique of critical realism for its disguised normative premises).

Phillips and Burbules (2000) note that whilst extra-scientific values might determine the focus of the research, this does not mean that those values should influence the conduct of the research (p. 53). Risjord (2014, p. 18) argues for 'epistemic values' (objective scientific reasoning) to be the hallmarks of research, and that these should not be confused with 'non-epistemic values' (moral and political values). Similarly Hammersley (2000, pp. 17–18) suggests that arguing against value-neutrality in research confuses the conduct of research (concerning itself with factual content) with its consequences and implications, and that, save for ethical limits, researchers do not have responsibility for what happens with regard to the consequences of their research. In other words, researchers remain disinterested and neutral, provide evidence, explanations and facts, even recommendations, but leave politics alone. Fact and value differ.

On the other hand, the question is raised that, by not addressing consequences and implications, researchers enable the status quo of inequality, social injustice and oppression to be perpetuated and that it is incumbent on researchers not to hide behind putative value-neutrality, because, in effect, such research is not value-neutral but reinforces the dominant ideology and the interests of the powerful (Hammersley, 2000, p. 136). One cannot pretend that oppression does not exist, and, therefore, to argue for value-neutrality demonstrates a political or moral commitment (Risjord, 2014, p. 28).

In response to this, however, the argument is brought forward that the nature of society is much more contested, complex, dissonant and unclear than critical theorists would argue, and, indeed, that their view of society is more an article of faith, an assumption or presupposition, a value or, indeed, a dogma or ideology that closes itself up to critical enquiry and sound knowledge, or that it harks back to the foundationalism so roundly criticized by post-positivists and post-structuralists. Social reality is not necessarily the taken-for-granted world as that seen through the eyes of critical theorists. In other words, critical theory may be as biased as those views of society it seeks to criticize, and to see society in such dichotomous, either/or terms – equal or unequal, socially just or socially unjust, democratic or undemocratic, free or unfree – or to see it as more complex but still characterized as being marked by oppression, ideology and injustice, is naive, not least as the same circumstances that gave rise to what critical theorists would call inequality also gave rise to greater equality. Just as there is no single, one-dimensional view of society and social reality, so there is no single view of how it must be viewed or researched. In this case, the researcher must regard the claims of critical theorists as hypotheses to be tested rather than as cases that are already proven.

Further, the terminology used by critical theorists is problematic (Hammersley, 2000, p. 139); terms such as ‘equality’, ‘discrimination’, ‘inequality’ are open to differences of interpretation, and, indeed, to differences in value. The same term has different meanings, interpretations and values; indeed, to derive values from facts is to conflate an ‘is’ with an ‘ought’, and this is not the stuff of research (see Hammersley’s (2014) criticism of critical realism on these grounds).

Is the job of researchers only to provide evidence and explanation, or does it extend into promoting political agendas? Should researchers be partisan or non-partisan, ‘committed’ or ‘disinterested’? Should their own political values or views of what society should be like enter into their research? Whilst objectivity and value-neutrality have been called into question by the post-positivists, indeed by many researchers, what is the limit of this? Here we have two distinct, perhaps irreconcilable views of the tasks and roles of the researcher and research: to provide information – to be a ‘methodological purist’ (Hammersley, 2000), or to be a political activist. Of course, serving political goals does not preclude the possibility that: (a) knowledge will be produced or facilitated by taking a political stance; (b) those who do not subscribe to the values or views of critical theorists are not simply ‘ideological dopes of stunning mediocrity’ (Giddens, 1979, p. 52); (c) those who are committed to value-neutrality are not free from the chance of making errors; (d) power differentials do exist in society regardless of which lens one uses to view it. Is there common ground between the analytical, value-neutral researcher and the partisan researcher, whether the latter espouses critical theory or some value system? Is it the case, as Hammersley (2000) so trenchantly puts it, that ‘the critical approach disqualifies itself as a form of academic research: it turns sociology into a political morality play’ (p. 150)?

3.7 A summary of three major paradigms

The three chapters so far have discussed very different approaches to educational research, which rest on quantitative, qualitative and critical theoretical foundations, or a combination of these.

Table 3.2 summarizes some of the broad differences between the approaches that we have made so far. We present the paradigms and their affiliates in Figure 3.2.

The companion website to the book provides PowerPoint slides for this chapter, which list the structure of the chapter and then provide a summary of the key points in each of its sections. This resource can be found online at: www.routledge.com/cw/cohen.

TABLE 3.2 DIFFERING APPROACHES TO THE STUDY OF BEHAVIOUR

Normative	*Interpretive*	*Complexity theoretical*	*Critical*
Society and the social system	The individual	Wholes, groups, systems and the individuals within them	Societies, groups and individuals
Medium/large-scale research	Small-scale research	Micro- and macro-scale research	Small-scale research
Impersonal, anonymous forces regulating behaviour	Human actions continuously recreating social life	Individuals and their environments constantly and dynamically interact to produce new, emergent systems and behaviours through self-organization, connectedness and feedback	Political, ideological factors, power and interests shaping behaviour
Model of natural sciences	Non-statistical	Action research, case study and narrative research	Ideology critique, action research and critical ethnography
Quantitative, objective	Qualitative, subjective	Quantitative, qualitative, objective and subjective, algorithmic	Ideology critique, participatory, objective and subjective
Positivist and scientific	Hermeneutic and interpretive	Systems-driven, social network driven	Ideology critical
Linear causality	Multiple directions of causality	Multiple directions of causality	Main trends of causality
Reductionist and atomistic	Phenomenologists, symbolic interactionists, ethnomethodologists	Holistic understanding of emergent conditions and systems	Change and emancipation
Research conducted 'from the outside'	Insider and outsider research	Non-reductionist	Interpretive, macro- and micro-concepts: political and ideological interests, operations of power
Outsider research	Personal involvement of the researcher	Objective analysis of systems	Critical theorists, action researchers, practitioner researchers
Generalizing from the specific	Interpreting the specific	Understanding wholes	Collectivity
Explaining behaviour/seeking causes	Understanding actions/meanings rather than causes	Understanding causal interactions	Participant researchers, researchers and facilitators
Assuming the taken-for-granted	Investigating the taken-for-granted	Investigating emergent systems	Critiquing the specific
Macro-concepts: society, institutions, norms, positions, roles, expectations	Micro-concepts: individual perspective, personal constructs, negotiated meanings, definitions of situations	Micro- and macro-level analysis informing each other	Understanding, interrogating, critiquing, transforming actions and interests
Structuralists	Hermeneutic	Explaining and observing, iterative	Interrogating, critiquing and changing the taken-for-granted
Prediction and control	Understanding and explanation	Understanding emergence of complex adaptive systems	Transformation and praxis
Technical interest	Practical interest	Technical and practical interest	Emancipatory interest