



Department of Sociology

Residents' Meanings and Experiences about a Reservoir and its
Surroundings: Implications for Water Management

By
Nuno-Gonçalo Cerqueira Gonçalves Noceda Matias

A Dissertation presented in partial fulfilment of the Requirements for the Degree of
Doctor of Sociology

Supervisor:
Joaquim Gil Nave, Ph.D., Professor,
ISCTE – Instituto Universitário de Lisboa

Co-Supervisor:
Penny Johnes, Ph.D., Professor,
University of Reading, School of Geography

June, 2012

This page intentionally left blank

Department of Sociology

**Residents' Meanings and Experiences about a Reservoir and its
Surroundings: Implications for Water Management**

By
Nuno-Gonçalo Cerqueira Gonçalves Noceda Matias

A Dissertation presented in partial fulfilment of the Requirements for the Degree of
Doctor of Sociology

Jury:

Nuno Alexandre de Almeida Alves, Professor, ISCTE – Instituto Universitário de Lisboa
José Virgílio Borges Pererira, Ph.D., Professor, Faculdade de Letras da Universidade do Porto
Maria Teresa Amado Pinto Correia, Ph.D., Professor, Universidade de Évora
Aida Maria Valadas Lima Pinto Guizo, Professor, ISCTE – Instituto Universitário de Lisboa
Joaquim Gil Nave, Ph.D., Professor, ISCTE – Instituto Universitário de Lisboa
Penny Johnes, Ph.D., Professor, University of Reading, School of Geography

June, 2012

This work is dedicated to Marta, Francisco, Frederico, and Leonor. Your love and support have played a vital role in this project in ways that are impossible for me to measure.

To my parents.

“There is a story about a long and high bridge on the west coast of Seattle which connects the mainland with a residential island. Around 1980 a ship ran into one of the supporting pillars of the bridge and the bridge collapsed. So far the facts are verified. If the rest is true I do not know, but I find it illustrative to the behaviour of academic researchers. Minutes after the collapse, a car approached the bridge in the dark and the driver got a funny feeling that something was wrong. He stopped just before the bridge, walked to the brim and looked down - to find only an empty hole. He walked back to the car, drove over the edge and died. Why did so? It was obviously irrational. But it was not unscientific in the mainstream sense. He probably was a scientist, maybe even a professor. He did it because it could not be true that the bridge was not there. He was educated not to trust his senses and clinical experience and only to trust scientific reports based on approved research techniques and objective hypotheses testing. He was not an inductive researcher. (...) The collapse of the bridge was a reality that could not just be assumed away as you assume away critical phenomena in theory because they provide an anomaly, a new and disturbing of information that messes up the beauty and comfort of your theory. Unfortunately, universities are churning out researchers that behave exactly like the car driver. They do not allow reality to tell its story”

(Source: Glaser, 1998; p. 106)

This work was partly funded by

FCT Fundação para a Ciência e a Tecnologia

MINISTÉRIO DA CIÊNCIA, TECNOLOGIA E ENSINO SUPERIOR

, with a Doctoral

fellowship awarded to the author (SFRH/BD//17786/2004). The views expressed are those of the author and not necessarily represent the views of the funding agency.



Programa Operacional Ciência e Inovação 2010

MINISTÉRIO DA CIÊNCIA, TECNOLOGIA E ENSINO SUPERIOR



ACKNOWLEDGEMENTS

I thank António Firmino da Costa (Department of Sociology, ISCTE - IUL), which was the first person with whom I talked to during my move to the Department of Sociology, ISCTE-IUL, as a Ph.D. student candidate. This was an important time in my academic life and I am very grateful for his crucial interest.

I would like to express my gratitude to Aida Valadas de Lima (Department of Sociology, ISCTE - IUL) because of her support and advice in the initial stages of my Ph.D. program.

I would like to acknowledge the assistance of Ilda Ferreira who helped me wade through the bureaucratic hurdles of the Ph.D. program.

I would like to acknowledge the help of: Maria da Conceição Gonçalves, José Casimiro Martins, and Tiago Brito Ramos from the Department of Soil Sciences, Estação Agronómica Nacional; Ernesto Vasconcelos, António Fabião, Fernando Oliveira Baptista, and Manuel Madeira (from ISA); Maria João Rasga and Rui Ramos from Laboratório de Évora da CCDR do Alentejo; João Pádua from INAG; Luzia Estevens, António Machado, Clara Patão and Ana M. Pinto from INE; Dulce Jorge and Manuela Nunes from Direcção Geral de Veterenária; Patrícia Ávila and Paula Castro from ISCTE; Ana Ilhéu and Rosário Costa from EDIA; João Pedro Carvalho Nunes (Universidade Nova de Lisboa); José Machado Pais (ICS); Joan Armengol (Universidade de Barcelona); João Matias (Diário do Alentejo); Bob Foy (Agricultural and Environmental Science Division, Belfast, UK); Crawford Jordan (Agri-Food & Biosciences Institute, Belfast); Greg Brown (University of South Australia); Ioannis Tsoukalas (Stockholm University); Tasos Hovardas (University of Cyprus); Lia Vasconcelos (Universidade Nova de Lisboa); Rute Oliveira Pires (Universidade de Lisboa); Matt Henn (Nottingham Trent University); Charles Tilly (was Joseph L. Bittenwieser Professor of Social Science, Department of Sociology, Columbia University); Frank van Dam (Netherlands Environmental Assessment Agency); Sharlene Hesse-Biber (Boston College); Keith Halfacree (Swansea University); Sophie Bowlby (University of Reading); Luís Coelho Silva, Verónica Policarpo; Ludmila Fernandes; and Marta Bidarra. All contributed with ideas, perspectives and/or specialist knowledge that have greatly enhanced the content of this dissertation.

Maria Vitória (Vila Alva Parish), Rosa Ribeiro (former President of Vila Alva Parish), Mariana Coelho (Alvito Municipality), Maria Luísa Pola (Alvito resident), Margarida (Viana do Alentejo resident), Gonçalo Pola (Alvito resident), Lucília Penedo (Alvito resident), Lília

and Lucinda (Alvito Library), Maria de Aires Moita (EDIA), Tólia (Alvito Municipality), and Fábio Rosado (Alvito Cultural Centre) who provided much useful support throughout the field work.

I would particularly like to thank all catchment residents who freely gave their time to participate in this research. Without their input this research would not have been possible.

I would like to thank Wolfgang Wagner (from Johannes Kepler Universität, Linz, Austria), who kindly received me in Linz and helped me with the analysis of word associations.

I would like to thank Ludmila Fernandes important advice and friendship during my Ph.D. program.

Special thanks to Helena Carvalho (from the Department of Quantitative Methods, ISCTE - IUL) who helped me significantly with discussions about my quantitative study.

I would also like to acknowledge Pedro Rodrigues (University of Lisbon), Derek Yalden (University of Manchester), Fernando Oliveira Baptista (Instituto Superior de Agronomia), Ian Bateman (University of East Anglia), Maria José Boavida and Maria José Caramujo (University of Lisbon). All, as supervisors, had an important impact during my undergraduate and graduate years in Lisbon and in the U.K.

I would like to thank Adrian Martin (University of East Anglia) who has been an important “adviser” during the last decade.

I am very grateful to Joaquim Gil Nave and Penny Johnes for their supervision. Their invaluable insight and fertile new ideas combined with productive discussions, refined my ideas and writing. At the same time they always gave me the freedom to pursue and conduct my research.

While writing my dissertation, talking with others can become a cherished necessity, and I am particularly grateful in this regard to them. For all of these I truly thank you.

Finally, to the people who found time to answer my questions – really, thank you!!

ABSTRACT

An interpretative mixed methods study approach was developed to explore how catchment residents understand, experience and give meaning to a reservoir and its surroundings to assist water management. This approach involved collecting qualitative data after a quantitative phase to explain and expand on the quantitative data in more depth. By conceptualizing a reservoir and its surroundings as a social representation, the quantitative study empirically describes catchment residents' representations using a word association task as a consultation tool. Correspondence analyses integrated the word associations into a limited number of comprehensive representational components of the social representation about the study area (i.e., "functional", "aesthetic", "nonconsumptive uses" of nature, and "restorative") and illustrated how they are associated across the considered subgroups of residents. The qualitative study developed a constructivist grounded theory methodological approach. Individual semi-structured interviews were carried out to elaborate on the results discovered in the survey and to develop an in-depth understanding of residents' meanings and underlying experiences about the reservoir and its surroundings. Results indicate that meanings can be grouped into two broad thematic categories: personal and social. The personal meanings coalesced around beauty, nature, escape and refuge, restoration, physical interaction and gendered practices. Social meanings were related to friends, family, stewardship needs and development. The integrative theme of 'showcase of everyday life stories/memories' was identified through the repeated narrative expressions of place experiences in creating enduring memories and nostalgia. The dissertation concludes by discussing how the study approach and findings may assist subsequent water management, and areas for further study are identified.

Keywords: reservoir and its surroundings; catchment residents; interpretative mixed methods research; social representations; correspondence analysis; everyday life experiences; grounded theory; social meanings; public consultation; water management

RESUMO

A presente investigação sociológica, através de uma metodologia mista de carácter interpretativo, foi desenvolvida para explorar a forma como os residentes de uma bacia de drenagem compreendem, experimentam no seu quotidiano e dão significado a uma albufeira e área envolvente. Ao conceptualizar a albufeira e área envolvente como uma representação social, o estudo quantitativo descreve empiricamente as representações dos residentes da bacia de drenagem, usando como ferramenta de consulta um exercício de associação de palavras. Utilizando análise de correspondências, as associações de palavras foram integradas num número limitado de componentes (i.e., *functional, aesthetic, nonconsumptive uses of nature, e restorative*) da representação social da albufeira e área envolvente e ilustrada a sua relação com os sub-grupos de residentes considerados. O subsequente estudo qualitativo utilizou a *grounded theory* juntamente com entrevistas individuais semi-directivas para explicar os resultados do inquérito por questionário do estudo quantitativo. Desta forma, pretendeu-se explorar os significados e respectivas experiências do quotidiano que os residentes associam à albufeira e área envolvente. Os resultados qualitativos evidenciam duas categorias temáticas: significados pessoais e sociais. Os significados pessoais estão relacionados com a beleza e carácter natural da área, com a fuga e refúgio do quotidiano, com o carácter/efeito restaurador da área, interacção física e práticas de género. Os significados sociais estão relacionados com amigos, família, boa gestão e desenvolvimento. A categoria temática ‘montra de histórias/memórias do quotidiano’ foi conceptualizada através da repetição de expressões narrativas de experiências no local que levaram à criação de memórias que perduram e um sentimento de nostalgia. A presente dissertação conclui discutindo de que forma a investigação sociológica desenvolvida e os respectivos resultados podem ser úteis na gestão da água.

Palavras-chave: albufeira e área envolvente; residentes da bacia de drenagem; metodologia mista de carácter interpretativo; representações sociais; análise de correspondências; experiências do quotidiano; *grounded theory*; significados sociais; consulta pública; gestão da água

Contents

ACKNOWLEDGEMENTS	v
ABSTRATC	vii
RESUMO	viii
List of Tables	xiii
List of Figures	xiii
INTRODUCTION	1
Research aims and main research questions	5
Theoretical perspective and underlying epistemological assumptions	5
Researcher reflexivity	7
Chapter outline and structure of dissertation	12
Chapter 1 – Water Management Issues: Contextualisation	14
1.1 Water Management	14
1.2 The European Union Water Framework Directive	15
1.3 An Overview of Water Management Legal Framework in Portugal	16
1.4 Public Participation in River Basin Management	19
1.5 Reservoirs as Ecosystems	26
1.6 Chapter Summary and Implications for the Current Dissertation	32
Chapter 2 – Human-Nature Relationship: Review of Relevant Empirical Studies	34
2.1 Environmental Sociology	34
2.2 Landscape Preferences and Images of Nature	38
2.3 Restorative Effects of Nature and the Physical Environment	40
2.4 Gender-Environment Studies	43
2.5 Anthropological Approach	45
2.6 Human Geography Approach	48
2.7 Place-based Meanings Approach	49
2.8 Social Representations Approach	62
2.9 Chapter Conclusions, Conceptual Grounding and Reformulation of Research Questions	64
Chapter 3 – Preliminary Field-work and Research Design	72
3.1. Preliminary Field-work	72

3.2 Mixed Methods Research	74
3.2.1 Motives for using a mixed methods approach	74
3.2.2 Why a mixed methods design was selected?	76
3.2.3 Development of an interpretative mixed methods approach	77
Chapter 4 –Methods and Procedures	84
4.1. Phase 1: Quantitative Study	84
4.1.1 Theoretical approach: a social representation perspective	85
4.1.2 Construction and content of the questionnaire	87
4.1.3 Piloting of the questionnaire	91
4.1.4 Sampling Criteria and Procedure	94
4.1.5 Data collection	95
4.1.6 Data analysis	95
Correspondence analysis	95
Preparing word associations for analysis	96
Correspondence analyses of word associations	97
4.2 Phase 2: Qualitative Study	98
4.2.1 Selection of a qualitative strategy of inquiry	99
4.2.2 Grounded theory as a research methodology	100
The origins of grounded theory	100
Versions of grounded theory	102
4.2.3 The choice of a constructivist grounded theory approach	103
4.2.4 The features of grounded theory	104
Coding and categorisation of data	104
Constant comparative analysis	106
Theoretical sampling	107
Memoing	108
Theoretical development	108
4.2.5 The relationship between grounded theory and existing literature	109
4.2.6 Sampling criteria and procedure	111
4.2.7 Data collection	113
Choice of semi-structured interviewing as method of data collection	113
Strengths, weaknesses and challenges of interviewing	113
Development of interview topic guide	115

The formal interview process	116
4.2.8 The process of data analysis	119
The coding process	119
Memoing	123
4.2.9 Methodological issues	124
Trustworthiness	124
Limitations of methodological approach	125
Need for reflexivity in grounded theory research	126
4.3 Linking Data Types	127
Chapter 5 – The Odivelas Reservoir and its Surroundings in Context	129
5.1 Regional Socio-economic and Structural Aspects	129
5.2 Land Use Change in Alentejo Region	130
5.3 Water Resource Issues and Management in Alentejo Region	134
5.4 Site Selection	135
5.5 The Odivelas Reservoir and its Surroundings	135
5.6 The Origins of Eutrophication in the Study Area	141
5.6.1 Odivelas catchment: export coefficient model output	141
5.6.2 Scenario analysis: impacts of management intervention on phosphorus export to the Odivelas Reservoir	142
5.6.3 Changes in lake total phosphorus status predicted by the model run	142
5.6.4 Conclusions regarding the appraisal of eutrophication in the study area	144
Chapter 6 – Meanings and Underlying Experiences about a Reservoir and its Surroundings – Findings	145
6.1 Phase 1 – Quantitative study: Representations about a Reservoir and its Surroundings	145
6.1.1 Response rate, refusals and sample characteristics	145
6.1.2 Reservoir and its surroundings uses	147
6.1.3 Correspondence analyses of word associations	147
6.2 Phase 2 – Qualitative study: Meanings and Underlying Experiences about a Reservoir and its Surroundings	152
6.2.1 Personal meanings and underlying experiences	153
Beauty	153
Nature	156

Escape and Refuge	158
Restoration	160
Physical interaction	163
Gendered practices	165
6.2.2 Social meanings and underlying experiences	168
Friends	168
Family	171
Stewardship needs	173
Development	176
6.2.3 The interaction of personal and social meanings	177
6.2.4 Showcase of everyday life stories/memories	177
Chapter 7 – Meanings and Underlying Experiences about a Reservoir and its Surroundings – Theoretical Discussion and Implications	181
7.1 Personal and Social Meanings and Everyday Life Stories/Memories	181
7.2 Revisiting Research Questions	199
7.3 Contribution to Knowledge and Water Management	205
7.4 Limitations of the Study and Recommendations for Further Research	213
CONCLUSIONS	217
References	220
Appendices	
CV	

List of Tables

1.1	Constraints facing Portuguese water resources	17
1.2	Comparison of reservoirs and lakes	27
6.1	Socio-demographic characteristics of the survey sample	146
6.2	Percent of respondents using the reservoir and its surroundings for the considered activities and respective time of the year	148

List of Figures

1.1	Decision-making environment in water management.	14
1.2	Catchment structure and pathways influencing reservoir water quantity and quality	31
3.1	An interpretative mixed methods explanatory sequential design approach for the sociological analysis	80
4.1	Description of stages in pilot testing of the questionnaire	93
5.1	Location of (a) Sado River Basin, (b) comprising Homogeneous Planning Units (HPU 1-5), and (c) topographic map of Odivelas reservoir and its catchment	138
5.2	Annual variation of total phosphorus and chlorophyll a concentrations between 1999 and 2010	139
5.3	Main elements of Odivelas reservoir and its surroundings	140
5.4	Predicted total phosphorus exports for 1990 and 2007 in the Odivelas catchment	141
5.5	Predicted riverine (a) and lake (b) total phosphorus concentrations of the study catchment for scenario runs compared with the model 2007 baseline	143
6.1	Semantic spaces of word associations elicited for the stimulus terms (a) “Reservoir and its surroundings”, (b) “Lake” and (c) “Catchment” along the first two dimensions of correspondence analysis and supplementary variables	150
6.2	Conceptual ordering of the emerged themes, associated meanings and underlying processes ascribed to the reservoir and its surroundings by residents.	155

INTRODUCTION

Freshwater ecosystems are of vital importance for human well-being and constitute a valuable natural resource in economic, cultural, aesthetic, scientific and educational terms (Dudgeon et al., 2006). Yet surface freshwater ecosystems contain only around 0.01% of the world's water and cover only about 0.8% of the Earth's surface (Gleick, 1996). In addition, freshwater ecosystems are subject to severe competition among multiple human stakeholders¹ in many regions, and serious conflicts can arise when water supplies are limited (Dudgeon et al., 2006). Therefore, a growing scarcity of freshwater relative to human demands is now evident in many parts of the world (Postel, 2000) and, particularly, in semi-arid regions (Alvarez-Cobelas et al., 2010). Protection of freshwater ecosystems will necessitate the development of inclusive management partnerships at appropriate (drainage-basin) scales, as well as require energetic and imaginative attention from researchers (Dudgeon et al., 2006).

In Portugal, reservoirs are the most important lentic water bodies, providing a significant amount of water for irrigation, domestic supply, energy generation, tourism and recreational purposes. However, water quantity and quality issues are being increasingly recognized by government authorities and the citizenry, particularly in the southern reservoirs in Alentejo Region, because of its semi-arid climate (Matias, 2010). In Alentejo, alternative job opportunities are scarce so younger people tend to leave the area to find work elsewhere; also, poor socio-economic conditions led, during recent decades, to widespread farm abandonment, turning farmers into a minority within the local rural populations (INAG, 2009a). Meanwhile, the region's landscape is increasingly appreciated as a leisure commodity (Surova and Pinto-Correia, 2008). Thus, improving the multiple uses of such reservoirs and their surroundings, particularly for leisure/recreation, could be a way to achieve a more diversified economy and a higher social value for the region (Matias, 2012). Consequently,

¹ The term 'stakeholder' refers to "any person, group, or organization with an interest or 'stake' in an issue, either because they will be directly affected or because they may have some influence on its outcome"; the 'general public' is defined as "one or more natural or legal persons, and, in accordance with national legislation or practice, their associations, organizations, or groups" (Drafting Group, 2002; p. 18). As shown, the definition of a stakeholder is broad and the distinction between the 'general public' and the 'stakeholder' becomes blurred. For example, a farmer is a member of the general public and his/her community, but the farmer is also a stakeholder when water pollution control measures must be implemented on his/her farm. Accordingly, in this dissertation, the term 'stakeholder' is used to cover all types of 'stakeholders', including the 'general public'. However, the terms 'general public' 'the public' or 'lay people' are used to demarcate non-organised actors/stakeholders (i.e., catchment residents with their respective occupations and/or hobbies) from organised actors/stakeholders (e.g., experts, decision makers, interest parties such as farmer associations and municipalities, among others).

the protection, management and development of reservoirs are of interest to local populations (Matias, 2010).

Contrary to the diversity of water effects and human values associated with water, water management policies have largely focused upon technical, engineering-based standards and on complex legal definitions and regulations that specify the levels of water quality and quantity required for a limited range of primarily consumptive uses (Burmila et al., 1999). In this paradigm, problems are addressed in isolation from their social context (Zwarteveen, 2010). The prevailing epistemological norm is positivist, assuming that there exists ‘a water reality’ out there that can be known by separate and interchangeable knowers whose specificities of embodiment and subjective location disappear in the process (Zwarteveen, 2009); and assumes that reality can best be discovered by looking for regularities that reveal themselves in normal circumstances (Langton, 2000). Incidental to or excluded from these policies has been consideration of basic human needs, ecological water requirements, the roles of communities and culture, and the desires and needs of future generations (Postel, 2000).

In recent years, new forms of governance have emerged in Europe engaging actors beyond the state in the act of governing (Parés, 2011). Water is now recognised as a common good and community resource; it is not only a necessity for life but also a recreational resource; it is imbued with cultural values and plays a part in social life of local communities (Gleick, 1998). Freshwater resources management by definition is a context-specific phenomenon, given that it concretely happens through managing river basins, aquifers, landscapes and ecosystems (Mollinga, 2008). Moreover, the achievement of sustainability² requires that the human dimension is an integral component of freshwater management, recognizing that people are part of ecosystems, and that people have influenced and will continue to influence freshwater resources (Cordell et al., 1999).

² More than twenty years since ‘sustainability’ catapulted into international prominence by the Brundtland Commission, it continues to provoke conflict over its definition and interpretation. Rather than force agreement it makes more sense to regard sustainability as a discourse and accept a plurality of views and allow for a disaggregated approach to the concept (Dryzek, 1997). In this project the Agyeman et al. (2003) interpretation is used; that is, “the need to ensure a better quality of life for all, now and into the future, in a just and equitable manner, whilst living within the limits of a supporting ecosystems” (p. 5). This is more holistic and explicit in its concerns for justice - on quality of life, on present and future generations; on justice and equity in resource allocation and on living within ecological limits (Agyeman and Evans, 2004). This conception moves away from the dominant orientation of ‘environmental sustainability’ to represent ‘just sustainability’, a balanced approach including an explicit focus on justice, equity and environment together.

Water policy in general and basin management in particular, through the European Union Water Framework Directive (EU WFD, 2000/60/EC)³, is clearly one of the policies affected by these new forms of steering. The EU WFD draws attention to the importance of the social dimension of water management and recommends the adoption of participatory approaches, inclusive of social agents' knowledge and actions (Gonzalez et al., 2009).⁴ However, when public agencies advocate public participation and formal consultation they often work only through formal interest groups and local politicians on the assumption that their views are the same as, and representative of, the population at large (House and Fordham, 1997). Also, such representatives have a tendency to concentrate on those issues with a high public profile and those with which they are personally concerned, and the views of the 'ordinary person' can get ignored (Smith, 1994). Therefore, effective engagement also involves identifying and maintaining local values and cultural associations that enhance relationships between people and ecosystems (Higgs, 2003).

In traditional forms of social research, the voices of participants often become lost in the process of generalization and theory building (Witz, 2007). The lack of voice is especially salient when participants belong to underrepresented populations (Fine and Weis, 2005). Moreover, in such analyses, humans appear as a whole population, 'the aggregate consumers of socially anonymous resources' (Shove, 2003; p. 7). However, Macnaghten and Urry (1998) pointed out that such approaches ignore the highly diverse, ambivalent, complex and multiple characteristics of human engagement with nature.⁵ Accordingly, effective management of water resources cannot ignore the social and cultural differences associated with different habits, expectations, meanings, and practices of water use (Allon and Sofoulis, 2006).

With the institutions' failure to meet rising public expectations, there has been a loss of faith, and both a questioning of the role of the expert in society and a weakening of

³ Directive 2000/60/EC, 2000. Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy.

⁴ A central issue within water governance is the consideration of different forms of knowledge – scientific, managerial and lay (O'Toole et al., 2009). Scientific knowledge is typically understood to be explicit, systematised, decontextualised and hence widely transferable (Reed, 2008); is seen as a form of 'expert' knowledge (O'Toole et al., 2009). Lundvall and Johnson (1994) refer to this as 'know-why', since scientific knowledge partly attempts to understand the underlying principles and theory behind observable phenomena. Managerial knowledge can be interpreted as a second form of 'expert' knowledge that may be shaped both by past experience in management practice and by formal managerial education; managers are often caught between the adoption of 'expert' opinion and the necessity to translate the results into an instrumental form for political and community consumption (O'Toole et al., 2009). They contrast this with the 'know-how' of lay knowledge ('practical knowledge' according to Thrift, 1985), that is primarily tacit, implicit, informal, context dependant, resulting from the collective experience of generations of observation and practice (Reed, 2008), and grounded in people's own experiences and observations (Irwin, 1995).

⁵ The use of the term 'nature' or 'environment' should be interpreted in the broadest possible sense, referring hereafter to nature and/or to the biophysical environment.

individual allegiances to traditional institutions (Habermas, 1976; Giddens, 1991; Beck, 1992). In an intellectual setting in which claims to universal knowledge are being abandoned, and with social scientists being prompted to confront the relativity of all forms of knowledge, the attention of social scientists is increasingly being turned towards “the everyday knowledge of both ordinary and elevated folk in explaining social patterns and processes” (Little and Austin, 1996; p. 101).

Nontechnical, local interpretations of environmental problems, concepts and places are all essential to mitigating and preventing conflicts and finding ecologically and socially viable solutions (Fischer, 2000). Therefore, water managers need to understand what freshwater ecosystems mean outside of the scientific and technical rationality of expert ‘toolboxes’ and management ‘best practices’. In addition to a scientific and technical understanding of the natural environment, when designing and implementing management plans, it is important to acknowledge the equally important roles played by history, language, culture, psychology, and the emotional attachment⁶ associated with the local biophysical environment in how people interpret the natural world (Escobar, 1999). This may lead to a greater involvement of local citizens who possess valuable knowledge about how they and their neighbours interact with a river, or other ecosystem, in their everyday lives (Geertz, 2000).⁷

Social science can therefore contribute to the democratic ambition to incorporate the public’s views and needs into management plans and the formulation of policy targets (Buijs, 2009a). On a national level, such studies can help to focus water management policies on areas that are valued by the public, or to draw attention to specific social values of nature that

⁶ The connectivity between people and places is often described as powerfully emotional sentiments that influence how people perceive, experience, and value the environment (Cheng et al. 2003). I will return to this in section 2.7.

⁷ It is well known that local people can make important contributions to our knowledge of local ecosystems and of resource management (Hedelin, 2007). Such knowledge has often been accumulated over long periods of time and is often based on moral beliefs and the understanding that humans are part of the ecosystem rather than controlling it from the outside (Gadgil et al., 1993). Thus, people who are living in the local environment that is a focus of the planning/managing activity observed are potential carriers of the information and knowledge that is needed to make informed decisions (Hedelin, 2007). Here, Silvano et al. (2005) showed that local ecological knowledge is an important keystone to the design and structure of natural resource management strategies and cite several authors who report that local ecological knowledge combined with scientific information has proven useful to the management of ecosystems. Hedelin (2007) explains that “such local and contextual knowledge can complement the available expert or scientific knowledge, which in many cases is of a more general character. Another reason why local knowledge can contribute to the production of more informed decisions is the fact that such knowledge has often been cultivated over a long period of time. Knowledge of the local ecosystem in question gathered from monitoring programs or other types of rational investigation, on the other hand, often has a comparatively short time frame. (p. 156). Local (ecological) knowledge is herein defined as knowledge held by a specific group of people about their local ecosystems; it is site-specific and often involves a belief component (Olsson and Folke, 2001).

need to be protected or enhanced. Here, Buijs (2009a) pointed out the need of future research to focus on residents' knowledge and understanding of local ecosystems and attachment to their local environment.

Research aims and main research questions

Based on these considerations, coupled with a strong personal interest in the topic⁸, the aim of this dissertation is to explore how catchment residents understand, experience, and give meaning to a reservoir and its surroundings to inform subsequent water management.⁹ Based on this aim, the central question to be explored in this dissertation is: What are the various place-based, everyday interpretations of a reservoir and its surroundings? A corollary question is: How an understanding of these interpretations can be used to inform subsequent water management? After the literature review in Chapters 1 and 2, I will rephrase them into research questions that are more detailed. Here, by developing an interpretative mixed methods study approach¹⁰ I consolidated local interpretations about a reservoir and its surroundings as told to me by catchment residents. An interpretative approach assumes a subjective reality that consists of stories or meanings grounded in 'natural' settings (Hesse-Biber 2010b)¹¹, as explained next.

Theoretical perspective and underlying epistemological assumptions

Methodologically this dissertation is anchored in interpretivism (Altheide and Johnson, 1994) and constructivism (Guba and Lincoln, 1994).¹² An interpretative approach has the specific

⁸ This is addressed later in 'Researcher reflexivity' sub-section.

⁹ The concept of meaning is ubiquitous in the human-nature relationship literature and is important because meanings are generally related to actions (Jordan et al., 2009). An emerging corollary to the idea of meaning (i.e., the outcomes) relates to the process of meaning-making. People use a process to make or construct meanings of particular phenomena; thus, they engage in meaning-making (i.e., the processes/experiences), which connotes a fluidity that may be both conscious and unconscious (Jordan et al., 2009). Namely, meanings arise out of actions, and in turn influence actions; this perspective assumes that individuals are active, creative and that social life consists of processes (Charmaz, 2006). So, as experience with sites builds, so does the meaning of a place. For example, as one has more and varied experiences with a water body, the meaning of and relationship with the water body changes. I will return again to this topic in sections 2.7 and 2.9.

¹⁰ This qualitatively-driven approach is an umbrella term used to characterize a variety of approaches; such as interpretative, feminist or postmodern. The common core assumption of this approach is that reality is socially constructed and that subjective meaning is a critical component of knowledge building; this approach does not reject outright some notion of objectivity (Hesse-Biber, 2010a).

¹¹ Briefly, this interpretative mixed methods approach involves collecting qualitative data after a quantitative phase to explain and expand on the quantitative data in more depth.

¹² In constructivism the understanding or meaning of phenomena is formed through participants and their subjective views (Guba and Lincoln, 1994). When participants provide their understandings, they speak from meanings shaped by social interaction with others and from their own personal histories; research is shaped 'from the bottom-up': from individual perspectives to broad patterns and, ultimately, to theory (Creswell and Plano Clark, 2007).

core assumption that reality is socially constructed and focuses on understanding the meaning of social reality from the perspective of the individual's experiences (Hesse-Biber, 2010a).¹³ Researchers' basic beliefs and worldviews lie behind their theoretical perspective. Guba and Lincoln (1994) talk about the need of researchers to make explicit both their ontological and epistemological assumptions before embarking on any research project.

Ontologically speaking, there are multiple realities or multiple truths based on one's construction of reality through their action and interaction. Reality is socially constructed (Berger and Luckmann, 1966) and so is constantly changing.¹⁴ So, for example, a reservoir and its surroundings is seen to be in constant change as it is continually being challenged, negotiated, and reconstructed through everyday experiences such as social interactions, observing others, and/or simply through being part of people's everyday life.¹⁵

On an epistemological level, there is no access to reality independent of our minds, no external referent by which to compare claims of truth (Smith, 1983). The investigator and the object of study are interactively linked so that findings are mutually created within the context of the situation which shapes the inquiry (Guba and Lincoln, 1994; Denzin and Lincoln, 1994). That is, the emphasis is on process and meanings in their natural settings, based on the minimum distance between the investigator and the investigated, and seek multiple definitions of reality embedded in various respondents' experiences. Although, this suggests that reality has no existence prior to the activity of investigation, and reality ceases to exist when we no

¹³ This approach is not necessarily critical of the social structures that social actors inhabit, nor is there necessarily a social transformation/social change goal, as in, for example, critical theory, postmodern, or feminist perspectives (Hesse-Biber, 2010a).

¹⁴ A social constructionist approach views relationship patterns as ongoing phenomena, constructed and reconstructed through daily interaction (Berger and Luckmann, 1966) and interpretive processes (Maines, 2000).

¹⁵ There has been considerable academic attention paid to the 'everyday' (e.g., Certeau, 1984; Lefebvre, 1971, 2002; Chaney, 2002; Harrison, 2007; Highmore, 2002a, 2002b; Martin, 2003a; Moran, 2004; Pais, 2002, 2010; Scott, 2009). Whilst there is much debate about how precisely the 'everyday' is to be defined, and what exactly constitutes everyday life, I take Rita Felski's phenomenological framework as a useful guidance for this dissertation. Felski (2002) suggests that everyday life is grounded in three processes: time, space, and habit. Repetition defines the everyday in relation to the temporality of social life (cf. Lefebvre, 2002); that is, routines of existence, and what happens 'day after day'; eating, sleeping, cleaning, washing, commuting, and, in our case, experiencing a reservoir and its surroundings. Everyday life is played out in many different places of work, travel, shopping, and leisure. So, for example, the reservoir and its surroundings becomes a 'home' through familiarity and the creation of an emotional attachment (cf. Blunt and Dowling 2006); it is a fixed place from which we stopover and return; it is a symbolic centre or base for the self. The reservoir and its surroundings may contribute towards home-making through a break from daily routines of domestic duties and through leisure activities. The reservoir and its surroundings is thus shared with others through joint physical 'work', pictures, cuttings, advice, and dialogically with family and friends (or even with unknown people). Finally, Felski points to the habitual character of everyday life "The idea of habit crystallises this experience of dailiness" (2002; p. 26). On the one hand, habit can be a repressive regime of routine. But, on the other hand, Felski argues that there is an element of banal habit that "may strengthen, comfort, and provide meaning" (2002, p. 28), and (after de Certeau, 1984), the breaking of habit (no matter how small) is itself creative.

longer focus on it (Smith, 1983)¹⁶, in this dissertation I advocate an interpretative approach that does not reject outright some notion of objectivity (cf. Hesse-Biber, 2010a).

Researcher reflexivity

The ‘problem of reflexivity’ and the ways in which “our subjectivity becomes entangled in the lives of others” (Denzin, 1997: 27) are issues which have concerned sociologists (see, for example, Denzin, 1989a, 1995; Hobbs and May, 1993). The ‘problem’ arises through the recognition that as social researchers we are integral to the social world we study and as Denzin (1994; p. 503) points out, “[re]presentation ... is always self-presentation ... the other’s presence is directly connected to the writer’s self-presence in the text”. The ‘reflexive turn’ in the social sciences has therefore contributed towards demystification and greater understanding of theoretically and empirically based knowledge construction processes; the partial, provisional and perspectival nature of knowledge claims is recognized (Mauthner and Doucet, 2003). There is increased awareness that “how knowledge is acquired, organized, and interpreted is relevant to what the claims are” (Altheide and Johnson, 1994: 486).

With ‘reflexive sociology’ Bourdieu (2004) argues that the biographies and behaviours of social scientists in relation to their object of study must be taken into account if social science is to be successful as a scientific enterprise. According to Bourdieu (2004), social scientists, themselves, are also objects under study in the sense that they are, at the same time, social actors with their own biographies and behaviours; shaped by and participating in the reality of society that is the object of their study. “The sociologist is thus saddled with the task of knowing an object —the social world— of which he is the product, in such a way that the problems that he raises about it and the concepts he uses have every chance of being the product of this object itself” (Bourdieu and Wacquant, 1992; p. 235). For Giddens (1991), reflexivity signifies the self-aware assessment of behavioural options and the ability to reconcile internal and external demands and influences in order to maintain a coherent personal narrative, if necessary by self-correcting earlier decisions ‘on reflection’ of their appropriateness. The social researcher therefore occupies a place in the social world,

¹⁶ “Most approaches to social research are based on a realist/neorealist position holding that there is a reality ‘out there’ that can be known or depicted as it really is, at least in principle, independent of the interests and purposes of researchers. Although interpretivists have no problem with the idea that there is a reality ‘out there’, they argue that the idea of no theory-free observation/knowledge means that as finite humans we can never access that reality as it really is. There is no way to factor out or eliminate the influence of the particular interests and purposes of particular researchers. This does not mean that interpretivists are antirealists in the sense that they believe that nothing exists outside of our minds. They are nonrealists, meaning they believe that there may be a reality ‘out there’, but our descriptions/interpretations of that reality are not ‘out there’. Social reality is always something we make or construct, not something we find or discover.” (Smith, 2008; p. 460)

which is the object of study, and must therefore adopt a critical awareness of his or her own social location in relation to both the research object and process (Fries, 2009).

In this dissertation, through the process of self-reflection (Mauthner and Doucet, 2003), I addressed several issues/topics about (and during) the research process. For example, I concur with the stance that methods of data analysis are not simply neutral techniques because they carry the epistemological, ontological and theoretical assumptions of the researchers who developed them (Alvesson and Sköldbberg, 2000), and they are later infused with the, sometimes different, assumptions of the researchers who use them. Moreover, I concur with Sharlene Hesse-Biber (2010a) remark that

knowledge gathering and truth are always partial; that researcher values, feelings, and attitudes cannot be removed from the research relationship but instead should be taken into consideration when interpreting the data as part of the knowledge construction process; and that the researcher should establish a reciprocal relationship with research participants to promote an interactional, cooperative co-construction of meaning. (p. 16)

My current view is also that subject accounts are not completely transparent but that there is nevertheless “a relationship between people’s ambiguous representations and their experiences” (Hollway and Jefferson, 2000: 3). As Mauthner and Doucet (2003) suggest, subjects are reflexively constituted between the researcher and the researched, and that while they are therefore always incompletely unknown, it is possible to grasp something of their articulated experience and subjectivity through a research encounter.

Sociologist Sharlene Hesse-Biber (2010a) points out that “practicing reflexivity helps researchers get in touch with their research assumptions by making them more conscious of what values, attitudes, and research concerns they bring to a given research endeavour” (p. 32). Mauthner and Doucet (2003) also suggest that the interplay between our multiple social locations and how these intersect with the particularities of our personal biographies need to be considered, as far as possible; and that the benefit of hindsight can deepen the understanding of what is influencing our knowledge production and how this is occurring. Accordingly, hindsight has enabled me to understand and articulate how my personal and

academic biographies¹⁷ have influenced the construction of knowledge in my doctoral research, as discussed in the following paragraphs.

I was born and grew up in Lisbon, like my parents. So, the traditional parents' direct link with the countryside was absent. However, during childhood my parents took us (both me and my brother) to a small rural village near the sea on weekends and to the countryside during summer holidays. I was always seeking to discover the 'mysterious' surrounding landscape and learning with locals by questioning and listening to what they would have to say.¹⁸ Later, during my youth, most of my holidays were also spent in the countryside where I spent a great deal of time chatting with locals, listening for hours about their diverse stories, and writing my own 'amateur' notes about these dialogues. This was my idea of gaining knowledge about countryside living experiences, since I always felt enchanted by the feeling of 'rural idyll'¹⁹ that being in the countryside could provide.

Thus, this research was firmly located within my personal experience, emerging as it did from my own interest and background. In fact, throughout the entire time in the field, my status as a 'person from university' was only raised once, and significantly, on this occasion the association was negative. That is, during preliminary field-work, I had informally asked a parish president how they consult populations about existing local water issues. He responded saying "We don't need people from universities coming up here and teaching us how to do our job". The implication was that university people were outsiders who lacked real understanding of local ways and signified a potential threat.

Of far greater importance to participants were other identities I inhabited. On most occasions, my position as a person who grew up in the city (Where did I come from?), my position as someone that was quite familiar with the countryside (How did I come to know this place? Why I was so fond of the area?), and most often raised, my position as 'young' man (Was I married? Did I have children? How old was I?) were of much more interest to participants than was my position as university researcher. Like in Barbara Pini's (2004)

¹⁷ This does not suggest however, that these were discrete or stable: "Our identities are constituted across a range of different discourses, often competing and inconsistent, and constructed not just by us, but for us. The process is consequently far more messy than a traditional published text can convey" (Pini, 2004; p. 171).

¹⁸ Research on environmental socialization and significant life experiences indicates the primacy of childhood play in natural environments in shaping later adult interest in natural places (James et al., 2010).

¹⁹ A positive image surrounding many aspects of rural lifestyle, community, and landscape (Ilbery, 1998). The rural idyll "presents happy, healthy and problem-free images of rural life safely nestling with both a close social community and a contiguous natural environment" (Cloke and Milbourne, 1992; p. 359). This romanticised construct is based on a pure and plain style of living close to green and natural amenities, "a less hurried lifestyle where people have more time for each other and exist in a more organic community where people have a place and an authentic role" (Short, 1991; p. 34); in this idyllic countryside one can escape the hectic urban life (van Dam et al., 2002).

research approach, I enabled people to ‘place’ me and to ask questions about myself and my background because I was seeking to have more inclusive and less hierarchical relationships with them. Here, participants responded very positively to being told that I had grown up in a city, but spent most of my free time in the countryside which was very important to me as a person. They also responded positively to the fact that I was married with a child, and that I was older than I seemed.

So, by “placing myself in the process of production” and explaining how my own background led to my interest in the research topic, I abandoned claims to epistemological authority on the grounds that I spoke in a singular narrative voice as ‘a researcher’ (Pini, 2004; p. 172). Instead I acknowledged that I speak from multiple and shifting positions and explained that the way in which I represent knowledge is influenced by these positions. In the following paragraph, I describe (another of these positions) and explain how a reflexive examination of my ‘academic self’ enhanced the quality of the data collection and analysis I undertook in the research.

I came to my Ph.D. from a background in natural sciences. However, my disenchantment with the discipline and its positivist paradigm led me to move to a social sciences department in the first year of my Ph.D.. As a sociologist, my theoretical and methodological position is one in which I rejected notions of the detached, neutral, ‘objective’ researcher; as well as, I utilize a range of tools –quantitative and qualitative– as needed to answer my questions. I am not wedded to one specific method or set of methods. I use whatever methods will facilitate getting answers to my research problem. I also consider crucial,

the importance of the empowerment of women and other groups in the research process by advocating the practice of reflexivity, which calls forth an awareness of power imbalances between the researcher and the researched, the need to be mindful of the research concepts used within a given study, and the importance of listening throughout the research process. (Hesse-Biber, 2010a; p. 131)

Here, I am influenced by feminist standpoint epistemology and the notion of ‘giving voice’ to marginalized groups. That is, a feminist perspective moves the issues of those whose lives have been marginalized, overlooked, or misrepresented by traditional investigations to the ‘front and centre’ of the research agenda (Pini, 2004; Hesse-Biber, 2007).

In particular, my research experience with lay people²⁰ about water issues (e.g., Turner et al., 2004; Matias, 2003; Matias et al. 2008) resulted in my desire to react against the dominant management tradition in the water field, in which lay people's views and lived experiences are frequently devalued and ignored and/or had not typically been a key input into planning and management (Matias, 2010). For example, on several occasions when holding informal conversations with residents from several reservoirs' surrounding villages they expressed their discontent about the way these water resources were managed without consideration of their opinions and/or relationship with the area. Thus, this experience motivated me to choose this area as the topic for my dissertation.

Overall, I was aware that I had obtained rich data because of the open and generous giving of people involved in the research, but I also became aware that this had been given to me not necessarily in my role (or solely in my role) as researcher, but perhaps in other roles such as 'husband', 'father' or 'man'. If I had worked harder to minimise these other identities and highlight instead my 'researcher' identity, perhaps participants may have been 'less open'. So, the data I gathered and analysed in this study were not simply gathered and analysed by 'a researcher'. The data were, in part, obtained and interpreted by a 'husband', 'father', 'traveller' and a 'man'. Also, in my dissertation I did not deny the epistemic significance of these locations. Instead I was explicit about them and thus opened my work up in a way which was accountable and transparent. Here, I draw on Barbara Pini's (2004) words:

My findings were credible not because I claimed to be an independent neutral observer documenting a reality I had cleverly captured, but because I attempted to be reflexive about the dynamics that occurred in producing the findings. This created the opportunity for the context in which the interpretations were made to be questioned both by myself and others. It also provided a space for me to utilise my own embodied and situated knowledges while simultaneously, it signalled potential biases and prejudicial assumptions and opened these up to scrutiny. (p. 176)

²⁰ In this thesis, I frequently speak of 'lay people' when referring to the general public. However, using this term does not imply a view of the public as ignorant and not having any knowledge or understanding of nature/environment and its processes. On the contrary, lay people are often experts in regard to their own local environments (Fischer, 2000). The term is merely used to demarcate residents and other non-organised actors from organised actors. As such, I use 'lay people' and 'the public/general public' more or less interchangeably in this thesis.

Moreover, conducting this study as a reflexive researcher, I engaged in writing and talking with colleagues, friends and research participants about a wide range of issues relating to the process of research. Overall, throughout the dissertation (i.e., at preliminary field-work, research design, data collection and analysis, and discussion/interpretation stages) I will further address how reflexivity has been translated into practice.

Chapter outline and structure of dissertation

The current dissertation is data-driven. It deliberately privileges the voices of participants with the aim of exploring in detail their perceptions, opinions and lived experiences about a reservoir and its surroundings. This is reflected in the methodological approach and the overall presentation of the study, including the sequence of chapters.

Chapters 1 and 2 contextualise and justify the current study, respectively. In chapter 1 a review of literature discusses some contemporary issues about water management related with the topic of this dissertation; namely, the European Union Water Framework Directive, public participation, the importance of local consultation, and reservoirs as ecosystems. It concludes with a discussion of the implications for the current dissertation. Chapter 2 provides a review of relevant empirical studies exploring human-nature relationships. Furthermore, it reveals important lacunae in existing knowledge, presents the conceptual grounding of this study, and concludes with the reformulation of the research questions.

Chapters 3 and 4 present the research design and methodology. Chapter 3 focuses on the preliminary field-work, as a reflexivity, exploration and contextual strategy, and provides detailed information on relevant issues raised by it and how it influenced the remaining stages of the dissertation. It also focuses on the research design approach employed in the study. This includes a discussion on the choice of the research design adopted (i.e., an interpretative mixed method explanatory sequential design) and the implications of this choice for the overall research methodology and chronicles the research procedure. Chapter 4 focuses specifically on the methodological approach employed in this dissertation. This includes a discussion on the choice of a research methodology, the features of this methodology, and the implications of this choice for the overall research, including the structure of the dissertation. It also explains the process of data collection and analysis, and discusses a number of additional methodological issues.

Chapter 5 contextualises and details the study area. Chapters 6 present the research findings. It starts with a section that presents and briefly discusses the outcomes of the

quantitative study, followed by the findings of the qualitative study. Chapter 7 discusses the findings of the qualitative study and reflects on the overall dissertation. Here, the discussion of the qualitative findings is linked to the previous quantitative study outcomes. After, the research questions are revisited, the contribution to knowledge and water management is discussed, and limitations of the study and recommendations for further research are identified. Finally, some conclusions are drawn.

Chapter 1 – Water Management Issues: Contextualisation

In this chapter, a review of literature discusses some contemporary topics about water management related with the topic of this dissertation; namely, the European Union Water Framework Directive, the water management legal framework in Portugal, public participation in river basin management, and reservoirs as ecosystems. It concludes with a summary and a discussion of the implications for the current dissertation.

1.1 Water Management

Fig. 1.1 shows the main players in general in an institutionally constrained decision-making setting concerning the management of water resources. Here, water management occurs in a given institutional setting in which several decision-makers may play a role, at different institutional and administrative levels (Brouwer et al., 2003). Through interactions with their decision-making environment, including stakeholders and experts, deliberations occur within existing or, perhaps as a result of the decision-making process, shifting formal and informal power structures (Brouwer et al., 2003).

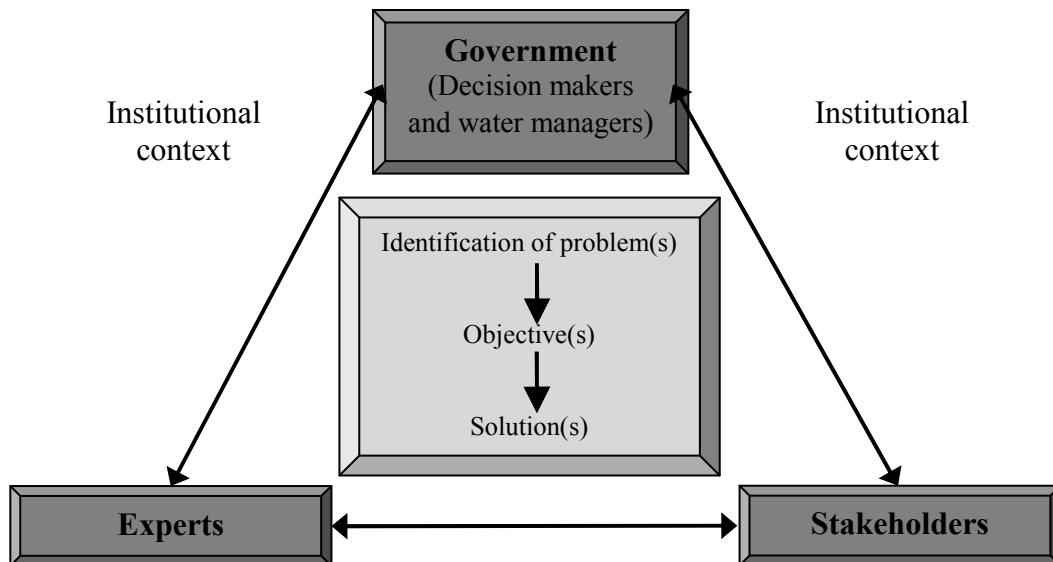


Fig. 1.1 Decision-making environment in water management (Note: Although the government is depicted at the top, it is not meant to imply a top-down decision structure; After Brouwer et al., 2003).

Water management issues, often embedded in seemingly endless ecological, social and political interactions across temporal and spatial scales, are context-dependent, socially constructed and technically uncertain (O’Riordan, 1989). Among other things, they are shaped by the interplay of multiple legitimate perspectives and problem definitions, and grounded in the wide range of stakeholder values, worldviews and histories found in increasingly pluralistic and fragmented societies (Funtowicz and Ravetz, 1992). Government policies in many countries reflect this need for integration between experts/researchers, policy makers and stakeholders; one such policy is the European Union Water Framework Directive (Letcher and Giupponi, 2005).

1.2 The European Union Water Framework Directive²¹

The European Union (EU) Water Framework Directive (WFD, Directive 2000/60/EC) was released on 23 October 2000 in response to concerns about the need for a more global approach to water policy in the EU. The WFD provides a framework for EU water policy aiming at establishing an integrated approach to the protection, improvement and sustainable use of water in Europe (Frederiksen and Maenpaa, 2007). The WFD rationalises and updates existing water legislation and introduces a holistic approach to water management based on the concept of river basin planning. The key objectives of the WFD set out in article 1 are to:

- Prevent further deterioration and enhance the status of aquatic ecosystems and associated wetlands;
- Promote sustainable use of water;
- Enhance protection and improvement of the aquatic environment;
- Reduce pollution of surface and groundwater, especially by ‘priority’ and ‘priority hazardous’ substances;
- Mitigate the effects of floods and droughts (EUROPA, 2003a, b).

In addition, the WFD introduces economic analyses of water use (principle of recovery of the costs) provides the general public with rights of involvement and information over river basin

²¹ The reader is referred, for example, to Frederiksen and Maenpaa (2007) report covering in detail the history, goals and implementation strategy of the European Union Water Framework Directive.

planning and establishes a detailed system of monitoring and reporting (Frederiksen and Maenpaa, 2007).

Several key mechanisms are applied to make these objectives operational within the Directive. As mentioned before, River Basins are appointed as the basic management units, and management plans will be drawn up these units, under the responsibility of the competent authorities assigned to River Basin Districts (RBDs). The River Basin Management Plan (RBMP) is to be produced and updated every 6 years for each basin. Water management on the basis of river basins enables the assessment of all activities which may affect the water course and their eventual control by measures which may be specific to the conditions of the river basin. Here, management objectives are coordinated through a set of targets for good status of both surface and groundwater. These measures of status consider both ecological protection, through targets for biological quality, and chemical protection, through a set of minimum chemical quality targets to be achieved throughout the EU. Good status targets are aimed to be achieved by 2015. Another key component of the WFD is the acknowledgement of the role of public participation in river basin management; this point will be further discussed in section 1.4. In Portugal, the publication of the Legislative-Decree 58/2005 approves the new water law and transposes the Directive into Portuguese legislation, as explained next.

1.3 An Overview of Water Management Legal Framework in Portugal²²

In Portugal, the concern with water preservation and management developed in the seventies (Ventura, 2003:137). The adoption of these concerns into national law was introduced in the same decade but its recognition occurred in the eighties and, particularly, in the nineties with the publication of the Legislative-Decrees n° 45, n° 46, n° 47/94 (Serra, 2003). This legislation was used to regulate the planning of water resources, the licensing system of water abstraction, and the economic and financing regime of the public water domain (Ventura, 2003). Soon after, the National Water Plan and River Basins Plans started to be elaborated (foreseen on the Legislative-Decree n° 45/94), in order to regulate the planning and use of water resources (INAG, 2001). These plans integrate the most recent principles of water management (i.e. an integrated harmonization of water use, economy, and environmental

²² The reader is referred, for example, to J. Pato (2008) for a more detailed historical review of water management in Portugal.

policy and planning) together with the basic elements of the EU water management policy, expressed in the WFD (Ventura, 2003).

The Portuguese National Water Plan²³, effective since April 2002, having taken into account the national, bilateral, EU, and international institutional frameworks, defines the main general goals to support water resources major policy guidelines. Those priorities and goals translate the former identification of different problems and causes carried out by the Portuguese National Water Plan (INAG, 2001). In this regard, Maia (2003) summarised the most important of them, grouped by some identified main factors (Table 1.1).

Table 1.1 Constraints facing Portuguese water resources (Source: Maia, 2003).

Category	Constraints
Natural	Uneven spatial and temporal distribution of water resources; large dependence on trans-boundary water
Human	Uneven population distribution, mainly on coastal areas; tourism pressure located essentially on those same areas; agriculture water use largely predominant; demand peaks on the dry season; lack of environmental awareness
Technical	Old agriculture infrastructure; lack of proper irrigation techniques; big water supply network losses
Juridical	Deficit of execution on water and environmental laws; juridical system deficiencies; no legal framework for some uses
Financial	Non effective economic and financial regime (leading to poor financial resources for water authorities); pricing of water (namely in agriculture) distorted and largely subsidised
Administrative and Institutional	Need to articulate the different water management entities; incipient participation of civil society; insufficient law monitoring and enforcement; insufficient administrative human resources

²³ Plano Nacional da Água (2002), Decree-Law nb. 112/2002 of Ministry of Environment and Territorial Ordinance. Portugal: Diário da República – I Série A, No. 90, 17/4/2002 (in Portuguese).

Over the last few decades, the Portuguese water resource policy model has been ‘supply enhancement’ oriented, looking to achieve: (i) basic sanitation for the whole population, (ii) development of irrigated areas, and (iii) generation of electricity (i.e., social policy and developmental policy), paying either no or very little attention to environmental problems (Maia, 2003). Thus, bearing in mind these policy aims and the previously identified current main water issues, the author identified some of the major ‘shifting paradigm’ components needed in the Portuguese water resources policy: (i) institutional reorganisation; (ii) integrated planning and management of water and land uses; and (iii) compliance with the WFD internal transposition and implementation.

Later, Law 58/2005, of December 29, 2005 (the new ‘Water Framework Law’) established the basis and the institutional framework for water management policy in Portugal. This new law aims at providing the means for the sustainable management and protection of water resources to be undertaken by regional water management authorities with assigned territories designed around river basins. The main purposes of this new Portuguese water management legal regime are to:

- protect inland surface waters, coastal waters and groundwater, in order to prevent and reduce pollution;
- promote sustainable water use;
- protect the aquatic environment;
- improve the status of aquatic ecosystems;
- mitigate the effects of floods and droughts.

The Law 58/2005 transposes into Portuguese law the applicable European legislation on this subject, namely the EU WFD. Like the WFD, Law 58/2005 provides a framework for future water management and water sources protection regulations and administrative measures. Several public authorities were created and called upon to assist in the planning and execution of regulations and measures for the implementation of sustainable water use. Notably among these authorities are the newly created River Basin Administrations (i.e., ‘Administração da Região Hidrográfica’) and the existing and now restructured INAG (i.e., the National Water Institute). The new Water Framework Law provides for the creation of administrative regions for each identified RBD, some of which are of international nature

(most of the largest Portuguese rivers have international basins shared with Spain; e.g., Tejo and Douro Rivers).

This Water Framework Law also provides for the definition of several water resource planning and development instruments and determines their respective scope of intervention. INAG has the primary responsibility of issuing planning instruments: The National Water Master Plan; RBMPs; and specific water management plans (such as the Reservoir Management Plan), which cover specific geographical areas or problems, water type or aspects of economic activities with special interaction with water. According to what is now a major principle in Portuguese environmental laws, all water sector stakeholders are welcome to participate in the approval and execution of both the National Water Master Plan and the water management plans; this point will be further discussed in section 1.4.

An additional set of measures is foreseen in order to systematically protect and enhance water resources. These are to be implemented by each River Basin Administration, in cooperation with the municipalities and private land owners where water resources are raised or deposited. The Water Framework Law also sets out rules and imposes obligations for the use of water resources, in accordance with the principles of precaution and of promoting sustainable and efficient use of water resources. The River Basin Administration will be responsible for granting licenses for activities such as water extraction. The River Basin Administration will also assess a charge on each license granted for the use of public domain water resources and for carrying out activities with possible negative impact on the quality and quantity of water resources. Further regulations will be necessary in order to implement the financing, supervision and enforcement rules related to the functioning of this new water management framework. Nevertheless, this new Water Framework Law is a step ahead in the definition and implementation of a sustainable water policy and water management system in Portugal, providing the necessary framework for a consistent and successful protection of this resource (Maia, 2003).

1.4 Public Participation in River Basin Management

In the past, it was usually the case that ‘the public’ was taken to be a homogeneous entity, and that it needed to be spoken for, rather than members of the public being interested or able to speak for themselves; this situation, in rhetorical terms at least, has certainly changed within the EU member states context (Hodgson and Smith, 2007). Here, public participation, also

referred to as public involvement, plays a notable role in the implementation of the WFD (Frederiksen and Maenpaa, 2007). In particular, Article 14 of the WFD states that the success of this Directive relies on close co-operation and coherent action at the community and local level, as well as on information, consultation, and involvement of the public²⁴ - including water users- and the interested parties (more commonly named ‘stakeholders’) (European Commission, 2000). The main purpose of public participation is to ensure that decisions are based on common understanding, shared knowledge, experiences and scientific evidence (Frederiksen and Maenpaa, 2007). Therefore, public participation should be a gradual and continuous process, starting with initial identification of significant water management issues. Early involvement is essential to ensure better input from the public and provide more credibility and transparency in the process (Rinaudo and Garin, 2005).

However, there are still large knowledge gaps and culture clashes which make the realization of participatory processes problematic for most governing bodies (Appelstrand, 2002). In certain EU member states, where public participation may represent an enormous shift in traditional planning models, decision makers may be tempted to restrict the participation process mainly as a means of legitimizing decisions (Rinaudo and Garin, 2005). Here, Smith and McDonough (2001) mention that many agencies develop alternatives in advance and then have citizens comment on alternatives. In effect, this means that the crucial decisions have already been made and citizen involvement becomes a formality leading to small changes that do not challenge basic assumptions (Smith and McDonough, 2001). Moreover, Hodgson and Smith (2007) point out that

Being involved, participating, makes demands that many individuals and groups cannot meet. For example, taking part in stakeholders events will often imply the ability to pay to get there, as well as, the available time to be involved, even assuming an event is known about in first place. For example, the process of current river basin planning in England makes claims to public involvement, but the major source of information is via the internet and can only be found if you are specially searching. (p. 190)

Accordingly, although a lot of literature is available on different public participation and consultation methods and approaches (e.g., OECD, 2001; Involve, 2005; Rowe and

²⁴ Namely, access to information and documents used to guide the development of RBMPs, consultation at various stages of the RBMP preparation process, and active involvement during the Directive’s implementation, especially during the preparation, review and subsequent modification of RBMPs (European Commission, 2002).

Frewer, 2005; Reed, 2008), some questions still remain unanswered: “how to reach beyond the organized stakeholders to the unorganized water users, and how to consult them in a simple and inclusive way for water management?” (Matias, 2010; p. 295).

In Portugal the socio-natural complexity of catchment dynamics is still systematically neglected in favour of top-down, prearranged management responses (Ioris, 2008; Matias et al., 2008).²⁵ The mainstream rationality relies on scientific expertise as the source of ‘truth’ that cannot be questioned, but serves to identify problems and formulate management solutions (Ioris, 2008). In particular, participation in the governing and management of water resources at the catchment level is restricted to agencies and to those users having an economic stake (e.g., hydropower, agriculture, household water supply companies, industrial enterprises; Matias et al., 2008).

Consultation, public hearings, and information dissemination are considered to be current practices in the Portuguese water management arena (Vasconcelos, 2007; Matias, 2010). However, there is a widespread opinion among those involved in water management (e.g., public officials, water experts, environmentalists, and other water users) that these public participation mechanisms have had an ineffective contribution to water management and to the implementation of water policy (Vasconcelos, 2007). Catchment populations also frequently express frustration, arguing that those mechanisms do not allow issues to be properly discussed and that the responses are often made with specific economic interests at heart (Matias et al., 2008). Thus, those methods of engagement appear to be perceived as formal legal practices, with catchment populations only ‘participating’ in strategic decision-making in marginal ways and at predetermined points (Matias, 2010).

For example, during public consultation regarding the elaboration of River Basin Management Plans, people are initially invited to formally submit comments and/or concerns about water management issues (INAG, 2009a) and are only given the chance afterwards to attend organized events to discuss the River Basin Management Plan draft proposed by experts. Most people affected by the water management decisions are not able to attend these ‘centralized’ meetings, and are therefore repeatedly excluded from discussions. Here, the mechanism is time limited and has a clear target: to write up a River Basin Management Plan according to what is established in the EU WFD.

Another example was a recent round of discussions with public officials, delegates from electricity and water supply companies, and private consultants about the

²⁵ The reader is referred to J. Pato (2009) for a more detailed review of public participation in water management in Portugal.

implementation of the WFD. This completely left out the general public, and in particular catchment populations that are affected by water management decisions (Ioris, 2008). Overall, the existence of systemic weaknesses such as the above discussed will make it difficult for lay people participation procedures to meet the requirements of Article 14 in anything more than a merely symbolic fashion.

Local consultation can yield local values and viewpoints (Hophmayer-Tokich and Krozer, 2008). This is particularly true for those values that cannot be measured in monetary terms such as the restoration of aquatic systems, as well as cultural and social considerations that science has failed to appreciate (Fischer, 2000). Since it enables gathering of different perspectives and interests, and reveals potential conflicts arising from them (Newig et al., 2005), it can thus assist in ‘better’ problem definition in terms of incorporating more viewpoints (Hophmayer-Tokich and Krozer, 2008). In this way, local consultation is a logical consequence of the understanding that planning/managing is not about finding a value neutral, optimal solution to a problem (Hedelin, 2007). Cases from the Hérault catchment in southern France (Garin et al., 2002) as well as catchment management in Alabama, U.S.A. (Mullen and Allison, 1999), for example, reveal that there can be a big gap between the way experts, the public and stakeholders perceive the local situation, its problems and its solutions. On the other hand, cases in North America’s Great Lakes region show that multi-value-oriented decisions help to define a common vision and priorities for action (Beierle and Konisky, 2001).

Local consultation can also yield local knowledge that cannot be gathered in any other way (Hophmayer-Tokich and Krozer, 2008). Local knowledge, based on local observation and experience, provides first-hand knowledge about area circumstances and complements experts’ knowledge (Fischer, 2000), as mentioned before. Pellizzoni (2003) argues that local knowledge is especially important as scientific knowledge is increasingly questioned because of unexpected technical failures and side effects. This calls for re-interpretation of the boundaries of knowledge so that it includes other forms, such as local knowledge; this is expected to improve the quality of knowledge in conditions of high uncertainty (Hophmayer-Tokich and Krozer, 2008). Furthermore, insights can be gained into the social system in which measures will be implemented (Newig et al., 2005). Hinchcliffe et al. (1995), for example, reviewed 22 cases of participatory catchment development projects worldwide. Despite cultural, political and other differences, all cases emphasized the need to use local

knowledge and locally adapted solutions to promote successful water management (Hophmayer-Tokich and Krozer, 2008).

To summarize, local consultation is expected to enhance the acceptance of decisions by involving the views and experience of those affected by the decisions (Kaika, 2003), improve the quality of decision-making, and ensure that proposals reflect local conditions and knowledge (Berkes et al., 2000; Lockwood et al., 2010). Here, assuming that those who are closest to a problem develop the best understanding of it, it seems plausible that water management can profit from the factual knowledge that local lay actors (among others) have about water issues concerning them. Therefore, the current view is that success in water management comes from a number of varied ‘publics’ rather than from inclusion of merely a number of different individuals or special interests (Sanoff, 2000).

Local consultation are increasingly being incorporated into catchment management strategies worldwide (e.g., Carter and Howe, 2006; Larson and Lach, 2008; Antunes et al. 2009; Videira et al. 2009; Parés, 2011). These formal consultation processes range roughly from surveys, task groups, focus groups, public meetings and hearings, citizens’ panels and juries, to commissions and workshops (Rowe and Frewer, 2005).²⁶ However, many scholars point out that these techniques both hide and perpetuate deep social inequities (Fraser, 1993; Cooke and Kothari, 2001; Kapoor, 2008). These inequities are evidenced in the minimal participation by women, and by lower-class or otherwise marginalized people, in consultation processes which are ostensibly meant to represent everyone in making public decisions which affect everyone – and often have the gravest impacts on the lives of those who participate least (Moraes and Perkins, 2007).

Overall, public consultation depends on people who have the time and energy to participate, so it is almost inevitably class-biased and favours dominant interests (Hodgson and Smith, 2007). The language in which meetings take place, time of day or day of the week, whether childcare, meals and transportation support are provided, and other such factors, can strongly influence who participates and who is effectively excluded (Perkins, 2010). Therefore, structural factors which make it easier for some people to attend (stakeholder)

²⁶ These particular mechanisms may be known by different names, or there may exist still other mechanisms; also, some of the mechanisms are composite processes, some specific techniques, and others tools (that is, not stand-alone processes for enabling engagement), and as such, some of the mechanisms may actually incorporate others either completely or partly (Rowe and Frewer, 2005). For example, a citizen panel is generally taken to be a standing and representative sample of a particular population, which may be used to gain public views when needed; one way the views of the panel may be attained is via a survey (another mechanism type).

meetings are likely to make it harder for others to attend (Hodgson and Smith, 2007), so this is not necessarily straightforward (Perkins, 2010).

The remainder of this section discusses, with case studies, the main key problems associated with the practice of public consultation. For example, the analysis of five European water related projects regarding the application of participatory processes for the sustainable river basin governance showed that the consultation techniques used (public hearings and public comments) fell short of including the interests, perceptions and values of the participants (Antunes et al., 2009). Also, these techniques encourage under-representation of hard-to-reach groups, as well as a consultation agenda determined by the decision-making body.

In another public consultation study in Portugal, participatory modelling workshops used in the scoping of river basin problems, pressures, and impacts (Videira et al., 2009) showed that the participation rate decreased dramatically over the workshops, and therefore that the model failed to achieve full potential in terms of engaging people. Here, those participants may well have regarded time-consuming modelling events as relatively unimportant, especially given the travel costs to attend the meetings. Overall, the major obstacle is that group meetings (including focus groups), no matter how participatory they may be, are still public activities during which certain aspects of everyday social life must remain hidden from the outside world (Pottier and Orone, 1995).

Another case is from the Spanish River Ebro Basin (Parés, 2011) where the “Commission for the Sustainability of the Ebro Lands” was created. The commission is a consultative mechanism formed by members of several administrations (national, regional and local), organisms, corporations, NGOs, the scientific community and many organizations of the civil society. The main objective of this commission is to write up an Integral Plan to protect the Ebro Delta. However, the mechanism is not opened to non-organized citizens, and it is the local government who appoints its members. Moreover, this consultative mechanism operates in a non-conflict context. So, governance fails thinking citizens from a perspective of commonality (Mouffe, 1992). And they fail, “because their main objective is not the creation of a public sphere where citizens could be recognized as participants in a community, but just to avoid conflict” (Parés, 2011; p. 476).

In the Ribble Pilot Basin, located in northwest England, a telephone and web-based surveys were used as consultation techniques (Carter and Howe, 2006). They gauged public opinions and existing knowledge about water management issues. Here, surveys can play a

crucial role in gauging public responses and in consultation processes, but they are not sufficient and can be misleading; for example, surveys generally assume a fixed measurable 'attitude' toward the option, and elicit responses without reference to the level of understanding that people have reached (Russell et al., 2009). Overall, the study identified certain issues, including a focus on the usual suspects in terms of the involvement of stakeholder groups and a lack of innovation concerning participation techniques employed during the process.

A final example illustrates the use of a mixed methods approach to assess place-based groups' attitudes about water resource management in US (Larson and Lach, 2008). The study began with semi-structured interviews of several stakeholders (e.g., leaders of the watershed council, planners and specialists at government agencies). These interviews assisted in designing survey items and enrich quantitative findings with narrative explanations and examples. The written survey was designed to reveal attitudinal and demographic differences between residents who do and do not participate in the place-based groups of interest. The key advantage in adopting a mixed method approach was gaining a complete overview of the matter under investigation; also, the combination of methods is likely to result in complementary strengths and non-overlapping weaknesses. In terms of water management, however, this research suggests that individuals who participate in place-based groups may not be representative of the broader non-involved public.

Overall, there are many reasons to develop even-better public consultation processes. For example, Perkins (2010) points out that

These processes must be locally appropriate and specific in their details. (...) I think it is also very important not to lose sight of its potential impact as a voice for previously marginalized people (...) by truly including a broad spectrum of public viewpoints in political and environmental decision-making. As academics (...) and people concerned about improving public policy, we must continually seek out the best, fairest, most effective and widest-ranging ways in which this can be done. (p. 211)

Here, House and Fordham (1997) stressed the need for direct contact with the public, and therefore the development and use of questionnaire surveys of, and semi-structured interviews with, local residents living within a proposed project area or catchment. These methods of social research have been seen as a useful means of reaching a sector (or more properly 'sectors') of the public, often referred to as the 'silent majority' (O'Riordan, 1971), whose

views are only infrequently recorded in any other way. This can be achieved by focusing not on any specific subgroups but on the ‘community at large’ and consulting as widely as possible with individuals within that community (Catt and Murphy, 2003). Here, acceptance of heterogeneity encourages social justice (Agyeman et al., 2003), which means recognizing the significance of water resources to all inhabitants and implies public consultation without discrimination (Matias, 2010).

Although managers usually may have the best intentions, they may find it difficult to understand the views on nature/environment of lay people, because of the existence of considerable diversity within the general public and between different stakeholders (Buijs, 2009a). This was acknowledged by water managers, parish presidents, and ecologists/experts I spoke with during informal conversations at preliminary field-work. Many said that they feel that the views of the general public are fluid and not really intelligible.

1.5 Reservoirs as Ecosystems

Reservoirs are artificial lakes that were created for a variety of purposes (e.g., domestic/municipal water supply, irrigation, stock breeding, industry, fishing, aquaculture, tourism, recreation, energy production, and conservation, etc).²⁷ Reservoirs are created predominantly in regions where large natural lakes are sparse or unsuitable for human exploitation (Wetzel and Likens, 2000). About 500 000 still water bodies with surface areas of >1 ha exist only in Europe (EEA, 1999). Hydropower and then irrigation and domestic/municipal water supply have been the main purposes of reservoirs in Europe; there is marked contrast in reservoir use (and importance) across Europe, which reflects topography, rainfall and national policies, particularly on hydropower (World Commission on Dams, 2000).

Reservoirs are considered to be environmental hybrids of lotic and lentic systems²⁸, which make them different in many respects from lakes. Thus, several aspects of their management are different. The most important qualitative and quantitative differences between reservoirs and lakes are summarised in Table 1.2. Qualitative differences refer to

²⁷ Tourism refers to recreational activities carried out by non-residents of the actual site; recreation refers to recreational activities practised by residents of the actual site where they are practised; and conservation, includes all areas where certain uses are prohibited by government order, with the objective of habitat and/or animal species conservation (Burton, 2003).

²⁸ Inland water bodies can be classified as either lotic (running-water) or lentic (standing-water). Lotic habitats include rivers, streams, and brooks, and lentic habitats include lakes, ponds, and marshes. Briefly, the major difference between them is the persistent flow of water in a lotic ecosystem.

those features of reservoirs which lakes do not have, and vice versa. For example, the location of maximum depth; in lakes maximum depth is centrally located while in reservoirs it is usually along one end.

Table 1.2 Comparison of reservoirs and lakes (After Straškraba and Tundisi, 1999)

Characteristic	Reservoirs	Lakes
Qualitative (absolute) differences		
Nature	Man-made	Natural
Aging	Rapid	Slow
Formed by filling	River valleys	Depressions
Location in catchment	Marginal	Central
Shape	Dendritic	Regular
Shore development ratio	High	Low
Maximum depth	Extreme at the dam	Near-central
Bottom sediments	(Mainly) Allochthonous	(Mainly) autochthonous
Longitudinal gradients	More pronounced	Less developed
Outlet depth	Deep	Surface
Quantitative (relative) differences		
Catchment : lake area	Higher	Lower
Water retention time	Shorter	Longer
Coupling with catchment	Greater	Lesser
Level fluctuations	Larger	Smaller
Hydrodynamics	Highly variable	More regular
Causes of pulses	Man-made operation	Natural
Water resources systems	Common	Rare

Quantitative differences cover features which both lakes and reservoirs possess, but these are ‘on the average’ different from these two water bodies types (e.g., water retention time). That is, some of these quantitative features overlap to some extent, as the variability of both reservoirs and lakes is very big. In particular, one reason for this variability is the many purposes for which reservoirs have been built. Overall, reservoirs are different than lakes in

terms of their age, origin, morphology, shape, position within the catchment, and uses, as well in respect to limnological behaviour²⁹ (Straškraba and Tundisi, 1999).

Drainage basins of reservoirs are much larger in relation to the lake surface areas than is the case among most natural lakes; because reservoirs are formed almost always in river valleys and at the base of the drainage basins, the morphometry of reservoir basins is usually dendritic, narrow, and elongated (Wetzel and Likens, 2000). These physical characteristics affect biological processes in many complex ways, the most of which are light and nutrient availability to aquatic organisms (Wetzel, 1990a). Longitudinal differences along the path from the inflow to the dam are a unique limnological feature of reservoirs and have great implications on water quality (e.g., higher phosphorus retention) (Straškraba and Tundisi, 1999). Therefore, retention time³⁰ is a deciding factor in the chemistry of a reservoir.

Reservoirs receive runoff water mainly via large streams, which have high energy for erosion, large sediment-load carrying capacities, and extensive penetration of dissolved and particulate loads into the recipient lake water (Wetzel and Likens, 2000). Because the inflows are primarily channelized (along the prior river course before it was inundated) and often not intercepted by energy-dispersive and biologically active wetlands and littoral interface regions, runoff inputs to reservoirs are larger, more directly coupled with precipitation events, and extend much farther into the lake per se than is the case in most natural lakes (Wetzel, 1990a). In particular, the reduction or elimination of wetlands and littoral communities around many reservoirs minimises their extensive nutrient and physical sieving capacities that function effectively in most natural lake ecosystems (Wetzel, 1990b).

Extreme and irregular water-level fluctuations occur in reservoirs often as a result of flooding, land-use practises not conducive to water retention, channelization of main inflows, and large, irregular water withdrawals, commonly for hydropower generation (Wetzel, 2001) and irrigation (Gerald and Boavida, 2003). Large areas of sediments are alternately inundated and exposed (Straškraba and Tundisi, 1999). Thus, the environmental conditions of reservoir ecosystems tend to have large, rapid, and erratic fluctuations; these instabilities result in biota that tend to be few and well adapted with broad physiological tolerances (low

²⁹ Limnology is the study of inland waters – lakes (both freshwater and saline), reservoirs, rivers, streams, wetlands, and groundwater – as ecological systems interacting with their drainage basins and the atmosphere. The limnological discipline integrates the functional relationships of growth, adaptation, nutrient cycles, and biological productivity with species composition, and describes and evaluates how physical, chemical, and biological environments regulate these relationships; stated simply, limnology is the study of the structural and functional interrelationships of organisms of inland waters as their dynamic physical, chemical, and biotic environments affect them (Wetzel, 2001).

³⁰ Residence time (or theoretical residence time, or renewal time) = volume of the water body concerned divided by the volume added to it in a given time (Moss, 1998).

diversity, less specialisation, rapid growth) (Wetzel and Likens, 2000). As in all restrictive, stressed environments, the productivity of adapted organisms can be high, as high as or greater than in more homeostatic natural lakes (Wetzel, 2001). Furthermore, the severe hydrological fluctuations, as a result of the changes from a riverine to a lacustrine status³¹, and discharges from external and internal nutrient sources can have a dramatic impact on their fish communities (Geraldes and Boavida, 2003, 2007).

Overall, a reservoir can be viewed as a very dynamic lake in which a significant portion of its volume possesses characteristics of and functions biologically as a river (Wetzel, 1990a). Often the riverine portion of a reservoir functions analogously to large, turbid rivers in which turbulence, sediment instability, high turbidity, reduced light availability, and other characteristics limit photosynthesis despite high nutrient availability (Wetzel and Likens, 2000). As turbidity is reduced and the depth of the photic zone³² increases in the transition to the lacustrine (near the dam/barrage) regions of the reservoir, areal primary productivity increases concomitant with greater light penetration and depth of the trophogenic zone (Armengol et al., 1999). Likewise, nutrients limitations can vary throughout a reservoir as losses of nutrients exceed renewal rates (Wetzel and Likens, 2000).

With the implementation of the WFD an ecosystem oriented water management and planning system is introduced, by using river basins and thereby natural boundaries as the fundamental management unit (Frederiksen and Maenpaa, 2007). That is, an organised system including physical/ecological and social elements (Connelly and Anderson, 2007). Therefore, to address water management concerns/issues the reservoir must be treated as an ecosystem consisting of a number of interacting subsystems. From the reservoir water management point of view, and based on Straškraba and Tundisi (1999: 37-38), it is useful to distinguish the following sub-systems (illustrated in Fig. 1.2):

- The catchment – the catchment including natural elements such as climate, precipitation, vegetation, and human activities; creates the character of water that flows into the reservoir, and the distribution of this water over time, affecting water quality within the reservoir. The natural limits of the catchment do not follow political or administrative boundaries. Thus, ‘catchments’ are seen as definable, pre-existing entities that require managing (Barraque, 2003). As defined in European Commission (2000), this can be: a river basin (main

³¹ Riverine status is related to or situated on a river; lacustrine status is related to or associated with lakes.

³² The photic (or trophogenic or euphotic) zone is the layer of water where sunlight is sufficient for photosynthesis to occur (Wetzel, 2001).

catchment), defined as “an area of land from which all surface run-off flows through a sequence of streams, rivers, and possibly lakes and reservoirs, into the sea at a single river mouth, estuary or delta” (p. x); or a sub-basin (sub-catchment), defined as “an area of land from which all surface run-off flows through a series of streams, rivers, and possibly lakes and reservoirs, to a particular point in a water course (normally a lake or reservoir or river confluence” (p. x). A ‘sub-catchment’ (hereafter referred as catchment) is fairly a discrete system, and provides an excellent focus for scientific research, and water management (Morris et al., 2001).

- Water inflow(s) – the water quantity and water quality characteristics of the reservoir inflow(s) are the main determinant of water quality within the reservoir. Thus, because inflow water quality is so important, the reservoir is very sensitive to influences caused by any activities within the catchment.
- The reservoir – it is a collector and digester of inputs (liquids and solids) from the catchment, which in turn influence the reservoir’s internal physical (e.g., thermal stratification), chemical (e.g., nutrients, organic matter and sediments concentrations) and biological processes (e.g., reservoir food web dynamics – fauna and flora), which in turn affect water quality within the reservoir.
- The reservoir outflow – the water quality of the reservoir outflow is determined by the water quality at the depth of the reservoir outlet(s). Additional water quality changes may occur due to processes at the reservoir outlet, use of turbines and/or spillways, and changes in gases related to altered hydrostatic pressure and contact with the air. Water quality may also change down-river of the outlet.
- The socio-economic and management subsystem – this consists of reservoir uses, laws regulating water quality and quantity and the management system that it is responsible for determining actions necessary to cope with demands.

Straškraba and Tundisi (1999) highlight the importance of mutual interactions between these ‘subsystems’. For example, the catchment determines the water quality, which affects decisions concerning activities in the catchment; water quality in the reservoir, determines outflow water quality, and poor quality outflow affects decisions concerning the reservoir.

The water cycle provides ecosystem functions - hydrological, ecological, physical, and chemical - of central importance to sustainability, including provision of economic, recreational, aesthetic, educational and spiritual opportunities (Wetzel, 2001). In this regard,

catchment systems constitute logical analytic and management units, throughout which all decisions and actions have interdependent ecological, social and economic implications (Calder, 1999). Therefore, a shift is occurring from piecemeal, site-specific ‘ways of seeing’ freshwater systems to catchment-scale study approaches (e.g., Brierley and Fryirs, 2009; Buijs, 2009b; Spink et al., 2010).

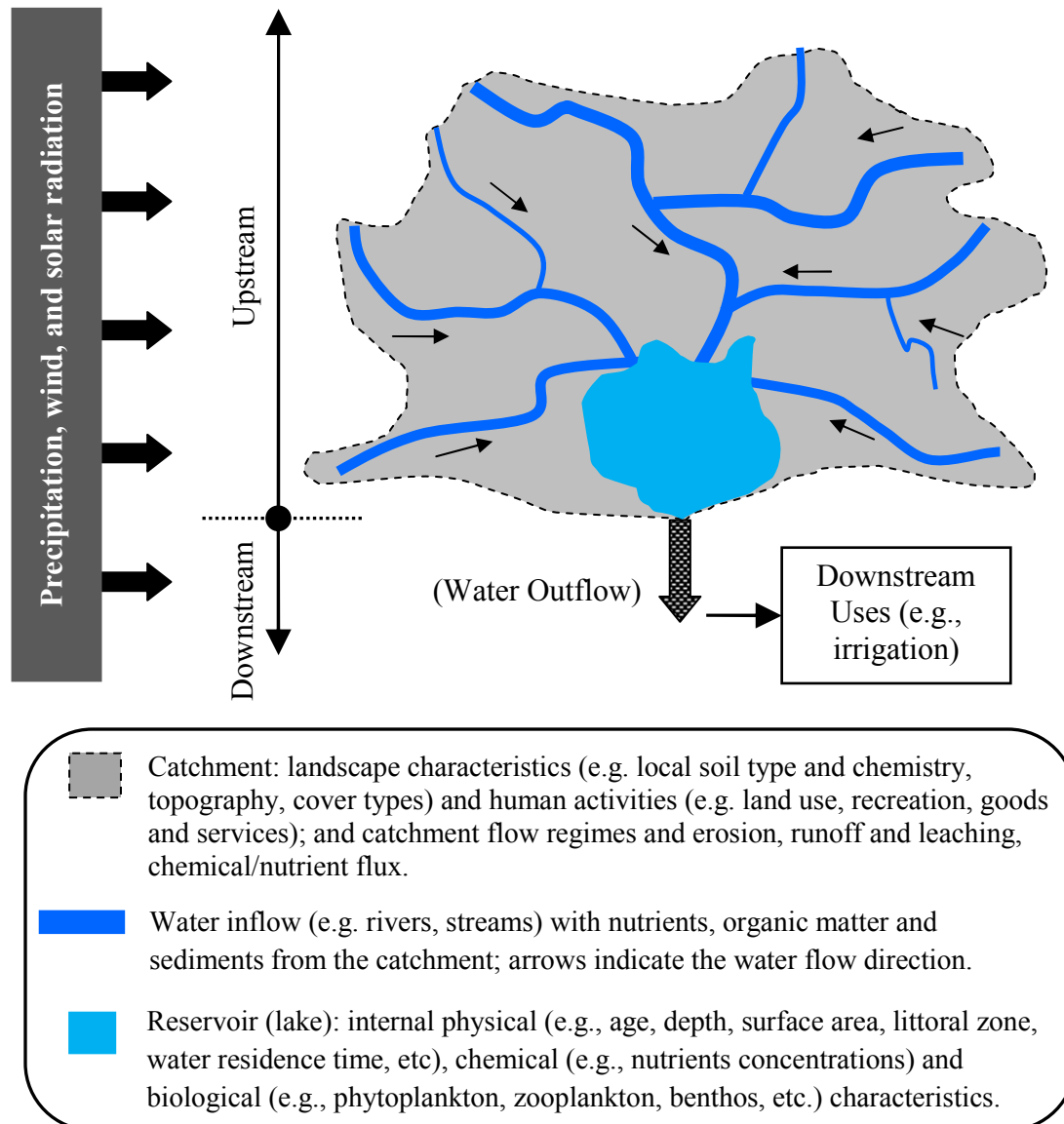


Fig. 1.2 Catchment structure and pathways influencing reservoir water quantity and quality.

1.6 Chapter Summary and Implications for the Current Dissertation

The use of the catchment as the most appropriate analytic and management unit is not new but it is now an internationally accepted principle (Wetzel, 2001; Burton, 2003). Over the past few years it has been recognised that catchments are the most suitable scale for managing natural resources, particularly inland water issues, because water sources and uses in a catchment are interrelated (Blomquist and Schlager, 2005). As mentioned before, the EU WFD puts forward a system of water management based on coordination of administrative arrangements within RBD instead of according to administrative or political boundaries. Furthermore, the importance of carrying out integrated water resources management at the level of the basin or sub-basin had also been stressed in Agenda 21 (Chapter 18 ‘Protection of the quality and supply of freshwater resources: application of integrated approaches to the development, management and use of water resources’; UNCED, 1992).³³ Accordingly, this dissertation adopts a ‘reservoir as an ecosystem’ approach, because it is an approach that considers both humans and nature/environment as part of the same system and is useful to understand local specificities and to inform water management. For analytic purposes the limits of the ‘reservoir as an ecosystem’ correspond to the respective catchment and lake areas, corresponding to the ‘sub-catchment’ term of the European Commission (2000) mentioned before.

Water managers can no longer protect and develop nature/environment independently of society at large (Jacobs and Buijs, 2008). Consequently, they are confronted by the differences in views that exist between experts and lay people, as well as by the diversity of views, demands, and interests that exist among the general public. For example, Harrison and Burgess (1994) showed how local knowledge is contrasted strongly with ‘expert’ knowledge by local people, who employ their own knowledge and understandings about ‘the environment’ to make sense of claims about its degradation. Accordingly, empirical research suggests that lay knowledges and understandings would not replace but complement more traditionally ‘scientific’ input to policy and management, especially at the local level; in this way, such research is trying to dismantle the hierarchy of knowledge in favour of a balanced

³³ This is a detailed programme of action principles at national and international level (meaning an agenda for the twenty-first century). An important corollary was Local agenda 21, an initiative which sought to bring concerns with sustainable development down to the local level. Local agenda 21 is its emphasis on grassroots participation in the process of sustainable development (UNCED, 1992).

diversity of knowledges, without merely perpetuating the lay-expert dichotomy (Szerszynski et al., 1996).

Although participatory processes can be very helpful in accommodating divergent views and preventing conflicts, such approaches are not applicable in every context and many managing agencies are reluctant to implement them on a wide scale (Buijs, 2009a). Their reluctance may be related to the amount of time and energy they have to put into these processes, as well as to their fear of not being able to control the outcome of such processes (Petts, 2006). Furthermore, as illustrated before, it has proven difficult to effectuate truly inclusive participatory approaches, namely approaches that focus not only on institutionalized stakeholders with vested interests, but also on non-organized citizens. Here, Buijs (2009a) pointed out that managing agencies have found it difficult to include non-organized citizens in participatory processes that are related to the design and management of natural areas.

For example, during a long-term project that some colleagues and I did with several Dutch water boards, water managers expressed their frustration over the difficulties they had in getting a grip on citizens' views on water management and nature conservation. Water managers were aware of the possible differences between experts' views and the views of local residents, but were unable to comprehend the views that circulate in the local community. (p. 20)

Consequently, these managers expressed the need to complement participatory processes with empirical (social) research that would map the different views of the public (Jacobs and Buijs, 2008, 2011).

Understanding public views on nature/environment is thus especially relevant to the democratic need to understand public views on nature in order to incorporate these views into management and policy, and the pragmatic need to understand and prevent socio-political issues that may emerge when nature/environmental policy is being implemented at the local level (Buijs, 2009a). Since research plays a central role in knowledge generation one of the first ways to proceed is to recognise and incorporate local research into an inclusive decision-making process (O'Toole et al., 2009). In this context, the aim of this dissertation is to explore how catchment residents understand, experience and give meaning to a reservoir and its surroundings to inform subsequent water management, with potential for future use in participatory processes.

Chapter 2 - Human-Nature Relationship: Review of Relevant Empirical Studies

In this chapter, I will describe how research on the human-nature relationship has been conducted from a variety of traditions.³⁴ To give an overview of all empirical investigations in this field of study would have increased substantially the size of this dissertation.

Furthermore, had I attempted to give such an overview, this dissertation would not have been published on time. Therefore, I will present a brief overview of and reflection on some important issues in the field. This review facilitates the formulation of specific research questions, presented at the end of the chapter, which guide this dissertation's sociological analysis.

2.1 Environmental Sociology³⁵

While the study of human-nature relationships is an inherently interdisciplinary project, spanning the natural and social sciences as well as humanities, the crucial role of the social sciences in general and sociology in particular are increasingly recognized (Brewer and Stern, 2005). This stems from growing awareness of the fact that environmental problems are fundamentally social problems: They result from human social behaviour, they are viewed as problematic because of their impact on humans (as well as other species), and their solution requires societal effort (Dunlap and Marshall, 2007). It is, therefore, not surprising that sociologists have shown growing interest in environmental issues in recent decades and that environmental sociology has become a recognized field (Dunlap and Marshall, 2007). Yet sustained sociological investigation of environmental problems did not come easily, and is a relatively recent development in the field (Freudenburg, 2008).

³⁴ The subject of human-nature relationship is studied by scholars representing a wide variety of scientific disciplines and using many different approaches. Therefore, this literature review is organised in several main areas of research or approaches to simplify the presentation of empirical studies. However, the reader should bear in mind that the respective studies are not mutually exclusive of each area of research or approach. Also, in leisure and tourism studies, many different approaches are adopted, because many scientific disciplines are engaged in studying leisure and tourism phenomena; therefore, they were not considered per se, but within the other considered areas of research or approaches.

³⁵ For a detailed discussion of environmental sociology's foundations, history, overview, and future trends (among other topics) the reader is referred, for example, to Buttel (1978), Catton and Dunlap (1978a, b), Dunlap and Catton (1979), Dunlap et al. (2002a), Sutton (2004), Dunlap and Marshall (2007), and Freudenburg (2008).

Although there was scattered sociological attention to both urban problems and natural resource issues prior to the 1970s, environmental sociology developed in that decade as sociology's own response to the emergence of environmental problems on the public agenda (Dunlap and Marshall, 2007). At first, sociologists tended to limit their attention to analyzing societal response to environmental problems, rather than examining the problems themselves (Freudenburg, 2008). But as sociologists gradually paid more attention to environmental issues, some began to look beyond societal awareness of environmental problems to examine the underlying relationships between modern, industrial societies and the biophysical environments they inhabit (Dunlap and Marshall, 2007).

The works of William R. Catton, Jr. and Riley Dunlap challenged the constricted anthropocentrism of classical sociology. In particular, by the early 1980s Catton and Dunlap argued that as changing ecological conditions are threatening human societies, the time is right to reassess sociological theory, because the disciplinary traditions of sociology were not only militating against a solution to ecological problems but actually impeding an understanding of their social importance (Dickens, 1992).³⁶ Therefore, Dunlap and Catton put forward an alternative paradigm the *New Environmental Paradigm* (NEP), which because it sought to emphasise the ecological foundation of human society, was quickly relabelled it the *New Ecological Paradigm* (Dunlap and Catton, 1979).³⁷ By calling attention to the relevance of the physical environment and the constraints that a finite planet poses for our species, the NEP offers a sharply contrasting image of human societies relative to that provided by the HEP (Dunlap et al., 2002b: 20). NEP recognises that, although humans have exceptional characteristics, the welfare of modern societies, even with their complex form of social organisation and sophisticated technologies, is intricately linked to the health of the ecosystem on which they depend for their existence (Buttel and Humphrey, 2002; Dunlap, 2002).

The result was the emergence of environmental sociology as a field of inquiry (Buttel, 1987; Dunlap and Catton, 1979). Environmental sociology represents a synthesis of ideas from classical and contemporary human ecology and general ecology, rural and urban

³⁶ In ensuing years other scholars have come to compatible conclusions regarding the degree to which sociological traditions have inhibited serious concern with environmental issues (e.g. Giddens, 1990; Redclift and Woodgate, 1994).

³⁷ In spite of several criticisms (e.g. Buttel 1978, 1987), Catton and Dunlap argued that the NEP was never intended to replace or supplant existing sociological theories, but to encourage development of ecologically oriented theories and research (Dunlap, 2002). In fact, those authors (Catton and Dunlap, 1980) were implying that NEP-orientated theories would not be totally commensurable with older theories, but simply be grounded in more realistic assumptions about the relationship between modern societies and the biophysical environment.

sociology³⁸, and general sociology (Sutton, 2004). However, environmental sociology is not simply just one more extension of standard sociology (Dunlap et al., 2002b: 16); it is a field that departs from the larger discipline by its willingness to consider and investigate non-social variables such as aspects of the built and natural environments (Catton and Dunlap, 1978b, 1980). In broad terms, environmental sociologists study not only the relations between humans and their environments, but also the multitude of ways in which these relationships are often influenced by interrelated socio-cultural processes – such as cultural representations, collective definitions, claims-making, politic power, public controversies, etc (Dunlap et al., 2002b: 10).³⁹

Public perceptions of environmental problems and environmental attitudes, values and beliefs are popular areas of research (e.g., Dunlap and Van Liere, 1978; Jones and Dunlap, 1992; Dunlap et al., 1993; Dunlap and Mertig, 1995; Dietz et al., 1998; Stern, 2000; Dunlap et al., 2001; Martinez-Alier, 2002; Marquart-Pyatt, 2007; Dunlap and York, 2008; White and Hunter, 2009). Also, the research on public environmental perception has examined the value bases for environmental concern (e.g., Dietz et al., 2005), as well as identifying important socio-demographic correlates (e.g., Biel and Nilsson, 2005; Hunter et al., 2004, 2010; Xiao and McCright, 2007). In Portugal, environmental sociology research includes nationwide surveys on environmental values and policy issues (e.g., Almeida, 2000, 2004) and studies on

³⁸ Human ecology generally refers to the study of the dynamic interrelationships between human populations and the physical, biotic, cultural and social characteristics of their environment and the biosphere (Lawrence, 2001). One basic principle of biological life is that all living organisms (irrespective of their species) impact on their surroundings (Lawrence, 2003). However, this is not the original meaning of this term which was first used in 1921 by Robert Park and Ernest Burgess (Park et al., 1925). They defined human ecology as the study of the spatial and temporal organisation and relations of human beings with respect to the selective, distributive and accommodative forces of the environment. This seminal contribution led to numerous studies of the spatial distribution of human populations especially in urban areas (Hawley, 1950; Young, 1983). In addition, the application of concepts borrowed from plant and animal ecology for the study of human communities implied that human ecology was interpreted as the study of those biotic factors that influence the social organisation and spatial distribution of human groups and communities (Lawrence, 2003). In particular, the Chicago human ecologist school (led by Robert E. Park and Ernest W. Burgess) expressed an interest in the relationship between population and the environment, but they did so in a restricted fashion, which focused almost exclusively on competitive cooperation in the spatial organization of metropolitan populations (Buttel and Humphrey, 2002). According to Andrew Abbott (1999: 196–97), the mark of Chicago School urban sociology was its unwavering interest in the situatedness of all social processes – the contextual location of social facts in space and time. The ‘model’ was both ecological and evolutionist: urban social life could best be understood as embedded in geographic and material environments (Gieryn, 2006). Within the area of rural sociology there is a body of empirical research on natural resources (Hannigan, 2006: 10). These enquiries took two forms: the study of natural resource dependent communities and research on the burgeoning use of public parkland for recreational purposes (Humphrey et al., 2003: 11). In Europe, a good example is the work of Marcell Jollivet, Marc Mormont and Nicole Mathieu (among others) about the problem of environmental reconversion of rural values (e.g., Jollivet, 1997; Mathieu and Jollivet, 1989; Mormont, 1987, 1994).

³⁹ The environment also emerges in contemporary sociology by finding in environmental sociology the main source of criticisms to the modern societies emerging global environmental problems (e.g. Anthony Giddens’s ‘Consequences of Modernity’, 1990; Ulrich Beck’s ‘Risk Society’, 1992; and Spaargaren and Mol’s ‘Ecological Modernisation’, 1992).

sustainable development and environmental policy at the local level (e.g., Schmidt et al., 2005, 2006), on environmental movements (e.g., Nave, 2001, 2003a; Lima and Guerra, 2004), on environment and the media (e.g., Schmidt, 1996), on water (e.g., Pato, 2004), on risk (e.g., Lima, 2004) and on environmental education (e.g., Schmidt et al., 2010), among other topics.⁴⁰

Overall, this approach has contributed both theoretically and empirically to rigorous investigations of concepts like values, beliefs, and attitudes (Buijs, 2009a). This has resulted in numerous studies focusing on specific themes in environmental management, and illuminating especially the different beliefs and values that lay people hold regarding, for example, large carnivores, invasive species, human-wildlife relationships, and forest management (Winter, 2005; Whittaker et al., 2006; Fischer and Van der Wal, 2007; Skogen, 2008; Teel et al., 2010); regarding water some examples include river restoration (Tunstall et al., 2000) and perceived and actual water quality (Stedman and Hammer, 2006), among others. These concepts may be helpful to unravel people's complex thoughts regarding nature; most studies in this field use quantitative methodologies to study the relevant concepts. These studies are often very methodologically sophisticated.

However, the explicit focus on the study of the mental dispositions of individuals is a serious drawback (Stedman and Hammer, 2006). For example, this 'methodological individualism'⁴¹ may fall short in understanding how these experiences are intertwined with the complex and contingent practices of nature recreation (Buijs, 2009c). Here, the social context in which nature management takes place may have a strong influence on the construction of individual attitudes; so, although concepts such as values and beliefs are useful concepts, their sociogenesis needs to be taken into account in order to fully understand how they are developed and manifest themselves (Buijs, 2009a).

This approach also treats the general public as rather passive actors in nature conservation policy, despite recent efforts to work toward more participative approaches in nature management practices (Buijs et al., 2008). Here, although Macnaghten and Urry (1998) may be exaggerating when they warn of the danger of a 'polling culture' in which nature policy is based merely on the results of superficial public attitudes that are not related to

⁴⁰ Here, OBSERVA (Observatório Permanente de Ambiente, Sociedade e Opinião Pública - a research program on environment, society, and public opinion), since its foundation in 1995, was pioneer of research on the field. For a historical account, issues and research trends on environmental sociology in Portugal the reader is referred to Mansinho and Schmidt (1994), Lima and Schmidt (1996), Schmidt (1999) and Freitas (2008).

⁴¹ Methodological individualism holds that social phenomena can be decomposed into and explained by properties of individual people (e.g., values and attitudes) (Schatzki, 2005).

actual practices, they have a point when arguing for a more contextual approach to understanding the relation between nature conservation practices and the general public (Buijs, 2009a). Furthermore, the validity of the supposed hierarchy of cognitions (Fulton et al., 1996) is not uncontested; namely, the relationship between attitudes and behaviour can be found only on a very high level of specificity (Buijs et al., 2008).

2.2 Landscape Preferences and Images of Nature

The influence of nature management practices on the landscape and their effects on people's preferences have been an object of study in environmental psychology ever since the 1970s (Buijs, 2009a). Most empirical studies in environmental psychology are based on what can be called the perceptual approach (Buijs, 2009a). This approach focuses on the evaluation of the environment through individual perceptual processes; landscape is thus considered an external stimulus to which individuals respond (Jacobs, 2006). This response is typically measured by rating overall preference, scenic beauty, attractiveness, or simply 'liking' (Buijs, 2009a).

The European Landscape Convention defines landscape as an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors (Barroso et al., 2012). Thereby, it stresses the need to address the relationship people establish with the landscape, and it recognizes that different people may have different relations to the same landscape (Gobster, 1996). Landscape preferences have been widely studied in the past. Some studies have focused on landscape preferences about river corridors (House and Fordham, 1997; Ryan, 1998) and riparian buffers (Kenwick et al., 2009). Other studies have shown that preferences for wild or more managed landscapes may differ significantly between social groups (Kaplan and Kaplan, 1989). Most researchers have explained these preferences in socio-economic terms, showing for example that preferences for managed landscapes are positively correlated with age and negatively correlated with education (Ulrich, 1983). For example, Ryan (2006) found some significant differences between the values that rural inhabitants, planners, and homebuilders place on nature. In Portugal, Diana Surová and Teresa Pinto-Correia (2008) developed an empirical survey to assess consensus and divergence within user groups in relation to their preferred Montado type, and the way they use or relate to this type of landscape (see also Pinto-Correia et al., 2010; Surová et al., 2011; Barroso et al., 2012).

Moreover, landscape preference studies have suggested a wide range of landscape features that are positively related to preferences for landscapes (Buijs, 2009a). It has been shown that people consistently prefer natural environments to built environments (Ulrich, 1981); preference for natural landscapes increases with the presence of vegetation, the visibility of water, scenic variety (variation and contrast between landscape elements), the absence of man-made objects, the scale or extent of the view, and the historicity and coherence of the scene (e.g., Ulrich, 1986; Kaplan and Kaplan, 1989; Purcell and Lamb, 1998; Burmila et al., 1999; Van den Berg, 1999; Tveit et al., 2006).

Overall, landscape preference studies contribute to our understanding of the meanings people attach to nature and the physical environment, and to the acknowledgement of the need to incorporate public views and perceptions into nature management (Buijs, 2009a). Moreover, these studies contribute with useful methodologies to investigate lay people's meanings and preferences, such as, for example, the validity of using pictures to measure landscape preferences (Ryan, 1998). However, this approach can be criticized for its methodological individualism, neglecting the complex practices of nature recreation and nature conservation in which these preferences are developed (Buijs, 2009a). For example, it has been shown that cultural practices influence individual views on nature (Bang et al., 2007). Moreover, landscape preferences among different groups of users are quite unknown in the literature about Mediterranean landscapes so far; new types of approaches and methods are needed in order to produce more thorough knowledge on landscape users' preferences in these regions (Barroso et al., 2012).

Research into images of nature is an emerging line of studies in Dutch and German research into comprehensive sets of meanings related to nature and landscape (e.g., Van den Berg, 1999; Buijs, 2000; Van den Born et al., 2001; De Groot and Van den Born, 2003; Keulartz et al., 2004; Rink, 2005; Buijs, 2009c) and, in particular, to aquatic nature (e.g., Jacobs, 2006). Images of nature can be defined as “enclosing frameworks that direct and structure the perception and appreciation of nature” (Keulartz et al., 2004). Images of nature are the cognitive reflections of prior experiences with and discourses about nature (Buijs et al., 2009). Previous studies have conceptualized images of nature as consisting of two dimensions: people's beliefs regarding nature and their normative views about the relationship between humans and nature (Buijs, 2009c).⁴²

⁴² By adding the dimension ‘images of relationship’ (the view that people hold of the proper relationship between humans and nature), van den Born (2007; see also van den Born et al., 2011; and de Groot and van den Born, 2003) extended the initial concept of images of nature, and coined the latter ‘visions of nature’. Visions of

Studies have shown that individual differences in images of nature are related to the cultural and social positions of individuals in certain groups (Buijs et al., 2009). Images of nature have been found to relate to cultural background (Bang et al., 2007; Buijs et al., 2009), agricultural background and other functional ties to nature (Van den Berg, 1999) and education (Buijs, 2000; Van den Born et al., 2001). Thus, this approach acknowledges the existence of interpersonal differences between individual people, and is a valuable addition to the focus on consensus in landscape preference studies (Buijs, 2009a). However, little has been written about the genesis of these images; namely, how do images of nature originate, and how do they develop (Jacobs, 2006). Also, methodological individualism is a limitation of this approach (Buijs, 2009a).

The difference between images of nature and landscape preferences is that images of nature are cognitions about nature (e.g. general values and beliefs) (Buijs et al., 2009). As mentioned before, landscape preferences are usually conceived of as predominantly based on precognitive, affective responses to the physical environment, related to feelings of liking or disliking (Ulrich, 1983; Korpela et al., 2002). They are often defined as the aesthetic or evaluative response elicited by visual encounters with real or simulated natural settings (Van den Berg, 1999). Therefore, as Van den Berg concluded (1999; p. 6), “cognitive and affective responses to landscapes should be studied in their own right”.

2.3 Restorative Effects of Nature and the Physical Environment

A growing body of knowledge demonstrates the significant restorative effects derived from contact with nature and landscape. For example, several studies have shown that natural scenes can evoke positive emotions (e.g., Ulrich, 1979, 1981; Hull and Harvey, 1989; Hull, 1990; Hartig et al., 1991, 1996), help restoration (e.g., Hartig et al., 1997; Herzog et al., 1997, 2003), and improve health (e.g., Kaplan, 1993; Ulrich, 1984). Also, researchers have addressed whether health benefits differ between natural and built environments (Ulrich, 1983; Hartig and Evans, 1993). Their findings suggest that people not only prefer natural environments to built environments, but they also perceive that natural environments offer them greater potential for positive experiences. The tendency to think of and respond to

nature thus comprise: i) values of nature (why is nature important?); ii) definitions of nature (what is and what is not considered nature?); and iii) images of relationship (the images of the appropriate relationships between humans and nature) (Buijs, 2009a).

natural environments more positively may be because they allow people to recover from the stresses and strains of daily living (Hartig et al., 1991; Hartig and Evans, 1993).

The health-restoring properties of natural environments are even more far reaching. S. Kaplan's (1995) work suggests that interactions with nature can reverse directed attention fatigue, an affliction common to the pressurized modern world. For example, Mayer and colleagues (2009) study concluded that exposure to nature increased connectedness to nature, attentional capacity, positive emotions, and ability to reflect on a life problem. Also, in a landmark study of a hospital setting, Ulrich (1984) found that patients recovering from surgery who had a window overlooking a natural scene recovered more quickly than patients whose view overlooked a built environment. Thus, something appears to be inherently therapeutic about communing with nature (Bodin and Hartig, 2003).

Overall, using a variety of quantitative methodologies and measures, researchers have shown that exposure to the natural world decreases negative behaviours and states (e.g., aggression, anxiety, depression, illness) and increases positive ones (e.g., affect, health, cognitive capacity) (Mayer et al., 2009). However, Maller et al. (2006) point out that "nature can be seen as an under-utilized public resource in terms of human health and well-being, with the use of parks and natural areas offering a potential gold mine for population health promotion" (p. 52).

Here, attention restoration theory (Kaplan, 1995)⁴³ explains the phenomenon whereby people become fatigued or 'burned out' during the course of their everyday lives, and describes how that condition can be remedied. To begin with, there are two types of attention humans attend to in their everyday lives: involuntary and what Kaplan has coined 'directed attention'. Involuntary attention describes that which we direct our attention to easily; in other words, things we like to do or that capture our attention because they involve some sort of stimulus (e.g. motion, animals, or shiny objects). Directed attention, on the other hand, depicts that which takes more effort to focus on because in order to focus one must inhibit distracting stimuli. Either prolonged mental effort (involuntary and directed attention) leads people to experience directed attention fatigue, but more so with directed attention because it requires inhibiting the distractions of what people 'want' to do from what they 'have' to do.

⁴³ I discovered the importance of this work and its relationship to my findings after I had analyzed my research, and will elaborate on the connection when I discuss the *restoration* meaning. In the following explanation of this theory, I draw primarily from Stephen Kaplan's (1995) work on the subject, as he has been instrumental in developing an integrative framework for understanding how nature can serve as a restorative environment.

A crucial part of understanding the problem of directed attention fatigue lies in comprehending that it “also underlies our ability *not* to respond” (emphasis in original) (Kaplan and Kaplan, 1989; p. 180). This means that when people are experiencing this fatigue they do not stop and think before acting or making decisions; the implications of which are irrational or risky action. Socially the consequences of directed attention fatigue are acting rash, irritable, incompetent and uncooperative, which may have detrimental effects to social and group relationships. Research has revealed that people suffering from directed attention fatigue are less likely to help others, act more aggressively, and are less sensitive to social cues, due to their inability to inhibit personal feelings in favour of group norms and values; finding a way to recover from attention directed fatigue, then, is important for both individual and social reasons (Alexander, 2008).

In order to recover from directed attention fatigue, a person must rest his or her overworked capacity for directed attention. One way to do this is sleep, and people who are mentally fatigued do have a tendency to sleep. Kaplan says that providing a way to lessen or balance the amount of time spent in directed attention during one’s waking hours might be an ideal strategy to deal with this syndrome. This is known as attitude restoration, and four central aspects of restorative settings have been identified thusly:

- Being away – places where people can escape or withdraw from an aspect of life that is usually present; away from distraction, putting aside the work one usually does, or resting.
- Other worlds and extent – this is putting one’s self in a real or imagined ‘whole other world’ in a place that is of sufficient size to allow a feeling of complete immersion.
- Fascination – Fascinating stimulus calls on voluntary rather than directed attention. There are both ‘hard’ and ‘soft’ fascination elements that draw people in through stimuli, which rests directed attention. Hard fascination is more extreme, such as witnessing an avalanche, whereas soft fascination describes being captivated by elements such as scenery that allow for reflection because, while drawn to this element, it does not ‘take up all the room in our head’.
- Action and compatibility – there has to be compatibility between the setting and a person’s inclinations and abilities to function in that setting.

Accordingly, Kaplan, in his 1995 research, explains that nature, or the physical landscape, contains these four aspects identified as central to attention restoration, and therefore makes the case that nature is restorative. Here, a reservoir and its surroundings may be seen as a ‘health resource’, where contact with nature may offer an affordable and accessible

preventative and restorative public health strategy for local populations. I will talk more about nature as a restorative environment and how this relates to my research in my discussion on restoration.

2.4 Gender-Environment Studies

Gender-environment relations have significant symbolic and material consequences in how nature is understood, in how environmental resources and responsibilities are managed and distributed, and in gendered power dynamics that play out in the day-to-day lives of people around the world (Hawkins and Ojeda, 2011). In the context of water management, gender continues to be a key principle of cultural differentiation, with the authoritative construction of norms that privilege traits associated with masculinity, and the simultaneous pervasive devaluation and disparagement of things coded as 'feminine' (Udas and Zwarteven, 2010). Here, there has been lack of attention to the differences between women's and men's needs and priorities with regards to resource use and meanings (Meinzen-Dick and Zwarteven, 1998). To date, the explicit questioning of gendered structures, identities and symbolisms are not considered as requiring explanation and discussion with respect to water (Zwarteven, 2011).

Although efforts are increasingly made to include social questions in the analysis of water problems, preferred scientific languages and methods continue to be derived mainly from the natural and engineering sciences; namely, the physical, biological and chemical characteristics of water, together with the engineering knowledge needed to convey water, constitute(d) the heart of much water knowledge (Zwarteven, 2010). In such a positivist epistemology the 'god-trick' is pervasive: the assumption that one can see everything from nowhere and that disembodied reason can produce accurate and 'objective' accounts of the world (Haraway, 1991). Normal water knowledge is marked by a faith in the neutrality of reasoned judgment, in scientific objectivity, in the progressive logic of reason in general and science in particular (Zwarteven, 2010). Through the omnipotence of reason, transcendence is possible, allowing the knower to escape the limits of body, time and space (Hartsock, 1998). This important criticism to claims of objectivity and neutrality of water knowledge, opens the door to the importance of other voices and sources of knowledge, how knowledge is constructed and by whom, and how the identity and social situation of knowledge producers affect the type of truth claims they make (Zwarteven, 2010).

Julie Davidson and Elaine Stratford (2007) suggest that the success of water management requires more than the ability of institutions to adequately incorporate concepts of sustainability, to adapt to changing environments, or their ability to optimize cooperation with other institutions, though these are necessary preconditions. In fact, Thrupp et al. (1994) make the case that addressing all inequities detrimental to women is essential to the goal of sustainable development largely because of the profound effect that they have on the well-being of their families, communities and ecosystems. They argue that any inequities that are detrimental to women are detrimental to society as a whole.

The historical development of nature-based pursuits has tended to promote a masculine persona with women's involvement trivialized or rendered invisible (McDermott, 1994; Henderson, 1996a). However, in the last two decades, research specifically addressing women's leisure experiences in nature-based surroundings has examined the motivations, constraints, benefits, and diverse meanings that women draw from their outdoor experiences (Cosgriff et al., 2009). The need to move beyond the 'one size fits all' approach that typified early research in the leisure arena has spurred scholarship examining the multiple meanings that leisure has for women (Henderson, 1996a). This rethinking of leisure has brought attention to the complex ways in which gender roles and relations are developed, reinforced⁴⁴, reproduced, and resisted through leisure (Cosgriff et al., 2009).

For example, a blurring of boundaries between unpaid domestic work and leisure for many women means that their leisure is commonly 'contaminated' by domestic work, so that women have less 'pure' free time than men: with leisure punctuated more by childcare, for example (Bittman and Wajcman, 2000). In other words, men's leisure time is constrained mainly by the time devoted to paid work, whereas women's leisure time, in contrast, is primarily constrained by housework. Also, gender represents a core division in paid work time and leisure time, but neither women nor men represent a homogenous mass, and inequalities amongst them are linked to experiences of work and leisure too (Warren, 2010). Hence, women have less opportunity to 'refresh and reinvigorate' themselves (Mattingly and Bianchi, 2003).

Leisure based in nature has been shown to contribute to women's well-being, confidence, and empowerment (Henderson, 1996b; Pohl et al., 2000). Nature can provide the

⁴⁴ Here, 'leisure as constraining' thesis suggests that leisure is not a gender-neutral aspect of social life (Shaw, 1994). Rather, the types of activities into which women and men are channelled, and the nature of certain types of free time activities function to perpetuate gender stereotypes and gender-based inequities, and thus to reinforce structured power relation within society.

life-space for women to step away from gender stereotyping and find a new sense of self (Henderson, 1996a). Nature-based leisure can also engender independence and self-sufficiency in women, which is then transferred to their everyday lives (Pohl et al., 2000). Here, 'leisure as resistance' approach in the study of women's leisure sees leisure activities as having the potential for resistance; rather than denying or ignoring the existence of constraints or oppression, this perspective focuses on ways in which leisure participation can function as resistance to oppressive gender relations (Shaw, 1994).⁴⁵

Although literature has helped to rethink the role of leisure in people's lives, further research is needed to examine the spatial and environmental aspects of women and their nature-based activity (Cosgriff et al., 2009). Moreover, Delgado and Zwartveen (2007) emphasize that it is necessary to open the 'black box' of the everyday life about water gendered practices⁴⁶ and meanings to inform water management and policy.

2.5 Anthropological Approach

In considering human-nature relationships and how it is made literally 'meaningful', anthropologists have stressed that meaning is socially constructed and culturally specific (Strang, 2005). Namely, based on the premise that the only way to understand human behaviour is to locate it in its social and cultural context, anthropology is committed to collecting a comprehensive range of (largely qualitative) in-depth data about this context - or social-ecological system - including its material and ecological aspects (Strang, 2009). Accordingly, anthropologists often adopt an insider's point of view based on ethnographic research. That is, they participate in communities and observe the behaviour, speech and experiences of people (Jacobs, 2006), by using analytic models that consider the human-environmental relationship as a whole (Strang, 2004).

Critiquing the conventional Western model that considers nature and culture in dualistic terms, anthropological approaches present this as a dynamic, interpenetrative interaction (Strang, 2004). Rather than merely 'adapting to' environmental pressures, human

⁴⁵ Resistance is seen as a struggle against institutionalized power, and this resistance or agenic exercise of power by individuals or social groups is seen to be possible under conditions of relative freedom; it is precisely this condition of relative freedom that makes leisure a potential site for resistance (Shaw, 1994). Thus the argument for resistance through leisure is also based on a conceptualisation of leisure which embodies notions of personal choice, control, and self-determination. If leisure experiences represent situations of choice and self-determination, they also provide opportunities for individuals to exercise personal power, and such power can be used as a form of resistance to imposed gender-related constraints or restrictions (Shaw, 1994).

⁴⁶ Here, gendered practices are institutionalized systems of action that continually reconstitute normative gender stereotypes, expectations and behaviours (Martin, 2003b).

beings have considerable agency (Descola and Palsson, 1996): they ‘appropriate’ nature and act upon it; they create a particular cultural space and construct it in ideological and moral terms, they engage with it imaginatively (Ingold, 2000); they impose meaning upon it (Strang, 2004) and invest identity and emotion in it (Milton, 2002).

Numerous texts have been published about human-nature relationships in anthropology, and a large number of studies have been conducted (see for example Ingold, 2000; Descola and Palsson, 1996; Milton, 1996, 2002, 2005; Strang, 2004; Haenn and Wilk, 2006). In Portugal, for example, Julia Carolino (2010) study focused on perceptions of landscape change by residents in a village located in southern Portugal (Mértola, Alentejo) and the role of landscape’s materiality in the intangible process of making place. The study argues against the vision of place as an achieved, ‘frozen’ fact, through ethnographic description.

In the context of water, engagement with this resource is the perfect example of a recursive relationship in which nature and culture literally flow into each other (Strang, 2005). Being the most vital of resources, fundamental to human and ecological well-being, water is invariably central in human-environmental relationships (Strang, 2004). It is thus an integral aspect of every cultural landscape and waterscape, and engagements with it are shaped by the particular beliefs and values of which these are composed (Strang, 2008). The use of water flows through what Ingold (1995) calls ‘dwelling’ in the world and making use of its ‘affordances’. As well as being physically vital for survival, water is the most fundamental necessity for economic production, essential to domestic tasks, and a major focus for recreational activities (Strang, 2008; see also Strang, 2010).

In a landmark study of an ethnography of the multiple meanings of water, Veronica Strang (2004) points out that “to understand why people, particularly in Western societies, are so passionate in their desire for water, it is necessary to go under the surface and explore the complexities of their relationships with this most vital resource and with each other” (p. 2). All in all, Strang argues that the “enclosure of water resources is fundamentally at odds with the cultural meanings encoded in water” (p. 247), cultural meanings that ethnographic data suggest have been “highly consistent over time” (p. 3), and therefore, “[h]owever strenuously the water industry tries to reframe water as a cultural artefact, as a product or commodity, it remains elusively part of nature, part of the body, part of the environment” (p. 248).

In another study about water, Strang (2009) considers how local communities in South Queensland (Australia) make use of the cultural meanings encoded in water to articulate

social connections and notions of belonging. Through the ethnography, this study attempts to show how their particular approaches serve to reveal some of the underlying differences in social and environmental knowledges and values which underpin wider debates on water issues in Australia. An understanding of these differences is useful for policy makers and water managers whose energies are directed towards encouraging community involvement in catchment management, and resolving conflicts between interest groups.

Anthropological studies about water in Portugal are limited. For example, Durand (2003) uses a brief ethnographic evocation and a retrospective glance to the anthropological approaches to water in order to identify topics of interest for future research, such as water as a commodity for mass consumption or the political and technical dimensions of hydraulic facilities. Here, a broader scope in the study of water would help understanding the way water is currently shifting from the status of *res nullius* to that of 'collective heritage'. In the last twenty years, ethnographic research about water have been mainly conducted by three French researchers: Colette Callier-Boisvert (1994), Fabienne Wateau (2000, 2002; and more recent on Alqueva Reservoir, as reviewed next) and Emmanuel Salesse (2003) studies about local irrigated land systems and how the cooperation and conflict around these schemes shape and promote change on local social and technical contexts.

As mentioned above, Fabienne Wateau (e.g., 1999, 2004, and 2010) recent work focuses on the implications of Alqueva Reservoir construction in Alentejo Region, Portugal. Broadly, the author seeks to explore the history of the region and this construction, and the interest in the patrimonial process of the newly re-composed territory; namely, of the reservoir itself to stretch of water and of its towns and neighbouring villages.

Overall, the above mentioned studies consider the meanings of water, focusing in particular on the relationship between water, culture and power. It suggests that an understanding of this relationship can illuminate contemporary conflicts over water in diverse cultural contexts (cf. Strang, 2010). However, these studies tend to deduce conclusions about experience from analysis of social structures and processes, without any subsequent explanation. This is too much of a simplification: experience is not the result of social structures and processes only, but depends on more factors (Jacobs, 2006). Also, most of these studies are ethnographic accounts, which is a welcome extension of the predominantly quantitative approaches in the study of human–nature relationship.

2.6 Human Geography Approach

The fundamental concept underlying human geographical studies is not the concept of space, with its connotations of formality, abstractness and infinity, but that of place, referring to space as experienced by people and having meaning and identity for people (Jacobs, 2006). People give meaning to the environment and attach to places (Tuan, 1974). Moreover, geographic research highlights the importance of local context in natural resource management, given unique patterns and relationships among physical and human elements of the landscape; environmental issues are often framed through local discourse and narratives of everyday life (Larson and Santelmann, 2007; see also Walmsley and Lewis, 1993). To analyse the way people experience the environment, many human geographers are inspired by phenomenology; this is a philosophical discipline focused on the analysis of experience as it directly presents itself to conscious agents (Tuan, 1971).⁴⁷

Studies by human geographers often describe the set of meanings given to a place. Here, places underlie how we make sense of the world as well as drive our actions (Sack, 1992). Sometimes these studies describe particular places, for example the Grand Canyon (Pyne, 1998), and sometimes they describe a category of places, for example the wilderness (Murphy, 1996). The concept of *genius loci* – in other words, sense of place – is widely used in publications by human geographers: by studying the meanings given to a place, the unique identity of a place is reconstructed (Jacobs, 2006).

For example, cultural geographies of nature seek to understand the diverse cultural meanings of nature, and the complex, multi-faceted role of nature in knowledge and practice (Gibbs, 2009). To configure nature in this way is to begin from a position of ontological and epistemological pluralism (Howitt and Suchet-Pearson, 2006). In the context of water, there is

⁴⁷ Phenomenology considers lived experience, moving away from absolutist positivism (with positivism as the scientific method), and toward alternative methods of theory building, with the goal of using descriptive works to find commonalities between phenomena (Seamon, 1987). Phenomenologists assert that phenomena must be understood holistically, using qualitative methodology and avoiding “a priori theory and concepts, hypotheses, predetermined methodological procedures, statistical measures of correlation, and the like” (Seamon, 1999; p. 163). In particular, phenomenological sociology is the prescientific study of social life and the process by which humans interpret, experience, and understand their individual and collective realities; the work of the social philosopher and sociologist Alfred Schultz (1899-1959) provides the most important foundation for phenomenological sociology (Williams, 2001; see also Ferguson, 2006). Framed in the general atmosphere of the debate between scientific and antiscientific movements that arose in the late nineteenth century, phenomenology places the social sciences in the context of everyday life (Thomason, 1982). “The sciences that would interpret and explain human action must begin with a description of the foundational structures of what is prescientific, the reality which seems self-evident to men remaining within the natural attitude. This reality is the everyday life-world” (Schultz and Luckmann, 1973; p. 3). The possibility of a phenomenological sociology has been partially realized in two current sociological traditions: social constructionism (see Berger and Luckmann 1966) and ethnomethodology (see Garfinkel, 1963).

a growing literature that seeks to understand the diversity of meaning, value and practice associated with water and water places (e.g., Harrison and Burgess, 1994; Allon and Sofoulis, 2006; Head and Muir, 2007; McManus, 2008; Gibbs, 2009, 2010). Social geographies of nature provide means for understanding the institutions, structures and processes that humans devise to mediate relationships with nature (Gibbs, 2009). Research on ‘social nature’ (e.g., Braun and Castree, 1998; Castree and Braun, 2001) asserts the co-constitution of nature and society; one recent feature of this work has been a focus on the neoliberalisation of nature (Gibbs, 2009). In the case of water this includes processes of privatisation, commodification, and regulation (e.g., Bakker, 2007; Kaika, 2005).

Also, the emergent body of emotional geographies literature (e.g., Davidson and Bondi, 2004; Bondi, 2005; Davidson et al., 2005; Sharp, 2009; Smith et al., 2009; Pile, 2010) is an attempt “to understand emotion – experientially and conceptually – in terms of its socio-spatial mediation and articulation rather than as entirely interiorized subjective mental states” (Davidson et al., 2005; p. 3). As such, scholarship in emotional geographies have argued that emotions are relational and fluid, not in individualized human subjectivities but rather relationally produced between peoples and places (Davidson and Bondi, 2004; Davidson et al., 2005; Smith et al., 2009). Emotions are always embodied experiences, where sites and context matter. Thus, environments and landscapes can produce varied emotional geographies (see Davidson et al., 2005 collection). Here, through its holistic approach to subjectivity, humanistic geography provided an important impetus towards engaging with emotional dimensions of people’s experiences of place and space (Bondi, 2005).

Overall, the work of human geographers is often theoretical and narrative; empirical research, for example by means of questionnaires, is often absent; therefore, the validity of many concepts is obscure (Jacobs, 2006).

2.7 Place-based Approach

The place-based social science literature is interdisciplinary in that geography, sociology, psychology, and other disciplines have each developed their own theoretical and research traditions for exploring issues related to place (Trentelman, 2009). However, most scholars credit the phenomenological geographers Tuan (e.g., 1975, 1977) and Relph (1976) with the

initial development of place studies.⁴⁸ In their early place writings, Tuan and Relph were responding to geographic and environmental works that discussed place from a highly abstract, theoretical perspective, far removed from people's lived experience, or else as a unique artefact (Trentelman, 2009), where distinct characteristics of individual places are presented individually without relating to each other (Tuan, 1975). Thus, Tuan (1977) and Relph (1985) called for a return to the everyday life world of lived experience, and a move away from the objectification of place and its meaning.

Places can become meaningful to people because of the relations they have had with other people for instance people living there – friends, acquaintances, relatives (Gustafson, 2001). Relationships with other people are a part of collective self defining as also individual place making through special relationships with only one or few persons; the connection, however, is two folded – places can become meaningful through social relationships but special places help to create meaningful relationships as well (Saar and Palang, 2009).

Places have a great role in reminding us of our past. On the individual level they act for us as connections with special times or occasions in our life (Shamsuddin and Ujang, 2008). A place can remind us of a certain occasion or can be like a path mark of the point we were back then. Places can also remind us of some particular periods in our life through nostalgia (Hay, 1998; Gustafson, 2001); usually childhood memories are an important example of how places became meaningful (Derr, 2002).⁴⁹ Places can also act contrary and reflect continuity in our lives (Smaldone et al., 2005). But in other circumstances places are valued for some decisions and changes that are connected to these and for interrupting continuity (Saar and Palang, 2009).

Places are also used for awaking certain feelings like comfort, security, belonging, being anchored, self-expression, and freedom to be oneself (Smaldone et al., 2005). For

⁴⁸ Phenomenologically oriented approaches consider landscape as an object of analysis (an area, district, scene) emphasizing the physical character of the landscape as a mixture of natural and cultural elements, and have reserved 'place' as a term for the context of experience (Relph, 1985; Saar and Palang, 2009). Here, 'landscape' is considered as a dwelling place, which is not something external to human being and thought, but simultaneously both the object and the subject of dwelling (Ingold, 1993, 2000). From this perspective, 'landscape' and 'place' cannot be seen as opposite, but rather as inseparable, as Karjalainen (1986; p. 141) has put it: "every place is a part of some landscape and, conversely, every landscape is part of some place" (see also Cresswell, 2003).

⁴⁹ This temporal aspect of place encompasses memories associated with place, especially childhood memories, through cyclical visitation (such as that which occurs with events) that can create attachment. Some scholars, however, while not refuting this position, explain that it is also possible to form attachments quickly – kind of like 'love at first sight' (Tuan, 1977). Manzo (2005) also found that places can be assigned meaning quickly through linking the memory of an important event occurring in a specific place. She called these pivotal or flashpoint moments, and these meanings connected to a particular place form the foundation for place attachment. These are intimate attachments and may also be comprised of the mundane or routine in our lives, which may be the very thing that makes attachment to place so authentic or real (Tuan, 1977).

example, catchment residents visiting a reservoir and its surroundings may provide them with the feeling of tranquillity, peace of mind, escape or freedom. Feelings awakened by some place can play a role in forming and maintaining place connections (Saar and Palang, 2009). Some places may acquire meaning through certain activities (Tuan, 1977). For example, how children make places meaningful by climbing trees, playing games, etc. Here, the environments of our childhoods – the meaning-laden places where we explored, played, and tried to make sense of the world around us – form a ‘primal landscape’ from which we compare and interpret future environments (Measham, 2006). For grownups similar activities exist which are sometimes part of their everyday routines like strolling or running near a reservoir.

Finally, the connection between the place meanings and identity also needs to be considered. Relph asserts that place holds an integral role in human identity: “to be human is to have and to know *your* place” (Relph, 1976; p. 1, emphasis in original). Place identity, when using the simplest clarification, characterizes people as meaning characterizes places (Saar and Palang, 2009). People’s identities are created through defining themselves in relation to places (Jorgensen and Stedman, 2001). As meaning-making, also this process takes place in a complex pattern of conscious and unconscious ideas, beliefs, preferences, memories, ideas, feelings, values, goals and behavioural tendencies and skills relevant to this environment (Vorkinn and Riese, 2001). I will come back to this topic later in this section.

Despite places mattering a great deal to the social interactions that occur within them, place have not been incorporated into general sociological research, only recently receiving more focus in the discipline (Lobao, 1996; Gieryn, 2000). Here, sociologists perhaps preferred to leave the matter to specialists from geography, or fearing that environmental determinism would rob social and cultural variables of their explanatory oomph, or worrying that the particularities of discrete places might compromise the generalizing and abstracting ambitions of the discipline (Agnew, 1989). Exceptions to this aspatial pattern include early urban studies, which considered the environment of the city and the neighbourhood as important to the social interactions that occurred there, as well as rural sociology’s long history of exploring spatial concerns; these remain somewhat of an anomaly in sociology (Lobao, 1996).

Recently, there is an increasing recognition in sociology that place matters. For example, Gieryn (2000) argue for ‘emplacing’ sociology and the key problems it addresses, since place is “not merely a setting or a backdrop, but an agentic player (...) a force with

detectable and independent effects on social life” (p. 466). In particular, Saar and Palang (2009) find that social researchers should deal more with places and conflicting meanings:

Often meanings that are attached to places by different groups can be a root to a community conflict. The importance of places in policy should be more noted. Also, we find studying place meanings highly beneficial for understanding the ongoing changes in our environment. Place meanings should be definitely involved in conservation strategies. (p. 17)

Here, increasing numbers of place scholars are turning to a social constructionist approach. With roots in phenomenology and interactionism (Berger and Luckmann, 1966), the use of a constructionist perspective in the social sciences grew in response to, and as a critique of, positivistic epistemology, although among place scholars this has not generally been in response to positivism within place scholarship (Trentelman, 2009).⁵⁰ There are a variety of rationales for this approach to place (Trentelman, 2009). Some use a constructionist approach specifically for its resistance to positivistic philosophy (e.g., Tuan 1991; Stokowski 2002), while others choose constructionism or interactionism for particular projects as a way to focus on meanings without linking that choice to philosophical perspectives (e.g., Greider and Garkovich, 1994; Freudenburg et al., 1995; Eisenhauer et al., 2000).

A constructionist approach is concerned with how place is socially constructed, by whom, and with what interests, as well as with how constructions are adopted and how various conceptualizations of places affect different groups (Williams, 2000; Stokowski, 2002; Trentelman, 2009). Using an interactionist framework, some consider how understandings of places are created through social interactions, describing a reciprocal relationship between humans and nature (e.g., Brandenburg and Carroll, 1995; Eisenhauer et al. 2000). Others acknowledge the material reality of specific geographic settings while looking beyond the physical properties of places (e.g., Stokowski, 2002), or argue that even our understanding of these physical properties is socially constructed (Greider and Garkovich, 1994; Freudenburg et al., 1995). Questions of power and politics of place are also examined (e.g., Williams, 2002; Cheng et al., 2003), as well as the inherently political legitimizing process seen in discourse about places (e.g., Tuan, 1991; Petzelka, 2004).

⁵⁰ Here, Berger and Luckmann (1966) instead argued that of even greater importance to the sociologist interested in studying social processes and society in general is to recognize how common sense, everyday knowledge emerges from and is maintained by the cultural and social context that the person holding that knowledge lives within. They describe society as encompassing both objective and subjective notions of ‘real’ everyday knowledge, or ‘reality’.

In particular, sociology has applied a social constructionist perspective, exploring the shared values and symbols that when applied to nature/environment and landscape creates common meanings (e.g., Greider and Garkovich, 1994; Hannigan, 1995; Eder, 1996; Macnaghten and Urry, 1998). Greider and Garkovich (1994) assert that natural environments assume different roles to different groups, depending on how a group defines itself. They explain “the symbols and meanings that comprise landscapes reflect what people in cultural groups define to be proper and improper relationships among themselves and between themselves and the physical environment” (p. 2). In their definition of social construction, every ‘river is more than one river’ and any bio-physical place is meaningless except as reflections of cultural identities of human beings; put another way, ‘landscape’, ‘river’, ‘forest’, ‘mountain’, and any other feature of nature is a culturally embedded concept and thus environmental management would be well-advised to account for this in practice (Greider and Garkovich, 1994).

Place-based approaches to natural resource management are attracting increased attention in many parts of the world, especially in the context of ecosystem management (Mitchell, et al. 1993; Williams and Stewart 1998; Brown 2005). This renewed interest in place recognizes the strong bonds that people develop with natural places and the need that they have to be involved in influencing the future direction of change in places they value (McIntyre et al., 2008). Place-based meanings and emotions or what is commonly referred to as ‘sense of place’, describes how individuals and groups of individuals ascribe social meaning, or interpretations, to places, negotiate those interpretations, and even choose to modify bio-physical features based on their interpretations (Davenport and Anderson, 2005).

A variety of theories, frameworks, or models of place have been proposed about the nature of connections between people and places and the processes through which places are given meaning by people. In particular, the social construction of meaning related to place has been explored through research in several place dimensions: sense of place, place attachment, place identity, place dependence, and place satisfaction (Alexander, 2008). Next, I will briefly review the place dimensions that are relevant to this research:

- Sense of place – sense of place literature usually describes the affective bond between people and place. Although having multiple definitions, sense of place usually refers to the experience of a place, which is gained through the use of, attentiveness to and emotions towards the place (Relph, 1976; Stokowski, 2002). It is not purely individually or collectively

constructed (Butz and Eyles, 1997). Relationships with places are also dynamic in the sense that they develop along with the human identity (Manzo, 2003), having a time horizon from the past (memories) to the future (dreams, wishes, worries) (Butz and Eyles, 1997; Kruger and Shannon, 2000). Sociologist Stedman uses the phrase like an umbrella encompassing other place dimensions: “a collection of symbolic meanings, attachment, and satisfaction with a spatial setting held by an individual or group” (Stedman, 2002). Several other researchers share this view of sense of place as broad and inclusive of other dimensions, but some scholars (Williams and Vaske, 2003) say that human geographers’ sense of place is similar to social psychologists place attachment.⁵¹

However, sense of place implies more inclusiveness (Trentelman, 2009). According to Hummon (1992), “sense of place involves a personal orientation toward place, in which one’s understandings of place and one’s feelings about place become fused in the context of environmental meanings” (p. 262). Also, while the word ‘attachment’ implies a positive relationship with the place in question, sense of place does not (Trentelman, 2009). Scholars argue that, while there is a need to consider the full range of affect in relationship to place, the literature on place attachment tends to focus only on positive emotions; negative affect seems antithetical to ‘attachment’ (e.g., Giuliani and Feldman, 1993; Kyle et al., 2004; Manzo, 2003). The sense of place construct is intuitively more conducive for considering negative as well as positive aspects of a relationship with a place (Trentelman, 2009). The term sense of place in my research will adhere to the widely endorsed use of the phrase as broadly inclusive of other place dimensions to describe the bond between people and place.

- Place attachment⁵² – place focuses on the environmental setting, while attachment’s focus is the affect (Hummon, 1992). Accordingly, place attachment has been described as an

⁵¹ Trentelman (2009) points out that ‘sense of place’ and ‘place attachment’ are each used as overarching place concepts by different groups of scholars, while ‘place dependence’ and ‘place identity’ are used as constituent parts of the overarching concepts. Also, Kyle et al. (2004) noted that studies using place attachment as a multidimensional, overarching construct (with place dependence and place identity as constituent parts) have typically been conducted in recreational contexts, where respondents, primarily visitors/recreationists, have more sporadic interaction with the setting (e.g., Bricker and Kerstetter, 2000; Kyle et al., 2003). Studies using sense of place as the multidimensional, overarching construct (with place attachment, place dependence, and place identity each a dimension) have typically included residents, with a more extensive history with the place in question (e.g., Jorgensen and Stedman, 2001).

⁵² It is easy to be confused reading the place literature, as there are many examples where the same terms are used to describe different aspects of place. Place attachment and meaning are one such case (Alexander, 2008). To clarify, place meanings are the stories people tell about place. They have a strong cognitive base, are constructed of people’s experience with place, and likely contribute to place attachment (Stedman, 2008) – they are what we are attached to. Place attachment describes the emotion or feeling we have for place. It is an evaluative dimension of place (Stedman, 2008); in other words, it describes how much place means to us. While a person’s place attachment is in part based on the meanings attributed to a place, the constructs should be separated (Stedman, 2003).

emotional bond between a person and a specific place (Tuan, 1977; Proshansky et al., 1983; Low and Altman, 1992). While this often happens over time, it can also happen quickly, like ‘love at first sight’; in either case, place attachment is an evaluative dimension of place – how much we feel (Alexander, 2008). Affect, emotion, and feeling are the most frequently reported central ideas of place attachment (Hummon, 1992). Hidalgo and Hernandez (2001) amended this commonly held definition of place attachment to read as “a positive affective bond between an individual and a specific place, the main characteristic of which is the tendency of the individual to maintain closeness to such a place”. Their amended definition underscores the intentionality of people to foster attachment (Alexander, 2008).

Low and Altman (1992) recognized the core of place attachment as emotion or affect and acknowledged that it includes many aspects of people-place bonding: “affect, emotion and feeling are central to the concept” (p. 4). Attachments, in addition to affective ones, can include cognitive and behavioural aspects; that is, these emotional elements “are often accompanied by cognition (thought, knowledge and belief) and practice (action and behaviour)” (pp. 4–5). So, besides the feelings we harbour about a place, we hold certain beliefs or memories about it, and act certain ways in places (Alexander, 2008). Tuan (1977) alludes to this relationship when he talks about attachment as the accumulation of memories and experience in place, and Proshansky et al. (1983) discuss the interplay of affective, cognitive and conative clusters in their work with place identity. Next, I will discuss identity as an element of place.

- Place identity – The focus of this concept is that ‘this place’ is part of my identity; my affiliation with ‘this place’ is part of how I want others to think of me (Trentelman, 2009). Place identity was first described by Proshansky (1978) and refers to

those dimensions of self that define the individual’s personal identity in relation to the physical environment by means of a complex pattern of conscious and unconscious ideas, beliefs, preferences, feelings, values, goals, and behavioural tendencies and skills relevant to this environment. (p. 155)

That is, Proshansky et al. (1983) define place identity as an aspect of self identity consisting of cognitions (memories, attitudes, beliefs, values, etc.) about the physical world in which a person lives. In other words, place identity describes the deep emotional or symbolic connection between a place and a person’s individual identity; for example, a boater might identify strongly with Lake Superior as it represents something about him or her (Budruk et

al., 2011). In this sense, settings offer individuals the opportunity to both express and affirm their identity. Proshansky et al. (1983) elaborate that place identity is individualized in nature, changes over time, and is largely an unselfconscious state (Alexander, 2008). They also emphasize that there are both physical and social elements in place identity – in fact, they declare “there is no physical environment that is not also a social environment” (Proshansky et al., 1983; p.64). The essence of this quote is that place identity is derived from a lifetime of social and cultural experiences linked with a particular place (Alexander, 2008).

While Proshansky and colleagues assert that place identity is a cognitive substructure of self, Twigger-Ross and Uzzell (1996) discuss how places can become central to one’s personal identity if the place provides distinctiveness, continuity, self-esteem, and self-efficacy. Similarly, functions that place serve linked to identity were described by researchers Lavin and Agastein (1984) who suggested that places are where we experience continuity; where we can express the self; where we can have interaction with others or participate in activities; and that we receive information from places about how to behave as well as remembering past actions (tied to place).

Geographer Relph (1976) describes three interrelated elements of place identity: the physical setting, activities in the place, and the meaning that a person assigns to both of these components. His description of both the physical setting and the activities in the setting are described as objective, as though they were inventory items in the case of the physical setting or patterns of movement in the case of the activities. The key is in the interrelatedness through meaning that happens when the three components come together as identification with a place and he explains that this happens through knowing and being known in a place (Alexander, 2008).

In sum, place identity is defined as “an interpretation of self that uses environmental meaning to symbolize or situate identity” (Cuba and Hummon, 1993). Place, then, is where people spatially locate their identity; it gives people a sense of roots in a place and people often develop a sense that they belong in places as a result of their relationship between self and place (Alexander, 2008). Here, I should point out that there is at least one point of confusion regarding how scholars conceive of place identity. While most describe it as a substructure of the self, some scholars say that place identity is a component of the self-system, but they also name it as a component of place attachment; in fact, quite often place identity is used interchangeably with place attachment (Alexander, 2008). Psychologist Woods (2006), in her dissertation examining how place identity contributes to self-identity,

theorizes that place attachment and the meaning that the person assigns to place recursively inform place identity. Accordingly, place meaning and attachment inform place identity; where they are attached and develop meaning becomes a part of who they are (Alexander, 2008).

- Ecological identity – There is no disputing that humans are social beings who live in a socially constructed world, but there are also non-human objects in the natural environment with which we interact, and our relationship with the natural world is also a part of our self (Alexander, 2008). Here, Clayton and Opatow (2003) say that researchers have paid little attention to our relationship with nature in defining identity and that we need to broaden its notion, recognizing that for many people “an important aspect of their identity lies in ties to the natural world” (p. 45). This broadened concept of identity is referred to as an ecological, or environmental, identity (Thomashow, 1995; Weigert, 1997; Clayton and Opatow, 2003; Holmes, 2003). Accordingly, adding ecological knowledge of a place, which is a person’s comprehension of the natural world (elements as well as function), along with their values system regarding the natural environment to place identity and you have ecological identity (Alexander, 2008).

In support of the concept of ecological identity, Clayton (2003) point out that for the natural environment to be considered an important aspect of identity it must influence the way people think about themselves. Here, time to reflect on life and escape from everyday pressures provides people with an opportunity to redefine their priorities and what is important in their life. Research on the restorative value of natural environments supports this assertion (as discussed in section 2.3). Another way the natural environment influences the way people think of their self is in the opportunity the natural environment affords us to see the influence or consequences of our actions and behaviours. This, Clayton explains, is because in a social setting we often cannot predict how others will react to us because their response to us is both a reaction to our appearance and behaviour and their interpretation of our appearance and behaviour, which may not be an accurate reflection of our self. In contrast, in a natural setting the environment often does not change perceptibly in response to our behaviour, and therefore, “the link between my behaviour and its consequences may be clearer in a natural environment than in a social environment” (p.50).

Because identities develop individually and socially, it is important to examine the social role in ecological identity. Here, Zavestoski (2003) makes this link when he defines ecological identity as “that part of the self that allows individuals to anticipate the reactions of

the environment to their behaviour” (p.299), adding that feedback from social others “validates the actions guided by our ecological identity” (p.301). This is because, while people anticipate the environment’s reaction, the time it takes to see the results of their actions in the environment is often long-term, whereas others (people) react pretty quickly, in either a positive or negative way, to our actions on the environment.

Sociologist Weigert (1997) refers to environmental identity as “who we are in relation to, and how we interact with, the natural environment as other” (p.159). Closely related to this is sociologist Michael Bell’s (1994) conception of the natural other, wherein people consider their relationship with the natural world as the reflective device to gauge their actions concerning nature (the environment). Both of these scholars put forth the notion that we take cues about how we will act according to how we anticipate the natural world will react to our actions, and we can only anticipate how nature will react if we possess ecological knowledge (or have an ecological identity) (Alexander, 2008).

In sum, ecological identity expands the notion of identity beyond understanding who we are in relation to social actors, to who are in relation to the natural world. Ecological identity ties place identity to the natural world this way:

Place identity tells us who we are in a place, and ecological identity tells us who we are in the natural world. Place identity tells us how to behave in place, and ecological identity tells us how to behave toward the natural world (our land ethic). Place identity tells us where we belong, and ecological identity tells us we belong in this place connected to nature. (Alexander, 2008; pp. 23-24)

A number of writers have hypothesized that places are based on three broad interrelated components that give places meaning: (1) the physical setting, (2) the person (an individual’s internal psychological and social processes and attributes, which are also tied to social and cultural factors), and (3) the activities or rituals done at the place (Relph, 1976; Sack, 1997; Stedman, 2002). These components have been used to describe numerous types of places, and even places of various scales. In his discussion on the meanings of ‘home’, Gunter (2000) noted that homes have three main functions or dimensions—as physical, personal and social places. Likewise, findings by Gustafson (2001) lend support to a similar tri-polar analytical framework of Self-Others-Setting. However, Gustafson noted that, within his proposed framework, the “meanings of place are not forced into three discrete categories but mapped around and between the three poles of self, other and environment” (p. 12).

Smith and colleagues (2011) examined a set of seven distinct place meanings individuals ascribe to landscape:

- Individual identity meanings represent the extent to which individuals believe the landscape informs their self-identity (Proshansky et al., 1995). Given self-identity provides purpose for one's life, a high level of individual place identity reflects a life guided by the presence and maintenance of the managed landscape.
- Family identity meanings extend the concept of individual place identity and represent the extent to which the landscape defines one's belief about their family's unique identity (Kruger and Shannon, 2000). Strong social bonds and memories formed through the presence of the resource are examples of meanings that reflect the family identity construct.
- Self-efficacy, which is both theoretically and empirically related to 'place dependence'⁵³ in previous research (see Williams et al., 1992 and Williams and Vaske 2003, respectively), represents the meanings associated with doing things or spending time in the resource area. The functional dependence of recreation settings for specific types of activities is the most apparent example of self-efficacy meanings.
- Self-expression represents meanings associated with how the resource provides opportunities for individuals to convey their true self. Self-expression is a related but conceptually distinct concept from individual place identity. The former involves action and the communication of one's self while the latter is limited to the defining of that self.
- Community identity meanings represent beliefs about the extent to which the managed landscape contributes to local culture, character, and identity. Community meanings are similar to family identity in that they represent beliefs about one's social group; they differ in that community meanings attempt to gauge the extent to which the landscape contributes to the aggregate local identity.
- Economic meanings represent beliefs about how the resource area contributes to the community's economic health.

⁵³ Place dependence is based on: (i) the ability of a place to satisfy needs and goals and (ii) how that place compares to other available settings (Anderson and Fulton, 2008). Williams et al. (1992) clarify that place dependence implies more than just satisfying a condition or need by providing the right setting attributes. Thus, place dependence is used to evaluate one place as compared to other places, to determine the level of agreement with the idea that, particularly due to emotional bonds, 'no other place will do as well as this one', or a dependence on the particular place of interest for the things one wants to do (Trentelman, 2009). Although place dependence is linked to both positive and negative experiences and outcomes, within the context of recreation management place dependence refers to the overall ability of a place to accommodate enjoyable leisure (Anderson and Fulton, 2008).

- Ecological meanings represent beliefs about how the resource functions to preserve community open space and ecosystem health.

Previous research indicates that these place meanings are empirically valid and generalizable to multiple resource management contexts (Smith et al., 2011) and that these place meanings can influence preferences for management outcomes (Davenport and Anderson, 2005). Each of these seven types of place meaning is a relatively distinct way that individuals can make sense of the landscape and ascribe meaning and significance to it (Smith et al., 2011).

Davenport and Anderson (2005) describe an expanding body of research that uses qualitative research methodologies to examine the human-environment relationship and specifically the meanings of place. Here, meanings “can be likened to stories about places rather than the physical properties of places” (Williams, 2008; p. 18). Williams point is that place meaning is embodied in the lived experience of people and not in the structure or landscape characteristics of a place. Accordingly, humans attach meaning to places over the course of time by tying the image of a place to personal experience. Place meanings are the stories people tell about place. They have a strong cognitive base, are constructed by people’s experience with place, and are the foundation of attachment – they are what we are attached to.

Thus, meanings related to place are the most fundamental connections individuals form with specific spaces (Smith et al., 2012). Place meanings can involve the personal significance of a space based upon numerous factors involving the characteristics of the individual, others, and the physical setting itself (Gustafson, 2001). Collectively, the set of meanings an individual ascribes to a particular space form their attachment to that place (i.e., their place attachment) (Smith et al., 2012).

For example, Brandenburg and Carroll (1995) conducted interviews with rural residents near a national forest to understand their worldview. They found that personal experiences are major factors in a group member’s values; individuals who rarely visit the forest frequently turned to their groups common values when asked about forest management; individuals who frequently visit the forest express values different from their group’s values. Moreover, Schroeder (1996) examined community members’ values and emotional attachments to a Michigan river through their place descriptions. Brooks et al. (2006) examined how place meanings accumulate and how place relationships develop in the context of national park backcountry. Hull and colleagues (2001) discovered that locals living near a

national forest value ‘cultural naturalness’, or an appropriate balance between human amenities and high-quality natural environments. Elizabeth O'Brien (2006) explored the diversity and complexity of the meanings people associate with the forested landscape of Vermont, which revolved around four main themes: forests and personal well being, personal and community identity, conflict and confusion, and forest management.

Davenport and Anderson (2005) uncovered a ‘web of meanings’ that local residents ascribe to the Niobrara National Scenic River as four dimensions: nature, identity, tonic, and sustenance. River as nature was related to recognition and appreciation for the pristine and undisturbed character of the river. River as identity revealed how participant’s sense of who they were individually, as family members, and as community members was tied to the river. River as tonic classified the river as a source of solitude, freedom, and enjoyment, declaring it “good for the mind, body and soul” (p. 633). And finally, river as sustenance described the importance of the river as a source of income and necessary commodity to support local residents’ livelihood as farmers.

Gunderson and Watson (2007) found social identity meanings, as well as meanings associated with study participants’ jobs and watershed protection expressed in residents’ descriptions of places in a national forest that they had not visited or visited infrequently. In Henwood and Pidgeon’s (2001) multiple methods investigation of the ‘mosaic’ of meanings and benefits local residents associate with forests in North Wales, ‘stability and familiarity’ emerged as a primary theme. The authors concluded that local forests serve as “a vehicle for negotiating people’s differing relationships with issues of community survival, socioeconomic transformation and cultural identity” (p. 144).

Jacobs and Buijs (2011) conducted two case studies to explore stakeholders’ place meanings and attitudes toward interventions in water resource planning contexts; the researchers identified five categories of place meaning, namely those relating to beauty (aesthetic judgments), functionality (landscape use), attachment (relationships of belonging), biodiversity (nature) and risk (worries about current or expected problems). Most stakeholders expressed place meanings that covered all five categories, and this finding, coupled with strong similarities between the categories and those identified in previous Dutch, English and American studies, suggests that they could be useful in developing a conceptual basis for further studies on the meaning of place in freshwater settings. Here, the authors assert that knowledge of stakeholders’ place meanings can assist water agencies in finding acceptable solutions on the local level and in coping with public attitudes.

By examining people's connections to places as expressed through their own words, these studies capture the subjective, lived experiences people have with nature (Davenport and Anderson, 2005). Compared to traditional research approaches, managers can learn more about stakeholder perspectives from qualitative research because what is shared "extends beyond what interviewees would have been willing to express in the context of more traditional public involvement frameworks and quantitative research" (Brandenburg and Carroll, 1995; p. 395). Also, Davenport and Anderson argue that one of the biggest contributions of research concerning place-based meanings and emotions is that "they extend our understanding of the human-environment relationship beyond the tangible and instrumental to include the symbolic and emotional" (2005; p. 629). Overall, a qualitative approach has the potential to reveal the complexity of subjective views (Miles and Huberman, 1994, p. 12) and is thus an appropriate approach to investigate the various categories of place meanings that are not accounted for by existing theories (Jacobs and Buijs, 2011).

Overall, studies based on the social construction of meaning have been successful in highlighting the diversity of meanings of nature, as well as the processes through which different stakeholders construct meanings in socio-political issues (Buijs, 2009a). This is a newer area of place research, especially in relation to the physical setting or natural environment (Alexander, 2008), such as a reservoir and its surroundings. Also, the focus on qualitative methods is a welcome extension of the predominantly quantitative approaches in the study of human-nature relationship.

2.8 Social Representations Approach

Although it has to be acknowledged that the term social representations has received divergent definitions by different authors (see Wagner, 1998 for a systematization), recent clarifications concur that the theory considers object and subject of knowledge as co-constructive (Jovchelovitch, 1996; Wagner, 1998; Jodelet, 2002; Castro, 2006). It is, in sum, consensual that the theory is first and foremost interested in the production of cultural meaning systems (Castro, 2006), and it assumes that the social and the individual are not opposed universes, since "while the social shapes the contents of individual minds, so is the social a product of communication and interaction between individual minds" (Gaskell, 2001, p. 232). In turn, this implies that social representations are "not the products of individual minds, even though they find expression in individual minds" (Jovchelovitch, 1996; p. 126).

Broadly, social representations theory describes how different social groups may develop different understandings of an object and how these understandings influence their communication about and behaviour toward that object (Moscovici, 2000). The key point is that social representations constitute collective systems of meaning which may be expressed, or whose effects may be observed in values, ideas and practices (Duveen and Lloyd, 1993). Social representations theory specialised on a crossroads, at the articulation between individuals and social, and between symbolic and real (Moscovici, 1982). They are embodied in habitual behaviour, in formal and informal communication, allowing us to construct a framework of references that facilitates our interpretations of reality and guides our relations to the world around us. In other words, social representations are products of interconnectedness between people and processes of references through which we conceive the world (Deaux and Philogène, 2001).

Although scholarly interest in social representations is confined primarily to European social psychology (Farr, 1993), it is also a subject of multidisciplinary interest, and anthropologists, historians, philosophers, and sociologists have incorporated this perspective into their work (Walmsley, 2004). Social representations research has been conducted in various applied domains (see Wagner and Hayes 2005); and in Portugal, for example, the concept has been used to describe social representations of genetically modified organisms in the press (Castro and Gomes, 2005) and of intelligence (Miguel et al., 2010). The concept of social representations was introduced in the spatial sciences by Halfacree (1993) and has been widely used in rural studies, especially in relation to rurality and the countryside (e.g., Halfacree, 1993, 1994, 1995; Phillips, 1998; Phillips et al., 2001; Haartsen et al., 2000, 2003; van Dam et al., 2002; Carmo, 2010). Here, the rural as social representations was related to “lay discourses of and the words and concepts understood and used by people in everyday talk” (Ilbery, 1998; p. 3).

Recently, Castro (2006) has suggested using social representations theory in psychological research to understand diverging values related to nature and the environment in order to move research beyond explanations based solely on socio-demographic variables. For example, the concept has been used to describe social representations of biodiversity (Buijs et al. 2008), of nature and the environment (Hovardas and Stamou, 2006a, b; Michel-Guillou and Moser, 2006; Hovardas et al., 2009; Buijs et al., 2011), of environmental issues (Mouro and Castro, 2010), of an alpine grassland landscape (Quétier et al., 2010), of invasive

non-native species (Selge and Fischer, 2011), of the wolf (Figari and Skogen, 2011), and of energy and climate change (Fischer et al., 2012).

Here, Buijs (2009a) pointed out the importance of social representations theory to study human-nature relationships. Namely, by redefining individual cognitions as social cognitions, social representations theory combines the focus on individual cognition with the focus on social processes in more social constructivist traditions. Therefore, the social representations theory is positioned between methodological individualism and social constructivism (Buijs, 2009a). Based on Wagner et al. (1999), social representations of nature can be defined as the collective elaboration of ‘nature’ by the community for the purpose of behaving and communicating. They function as a resource for people’s opinions and actions, and facilitate communication by presenting a more or less commonly shared set of ideas (Buijs et al. 2011). Overall, social representations are socially elaborated systems of values, ideas and practices that define an object for a social group (Moscovici 2000). Thus, these representations are used by individuals in their social contexts to understand and communicate about their surrounding environment (Buijs et al., 2008).

2.9 Chapter Conclusions, Conceptual Grounding and Reformulation of Research Questions

I start this section by describing the main conclusions regarding the review of empirical research on the study of human-nature relationship. After that, I explain the perspective (i.e., conceptual grounding) used in this dissertation. Altogether, they inform the reformulation of the research questions presented at the end of this section, which in turn inform the research design discussed and presented in the following chapter.

The above reviewed empirical research on the study of human-nature relationship raises a number of important considerations and poses some challenges to this dissertation. Most of the above mentioned approaches based on quantitative methods (e.g., environmental sociology, landscape preferences and restorative effects of nature) have predominantly focused on the level of the individual actor. These studies have illuminated interesting aspects of the human-nature relationship, such as the relationship between human evolution and the perception of nature, the restorative effects of nature, the different values related to pro-environmental behaviour, or the different understandings of the concept of nature. However, focusing on the individual level, most studies and theories do not incorporate the social

dynamics of the meanings attached to nature. Therefore, the static view on the human-nature relationship is an important limitation of these approaches. Furthermore, most approaches tend to focus on separated concepts (e.g. values or beliefs) without paying much attention to their interrelatedness.

Human geography, anthropological and gender-environment studies have the merit to engage in the study of the diverse cultural meanings of nature, and the complex, multi-faceted role of nature in knowledge and practice. For example, through its holistic approach to subjectivity, some of these studies provided an important impetus towards engaging with the meanings given to places. Some studies also demonstrate that resource use/control/access are not just material challenges but emotional ones, which are mediated through bodies, spaces and emotions. Other studies reveal some of the underlying differences in social and environmental knowledges and values about nature. This research is often theoretical and narrative. Empirical research, for example by means of questionnaires, is often absent. Therefore, the validity of many concepts is obscure. Finally, the focus on qualitative methods is a welcome extension of the predominantly quantitative approaches mentioned before. However, this is merely a replacement, not an addition, as in most of these studies a combination of quantitative and qualitative approaches are uncommon.

Studies on place-based meanings and emotions have been successful in highlighting how individuals and groups of individuals ascribe social meaning, or interpretations, to places and negotiate those interpretations. Compared to traditional research approaches, this predominantly qualitative research has the potential to reveal the complexity of subjective views. Also, one of the biggest contributions of research concerning place-based meanings and emotions is that they extend our understanding of the human-environment relationship beyond the tangible and instrumental to include the symbolic and emotional.

The place-based meanings and emotions studies focus on the social processes involved in meaning construction. Consequently, the individual appreciation and experience of nature receive less attention, and tend to ignore the functions of individual cognition. The expression of values, beliefs, and attitudes is conceptualized as accounting for one's behaviour and as the result of people's behaviour rather than as influencing their behaviour (Buijs, 2009a). An additional limitation is related to the relevance of 'biophysical' nature for understanding the construction of the meanings of nature. Many constructivists state that because we can only experience nature through our own senses, the meanings we attach to nature are always a subjective (and socially elaborated) version of nature. The relevance of

this biophysical nature is denied, and the focus is limited to the social processes in which meanings of nature are constructed. Accordingly, people are attached to the meaning of places, and the physical setting underpins that meaning, but we know little about what meaning the physical setting holds for people (Alexander, 2008).

Social representations are socially elaborated systems of values, ideas and practices that define an object for a social group. Social representation theory specialised on a crossroads, at the articulation between individuals and social, and between symbolic and real. Thus, the strength of a social representation approach lies in the two-faced character of social representations: They are social cognitions that are socially defined but individually internalized. Cognitions are not treated as individual elaborations of the world, but as mental reflections of socially constructed representations. Social representations thus not only reside in communication between people “across the minds of members of a social group”, but are also “represented within individual minds” (Jovchelovitch, 1996; p. 125). A ‘weak’ constructivist interpretation of this perspective⁵⁴ fully acknowledges this complex character of social representations, and I use it in this dissertation in order to preserve the added value of social representations perspective as an approach between methodological individualism and social constructivism.

All in all, studying the human-nature relationship at the level of social practices avoids the pitfalls of methodological individualism that treats perceptions of nature and social representations of nature as purely individual representations of the outside world that are

⁵⁴ These versions depend on how strongly one subscribes to the theory of social constructionist implications (Wagner, 1998; p. 322): “The ‘strong’ version subscribes to social representations being socially constructed phenomena which exist in the mind of people as well as in their talk and action. A representation is constructed and constructive. The ‘strong’ version articulates the group level with the individual not only through the social origins of representations but also through construction of social worlds. Social representations represent things which exist independently and endow them with attributes which simultaneously relate subjects and objects. The adopted in this thesis, ‘weak’ version accepts that social representations are an outcome of discursive processes. Therefore they are mental representations of objects which might even be shared by members of natural, that is, reflexive, groups. The behaviour of subjects can be seen as a consequence of their mental representations and can be analysed according to a cause-effect relationship, where the mental is the cause and the behaviour is the effect. In this version the objects exist independently of the cognizer and therefore their representation can either be veridical – if it is represented correctly accordingly to some external criterion – or false.” Accordingly, based on Buijs (2009a) social representations of nature approach, although physical reality is interpreted in discursive practices, the material dimension of nature can have direct impact on people. It produces a setting in which certain interpretations of reality are more easily developed than other interpretations. For example, an algal bloom or water pollution in a reservoir can have direct material impact on people. This material phenomenon becomes interpreted and influences the meanings attached to, for example, water quality or about the reservoir and its surroundings in general. The material effects of such an event then function as a context in which social representations may be changed as a result of these effects. Of course, this change is a fully social process based on symbolic interpretation and influenced by power relations. Altogether, even if most of our understanding of the physical world is based on symbolic interpretation, the direct, unmediated impact of physical phenomenon (the ‘brute facts’: Wagner, 1998) also needs to be taken into account in order to understand social representations of nature.

based on personal experiences or evolutionary adaptation. Furthermore, it also avoids the pitfalls of structural determinism, in which the agency of actors tends to be underestimated. It allows the incorporation of both the intentionality of individual actors and the communicative practices in which social representations are developed and mobilized. Here, I am unaware of any published literature on lay representations about reservoirs and their surroundings.

The review of human-nature relationships studies also points out that there is a growing literature that seeks to understand the diversity of meaning, value and practice associated with water and water places from a variety of perspectives. That it is necessary to go under the surface and explore the complexities of people's relationships with water; that there is a lack of attention to the differences between women's and men's needs and priorities with regards to water resource use and meanings. Highlight the importance of everyday life about water practices and meanings to inform water management and policy; and the need to understand differences in the way people experience and interpret water and water places to inform policy makers and water managers whose energies are directed towards encouraging community involvement in catchment management, and resolving conflicts between interest groups. However, the review highlight the lack of focus on catchment residents' knowledge, understandings and lived experiences about reservoirs and their surroundings in extant studies for subsequent water management. Also, the combination of quantitative and qualitative approaches is quite uncommon; I will come back to this point later. Finally, relatively little attention has been paid to human-environment relationship in semi-arid regions (Latorre et al., 2001).

Local people's understandings, everyday experiences and meanings regarding a reservoir and its surroundings are therefore a legitimate form of knowledge that may provide a key input into water planning and management. This entails a shift from a purely scientific and biophysical focus on water management to one that acknowledges humans as core components of ecosystems (Mollinga, 2008). However, as mentioned before, in Portugal and elsewhere when public agencies advocate formal consultations, they often ignore the views of the 'silent majority', focusing on the more vociferous organized stakeholder groups; this is explained by the weak culture of information sharing in Portugal (Matias, 2010, 2012). Here, management success cannot be achieved through top-down processes in their own right; rather, it is contingent upon understanding the existing perceptions and views of people who have a connection to catchments in one form or another – be it through residence, work or

recreation (Spink et al., 2010). Central to this approach is the need to harness local knowledge that can be used in local water governance (O'Toole et al., 2009).

In this dissertation, the use of a catchment-based study therefore helps investigate the way residents' express diverse experiences and their outcomes (i.e., meanings) about a specific biophysical feature; in this case, a reservoir and its surroundings as a place encompassing the convergence of social processes, biophysical attributes and processes, and social and cultural meanings. Therefore, central to the conceptual grounding underpinning this dissertation is thinking of environments as meaning-laden places (Kruger and Shannon 2000; Cheng et al., 2003; Measham and Baker 2005), which recognizes the roles of people in these environments (Measham, 2006). A reservoir and its surroundings is part of a particular ecosystem, but it is also a place of significance – a source of livelihood or inspiration.

Furthermore, thinking of environments as places facilitates acknowledging the different meanings that environments have for different people, as well as how these are constructed and change over time according to the different ways we relate to them (Williams and Patterson 1996). So, a sociological analysis when broadened to encompass place as a cultural system, provides a more complete understanding of social systems and can illuminate elusive conceptions of quality of life and well-being that are closely related to place (Kruger and Shannon, 2000) and provides an opportunity to integrate multiple perspectives, grounded in experience, into a whole that represents a more complete depiction of the world (Geertz, 1973). In this context, thinking of environments as meaning-laden places can help address practical challenges for improving our relationships with our environment (Measham, 2006). In particular, it helps us to integrate social and ecological dimensions of environment (Cheng et al., 2003). Hopefully, if we can learn enough about how we come to know our environments as lived places, we might have an opportunity to learn to live with them on a more sustainable basis or we might be able to 'learn our way out' of environmental problems (Measham, 2006: 427).

As mentioned before, the criticism to claims of objectivity and neutrality of water knowledge, opens the door to the importance of other voices and sources of knowledge, how knowledge is constructed and by whom, and how the identity and social situation of knowledge producers affect the type of truth claims they make. Also, the combination of quantitative and qualitative approaches is quite uncommon, and only a handful of studies have developed mixed methodologies (e.g., Buijs, 2009b; Gonzalez et al., 2009). Here, I believe

that a combination of quantitative and qualitative research has additional value over a one-sided focus on either one of them.

In contrast, this study uses an interpretative mixed methods research approach. This approach enables the researcher to document the subjective nature of real world phenomena, unearth unanticipated findings, and embrace the context of the study (Davenport and Anderson, 2005). In this dissertation, the interpretations of meanings about the reservoir and its surroundings appeared indicative of individual experiences as well as social interactions with others and the natural environment (cf. Jordan et al., 2009). Because human beings are regarded as purposive agents (Blumer, 1969; Schwandt, 1994), knowledge is constructed by the mind's ability to explore and develop meaningful accounts of phenomena (Watkins, 2000). Thus, people are assumed to be self-reflexive and can actively make meanings of the world (Jordan et al., 2009). Interpretive research uses inductive or theory-generating data collection and analysis techniques versus deductive or theory-testing techniques common to positivist research designs. Data collection and analysis procedures are designed to capture a range of perspectives and preserve their richness and detail since the aim is to build an account that is both theoretically rich and grounded in the data. Accordingly, this dissertation is part of the attempt to provide opportunities for the representation of views of the lay public in water management and for future use in participatory processes.

Many studies describe individuals' understanding of nature and landscape as isolated concepts, such as values or attitudes, neglecting those meanings that are connected to the respondents' daily practices, own experiences, knowledge and emotions (Buijs et al., 2008). In contrast, this study combines the notion of social representations within the interpretative approach to describe understandings catchment residents assign to a reservoir and its surroundings, as it is a useful way to explore the content of place-related knowledge and meanings. This, it is argued, avoids some of the perils of social reductionism involved in the earlier constructivist analyses; it also makes a marked contrast to earlier forms of constructivism by asserting the relevance of social context and practice (Marsden et al., 2003). Environmental attitudes, feelings, actions, and perceptions are not simply free-floating; rather they need to be seen in context; they are "discursively formed within particular social settings and contexts" (Irwin, 2001; p. 176).

Also, when studying human relationships to nature through the lens of social constructionism, the primary emphasis is not to refute that the biophysical features of 'nature' exist outside of human reality (Perry, 2009). Instead, most social constructionism projects are

designed to focus attention on how humans ‘invest’ biophysical features of the natural world with social and cultural meanings that are filtered through social processes and institutions, and to describe the variety of meanings humans ascribe to ‘nature’ (Herda-Rapp and Goedeke, 2005). Scholars have studied the processes by which different groups socially construct and project different meanings and interpretations onto nature, the result of which is to transform an objective biophysical reality into a variety of, often conflicting, subjective realities (Perry, 2009).⁵⁵ Accordingly, Escobar (1999) has recommended we consider ‘nature’ as a product of the all-encompassing and changing articulations of human history, social networks, and biology (i.e., evolution), rather than simply social construction, history, or biology alone. Thus,

‘every river is more than one river’ is transformed from a statement defining the social construction of nature as a purely cultural phenomenon based first on human agency, to a description encompassing the interrelationship between cultural, historical, psychological, economic and biophysical phenomena where humans and the natural world are mutual actors on the same stage. (Perry, 2009; p. 19)

The conceptual grounding for my research was inspired by this interrelated approach to understand how residents interpret the biophysical environment; in this case a reservoir and its surroundings.

Based on the project’s interpretative approach and the previous considerations, coupled with a strong personal interest in the topic, to examine how residents understand, experience and give meaning to a reservoir and its surroundings, I decided to break down the central, and very broad, research problem and question into several discrete parts. The overarching question remained: What are the various place-based, everyday interpretations of a reservoir and its surroundings, and how these interpretations can be used to inform water management? But, I felt that this question could be most effectively addressed and more clearly articulated into survey questionnaire and semi-structured interviews queries within the interpretive approach if it could be reduced to more specific research questions⁵⁶ explicitly

⁵⁵ The underlying premise is that these social constructions, or interpretations, have emerged as a product of: a changing biophysical environment; and ongoing socio-political direct and indirect interactions within and between local and extra-local actors and institutions holding different and sometimes contradictory storylines of the environment, environmental concepts, places, and problems (Perry, 2009).

⁵⁶ As will be explained later, it should be noted that the quantitative study of this project uses the notion of social representation to describe understandings catchment residents assign to a reservoir and its surroundings, as it is a useful way to explore the content of place-related meanings, as well as matches the logic of the adopted

related to the reservoir and its surroundings. In particular, the objectives of the quantitative study of the dissertation were to identify and map representations held by residents about the reservoir and its surroundings; as well as capture possible relationships between the structural elements of the social representation and socio-demographic characteristics and type of reservoir and its surroundings uses. Accordingly, I sought to answer two key questions:

- How a reservoir and its surroundings is represented in the everyday language of catchment residents?
- And how these representations relate to socio-demographic characteristics and type of reservoir and its surroundings uses?

In addition, the qualitative study of the dissertation sought to arrive at a deeper understanding of these representations by exploring in-depth residents' representations about the reservoir and its surroundings. Specifically, I sought to develop a grounded theory that aims at understanding residents' experiences and their outcomes (i.e., meanings) about a reservoir and its surroundings and how they may relate to their everyday life. The research questions guiding this study were:

- How do residents describe their experiences about a reservoir and its surroundings?
- What are the outcomes of these experiences (i.e., meanings) about the reservoir and its surroundings?
- How (if they do) the outcomes of experiencing the reservoir and its surroundings influence residents' everyday lives?

Finally, I sought to answer the question:

- How the research approach and findings may provide an opportunity to capture the views of lay people to assist water management and for future use in participatory processes?

interpretative approach; the subsequent (primary) qualitative study explores in-depth the quantitative results by paying attention to residents' lived experiences and their outcomes (i.e., meanings) regarding the reservoir and its surroundings.

Chapter 3 – Preliminary Field-work and Research Design

3.1 Preliminary Field-work⁵⁷

Caine and his colleagues (2009) advocate that preliminary field-work can benefit researchers by opening opportunities for new research and relationships, satisfy community's desires for meaningful participation (incorporating issues of trust, ethics, and collaboration), and expand the scholarly frontiers of field-based research. Accordingly, preliminary field-work can be seen as an activity that increases connections between and understanding of local contexts, assists as a repositioning tool in asking questions during research, and helps gain deeper access to the lived experiences of others (Carrier, 2006). As such, multifaceted understanding of a community from immersion prior to the actual research may provide new insights requiring the researcher to modify original objectives and procedures (Carrier, 2006), or contribute to better development of the research problematic (De Vries, 1992).

In the remaining paragraphs of this section, I will address my own experience and effects of preliminary field-work upon this dissertation. Briefly, how increased participation of catchment residents in my study, improved my understanding of local contexts, and thus helped contribute to a better understanding of local views and lived experiences about the reservoir and its surroundings. However, I concur with Caine et al. (2009; p. 495) when saying that “preliminary field-work is only a part of the research and by itself, does not explain or produce good research”. Instead, seen as a construction, preliminary field-work allows for the development of a contextually appropriate knowledge base which may lead to continued dialogue and co-learning between the researcher and community members (Boothroyd et al., 2004).

I started my preliminary field-work by examining available documents about the potential setting and issues under investigation, as well as by conducting informal consultations with people who have experience or knowledge of the area.⁵⁸ Also, in order to,

⁵⁷ Caine and his colleagues (2009; p. 506) define preliminary field-work “as the formative early stages of research in the field that allow for exploration, reflexivity, creativity, mutual exchange and interaction through the establishment of research relationships with local people often prior to the development of research protocols”, which is the definition used in this thesis.

⁵⁸ I also used, based on my past experience in natural sciences (i.e., freshwater ecology), the Export Coefficient Modelling approach to allow examination of the specific origins of current nutrient loading on the study area, and the likely impact of a range of catchment management measures on nutrient export rates in the catchment. The development of such an approach in the initial stages of this thesis also helped me inform and contextualise this sociological study; this analysis will be presented in section 5.6.

as a researcher, be effective in the creation of partnerships with locals I conducted early visits to the area to develop further awareness of local topics of interest. These visits and earlier efforts assisted me in finding out exactly what was needed before “imposing a potentially foreign cultural process of academic research on [the] community, but also helped me to gain insight into people’s culture, history, and moreover, spirit and struggles” (Caine et al., 2009; p. 497). Namely, by living in the area for some period of time, using the local library daily, participating in local events, and talking with people at cafe during lunchtime, snack time, and/or dinnertime. During this period, I sometimes took notes overtly, sometimes taped casual conversations, and sometimes wrote full field notes from memory that same day.

It is rare for preliminary field-work to take place without a gatekeeper; that is, someone personally knowledgeable about the community who assists in facilitating the research process (Hesse-Biber, 2010a). Here, as stated by Caine et al. (2009) one of the underrated yet central aspects of preliminary field-work is intuition:

Intuition is a-methodological, but is not anti-methodological. In other words, one cannot plan for intuition but what one can do is maintain the ‘right attitude’ and be open to, and aware of, opportunities that require leaps of faith early on in the field. [In particular,] ‘serendipitous encounters’ are a result of placing [ourselves] in situations that created the space from which relational discovers could occur. (p. 504)

In my personal case, when I attended a short-course about participatory processes in Lisbon, I had the opportunity to meet a person from a village near the study area, who put me in contact with a friend that lives and works at the study area. As a result of this, further contacts were established from this initial contact, and snowballed from there.

Therefore, talking with people who, at the outset may not seem to help me but have some connection to, or interest in, the subject, allowed for those serendipitous moments of connection to occur. Here, trust needs to be actively fostered by opening ourselves to others, while in a process of negotiating and bargaining (Giddens, 1991). Specifically, trust in the preliminary field-work stage has a highly reciprocal relationship; that is, trust leads to better preliminary field-work while at the same time, preliminary field-work allows contacts and trust to evolve (Caine et al., 2009). Accordingly, these established contacts together with increased time spent in the area gave me visibility and promoted the trust and interest of residents in my dissertation, which ultimately greatly motivated people to participate in the study. Overall, this preliminary field-work helped me making decisions about how to produce

rich quantitative and qualitative data that better describes and explains my research questions and explores the experiences of the participants under investigation in their own words, as explained later in this chapter of the dissertation.

3.2 Mixed Methods Research

Mixed methods research is a procedure for collecting, analysing, and ‘mixing’ or integrating both quantitative and qualitative data at some stage of the research process within a single study for the purpose of gaining a better understanding of the research problem (Creswell 2003; Tashakkori and Teddlie, 2003; Ivankova et al., 2006; Tashakkori and Creswell, 2007a). The view of mixed methods research taken here is that “mixed methods investigations involve integrating quantitative and qualitative data collection and analyses in a single study or program of inquiry” (Creswell et al., 2004; p. x). It follows, as stated by Tashakkori and Creswell (2007b), that “mixed methods research questions demand the use and integration of quantitative and qualitative methods and approaches” (p. 207).

Mixed methods research has been burgeoning in popularity as an approach to research over the past decade, evidenced, for example, by the publication of the *Sage Handbook of Mixed Methods in the Social and Behavioural Sciences* (Tashakkori and Teddlie, 2003) and the inclusion of mixed methods as a third major approach (adding to quantitative and qualitative approaches) in the second edition of Creswell’s *Research Design* text (2003). Acceptance of mixed methods has occurred particularly in the areas of applied social research and evaluation: “[Researchers] have learned that combining quantitative and qualitative information is not only advisable but inevitable” (Riggin, 1997; p.87).⁵⁹ The following section summarises the main motives for the use of a mixed methods approach.

3.2.1 Motives for using a mixed methods approach

Relying mainly on examples from research practice, different authors have listed various reasons for a combined use of quantitative and qualitative aspects in a single study (see, for example, Bryman, 1988, 2004 and Greene et al., 1989). Mainly, the logic of mixed methods

⁵⁹ In contrast to Thomas Kuhn’s (1962/1996) expectation for single paradigms characterising ‘normal science’, Johnson et al. (2007) suggest that a three methodological or research paradigm world, with quantitative, qualitative, and mixed methods research (all thriving and coexisting) might be healthy because each approach has its strengths and weaknesses and times and places of need. The authors add that “perhaps normal science is not best for social research; that is, perhaps a continual interaction between Kuhn’s normal and revolutionary science will best keep us all in check and balanced” (p. 117).

research is to try to overcome any deficiencies that may derive from a dependence upon any one particular (single) method; methods are combined not only to gain their individual strengths, but also to compensate for the particular faults and limitations of any single method (Henn et al., 2006; Ivankova et al., 2006).

One reason for combining approaches is to overcome bias in research: “Triangulation⁶⁰, or the use of multiple methods, is a plan of action that will raise sociologists above the personal biases that steam from single methodologies” (Denzin, 1989b; p. 236). Unfortunately, however, its use appears to have resulted in a common misconception, presumably stemming from its original referent, that mutual validation is the goal in mixed methods studies (Kelle, 2001). On the contrary, mix methods designs now serve purposes beyond triangulation (Creswell, 1995), as quantitative and qualitative methods provide differing perspectives on a subject and this is why the use of both may be viewed as complementary rather than validatory (Woolley, 2009). So, a key advantage for adopting a mixed method approach in a research study is that it is likely to assist the researcher in gaining a complete overview of the matter under investigation. As Denzin and Lincoln (1998) stated, “the combination of multiple methods, empirical materials and perspectives in a single study is best understood as a strategy that adds rigor, breadth, and depth to any investigation” (p. 4).

Mixed methods research also is an attempt to legitimate the use of multiple approaches in answering research questions, rather than restricting or constraining researchers’ choices (i.e., it rejects dogmatism) (Johnson and Onwuegbuzie, 2004). Accordingly, it is an expansive and creative form of research, not a limiting form of research; it is inclusive, pluralistic, and complementary, and it suggests that researchers take an eclectic approach to method selection and the thinking about and conduct of research (Johnson and Onwuegbuzie, 2004). However, in order to mix research in an effective manner, researchers first need to consider all the relevant characteristics of quantitative and qualitative research (Bryman, 2006, 2007; Johnson and Onwuegbuzie, 2004). Therefore, gaining an understanding of the strengths and weaknesses of quantitative and qualitative research puts a researcher in position to mix or combine strategies and to use what Johnson and Turner (2003; p. x) call the “fundamental principle of mixed research”. According to this principle, researchers should

⁶⁰ Triangulation—or, more specifically, methods triangulation, in the context of methods alone—refers to the use of more than one method while studying the same research question in order to “examine the same dimension of a research problem” (Jick, 1979; p. 602). The researcher is looking for a convergence of the data collected by all methods in a study to enhance the credibility of the research findings (Hesse-Biber 2010a).

collect multiple data using different strategies, approaches, and methods in such a way that the resulting mixture or combination is likely to result in complementary strengths and non-overlapping weaknesses (see also Mason, 2006).

Effective use of this principle is a major source of justification for mixed methods research because the product will be superior to monomethod studies; for example, adding qualitative interviews to experiments as a way to discuss directly the issues under investigation and tap into participants' perspectives and meanings will help avoid some potential problems with the experimental method (Johnson and Onwuegbuzie, 2004). Overall, the chief rationale for using a combination of sources of data is that a complete picture could not be generated by any one method alone; and since each method has its strengths and weaknesses, combining methods is purported to give the best of both worlds (Chen, 1997). The following two sections discuss the justification for using a mixed methods research approach in this project and provide a description of the specific research design developed, respectively.

3.2.2 Why a mixed methods approach was selected?

As previously noted, my research experience with lay people about water issues resulted in my desire to react against the dominant management tradition in the water field, in which lay peoples' views and lived experiences are frequently devalued and ignored and/or had not typically been a key input into planning and management. So, the purpose was to develop a project where I could gather an overall context within which I could explore in-depth residents' meanings and underlying lived experiences regarding a reservoir and its surroundings, as is an important water resource, to assist subsequent water management. Meeting the dissertation's aim thus required a methodological approach capable of establishing a picture of these, and a mixed methods research approach appeared most promising. Here, it was assumed that in collecting evidence of residents' meanings and lived experiences about the reservoir and its surroundings both quantitative and qualitative approaches would be valuable and that both would give a differing partial picture. In the words of Bryman et al. (2008) "each source of data represents an important piece in a jigsaw" (p. 264). Thus, a methodology was developed in which quantitative and qualitative approaches were used to address different aspects of the research problem, in order that a fuller picture might be developed.

Designing a strategy for combining methods requires a number of decisions to be made concerning, for example: the relative importance accorded to each approach, whether the approaches are to be implemented sequentially or simultaneously, and the stage at which findings from each approach will be combined (Creswell, 2003). Moreover, the research design and methods selected for a research project should be guided by the need to develop a coherent methodology that provides the best hope of answering the project's objectives and questions (Woolley, 2009). That is, the research design links a research purpose or question to an appropriate method of data collection and a set of specific outcomes (Hesse-Biber, 2010a). This is explained in the following section.

3.2.3 Development of an interpretative mixed methods approach

Recently mixed methods studies have become eclectic (Bryman, 2006) with researchers adopting “complex methodological hybridity and elasticity” (Green and Preston, 2005; p. 171). Attempts to chart the area by developing taxonomies for studies combining quantitative and qualitative research in different ways have been made (see, for example, Creswell, 1995, 2003; Creswell et al., 2003; Tashakkori and Teddlie, 2006).⁶¹

Bryman (2006) critiques the typology approach from the point of view that they are largely built on theoretical modelling, rather than a review of research in practice. Maxwell and Loomis (2003) argue that the actual diversity in mixed methods research is far greater than any typology can adequately encompass. Some authors (e.g., Creswell and Plano Clark, 2007; Hesse-Biber, 2010a) then focus, I think more usefully, on the stages one might go through in the process of designing, conducting, and analyzing the data from a mixed methods study. However, Leech and Onwuegbuzie (2009; p. 274) argue that “In any case, whatever framework is used, we recommend that researchers thoughtfully create designs that effectively address their research objectives, purposes, and questions”.

To recapitulate, the research stance is interpretivist, subjectivist, and constructivist. Epistemologically, I am working on the assumption of the existence of multiple truths and multiple valid ‘knowledges’. In terms of ontological considerations, ‘reality’ is viewed as being subjective and, thus, multiple. Axiologically, the stance is taken that all research is value-laden and that biases are always present. Finally, from a methodological perspective, research processes are viewed as being necessarily inductive and emergent in nature (Creswell, 1998). For the interpretative researcher, the social reality is created through the

⁶¹ Nastasi et al. (2010) provide a review of the many different design options that have been presented in the mixed methods literature.

social interactions of individuals with the world around them.⁶² An interpretative approach assumes a subjective reality that consists of stories or meanings grounded in “natural” settings (Hesse-Biber 2010b). Moreover, an interpretative approach enables the researcher to document the subjective nature of real world phenomena, unearth unanticipated findings, and embrace the context of the study (Davenport and Anderson, 2005).

Seen in this light, a qualitative-driven approach was deemed most appropriate, particularly given that the (primary) qualitative research questions require an elucidation of respondents’ subjective views and lived experiences. So, the strategy selected builds on Sharlene Hesse-Biber (2010a) qualitatively-driven mixed methods design ‘templates’, and was carried out guided by a view of sociological inquiry that “privilege the lived experiences of the individuals studied, with the goal of understanding from their perspective” (p. 125). The approach selected was a qualitatively-driven mixed method ‘sequential explanatory design’ in which the collection and analysis of quantitative data is followed by the collection and analysis of qualitative data to generate theory. Creswell and Plano Clark (2007) noted that this design gives priority to the quantitative aspects of the study. However, from the perspective of an interpretative approach, researchers view the quantitative component (quan) as in the service of the qualitative component (QUAL), which is considered primary (Hesse-Biber 2010a). The sociologist Sharlene Hesse-Biber (2010a) explains

A mixed methods project from an interpretative perspective often uses quantitative research as an auxiliary to a primary qualitative methodology as a means of both understanding the broader objective context and contextualizing people’s lived experiences. [That is,] a researcher might employ a quantitative study first to provide a representative sample as input into her or his primary qualitative study in order to produce a more valid study and a more robust way of generating theory. (p. 106) (...) [So,] a sequential design employing a quantitative study first is often used when the researcher seeks to gain perspective on what results seem important and worthy of further in-depth exploration. In addition, a qualitatively driven researcher might employ a sequential design in order to increase the validity of his or her qualitative findings by using the quantitative sample to inform the specific type of subsequent qualitative sample chosen. For example, the findings from a quantitative sample can provide the criteria for determining the particular population selected for a qualitative sample. (p. 184)

⁶² There is an underlying philosophical concern with meaning and how social actors give meaning to their social interactions. The goal of this approach is to ascertain these meanings and, through this subjective understanding, to gain knowledge of the social world (Hesse-Biber, 2010a).

Given the iterative quality of mixing methods from an interpretative approach, employing a sequential design hinges on the research question(s), as well as the ways in which data collection and analysis of both sets of data interact to lead to the asking of additional questions, and so on (Hesse-Biber, 2010b).

The study's research design, shown in Figure 3.1, was driven by the research objectives and questions (see section 2.9). According to Ivankova et al. (2006), mixing in a sequential explanatory design may take two forms: (1) connecting quantitative and qualitative phases of the study through selecting the participants for the second phase and developing qualitative data collection protocols grounded in the results of the statistical tests; and (2) integrating quantitative and qualitative results while discussing the outcomes of the whole study and drawing implications (black square boxes in Fig. 3.1). Such mixing of the quantitative and qualitative methods results in higher quality of inferences (Tashakkori and Teddlie, 2003) and underscores the elaborating purpose of the mixed methods sequential explanatory design (Ivankova et al., 2006; see also Creswell et al., 2006). As an area-based project, an aspect of the fieldwork was the contextualising strategy (i.e., the preliminary fieldwork) which informed the research questions, design selection/development, data collection, analyses and integration of results.

The (quantitative and qualitative) data sets complemented one another, together providing a more complete picture of residents' perspectives. Each phase had a particular aim and addressed different research questions and concerns (as shown in section 2.9). Moreover, it was the case that the second (qualitative) phase depended upon the first (quantitative) phase; that is, the survey provided contextual information about residents' understanding regarding the reservoir and its surroundings and the sample frame for the follow-up qualitative phase. Here, where a study is being conducted with a two-stage design, the contextualization provided in the first phase can be very helpful (Brannen, 2005), as explained later. The study's research design is described briefly next, since chapter 4 will provide further details of each phase of the sociological analysis; namely, data collection and analyses, methodological issues, and linking data types.

The quantitative study, empirically investigates how, conceptualized as a social representation, a reservoir and its surroundings is socially understood by lay residents as well as possible relationships between representations and respondents' socio-demographic characteristics and type of reservoir and its surroundings uses.

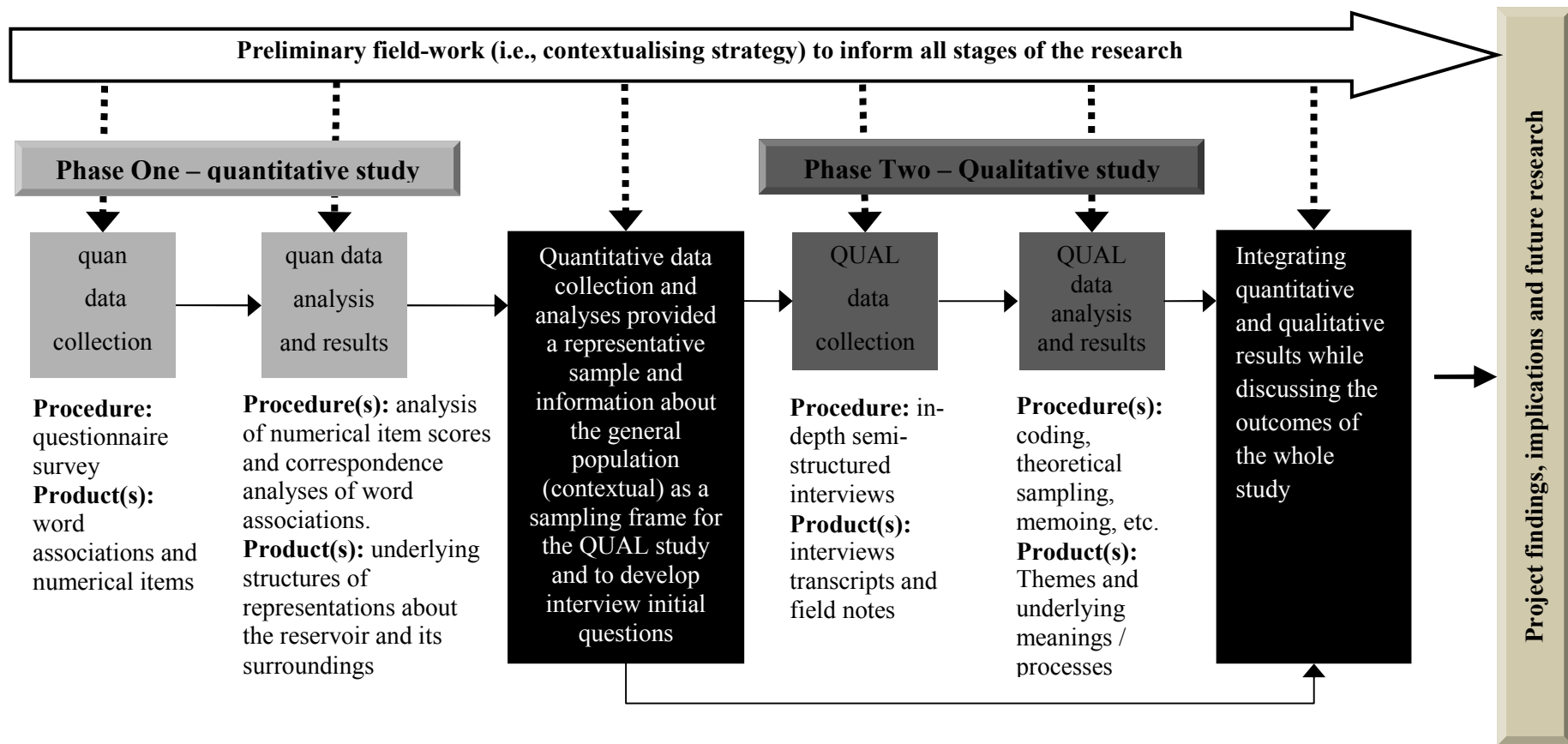


Fig. 3.1 An interpretative mixed methods explanatory sequential design approach for the sociological analysis. Note: dotted arrows illustrate the ‘feedback’ from the preliminary field-work (as explained in the main text). Acronyms: quan, quantitative approach; QUAL, qualitative approach. Note: black boxes denote how the quantitative and qualitative phases were integrated.

A survey questionnaire was conducted, consisting of three word association tasks and questions about socio-demographic and other attributes of respondents. Correspondence analyses identified underlying structures according to word co-occurrence and their associations with socio-demographic characteristics and type of reservoir and its surroundings uses.

The qualitative study, developed a constructivist grounded theory methodological approach (Charmaz, 2000, 2006) which acts as both theory and method in that it allows researchers to analyze their findings by developing “progressively more abstract conceptual categories to synthesize, to explain and to understand” (Charmaz, 1995; p. 28). This ‘Phase 2’ involved a sub-sample derived from the survey sample. Here, individual interviews were carried out to elaborate on the results discovered in the survey and to develop an in-depth understanding of residents’ meanings and lived experiences about the reservoir and its surroundings.

The strengths and weaknesses of this mixed methods design have been widely discussed in the literature (see Creswell et al., 1996; Green and Caracelli, 1997; Creswell, 2003; Moghaddam et al., 2003; Creswell and Plano Clark, 2007; Hesse-Biber 2010a). Briefly, Creswell (2003) refer the straightforward nature of this design as one of its main strengths; that is, it is easy to implement because steps fall into clear, separate stages, and makes it easy to describe and to report. This means that single researchers can conduct this design; a research team is not required to carry out the design (Creswell and Plano Clark, 2007). Another advantage is the opportunities for the exploration of the quantitative results in more detail (Ivankova et al., 2006). The main limitations of this design are length of time and feasibility of resources to collect and analyze both types of data (Creswell et al., 2003; Ivankova et al., 2006).

The reasons for the choice of a qualitatively-driven mixed methods sequential explanatory design are presented next:

- The overarching aim that guided this mixed methods study was to explore how residents understand, give meaning to and experience a reservoir and its surroundings. This fits the aims of qualitative research, which broadly are “to unpack meanings, to develop explanations or to generate ideas, concepts and theories” (Ritchie et al., 2003; p. 82). Therefore, for this study a qualitatively-driven mixed methods design was preferred. Also, Hesse-Biber (2010a;

p. 17) states that “qualitative methodologies⁶³ are a particularly sensitive means of capturing the lived experiences of groups and individuals, especially those often left out of traditional knowledge-building research projects”, which is precisely the focus of the current dissertation. Howe (2004) concurs that such an approach “actively engages stakeholder participation” and ensures that “all relevant voices are heard” (p. 54). Moreover, the logic of such an interpretative design “is not to explain why something happens, but to explore or build up an understanding of something that we have little or no knowledge of. Through piecing together such an understating, we eventually build up a theory” (Henn et al., 2006; p. 15). Once again, this matches the aim of the current dissertation.

- In general, such a qualitatively-driven research design approach privileges qualitative methods, with the quantitative methods component playing an auxiliary role in a mixed methods framework (Howe, 2004). Here, using a quantitative study first provided a sampling frame for the qualitative phase; that is, the quantitative study helped obtaining a representative sample of the target population to subsequently define a subsample of interest based on specific research findings gathered from the quantitative study.⁶⁴ Also, the quantitative data and their subsequent analysis provided a general understanding of the research problem, and the qualitative data and their analysis helped explain and expand those statistical results by exploring participants’ views and lived experiences more in-depth. Accordingly, this explanatory mixed methods design helped me in the development of my dissertation by creating “a synergistic effect, whereby the results from one method ... help[ed] develop and inform the other method” (Greene et al., 1989; p. 259). Similar to Mactavish and Schleien (2004) study⁶⁵, I was able to capitalize on the quantitative findings but remain open and

⁶³ “Qualitative methodologies should not be mistaken for qualitative methods. Qualitative methodologies, as noted earlier, use quantitative as well as qualitative methods. The same rule applies for quantitative methodologies. After all, the method is but the tool; the methodology determines the way in which the tool will be utilized” (Hesse-Biber, 2010; p. 17).

⁶⁴ Similar to Creswell and Plano Clark (2007) ‘participant selection model’ that is used when the researcher needs quantitative information to identify and purposefully select participants for a follow-up, in-depth, qualitative study.

⁶⁵ The purpose of the initial survey was to provide the researchers with a context within which to understand the data they gathered in the second phase of the project. In addition, the survey data also provided them with some answers to a variety of topical questions addressed in the study. They noted that “the questionnaire data provided initial insights about a breadth of family recreation topics and, in turn, became the foundation for the interviews” (p. 126). Note that this sequence of using quantitative survey questions as an aid to the development of a qualitative study is a reversal of the usual emphasis in mixed methods research (Hesse-Biber 2010a). Another goal was to recruit a sample of families with disabled children for the research project, which allowed the researchers subsequently to link their study to the quantitative component of their research. Also, it provided them with a sample that reflected the wider population of families with developmentally disabled children; and it allowed them to explore various theoretical ideas they had regarding disability by using interviews to explore in greater depth theoretically relevant patterns found in the quantitative data. In this sense, the authors were able to capitalize on the quantitative findings but remain open and flexible in the study. They noted that “the interviews

flexible in the study; that is, I used the interviews to explore issues arising from the questionnaires while being flexible enough to accommodate emerging issues and questions.

- Complementarity allows the researcher to gain a fuller understanding of the research problem and/or to clarify a given research result (Hesse-Biber, 2010a). Here, integrating the results of the quantitative and qualitative phases during the discussion of the outcomes of the entire project helped me obtaining a better understanding of how residents understand, give meaning to and experience the reservoir and its surroundings.
- The fact that the researcher conducts the two methods in two separate phases and collects only one type of data at a time (Creswell and Plano Clark 2007), was seen to represent a more manageable project within the scope of a doctoral programme (cf. Maharaj et al., 2009).
- Finally, it should be clear that in this study the two-phase research design was not selected as a method of ‘triangulation’, at least not in the sense of using one part of the study simply to check the ‘validity’ of the other part. However, this two-phase design certainly will intend to enhance the ‘validity’ of the overall analysis, precisely (as referred above) by producing data on different aspects of the research problem so that it can build up a credible overall picture. In this way, the research design aimed to establish a data set capable of bridging the gap between the lived experiences and abstract theoretical conceptions.

Having decided to adopt a qualitatively-driven research design approach, and explained the reasons for this choice, a suitable strategy of inquiry must be selected. The following chapter of this part of the dissertation explains in detail the data collection methods and development of instruments, and data analyses undertaken to address the research questions outlined in section 2.9. It should be noted that in presenting these methods I do not suggest that they are the only and/or best ones ways to explore how people understand, give meaning to and experience the reservoir and its surroundings. I chose these methods because I believed they were fit for the purpose of this dissertation, but this selection process was undoubtedly influenced by personal preference and through the process of self-reflection and serendipitous events during all stages of the research process. I am certain that other researchers would bring different ones to the mix.

were used to intensively explore issues arising from the questionnaires while being flexible enough to accommodate emerging issues and questions” (p. 127).

Chapter 4 –Methods and Procedures

To recapitulate, in mixed methods research, the researcher bases the inquiry on the assumption that collecting diverse types of data best provides an understanding of a research problem (Creswell, 2003). Here, mixed methods research should use a method and philosophy that attempt to fit together the insights provided by quantitative and qualitative research into a workable solution (Johnson and Onwuegbuzie, 2004). Also, the way they use these data will vary according to the phase of the research in which the researcher brings the different data sets into play (Brannen, 2005).

In the adopted mixed method sequential explanatory design each phase has a particular objective and address different research questions and concerns, as explained before (see section 2.9). In the following two sections the developed instruments, data collection and data analysis strategies of each phase of the project are presented. After, the last section explains how the data was integrated in the process of presenting and discussing the results of the project.

4.1 Phase 1: Quantitative Study

In a nutshell, the objectives of this part of the dissertation were to identify underlying structures of the social representation about a reservoir and its surroundings and capture possible relationships between the structural elements of the social representation and socio-demographic and type of reservoir and its surroundings uses. Accordingly, this part of the project adopted a social representations theory perspective to explore the understandings and meanings about a reservoir and its surroundings by means of a word association task as a consultation tool.

The initial stages of my dissertation were not directly concerned with the application of such a theoretical approach. Over time, however, I began to piece together studies about social representations of the countryside and rurality (i.e., Halfacree, 1993, 1994, 1995; Haartsen et al., 2000, 2003; van Dam et al., 2002), which enticed me to explore further the usefulness of this perspective to my dissertation. Here, I became aware of the relevance of the social representations approach since unidimensional concepts and measures are inadequate for capturing the complexity of human judgments about environmental matters (Castro,

2006).⁶⁶ Also, and as mentioned before, many studies describe individuals' understanding of nature and landscape as isolated concepts, such as values or attitudes, neglecting those meanings that are connected to the respondents' daily practices, own experiences, knowledge and emotions (Buijs et al., 2008). In contrast, the quantitative study of this project uses the notion of social representation to describe understandings catchment residents assign to a reservoir and its surroundings, as it is a useful way to explore the content of place-related knowledge and meanings, as well as matches the logic of the adopted interpretative approach, as explained next.

4.1.1 Theoretical approach: a social representation perspective⁶⁷

The social representations theory provides a framework for conceptualizing 'common sense' theories or broad branches of knowledge that circulate in contemporary society about socially meaningful objects (Moscovici, 1984). A social representation is a system of values, ideas, and practices with a two-fold function: they enable people to master their material and social worlds and to communicate (Wagner and Hayes, 2005). Social representations theorize knowledge in relation to the cultural, historical and social frameworks of the context under consideration (Wagner et al., 1996). Therefore, the social representation about a reservoir and its surroundings are grounded in people's knowledge, experience and practices. Catchment residents are thus viewed as 'communities of knowing' (cf. Boland and Tenkasi 1995).

Overall, conceptualized as a social representation, the reservoir and its surroundings becomes more than an individual's opinion or perception; it is an understanding constructed and shaped by the exchange and interaction processes (e.g., discussions with friends and family) that operate within society (Wagner and Hayes, 2005).⁶⁸ These representations are the terms through which people understand, explain and articulate the complex social and physical environment of the reservoir and its surroundings of which they are part.

⁶⁶ To recap, a social representation is a system of values, ideas and practices that define an object and are, importantly, developed and shared by a group. This is what distinguishes social representations from individual (cognitive) representations.

⁶⁷ The reader is referred to some excellent textbooks covering the social representations theory (e.g., Farr and Moscovici, 1984; Abric, 1994; Wagner and Hayes, 2005).

⁶⁸ There are parallels between the American school of symbolic interactionism and the French school of social representations: both share "a dynamic processual view of human behaviour" (Deutscher, 1984; p. 96); both are concerned with the 'implicit' aspects of behaviour and put an emphasis on the role of symbolic processes and language in the definition of social reality (Walmsley, 2004); both emphasize discovery based on direct empirical investigation of social phenomena rather than verification and theory testing; and both are concerned with social situations, or "lesser units than total societies or social institutions" (Deutscher, 1984; p. 97). In spite of these parallels between the American school of symbolic interactionism and the French school of social representations, there is little evidence of interrelated scholarly writing or research (Walmsley, 2004).

Accordingly, this study focuses on ‘lay’ representations, which encompass the commonplace interpretations (i.e., the words and concepts understood and used by people in everyday talk) of the reservoir and its surroundings. Representations are developed by drawing on and incorporating existing representations of related objects through the process of ‘anchoring’⁶⁹ (Buijs et al., 2008). Namely, people attribute certain characteristics to a reservoir and its surroundings partly based on representations of more familiar concepts like nature, landscape and cultural diversity.

According to the theoretical framework developed by Doise et al. (1993, 1999; see also Spini and Doise, 1998; Clemence, 2001)⁷⁰, even if members of a given population share common understandings and views about a certain social issue/object, the members could vary in their adherence to various aspects of the social representation and hold different positions. In this sense, social representations are considered as organizing principles of individual differences or positions, anchored in collective symbolic realities, in social experience and in beliefs about social reality. Analyzing how individuals vary in their adherence to the various aspects of the social representation is an important methodological device for linking the study of a common reference system and individual differentiated anchoring in the social representation components (Doise et al. 1993, 1999). For example, the elements of a representation identified by a word association task can be analyzed by a correspondence analysis (see Wagner et al., 1996, 1999; Hovardas et al., 2009)⁷¹, which not only detects a link between the various social representation components but also sheds light on the association between these representational components and individuals characteristics (such as age, gender, occupation, or educational categories) of a given population (Doise et al., 1993). In this regard, Buijs and colleagues (2006, 2008) showed that representations of nature and landscape interrelate to a large extent with socio-demographic variables like age,

⁶⁹ According to Billing (1988), anchoring is a universal feature of social knowledge systems. Here, social representations, as systems of concepts, classes and theory-like relationships, permit or even demand social objects and stimuli to be classified into the existing system of understanding (Wagner and Hayes, 2005). This mechanism enables us to anchor foreign ideas into known contexts, by reducing them to commonplace categories and images, classifying and naming them (Doise, 1992). Thus, anchoring has primarily a stabilising effect on social representations and draws on shared knowledge from the past and/or the culturally familiar (Wagner and Hayes, 2005).

⁷⁰ Here, Doise et al (1993) aims to highlight the underlying principles governing social representations and the anchoring of such shared knowledge in pre-existing sociological and psychological systems. That is, data is collected from individual minds, however, the theory encompasses the interdependence between individual cognition and the socially shared representations reflecting social groups (Laszo, 1997).

⁷¹ There are several other methods that have been used for a structural decomposition of word associations, such as multi-dimensional scaling (Spini, 2002). Wagner and Hayes (2005) argued that “which of these methods is best for the present purpose is a tricky question. Whatever decision is taken, it will need to be well argued in theoretical and methodological terms” (p. 333).

education and occupation, as well as types of uses of the landscape (i.e., farmers differ significantly in their views on nature/environment as compared to, for example, recreationists or birdwatchers). This is the approach used in this study, as will be explained later in section 4.1.6.

Since ‘place’ matters (i.e., locations are in many ways unique in terms of problems, solutions and the needs of local communities), successful water management should recognize the importance of local people’s knowledge (besides other stakeholders) and provide an opportunity for meaningful catchment consultation in the development of water management plans (Matias, 2010, 2012). In this regard, a social representation approach values local knowledge by paying attention to the lived dimensions of knowledge and the traditions in which they are grounded (Jovchelovitch, 2007).

To recapitulate, social representations theory is an approach towards analysing systems of beliefs, images, and symbols, in one word ‘representations’ existing in social and cultural groups which are not only representations describing and explaining a social object, but representations primarily in and for everyday practice (Wagner and Hayes, 2005). In the words of Wagner (1997a) “social representations theory specifically aims at capturing local knowledge of modern societies. It conceives of local knowledge of social groups as rational in its own right and as correct by the standards of the groups’ everyday practice” (pp. 5-6). In this sense, social representations theory can be understood as a constructionist approach towards social life (Wagner, 1996, 1997a), which is epistemologically compatible with the overarching interpretative approach assumptions of this dissertation.

4.1.2 Construction and content of the questionnaire

Questionnaires are criticized for reproducing the researcher’s view of the world, their assumptions, values, beliefs, which in combination with the lack of any context depth results in at best very partial data (Denscombe, 1998; Henn et al., 2006), and thus offering little or no insight into the participants’ lived experience (Galasiński, 2008). Moreover, the medium of the questionnaire reduces the participants to transparent deliverers of information and does not allow seeing them as socially situated actors negotiating troublesome or problematic categories or experiences (Galasiński and Kozłowska, 2010). Mishler (1991) put it aptly by saying that “in adopting an approach that is behavioural and anti-linguistic, relies on the stimulus-response model, and decontextualizes the meaning of responses, researchers have attempted to avoid rather than to confront directly the inter-related problems of context,

discourse and meaning” (p. 27). Robbins (2002; p. 213) added to this critique arguing that questionnaire data are an “unknown mixture of politeness, boredom, and a desire to be seen in a good light” rather than offering insight into what the respondents actually think or feel.

When the qualitative critique is made within the antipositivist paradigm, the questionnaire and its problems, such as those mentioned previously, are criticized as problematic assumptions underpinning the method of questionnaire design (Galasiński and Kozłowska, 2010). Contrary to the idea that questionnaires are designed to discover and verify theories about reality, the qualitative perspective rejects this ontological assumption and points out that reality is socially constructed (Denzin, 1989b; Denzin and Lincoln, 2000). Moreover, the relationship between the researcher and what is studied and, crucially, the situational constraints that shape inquiry are seen as critical. In her critical review of literature, Speer (2002) proposes that traditional social scientific research methods cannot be seen as a neutral mechanism to collect people’s views and opinions but are pieces of interaction in their own right.

Here, I assumed that social reality is constructed through and within language and that every language use designed to represent reality necessarily entails decisions as to which aspects of that reality to include, and decisions as to how to arrange them (cf. Galasiński, 2008). Each of these selections, both in content and the lexico-grammatical form, made in the construction of a message carries its share of these ingrained values, so that the reality represented is ideologically constructed (Hodge and Kress, 1993). No text, spoken or written, including such ‘scientific’ instruments as questionnaires, presents reality in a neutral or objective way; representation is never of reality ‘as it really is’, rather it is always looking at it through the tinted lens of ideological assumptions (Fairclough, 1992; Barker and Galasiński, 2001).

Seen in this light, I chose to adopt a hybrid questionnaire instrument that allowed the collection of data using not only precoded response categories but also some open-ended questions such as an indirect associative technique (i.e., the word association technique) when investigating the representations catchment residents assign to the reservoir and its surroundings. Here, survey questionnaires have been extensively used to extract a description of representations pooled across individuals; in this kind of study, it becomes clear that whenever we study individuals, we are simultaneously looking at how they relate to others and to their group (Wagner and Hayes, 2005).

The questionnaire was developed largely from my experience gained from investigations about water issues in the study region (e.g., Matias and Boavida, 2005; Matias et al., 2008) and in East Anglia, UK (Matias, 2003; Turner et al., 2004), as well as in cooperation with studies on representations of the countryside (Halfacree, 1993, 1995; Haartsen et al., 2000, 2003; van Dam et al., 2002), feedback from other researchers, and input from the pilot testing of the questionnaire (as discussed later in section 4.1.3). I also exchanged emails with several academics in the UK, Netherlands, Switzerland and USA who have experience in this area. The questionnaire was organised into six sections (see the actual questionnaire as Appendix A). Nevertheless, because of page limits and according to the study objectives (see section 2.9), only some results of the questionnaire survey were used in this dissertation. The operationalization of concepts is presented below:

- Representations about the reservoir and its surroundings - To address people's representations, a word association task⁷² was selected because ideas expressed within such a procedure are considered to be spontaneous productions subject to fewer constraints than typically imposed in interviews or closed questionnaires (Wagner, 1997b, 1998). The technique of word associations is used as a complement to traditional questionnaire techniques (Wagner, 1997b). Word association tasks have frequently been used for the study of social representations of the countryside (Halfacree, 1995; Haartsen et al., 2000, 2003; van Dam et al., 2002), nature, environment and ecotourism (Hovardas and Stamou, 2006a, b).

A word association task is particularly appropriate here because it allows people's understandings and meanings to be obtained in a non-confrontational manner, providing a 'safe space' for people to reflect on their own individual experience and express any concerns they may not feel comfortable bringing to the attention of a group discussion. It also can be applied to large samples, thereby surpassing the number of respondents that can be engaged through in-depth interviews. Overall, it is community oriented in that it is open to participants from all sectors of the study area; the data collection process is not overly long and/or complex as, for example, in cognitive mapping; and promotes the understanding of multiple

⁷² Word associations are a special form of open questions which are easier to analyse statistically than other forms of open questions which require the respondents to write down sentences (Wagner, 1997b). It is based on the assumption that giving a stimulus word and asking the respondent to freely associate what ideas come to her or his mind gives relatively unrestricted access to mental representations of the stimulus term (Wagner et al., 1996; Wagner, 1997b; Hirsh and Tree, 2001; Hovardas and Korfiatis, 2006); and are able to grasp affective and less conscious aspects of respondents' mindsets better than methods that use more direct questioning (Wagner, 1997b).

(or even contradictory) views. This enabled the full variety of meanings about the reservoir and its surroundings to be explored.

An important point in questionnaire design is that questions do not only retrieve information from respondents but that they also convey information to the respondents (Galasiński and Kozłowska, 2010). So, the location of word association tasks within a questionnaire requires some reflection. Wagner (1997b) explains

Consider the question “When did you first learn about genetically modified food?” This sentence makes the respondent aware of the fact that genetically altered food exists, even if he or she never has heard of it before. When you place a word association task on biotechnology after this question your respondent most certainly will produce the word <food> as one of his or her ideas. It is therefore a good rule to place word associations right at the beginning or as close to the beginning as possible. (p. 4)

That is why the word association task section was placed right after the initial section about information on place of residence and knowledge of the reservoir and its surroundings. Moreover, keeping in mind that one never should over-stretch the respondents’ willingness to fill in questionnaires if one is interested in valid data three such tasks per questionnaire are probably a maximum (Wagner, 1997b), as was the case in this study.

As mentioned earlier, from a water management point of view, a reservoir must be treated as an ‘ecosystem’ consisting of a number of interacting subsystems, of which the “Lake” and “Catchment” are main subsystems (Wetzel 2001). Here, based on preliminary field-work, I gained an insight into people’s everyday way of talking not only about the reservoir and its surroundings as a whole but also about the ‘Lake’ and ‘Catchment’ elements alone. Therefore, three interrelated analytical dimensions (by using three stimulus terms) of the reservoir and its surroundings were considered to reveal the full array of structural elements of the social representation held by catchment residents regarding this freshwater ‘ecosystem’. The approach was pre-tested in a pilot survey at the study area (N = 32) with success, as explained in 4.1.3.

Respondents were asked (always in the same order) to give the three words or small phrases that first came to mind associated with: ‘Odivelas Reservoir and surrounding area’ (i.e., considered to be the stimulus term referring to the reservoir and its surroundings as a whole), ‘Odivelas Reservoir’ (i.e., considered to be the stimulus term referring to the ‘Lake’ element of the reservoir and its surroundings), and ‘Reservoir surrounding area’ (i.e.,

considered to be the stimulus term referring to the ‘Catchment’ element of the reservoir and its surroundings).⁷³ Respondents did not know the content of the subsequent questions before answering the preceding question, and they were free to repeat any word(s) for each subsequent association exercise. Hereafter, each stimulus term will be referred, respectively, as “Reservoir and its surroundings”, “Lake” and “Catchment”.

- Reservoir and its surroundings uses - The demand for new uses of landscape such as leisure, recreation, appreciation of traditional landscapes and activities that lead to quality of life, is increasing (Surová and Pinto-Correia, 2008). For example, Buijs et al. (2006) showed that the way people perceive landscape (e.g., anglers, hunters, or birdwatchers) is strongly determined by the way they are involved. So, to understand the landscape management requirements, knowledge about the landscape preferences of users is needed in order to ensure that the management responds to the changing demands on the landscape and the needs of modern society (Surová and Pinto-Correia, 2008). Accordingly, respondents were asked about the frequency of their uses of the reservoir and its surroundings on a 5-point Likert-type scale (ranging from 1 = ‘Never’ to 5 = ‘At least twice a week’) and to state the time of year they undertake in each activity.

- Socio-demographic characteristics - respondents were asked about their age, gender, educational attainment, occupation, and environmental and social groups’ membership (with an open-ended question).

4.1.3 Piloting of the questionnaire

Questionnaires are defined as “self-reported measuring instruments to assess people’s abilities, propensities, views, opinions and attitudes, while scales are instruments which allow insight into what people feel or believe about something” (Payne and Payne, 2004; p. 292). However, there are two main issues about this definition (Galasiński and Kozłowska, 2010): first, it assumes that respondents have clear and well-formed opinions or views, know what they feel or believe, and are able to transform them into the categories offered by the instrument; second, the instrument is actually able to accurately capture all those views, opinions, or feelings in their complexity.

Problems that arise from such issues are treated as those to do with the instrument’s validity (i.e., the relationship between the responses and the reality the responses were

⁷³ The three Portuguese terms (‘Barragem de Odivelas e área envolvente’, ‘Barragem de Odivelas’ and ‘Área envolvente da Barragem de Odivelas’, respectively) and the associations were literally translated into English.

intended to capture) (Galasiński and Kozłowska, 2010). This includes situations in which (Gomm, 2004: 152-153):

- the participant does not know the right answer but gives an answer nonetheless;
- the participant gives an inaccurate answer which s/he thinks is accurate;
- the participant knowingly gives an inaccurate answer in order to present a favourable impression;
- the participant is unwilling to give (what s/he thinks is) the right answer, but gives another, perhaps one which the respondent thinks the interviewer wants;
- the participant refuses to give any answer at all;
- the participant doesn't interpret the question as it was intended and gives an answer based on a different interpretation, unbeknown to the researcher.

Nevertheless, such technical issues can be dealt by careful attention to design and measurement (de Vaus, 2002). For example, item wording can be clearer, the process of completion can be simplified, and the response options can be better matched to the way people think about the topic at hand (Galasiński and Kozłowska, 2010). Therefore, once a questionnaire has been developed, each question and the questionnaire as a whole must be evaluated rigorously before final administration; however, pilot testing of questionnaires is probably one of the most ignored suggestions regarding questionnaire design (de Vaus, 2002).

The pilot testing strategy was used (see Fig. 4.1), based on David de Vaus (2002: 114-118) approach, to improve the internal validity of the questionnaire (van Teijlingen and Hundley, 2001) by: asking the subjects for feedback to identify ambiguities and difficult questions; administer the questionnaire to pilot participants in exactly the same way as it would be administered in the main study; record the time taken to complete the questionnaire and decide whether it is reasonable; discard all unnecessary, difficult or ambiguous questions; assess whether each question gives an adequate range of responses; check that all questions were answered; re-word or re-scale any questions that were not answered as expected. Here, I only discuss the main issues addressed in 'Stage 3' of pilot testing:

- The input gained from participants about the way they talk regarding the reservoir and its surroundings as a whole but also regarding the 'Lake' and 'Catchment' elements alone made me realise the importance of using three interrelated analytical dimensions (by using three

stimulus terms) to reveal the full array of structural elements of the social representation held by residents regarding this freshwater ‘ecosystem’. Here, respondents stressed that such an approach made them feel comfortable about freely expressing their thoughts. Overall, the word association approach was pre-tested with success, since all pilot participants considered the task to be simple, inclusive, understandable, and stimulating.

- Initially, the scale about the reservoir and its surroundings uses was a replica of Matias et al. (2008) study (i.e., never/rarely/sometimes/often/always). However, some of pilot participants found the scale ambiguous. Therefore, the scale was re-worded to reflect the context of use of the study area (i.e., never/once a month/once fortnightly/once a week/twice a week or more).

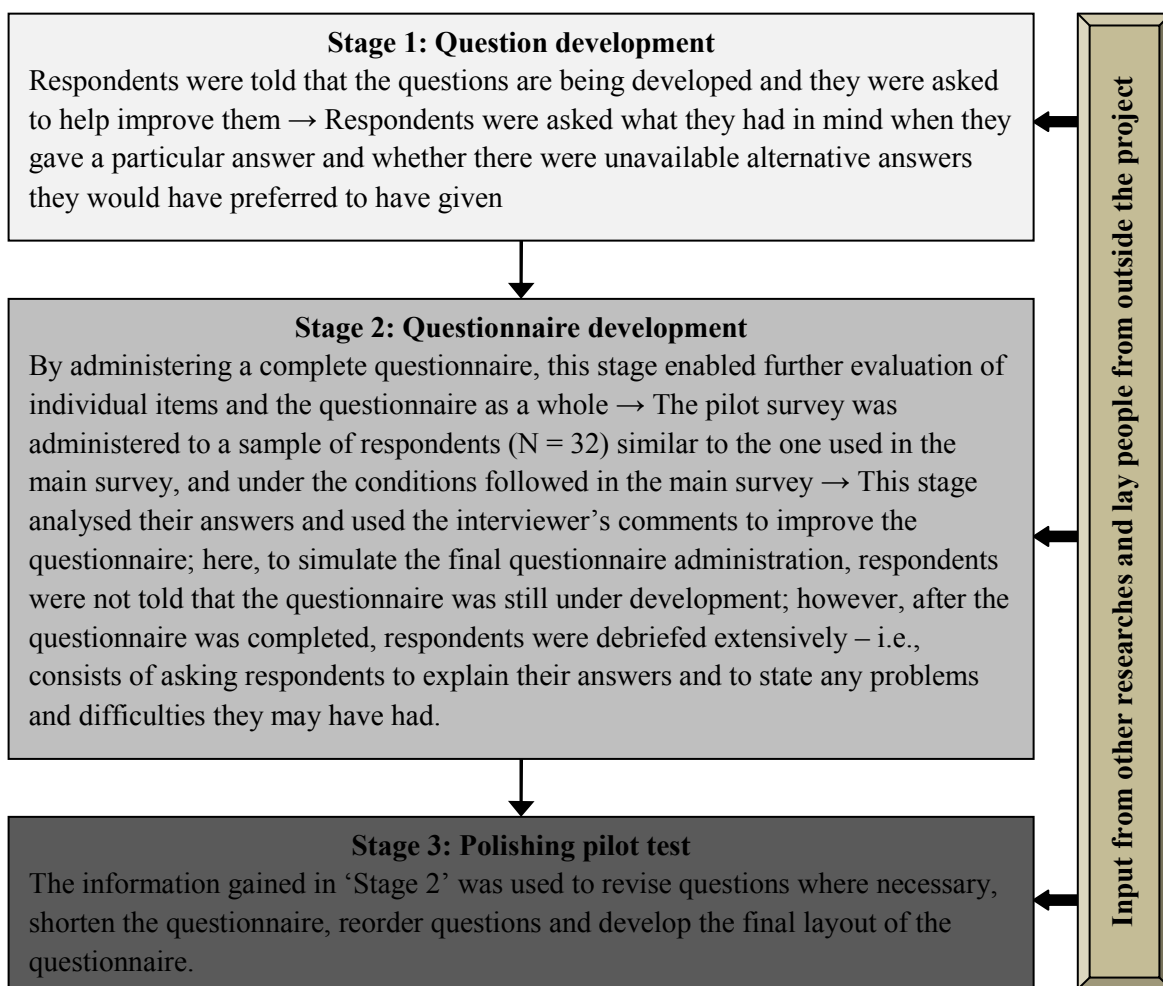


Fig. 4.1 Description of stages in pilot testing of the questionnaire (Adapted from: de Vaus, 2002).

- Finally, one important concern about pilot testing is that of contamination (van Teijlingen and Hundley, 2001). To avoid contamination in this study, the data from the pilot study were not included in the main results, and none of the pilot participants took part of the main study.

4.1.4 Sampling criteria and procedure

To recapitulate, the WFD Guidance on Public Participation (European Commission, 2003) stress that while consultation does not concede any share in decision-making, provides an opportunity for the identification of water management issues by learning from knowledge, experiences, and ideas of citizens and stakeholders. The focus of this quantitative phase of the project was to identify the structural elements of the social representation regarding a reservoir and its surroundings. A decision was therefore made to work with catchment residents (aged over 16 years) instead of stakeholder groups (i.e., organizations, institutions) because: (1) participants of such stakeholder groups may not be representative of other interests or the broader public; and (2) such an approach would result in under-representation of certain social groups (e.g., women, elderly people, recreational users, students) in the research sampling process.

In this context, participants do not act as formal representatives of groups or interests, but as lay assessors reflecting a cross-section of the community. Individuals take part as members of society, in their capacity as citizens (Meadowcroft, 2004). Since there can be considerable discrepancies between managers' (decision makers) and stakeholders groups' beliefs, and values held by the public (Miller and McGee 2001), investigating residents' views about the reservoir and its surroundings was considered essential to inform subsequent water management (Matias, 2010).

A stratified random sample of residents (Kalof et al., 2008), through face-to-face interviews, was drawn to ensure representation from all segments of the catchment population based on age, gender and education. First, I organized the sampling frame into homogeneous groups (strata) before selecting elements for the sample (cf. Ruane, 2005; as shown in Appendix B). This step increases the probability that the final sample will be representative in terms of the stratified groups (Kalof et al., 2008). After, I used proportionate stratified sampling (Ruane, 2005), which enabled me to select sample elements in proportion to their actual numbers in the overall catchment population. For instance, the catchment population is 52% female and 48% male. So, for every 100 residents interviewed I randomly selected 52 women and 48 men, thereby achieving a sample that accurately mimics the gender

distribution of the catchment population.⁷⁴ Here, this approach was used intertwined for gender, age and education strata. Accordingly, respondents were individually approached and invited to participate in the study on the street, door-to-door and in public spaces, through a random walk at each of the four villages of the catchment, at different hours of the day and on different days of the week.

4.1.5 Data collection

Catchment residents were surveyed from August to September 2008. Respondents were approached individually through face-to-face interviews, and were informed that their participation in the survey was completely voluntary, that their identities would be kept confidential, and that they could skip or refuse any questions they did not feel comfortable answering. They were also told that there were no right or wrong answers, so that they could answer with their own, honest impressions. After a brief introduction of the survey aims they answered the questions orally.

4.1.6 Data analysis

Basic descriptive statistics are provided to describe study participants. To assess the representativeness of the survey sample, comparisons between socio-demographic characteristics of the Odivelas catchment resident population and survey respondents were performed using the χ^2 test for consistency, in order to assess the significance of the differences between the two distributions spread over the respective classes (de Vaus, 2002). For all statistical tests the type-1-error probability α was defined as $p \leq .05$. The statistical analyses were performed with SPSS® version 15.0.

Correspondence analysis⁷⁵

For this study, I used correspondence analysis (CA), an inductive statistical technique that is suitable for exploring relations among categorical variables (Clausen, 1998). The CA is a statistical technique applicable to different forms of categorical data (such as counts, preferences, ratings, and zero/one "dummy" variables), which make it a versatile technique in

⁷⁴ I recognize that one problem is that sample size may need to be large to ensure that all subgroups (or strata) in the population are adequately represented. But since my sample frame was relatively small (i.e., 2480 people), this/it was not a problem. Also, the willingness of people to participate in my study was another aid to my sampling strategy and success.

⁷⁵ The reader is referred to some excellent textbooks covering the theory of CA (e.g., Weller and Romney, 1990; Greenacre, 1994, 2007; Greenacre and Blasius, 1994).

many areas of research (Greenacre and Blasius, 1994). The method is particularly helpful in analysing cross-tabular data in the form of numerical frequencies, and results in an elegant but simple graphical display which permits more rapid interpretation and understanding of the data (Greenacre and Blasius, 2006).

CA proceeds differently from many standard exploratory multivariate techniques which seek to define a valid, distinct, dependent variable which might then be explained through different combinations of independent variables (see for example, Chan and Goldthorpe, 2007). Rather, it proceeds inductively from a contingency table, not by providing summary statistics, but by summarizing the associations between a set of categorical variables (Greenacre, 2007). Here, a significant advantage of CA is that it permits results to be presented graphically (Clausen, 1998). By overlaying the categorical variables the interconnections can be usefully unravelled in a readily accessible form which does not demand statistical expertise (Gayo-Cal et al., 2006). Also, the CA does not try to confirm or reject hypotheses about underlying processes that generated the data (Clausen, 1998). Accordingly, CA is purely an exploratory technique, and that statistical significance of relationships should not be assumed (Hair et al., 1998).

CA contains three basic concepts, that of a profile point in multidimensional space, a weight (or mass) assigned to each point and finally a distance function between the points, called the χ^2 distance (Greenacre, 1994). After transforming the frequencies of variables into percentages relative to the row or column totals, also called profiles, the analysis makes it possible to compare the magnitude of occurrence among categories directly. While profiles, considered to be mathematical vectors, explain the proportional frequencies of categories only relative to the group total, masses are values that adjust different numbers in the group totals and are obtained by dividing each group total by the grand total. Distances between points in space are computed as χ^2 distances, which are equivalent to Euclidean distances with an adjustment for proportions in frequencies of categories using profiles (cf. Weller and Romney, 1990).

Preparing word associations for analysis

Plurals and adverbs were pooled when responses had the same stimulus term. For example, 'friend' and 'friends' and 'stroll' and 'strolling' were coded as 'friend' and 'stroll', respectively. The same guidelines were followed for tense and grammatical form. This was

done because these words should all have the same underlying meaning and therefore be the same association (Hovardas and Korfiatis, 2006).

After, the words (i.e., associations) were cleaned and homogenized into synonymic categories (Wagner, 1997b). For example, stated associations referring to physical activities (e.g., ‘swimming’, ‘motocross’, ‘jogging’, ‘hunting’) were summarized as ‘recreational activities’; words referring to respondents’ leisure time (e.g., ‘holidays’, ‘leisure’, ‘spare time’) were summarized as ‘leisure’; words like ‘dating’ and ‘sex’ were coded as ‘get-together’; and related words were coded as the same (e.g., ‘irrigation’ and ‘irrigated land’, ‘poor water quality’ and ‘dirty water’); however, the association ‘bad quality for bathe’ was considered a specific category because it evokes the influence of water quality in a specific use of the area. Here, the associated words with each stimulus term stated twenty times or more were used in the analysis (i.e., 84.1% of associations with “Reservoir and its surroundings”, 68.2% of associations with “Lake”, and 78.2% of associations with “Catchment”).

Correspondence analysis of word associations

Each association exercise produced slightly differing words: “Reservoir and its surroundings” produced 21 words, “Lake” produced 13 words, and “Catchment” produced 16 words that partly overlapped.⁷⁶ Three matrices were constructed based on the co-occurrence of words elicited with each stimulus term. Each matrix was subject to a CA that is suitable for representing word associations spatially (i.e., the semantic space) so that the results can be visually examined for structure (Doise et al. 1993). That is, the positions of words relative to one another in the semantic space can be called the ‘structure’ of the associations (Wagner, 1997b). So, dimensions derived from this analysis cluster words according to their co-occurrence; two words stand closer in space if they are associated within the answers of several respondents, and are located farther away from other words to which they are less associated (Wagner and Hayes, 2005). Here, the closer two row points in the space, the more similar are their profiles. Additionally, the higher a row’s margin sum (i.e. its mass) the closer it appears to the origin of the coordinates. In practice this means that the most consensual word will be the central one.

Each projected ‘map’ of the relationships between the word associations suggested a three-cluster structure. To verify the suggested ‘types of representations’ of each analysis, the

⁷⁶ Four words overlapped between the first two stimulus terms, 11 words between the first and third terms, two words between the second and third terms, and two words overlapped between all three terms.

object (i.e., words) scores generated by the CA were entered in a Hierarchical Cluster Analysis (Squared Euclidean distance and Ward's aggregation method) and then in a K-Means Cluster Analysis to validate and optimize the three-cluster solution, respectively (Carvalho, 2008). In addition, social and other attributes of respondents can also be projected into the word-correspondence space; the positions of these attributes relative to the word clusters provide information about which class of respondents produced which word clusters about each stimulus term (Wagner and Hayes, 2005). So, respondents' socio-demographic characteristics (i.e., age, gender, education and occupation) and type of reservoir and its surroundings uses were entered into each CA as 'supplementary' variables to explore how they relate with the semantic space. The respective categories are placed by the CA at the centre of the subset of active modalities (i.e., words) to which they are most closely associated; however, the relations of the 'supplementary' variables between themselves must be ignored because they were not used in axis construction (Doise et al. 1993). The CAs were performed with SPSS® version 15.0.

4.2 Phase 2: Qualitative Study

To recapitulate, the research questions guiding this study were:

- How residents describe their experiences about a reservoir and its surroundings?
- What are the outcomes (i.e., meanings) of these experiences about the reservoir and its surroundings?
- How (if they do) the outcomes of experiencing the reservoir and its surroundings influence residents' everyday lives?

As explained before in section 3.2.3, this 'Phase 2' of the project adopted a qualitative research framework. However, researchers must have a compelling rationale for choosing a qualitative research framework (Creswell, 1998). Accordingly, in this study, (1) the nature of the research questions, (2) the level of research done on the topic to date, and (3) the aims of the research, support the use of a qualitative research framework:

(1) The research questions driving the current qualitative study are exploratory and open-ended. They focus on gaining an in-depth insight into residents' views and lived experiences of a given phenomenon. Questions with these characteristics lend themselves to a qualitative

research approach (Creswell and Plano-Clarck, 2007). Avis (2005) remarks that “the research questions that drive qualitative research concern the need to provide an understanding of social behaviour by exploring people’s accounts of social life” (p. 4), which is precisely the focus of the current research questions. Furthermore, Creswell and Plano-Clarck (2007: xx) state that qualitative research questions “tend to inquire less about ‘whether’ or ‘how much’, but more about ‘what’, ‘how’, and ‘why’”. Once again, this matches the current research questions.

(2) Qualitative research is particularly useful for exploring phenomena about which relatively little is known (Creswell, 1998; Henn et al., 2006). As has been highlighted in Chapter 2, residents’ meanings and lived experiences about a reservoir and its surroundings have been given little attention to date, particularly in the Portuguese context. As such, a qualitative approach is an appropriate choice.

(3) The aim of the current study is to gain a deep understanding of a specific phenomenon, in this case residents’ views, meanings and lived experiences regarding a reservoir and its surroundings. This fits the aims of qualitative research, which are “to gain an understanding of the nature and form of phenomena, to unpack meanings, to develop explanations or to generate ideas, concepts and theories” (Ritchie et al., 2003; p. 82). This again matches the aim of this qualitative study.

4.2.1 Selection of a qualitative strategy of inquiry

Creswell (1998) proposes five main qualitative research approaches that represent long-lasting traditions in social science: Biography, Phenomenology, Grounded Theory, Ethnography and Case studies. Despite these differing perspectives, Miles and Huberman (1994: 6-7) posit that qualitative research strategies share common features: qualitative research strategies allow for multiple interpretations of the data; they engage with a given ‘field’ or ‘life situation’ with the aim of achieving a holistic overview of the context; they seek to capture data on the perceptions of the local actors ‘from the inside’; and they elucidate the ways in which people in particular settings come to understand, account for, take action, and otherwise manage their day-to-day situations.

Having examined different strategies of inquiry it was decided that a ‘grounded theory’ methodology (Glaser and Strauss, 1967) would be most appropriate, based on the research questions and aims, the viability of using such a methodology within the specific research context, and the specific guidelines for data analysis which it offers. As has been

stated, the current research questions are flexible and open-ended, which are characteristic of grounded theory research questions (Smith and Bailey, 1997). Also, grounded theory relies on listening carefully to the research participant's view of the subject in question, and following the tenets of the method allows theory to emerge from the data. The researcher is obliged to be open to understanding how the participant conceives of the subject even though they (the researcher) enter studies with an interpretation of the subject based on their biases and prior research (Glaser, 1978, 1998). These goals appear to be congruous and particularly appropriate to this study, which aims at developing a theory about residents' lived experiences and meanings regarding a reservoir and its surroundings. This methodology is explored in detail next.

4.2.2 Grounded theory as a research methodology

Grounded theory was first proposed by Glaser and Strauss (1967), who defined it as a research methodology facilitating “the discovery of theory from data” (p. 1). In grounded theory a new ‘theory’ is developed from empirical data; that is, the researcher does not enter the research environment with predetermined hypotheses or a specific theoretical framework (Cutcliffe, 2000). As such, grounded theory privileges the data rather than extant theoretical concepts. This is what is known as an inductive or grounds-up approach to data analysis; one begins with general observations and through an ongoing analytical process creates conceptual categories that explain the topic under study (Marvasti, 2004). Overall, the goal of grounded theory is to develop an explanatory theory of basic social processes, studied in the environments in which they take place (Glaser and Strauss, 1967). Before examining the procedures of grounded theory, it is useful to recognise the context within which it was developed.

The origins of grounded theory

Grounded theory originates from sociology, specifically from symbolic interactionism (Dey, 1999) and was developed and established nearly 40 years ago by Barney Glaser and Anselm Strauss. As Charmaz (2000) has put it, “grounded theory combined Glaser’s ‘positivistic methodological training in quantitative research from Columbia University’ with Strauss’s Chicago school ‘pragmatist philosophical study of process, action and meaning’” (p. 512). Their 1967 book, *The Discovery of Grounded Theory*, laid out a set of procedures for the generation of theory from empirical data. This seminal work was conceived at time when

symbolic interactionism⁷⁷ was suffering a decline, partly due to what some saw as its celebration of liberal individualism (Gary and James, 2006), but principally due to pressure from “the ‘hard’ methods such as statistical method and structural functionalism on the one hand, and competition from the ‘soft’ side in the form of ethnomethodology ... on the other” (Alvesson and Sköldbberg, 2000; p. 13); as explained in more detail next.

Grounded theory was developed as a response to two principal factors (Dunne, 2011). Firstly, it represented a revolt against the dominance of a quantitative ideology pervading social science research during the 1960s (Denzin and Lincoln, 2005). This meant that qualitative research was often derided as “impressionistic, anecdotal, unsystematic and biased” (Charmaz, 2006; p. 5), therefore occupying a subordinate status within social science research (Dunne, 2011). The development of grounded theory was a response to this criticism, as McGhee et al. (2007; pp. 334-335) explain, grounded theory offered a way of “challenging the status quo in social research, as contemporary studies were dominated by the testing of ‘grand theory’ and were deductive in nature”. As such, grounded theory can be seen as a reaction to external forces, in this case the hegemony of quantitative research methods during that particular period (Dunne, 2011).

Secondly, researchers who in principle espoused qualitative inquiry nonetheless recognised a lack of systematic guidelines, which would improve the quality of research and also counter the criticisms of quantitative thinkers (Dunne, 2011). Glaser and Strauss’ frustration with the generation of theories from a priori assumptions constituted a catalyst for the development of a method that could instead generate theory from data obtained in the ‘real’ world (Dunne, 2011). By combining “the depth and richness of qualitative interpretive traditions with the logic, rigor and systematic analysis inherent in quantitative survey research”, grounded theory constituted a pioneering research approach (Walker and Myrick, 2006; p. 548). It was an attempt to “liberate theory from the seductive comforts of the armchair and empirical research from the uninspiring and restrictive confines of analysing variables or verifying hypotheses” (Dey, 2004; p. 82). According to Glaser and Strauss (1967; p. vii), it represented an attempt to bridge “the embarrassing gap between theory and empirical research” by providing practical guidelines that would enable the rigorous

⁷⁷ Grounded theory is anchored in the idea of symbolic interactionism (Charmaz 2006), which originated from the work of George Mead (1934), and which “assumes that people construct selves, society, and reality through interaction” (Charmaz 2006: 189). Symbolic interactionism is based on three premises: (i) individuals act towards things based on the meanings things have for them, (ii) meanings are derived from the social interaction between people, and (iii) meanings are modified through interaction with people (ibid.). According to Annells (1996; p. 380), “symbolic interactionism is both a theory about human behaviour and an approach to inquiring about human conduct and group behaviour”.

construction of theories relating to social processes from raw data (Dunne, 2011). In this sense, its introduction was also a response to internal pressures within the field of qualitative research (Dunne, 2011).

While the espousal of grounded theory as a preferred research methodology was initially quite slow, over the last two decades grounded theory has become extremely popular in qualitative research (Payne, 2007). Strauss and Corbin (1997) summarize the contemporary status of grounded theory when they say that grounded theory's methods are "now among the most influential and widely used modes of carrying out qualitative research when generating theory is the researcher's principal aim" (p. vii). And as Denzin (1994; p. 508) has noted, "the grounded theory perspective is the most widely used qualitative interpretive framework in the social sciences today".

Versions of grounded theory

Grounded theory is the subject of multiple definitions and interpretations (Cutcliffe, 2000). Although at its nascent stage Glaser and Strauss "invited their readers to use grounded theory strategies flexibly in their own way" (Charmaz 2006: 9), since the 1990s Glaser in particular has become uneasy with diverse interpretations of the methodology. Indeed, Glaser and Holton (2004) outlined the differences between grounded theory and qualitative data analysis from their perspective, arguing that those who do not recognise these differences are compromising grounded theory as it was originally developed.

For many researchers, grounded theory methods provided a template for doing qualitative research stamped with the positivist approval (Charmaz, 2005). Glaser's (see Glaser, 1978, 1992) strong foundation in mid-20th-century positivism gave grounded theory its original objectivist cast with its emphases in logic, analytic procedures, comparative methods, and conceptual development and assumptions of an external but discernible world, unbiased observer, and discovered theory (Charmaz, 2005). Like Glaser, Strauss and Corbin's 1998 methodological manual, *Basics of Qualitative Research*, also advanced positivistic procedures although different ones; namely, they introduced new technical procedures and made verification an explicit goal, thus bringing grounded theory closer to positivist ideals (Charmaz and Bryant, 2008). In divergent ways, Straus and Corbin's works as well as Glaser's treatises draw upon objectivist assumptions founded in positivism (Charmaz, 2005).

Constructivist grounded theory, as Bryant and Charmaz each first articulated separately (Bryant, 2002, 2003; Charmaz, 2000, 2005, 2006) and recently together (Bryant

and Charmaz, 2007) has emerged as the major alternative to the earlier versions. According to Kathy Charmaz (2002), constructionist grounded theory views data collection and analysis as tools that help researchers produce tentative explanations about the social construction of reality. In objectivist versions of grounded theory, meaning is something to be ‘discovered’ in the data. Discovery means something akin to prospecting for gold nuggets of facts in a riverbed of data. A constructionist grounded theory, on the other hand, places emphasis on how the data and its analysis are products of social interaction. The focus is on the process of social interaction and how it creates meaning.

4.2.3 The choice of a constructivist grounded theory

According to dissertation’s philosophical assumptions, I believe that a traditional grounded theory approach would be quite limiting, as a result of its rather positivistic assumptions, generally, and due to its objectivist stance, specifically. A traditional grounded theory approach adopts the ontological stance that an external reality exists and can be captured, with the researcher being a neutral part. Charmaz (2000, 2006), however, proposes a constructivist grounded theory, which recognises the key role played by the researcher in the research process and the way in which data and analysis are created through an interactive process between the “viewer ... [and] the viewed” (Charmaz, 2000, p. 523). Charmaz (2006) explains:

In the classic grounded theory works, Glaser and Strauss talk about discovering theory as emerging from data separate from the scientific observer. Unlike their position, I assume that neither data nor theories are discovered. Rather, we are part of the world we study and the data we collect. We construct our grounded theories through our past and present involvements and interactions with people, perspectives, and research practices. (p. 10)

Methodologically then, this study aligns itself with a constructivist version of grounded theory, in which the key role of the researcher as part of the research process is recognised. Further, while grounded theory procedures are being adopted throughout the research process, the processes and procedures used are determined at each juncture by a close listening to what the data are saying as opposed to following a highly systematised, rigid set of rules and requirements. In this way, it is argued that the emerging theory is truly grounded in the data. Also, Charmaz (2006) is keen to emphasise the flexible nature of the methodology, viewing it

as “a set of principles and practices, not as prescriptions or packages” (p. 9). This provides the researcher with a degree of autonomy when following her/his guidelines.

Overall, the constructivist version of grounded theory assumes that the researcher plays an active and vital role in the research process, particularly in the developing dialogue between researcher and data from which codes and categories, and eventually a grounded theory should result (Charmaz and Bryant, 2008). Hence, this form of the method strengthens the basic guidelines by attending to issues such as reflexivity, the research context, the inescapable effect of prior knowledge and existing literature (Charmaz, 2006). It also offers insights into the ways in which new theoretical insights develop by engaging with epistemological issues, and so provides a more sophisticated account of induction and deduction than that contained in the early books on the method (Charmaz and Bryant, 2008).

4.2.4 The features of grounded theory

While numerous variations of the original idea exist, as Charmaz (2002) notes, they all have the following components in common:

- (a) simultaneous data collection and analysis; (b) pursuit of emergent themes through early data analysis, (c) discovery of basic social processes within the data, (d) inductive construction of abstract categories that explain and synthesize these processes, (e) sampling to refine the categories through comparative processes, and (f) integration of categories into a theoretical framework that specifies causes, conditions, and consequences of the studied processes. (p. 677)

A review of the literature indicates that there is consensus regarding certain features of the methodology, even though disagreement may still arise regarding how these are actually executed. These features have been identified as the following: coding and categorisation of data; constant comparative analysis; theoretical sampling; memoing; and theoretical development. They are explained next.

Coding and categorisation of data

Coding is the cornerstone of data analysis in grounded theory (Charmaz, 2008). It is the process of “attach[ing] labels to segments of data that depict what each segment is about. Coding distils data, sorts them, and gives us a handle for making comparisons with other segments of data” (Charmaz, 2006; p. 3). These labels are called ‘codes’, and can be attached to words, phrases, sentences or entire paragraphs (Charmaz, 2008). By linking raw data with

theory development, coding represents the ‘analytic scaffolding’ bridging the data and conclusions (Charmaz, 2005; p. 517). In practical terms, coding allows the researcher to condense large quantities of raw data, such as interview transcripts, into manageable units to facilitate further analysis (Charmaz, 2008). In this sense, coding is a mechanism for ‘data reduction’, which “aids the organization, retrieval, and interpretation of data” (Coffey and Atkinson, 1996; p. 27).

Taking interview transcripts as the primary source of data, whereby each code represents a label for participants’ comments, the coding process can contribute to the rigour of the analysis by constituting an audit trail linking the raw data with the emerging categories and theory, albeit based on the researcher’s interpretation (Charmaz, 2008). Charmaz (2006) states that coding consists of three phases:

(1) Initial Coding - is the first phase, during which the researcher engages intimately with the raw data, assigning labels – codes – to segments of the data. During this phase Charmaz (2006: 50) advises the researcher to “remain open to what the material suggests and stay close to it. Keep your codes short, simple, active and analytic”. Furthermore, she recommends that the researcher code swiftly and with spontaneity, and importantly, “code data as actions” (p. 48); also, coding with gerunds helps the researcher detect processes and stick to the data (Glaser 1978). Initial coding is crucial, as it represents the researcher’s first interpretation of the data (Charmaz, 2008). The labels assigned to initial codes are provisional and may be reworded as analysis progresses (Charmaz, 2006).⁷⁸

As part of initial coding, *in vivo* codes may be generated. These are “codes of participants’ special terms”, and “help us to preserve participants’ meanings of their views and actions in the coding itself (Charmaz, 2006; p. 55). *In vivo* codes may be general terms familiar to most people, an innovative term which concisely encapsulates meanings or experiences, or ‘insider’ terms specific to a certain group; unpacking these codes can reveal hidden assumptions and direct data collection and analysis (Charmaz, 2008).

(2) Focused Coding - is more conceptual than initial coding. Charmaz (2006) explains

After the researcher has established some strong analytic directions through initial coding, s/he can begin focused coding to synthesise and explain larger segments of data. Focusing coding

⁷⁸ Initial codes are provisional because the researcher aim to remain open to other analytic possibilities and create codes that best fit the data s/he have; codes are also provisional in the sense that the researcher may reword them to improve the fit; part of this fit is the degree to which they capture and condense meanings and actions (Charmaz, 2006).

means using the most significant and/or frequent earlier codes to sift through large amount of data. (...) Focused coding requires decisions about which initial codes make the most analytic sense to categorise your data incisively and completely. (pp. 57-58)

During this phase, comparing and contrasting the data is vital, as it enables the creation of analytic categories, which facilitate theoretical development; focused coding therefore generates analytic categories, which are essentially abstract ‘umbrella concepts’ encompassing multiple initial codes (Charmaz, 2008). In practical terms, focused coding requires the researcher to analyse lists of initial codes and identify higher categories into which these may comfortably fit.⁷⁹ Moreover, through focused coding, “the researcher can move across interviews and observations and compare people’s experiences, actions, and interpretations” (Charmaz, 2006; p. 59).

(3) Theoretical Coding - moves the analysis towards a more abstract, theoretical level (Charmaz, 2008) that “follows the codes you have selected during focused coding” (Charmaz, 2006; p. 63). Namely, at this stage of coding the focus is not simply on categorising data, but on exploring relationships between categories which have emerged during focused coding; this again informs data collection, as the researcher may identify gaps in the emerging theory and return to the field for further exploration (Charmaz, 2008). This highlights the circular nature of data collection and analysis in grounded theory (Glazer, 1998). Theoretical coding should lead to the emergence of one or more ‘core categories’, which are categories which are central to explicating the nature of the phenomenon from the researcher’s perspective (Charmaz, 2008). This stage is therefore central to the process of theory building.

Combined, these three stages of coding move the analysis from the ‘ground’ to a higher, abstract theoretical level, in a systematic, albeit non-linear, fashion; as such, grounded theory offers a link between the raw data and the developed theory (Charmaz, 2006, 2008).

Constant comparative analysis

Constant comparative analysis involves constantly examining the data for commonalities, contrasts and variations throughout the research process (Emerson, 2004). In practical terms, this means that in grounded theory the process of data collection and analysis is not linear (Coyne and Cowley, 2006; Dick, 2005). Instead, in order to compare the data and further

⁷⁹ Grounded theorists scrutinize their focused codes to evaluate which ones best explain or interpret the empirical phenomenon; these codes then become tentative theoretical categories (Charmaz, 2008).

develop and test the emerging ideas, data collection and analysis is conducted in a cyclical fashion, with both collection and analysis “interwoven in a seamless dialectic” (Dey 2004; p. 84). Constant comparative analysis therefore demands that the researcher analyses data as it is collected, and should not wait until the end of data collection to commence analysis (Charmaz, 2006). Creswell (1998; p. 57) describes this as a “‘zigzag’ process – out to the field to gather information, analyze the data, back to the field to gather more information, analyze the data, and so forth”.

Constant comparative analysis continues throughout the research process and, like theoretical sampling (discussed next), concludes “when your data is ‘saturated’” (Charmaz 2006: 113). According to Charmaz (2006; p. 113) “categories are ‘saturated’ when gathering fresh data no longer sparks new theoretical insights”. However, she cautions against confusing saturation with the simple repetition of described events, actions, and statements (Charmaz, 2008). Glaser (2001) explains

Saturation is not seeing the same pattern over and over again. It is the conceptualisation of comparisons of incidents which yield different properties of the pattern, until no new properties of the pattern emerge. This yields the conceptual density that when integrated into hypotheses make up the body of the generated grounded theory with theoretical completeness. (p. 191)

Theoretical sampling

Initial sampling in grounded theory is where you start whereas theoretical sampling directs you where to go (Charmaz, 2006). For initial sampling, the researcher establishes sampling criteria for people, cases, situations, and/or settings before you enter the field (as explained in section 4.2.6). In contrast, researchers who subscribe to the grounded theory method conduct theoretical sampling only after they have tentative categories to develop or refine (Charmaz, 2008). Glaser and Strauss (1967; p. 45) define theoretical sampling as “the process of data collection for generating theory, whereby the analyst jointly collects, codes and analyzes his data and then decides what data to collect next and where to find them, in order to develop his theory as it emerges”. Theoretical sampling directs the researcher to build upon concepts and tentative hypotheses which are emerging from the data, and becomes increasingly important as analysis progresses (Charmaz, 2006). This means that purposive sampling techniques are used in grounded theory, as the sampling strategy is directed by emerging ideas (Charmaz, 2008).

Memoing

Memos are ‘informal analytical notes’ which the researcher produces during the research process (Charmaz, 2006: 72). “When you write memos, you stop and analyse your ideas about the codes in any – and every – way that occurs to you during the moment” (Charmaz, 2006; p. 72). In this sense, memos reflect the researcher’s internal dialogue with the data at a point in time (Dunne, 2011). Memoing is extremely valuable because helps raise data to a conceptual level, develop the properties of each category, generate hypotheses about connection between categories (Charmaz, 2008), improve the researcher personal writing voice, spark new ideas, and identify gaps in the analysis (Charmaz, 2006). Charmaz (2006) differentiates between early and advanced memos, and in particular talks about how systematic memoing can help raise focused codes to abstract categories by helping the researcher to define categories, explicate their properties, specify conditions, describe consequences, and reveal relationships within the data. Memos need not be exclusively textual, and can take the form of diagrams (Charmaz, 2008).

Theoretical development

Grounded theory aims to discover or construct, depending on the researcher’s epistemological perspectives, a theory based in empirical data relating to a specific phenomenon (Charmaz, 2006). Dey (1993; p. 51) defines a theory as “simply an idea about how other ideas can be related”. This ‘theory’ can take various forms in terms of what it describes or explains, and how it is presented. McCann and Clark (2003) point out that grounded theory studies typically produce substantive rather than formal theories. According to Marvasti (2004)

Substantive theories explain a particular aspect of social life, such as why or how juvenile delinquency or teen pregnancy happens. Formal theories, while informed by their substantive siblings, take the level of explanation a few notches higher; they explain social issues at a higher level of abstraction (such as a particular theory of social inequality that explains a wide range of social problems). (p. 85)

Given that grounded theory studies are typically focused on a phenomenon as experienced by a specific group of people, it is logical that grounded theories would be classified as substantive rather than formal.

Overall, grounded theories are substantive theories which may both describe a phenomenon and explain processes underpinning it (Charmaz, 2006). Grounded theorists

Strauss and Corbin define theory as “a set of well-developed concepts related through statements of relationship, which together constitute an integrated framework that can be used to explain or predict phenomena” (1998, p. 15). Case-specific theories are known as substantive theories, which is the product in this study.

In terms of the use of diagrams and models, Charmaz (2006) acclaims their ability to visually represent the conceptual relationship that develops among categories (i.e., themes). Indeed, Orona (2002; p. 377) argues that “if the researcher is unable to graphically depict ‘what all is going on here’, he or she is probably not genuinely clear of the process yet”. Also, for Charmaz (2006), the advantage of diagrams is that they provide a visual representation of categories and their relationships. With this in mind, diagrams have been employed in the presentation of the current research findings.

4.2.5 The relationship between grounded theory and existing literature

Within the field of grounded theory research, the use of existing literature represents a polemical and divisive issue, which continues to spark debate (Dunne, 2011). Specifically, the crux is not whether a literature review should be conducted – there is consensus that it should – but rather when it should be conducted and how extensive it should be (Cutcliffe, 2000). The reasoning behind this call for abstinence from existing literature is essentially related to the desire to allow categories to emerge naturally from the empirical data during analysis, uninhibited by extant theoretical frameworks and associated hypotheses (Dunne, 2011). Thus, because the methodology privileges empirical data, Glaser (1992) argues that grounded theorists must ‘learn not to know’, which includes avoiding engagement with existing literature prior to entering the field. Furthermore, Glaser (1998; p. 68) argues that a literature review may result in external “rhetorical jargon” impinging upon the research. However, Dey (1999) and Layder (1998) suggest it is naïve to view any researcher as a ‘tabula rasa’.

Charmaz (2006; p. 165) suggests that delaying the literature review can help “to avoid importing preconceived ideas and imposing them on your work. Delaying the review encourages you to articulate your ideas”. Nathaniel (2006), meanwhile, recognises that for Ph.D. candidates in particular, the idea of not engaging with extant literature at an early stage may be unviable. Accordingly, prior to commencing data collection – in this case qualitative interviews – I engaged extensively with existing empirical studies and literature (which formed the basis for Chapters 1 and 2), in order to identify what work had been done, which issues were central to these fields, what knowledge gaps existed, and was central to the

formulation and justification of the research questions (as stated in section 2.9). For many Ph.D. students the research process can be fraught with concerns that they are not fully aware of the context within which their study resides (Dunne, 2011), and this early literature review went some way to addressing these anxieties.

In terms of engaging with existing theoretical concepts⁸⁰, I deliberately avoided imposing a specific theoretical framework on this study at the outset. This approach to extant theories is what Henwood and Pidgeon (2006; p. 350) term ‘theoretical agnosticism’, which they argue “is a better watchword than theoretical ignorance to sum up the ways of using the literature at the early stages of the flow of work in grounded theory”. This approach does not advocate that the researcher ignore existing theoretical concepts, but rather avoid the imposition of specific theoretical frameworks, as this may cause the researcher to analyse the data through a specific theoretical lens (Dunne, 2011: 119).

In practice, this meant that as the data collection and analysis progressed, and ideas and tentative hypotheses began to emerge, I began to consider how theoretical concepts with which I was already familiar could perhaps be used to progress the analysis. Accordingly, engagement with existing theoretical concepts was directed by the themes and ideas which emerged during the process of data collection and analysis. The purpose of this was to link extant research and theoretical concepts with themes, constructs, and properties of the new theory, given that grounded theorists “do not use theories for deducing specific hypotheses before data-gathering” (Charmaz, 2006; p. 169). As such, in grounded theory the theoretical literature review is fundamentally informed by the data analysis and research findings (Cutcliffe, 2000). Here, the existing relevant theoretical concepts were identified and accessed as and when it was deemed necessary in order to progress the overall study, revealing a pragmatic relationship with the existing literature. As a result, for example, sections 2.3-2.4 and 2.7 of the literature review were rewritten to introduce the reader with the relevant theoretical concepts at the outset of this dissertation, but based on the grounded theory study outcomes.

⁸⁰ Although grounded theory privileges the collected empirical data, engaging with extant theoretical concepts is a crucial part of the overall research process. The term ‘theoretical concepts’ is used here to include formal theories (i.e., Attention restoration theory), and specific theoretical ideas (i.e., place dimensions and meanings) that do not constitute formal theories. Relating research findings to existing theoretical concepts is necessary for a number of reasons (Eisenhardt, 2002): Firstly, given that research seeks to make a meaningful contribution to existing knowledge, it is important that researchers demonstrate an awareness of, and draw upon, existing theoretical concepts; secondly, identifying theories which are relevant to the research findings allows the researcher to situate these findings within a broader theoretical terrain; thirdly, engagement with existing theoretical concepts can enrich the validity and overall quality of the research by helping to explain the findings and elevate them to a more theoretical level. Overall, the literature therefore constitutes an additional data source to contribute to the overall research (Coyne and Cowley, 2006).

4.2.6 Sampling criteria and procedure

In an explanatory design the same individuals should be included in both data collections, since the intent of this design is to use qualitative data to provide more detail about the quantitative results and to select participants that can best provide this detail (Creswell and Plano Clark, 2007). Hence, this study employed a nonprobabilistic form of sampling known as purposeful sampling (Patton, 2002). Purposive sampling involves “selecting groups or categories to study on the basis of their relevance to your research questions” (Mason, 1996; pp. 93-94). That is, a purposeful sampling seeks to identify ‘information-rich’ participants who have certain characteristics, detailed knowledge, or direct experience relevant to the phenomenon of interest (Patton, 2002).

In the specific case of grounded theory, purposive sampling can also be termed ‘theoretical sampling’, insofar as the sampling process seeks to identify informants “based on their ability to contribute to an evolving theory” (Creswell, 1998; p. 118). The use of purposive sampling in grounded theory research is logical as the participants “need to be individuals who have taken an action or [are] participating in a process that is central to the grounded theory study” (Creswell, 1998; p. 114). That is, the researcher must identify and engage with individuals who “are gatekeepers to local knowledge” (Bong, 2002; p. 4). Creswell (1998) emphasise that the quality of the purposive sampling procedure is vital. Sampling should be underpinned by clear criteria and rationales for these criteria. In the current study, based on the outcomes of the quantitative study, the sampling approach was used to achieve a sampling frame which included women and men and a broad spread of the active population and ages. Using this criterion created an opportunity to talk with both younger and older resident as well as to represent a diversity of backgrounds, occupations, experiences, and views. Also, these residents’ extensive association with the setting increased the likelihood that they would be more knowledgeable of the social and spatial context; it was likely that they were more deeply rooted in the social world that shaped their fair experience and defined their place meanings; and I expected that residents had place-based stories to share that would provide insight on the nature of their interactions with the social and physical environment.

As explained before (see section 4.2.4), the criteria for initial (purposive) sampling differ from those while theoretical sampling. That is, the initial sampling was based on the criteria above mentioned, whereas ‘theoretical sampling’ as a purposive sampling strategy

was used after to obtain further data to help explain the emerging categories. Here, “until researchers construct conceptual categories from the data and sample to develop these categories, they are not conducting theoretical sampling” (Charmaz, 2006; p. 101). So, theoretical sampling “pertains only to conceptual and theoretical development” (Charmaz, 2006; p. 101); this will be explained in detail in section 4.2.8.

The size of the sample is not predetermined. Ideally, sampling is complete when new data cease to provide new information or understanding; however, this point is rarely reached within the resource limitations of the research (Layder 1998; Patton 2002). Accordingly, the adequacy of the sample size is determined by the principle of theoretical saturation. Theoretical saturation refers to the point at which no new concepts emerge from the review of successive data from a sample that is diverse in pertinent characteristics and experiences (Glaser and Strauss, 1967; Morse, 1995).

Obviously, as this is a qualitative study, the achieved sample should not be understood in terms of being ‘statistically representative’. In fact, purposeful sampling is not intended to be representative in any statistical sense (Patton, 2002). Rather, what the lay sample ‘represents’ is the range of viewpoints likely to exist in the public at large, for which the selection criteria serves as proxy. Moreover, in seeking information-rich cases, sampling aimed to reflect the cultural and demographic diversity of catchment residents within the time and cost limits of the study. According to Taylor and Bogdan (1984; p. 83), “in theoretical sampling the actual number of ‘cases’ studied is relatively unimportant; what is important is the potential of each ‘case’ to aid the researcher in developing theoretical insights into the area of life being studied”. This means that in grounded theory studies the number of participants is typically quite small.

Potential participants were initially identified through the contacts made during the quantitative study and by attending local events. This gave me access to a large number of people from a diversity of backgrounds from which to approach potential participants. Following this, an adapted snowball approach (Creswell, 1998) was employed. Central to this technique was a referral process so that interviewees were not approached ‘cold’. In addition to providing the researcher with a wider network of potential participants, the referral also increased trust between the researcher and participants.

In total, 29 residents were recruited. In an effort to maintain the anonymity and confidentiality of participants, each resident was assigned a number. Appendix C provides

details of the residents who participated in the study, including their age, gender, education and occupation. Participants are listed in the order in which they were interviewed.

4.2.7 Data collection

This section outlines the chosen method of data collection. It explains the decision to use interviewing as the primary method of data collection and issues related to this.

Choice of semi-structured interviewing as method of data collection

Individual in-depth, semi-structured, open-ended interviews were chosen as the most appropriate data collection method. Here, an interviewing approach which allows interviewers to probe and the interviewees to give narratives of incidents and experiences is likely to result in a more holistic picture of people's understandings and elucidate the meanings that research participants attribute to their practices and actions (Brannen, 2005). Also, interviewing permits an in-depth exploration of a particular topic or experience and, thus, is a useful method for interpretative inquiry (Charmaz, 2006).

Interviews are widely used in qualitative research (Bong, 2002). In particular, interviewing fits grounded theory methods well as Charmaz (2006) explains

Both grounded theory methods and interviewing are open-ended yet directed, shaped yet emergent, and paced yet unrestricted. (...) Interviewing is a flexible, emergent technique; ideas and issues emerge during the interview and interviewers can immediately pursue these leads. (...) Grounded theory methods depend upon a similar type of flexibility as in in-depth interviewing. (...) Thus, the combination of flexibility and control inherent in in-depth interviewing techniques fit grounded theory strategies for increasing the analytic incisiveness of the resultant analysis. (p. 28-29)

Furthermore, interviewing is suggested as the most appropriate and commonly used method of data collection in grounded theory research (Charmaz, 2008).

Strengths, weaknesses and challenges of interviewing

The rationale for qualitative interviewing is based on the idea that "people are experts on their own experience and so best able to report how they experienced a particular event or phenomenon" (Darlington and Scott, 2002; p. 48). Furthermore, "[a] basic assumption in in-depth interviewing research is that the meaning people make of their experience affects the

way they carry out that experience” (Seidman, 2006; p. 10), which reflect a symbolic interactionist emphasis on learning about participants’ views, experienced events, and actions (Charmaz, 2006).

Smith and Bailey (1997; p. 21) argue that “interviews are especially useful for uncovering the subjective domain, the world of feelings, perceptions, values, morals and experiences”, which is precisely the aim of the current research. Darlington and Scott (2002) point out that interviewing affords flexibility to the data collection process, assists the researcher in understanding the thoughts and feelings of the interviewee, and actively engages both parties in the process, while Marshall and Rossman (1999) advocate interviewing based on the ability to collect large amounts of data quickly and immediately follow up or seek clarification.

In terms of the weaknesses of interviewing, Darlington and Scott (2002) suggest that these are best conceptualised as issues about which the researcher should be mindful, rather than inherent weaknesses. They point out that interviews may tell us what people say they do, but cannot reveal what actually happens. This point is echoed by Coffey and Atkinson (1996; p. 19), who comment that interviews “do not give us access to how people actually perform a wide variety of daily activities”. Interviewing also presents numerous challenges to the interviewer. Trust and rapport must be established to facilitate self-disclosure (Charmaz 2006). To do this, McCracken (1988) recommends the interviewer present herself or himself as “a benign, accepting, curious (but not inquisitive) individual who is prepared and eager to listen to virtually any testimony with interest” (p. 38). Accordingly, during the interviews, I made a conscious effort in making participants to feel at ease. I initiated the interview with general questions, and I avoided comments which I felt could be perceived as judgemental.

Getting interviewees to engage in the topic, articulate their opinions, or elaborate on ideas may also be challenging. To overcome this, ‘probing’ strategies are recommended (Fielding and Thomas, 2001). Such strategies can involve using ‘floating prompts’ (McCracken, 1988: 34), which can be as subtle as raising an eyebrow and nodding to express interest and encourage continuation, or more definite, like asking interviewees to clarify a term; or ‘planned prompts’, which “give respondents something to ‘push off against’” (McCracken, 1988; p. 35). Fielding and Thomas (2001: 129), however, argue that probing needs skill because it can easily lead to bias.

This issue of interviewer bias is controversial. McCracken (1988: 21) prioritises the ‘law of nondirection’, arguing that the interviewer must be conscious of not leading the

interviewee. Rapley (2004), alternatively, argues that the interview data is simply a product of the interaction between interviewer and interviewee, and so by definition cannot be biased given that concerns about bias are based on the assumption of an external truth held by the interviewee. While both arguments are valid insofar as they reflect distinct epistemological perspectives, the point can be made that the specific aim of the interview is to explore the perceptions, thoughts, feelings and experiences of the interviewee relating to a given phenomenon, and this must be borne in mind by the interviewer during the co-creation of the interview data. Therefore, although the interviewer cannot be biased insofar as the interview constitutes a process of mutual knowledge creation, the imposition of assumptions, suggestions, or rigid direction by the interviewer may compromise the quality of this co-created data in terms of the depth of insights achieved and their usefulness in answering the central research concern (Seidman, 2006).

In the current study, a variety of probing strategies were therefore used to encourage participants to reflect and articulate their opinions, thoughts and experiences about the reservoir and its surroundings.

Development of interview topic guide

An interview guide was prepared prior to commencing formal interviews. Consistent with Blumer's (1954) depiction of 'sensitizing concepts', grounded theorists often begin their studies with certain research interests and a set of general concepts (Charmaz, 2006). These concepts give grounded theorists ideas to pursue and sensitize them to ask particular kinds of questions about her/his topic (Charmaz, 2006). Moreover, where a study is being conducted with a two-stage design, the contextualization provided in the first phase can be very helpful (Brannen, 2005). Accordingly, in this study, the initial interview guide was informed by the research findings of the ('Phase 1') quantitative study and designed to capture this study guiding questions.

The use of an interview guide is commonly recommended (Creswell, 1998). Specifically, this gave a degree of structure and direction to the interviews and helped me, as the interviewer, to relax and not worry about forgetting to ask certain questions. In formulating the interview guide, I also felt important to allow respondents to define their experiences in their own way. Consistent with a grounded theory approach, the interview questions are exploratory, few in number and broad and open-ended in nature (Creswell, 1998). The interviews therefore included a series of themes, but the interviews were designed

to facilitate exploration of more details and to follow the participants' leads into unexplored or unanticipated areas. Reinharz (1992) has suggested that this approach is consistent with "more egalitarian research method" (p. 21) which assist the researcher in "avoiding control over others" (p. 20).

I questioned this assertion once I began the interviews because, although this had not been my intention at the beginning, I found that respondents consistently allowed me to set the agenda for discussion and at no point did I feel that I was "studying up" (Reinharz, 1992; p. 42). Here, I discovered that once I had defined a topic area, silence on my part was a powerful means of "maximising discovery and description" (Reinharz, 1992; p. 18).⁸¹ As Silverman suggests, it may be "naive to assume that open-ended or non-directive interviewing is not in itself a form of social control which shapes what people say. For instance, the passivity of the interviewer can create an extremely powerful constraint on the interviewee to talk" (1993; p. 96). However, I found that interviewees were keen to be listened, without interruption and with interest.

The interview guide was divided into five interview topics, with room for note taking. Having drafted the interview guide, five pilot interviews were conducted in October 2009 with residents prior to commencing formal interviews with residents that fit the sampling criteria. The purpose of this was to develop my personal interviewing technique and to see how participants responded to the questions. Following the pilot process, the interview guide was refined.

The formal interview process

In total, 29 formal interviews were conducted. Interviews took place over a five month period, between November 2009 and March 2010. Although there are no strict guidelines recommending a specific number of interviews, Creswell (1998) suggests 20-30 qualitative interviews. Rapley (2004) refers to the importance of location when conducting interviews, given that interviewees might not feel totally at ease in certain places. Hence, based on participants' arrangement, some interviews were held at Alvito Library and some in the homes of participants; only in two occasions the interviews were held at Camping 'Markádia' near the reservoir (i.e., interviewee #2 and #3).

Prior to formally commencing the interview I introduced myself, thanked the respondent for their participation, reassured them about confidentiality, requested their

⁸¹ An example was when interviewing a young woman and she decided to share the memories of the moments spent at the reservoir area with her recently deceased husband.

permission to record the interview, explained the overall purpose of the research and the potential uses of the data, requested that they ask for clarification if they found any questions unclear, and encouraged them to critique any questions I asked if they felt the need to do so. Participants were also encouraged to give expansive descriptions of their own views and experiences.

The interview guide of open-ended questions was used to direct conversation around five main areas of questioning: reactions/comments about the questionnaire survey results and meanings associated with the place, emotions/feelings about the reservoir and its surroundings, perception about the water quality of the reservoir, social interaction with family and friends at the reservoir area, and the reservoir and its surroundings management and local development. Because this study was grounded in a constructivist approach, each interview was treated like a directed conversation (Charmaz, 1991). In this way, the interviews were flexible and variable to accommodate the way that participants understood, described, and talked about their experiences (i.e., the processes of meaning-making) and associated meanings (i.e., the outcomes) about the reservoir and its surroundings. Participants were asked broad questions related to each topic and then follow-up (probing) questions to encourage further detail. Overall, the guide enabled me to frame the topics and keep participants on track, while allowing participants to describe and reflect on their experiences.

Interviews were recorded, with permission, on a digital voice recorder. Rapley (2004) suggests that recording facilitates interaction as the interviewer is not so engrossed in note-taking. Thomas et al. (2005) recognise the potential for recording devices to promote nervousness among interviewees, but they also say that they tend to overcome this in the course of the interview. In the case of the interviews conducted for this study, this did not appear to be an issue, possibly helped by the silent nature of the recorder, and participants did not talk 'off the record' after recording had ceased.

Glaser and Holton (2004) argue against recording interviews, suggesting that taking notes is preferable. However, while I acknowledge that the quantity of data generated from recording can be very challenging to manage, I disagree with their position. Firstly, it may cause the listener to get distracted away from what the interviewee is saying and so may compromise the quality of data collected. Secondly, seeing the interviewer constantly taking notes may impact upon the openness of the interview; it may hinder the rapport and possibly cause interviewees to be more cautious in their comments. Thirdly, interview notes create distance between the interviewee's comments and the data which is actually analysed. While

acknowledging that the process of qualitative data analysis is subjective, to rely on interpretive notes as the sole source of raw data would sever the link between the raw data and the analysis and therefore, in my opinion, undermine the overall research quality. The main problem of recording is the risk of equipment failure, which fortunately did not occur in this study.

After the early interviews, changes were made to the interview guide and as the data collection process progressed I became less reliant on the guide, as I was used to the questions and was also exploring themes as they emerged. Here, a grounded theory interview is inherently flexible and so the researcher has scope to follow interesting leads as they may arise as part of theoretical sampling (Charmaz, 2006). As Creswell (1998; p. 19) remarks, “our questions change during the process of research to reflect an increased understanding of the problem”. Appendix D lists the questions which comprised the original interview guide and provides some examples of how these questions changed over time.

Once the interview was finished, I thanked each participant and each participant received a Participant Information Sheet and signed a consent form; after, I asked a series of socio-demographic questions (i.e., age, sex, education, and occupation). The length of interviews varied from between 35 and 100 minutes. Some participants were more talkative, articulate and engaged than others. Also, as the data collection proceeded, the length of interviews tended to get longer, as I was seeking to flesh out emerging concepts and was comparing and contrasting residents’ comments with data analysed from previous interviews in accordance with constant comparative analysis.

Despite being very time-consuming, I personally transcribed verbatim all interviews. This ensured confidentiality, not just of the interviewees but for any people they had mentioned during the interview; and also allowed me to familiarise myself with the data at a very intimate level. As such, transcribing was itself part of the data analysis process. Personal transcription is not universally advocated. McCracken (1988; pp. 41-42) argues against that it will “invite not only frustration but also a familiarity with the data that does not serve the latter process of analysis”. This position is completely opposed to the advice of Darlington and Scott (2002) who argue that it is imperative to transcribe the interview yourself as it stimulates engagement with the phenomenon being researched. While acknowledging the arduous character of personal transcription, I would strongly recommend it, and would disagree with McCracken’s thesis that such familiarity is not useful. Furthermore, a memo

was written after each interview, noting my thoughts and impressions about the overall interview and possible emerging concepts.

4.2.8 The process of data analysis

According to Coyne and Cowley (2006; p. 503), “the process of generating theory is one of deconstruction and reconstruction of the data”. This is precisely what takes place during data analysis. Given the non-linear nature of this process, chronicling it in linear form is problematic. Therefore, while the process of initial coding, focused coding and theoretical coding are discussed sequentially, it should be recognised that in reality these have been concurrent to varying degrees. For example, having conducted a number of interviews which generated numerous initial codes, I commenced focused coding, which involved identifying broader categories into which these initial codes might fit. However, initial coding of subsequent interviews still continued.

I am guided by researcher Charmaz’s (2006) symbolic interactionism theoretical perspective that assumes that research participants’ implicit meanings, experiential views—and researcher’s finished grounded theories—are constructions of reality. The data analysis was an inductive theory generating process conducted in accordance with the guidelines proposed by Charmaz (2006), and the features of grounded theory outlined in section 4.2.4 were central to this process. The aim was to construct theory rather than use data to test a pre-existing theory (Charmaz, 1990). In keeping with constant comparative analysis, interviews were transcribed and analysed individually before moving on to further data collection. Here, Coffey and Atkinson (1996; p. 2) argue that “letting data accumulate without preliminary analysis along the way is a recipe for unhappiness, if not total disaster”.

The coding process

As mentioned in section 4.2.4, coding is an integral aspect of grounded theory. Although I had the input from the previous (‘Phase 1’) quantitative study and was aware of the general content of my developing database, I did not initially undertake the study with any preformed categorization of the meanings and underlying experiences that I came to gather. It was through the analysis, and not prior to it, that these themes/categories emerged. Accordingly, the grounded theory process described next was followed to systematically identify respondents meanings associated with the study area, as well as the underlying and implied experiences associated with the data that respondents embedded within their stories.

Initial coding - Individual transcripts were read several times, beginning with a general reading to gain an overall sense of the issues covered, followed by line-by-line coding of phrases and sentences or segment-by-segment. Also, I coded phrases that related to my research questions and phrases that I heard more than once in case I needed them later. This type of initial coding is important to theory development, but also helps the researcher remain close to the data and helps the researcher to challenge any a priori assumptions. As advised by Charmaz (2006), initial coding was done using gerunds⁸², since this allows the researcher to “detect processes and stick to the data” (p. 49); this was particularly important because my intent was to derive meaning from residents lived experiences (i.e., the process of meaning-making). Initial coding was informed by Charmaz’s (2006) guidelines, which recommend asking the following questions during the coding process:

- What is the data a study of?
- What does the data suggest?, and
- From whose point of view?

Early analysis focused on ‘sensitising concepts’ emerged from the (‘Phase 1’) quantitative study data analysis and was subsequently shaped by ongoing data collection and interpretation. Similar codes were grouped together and given the same conceptual label. This open-coding process was descriptive and consisted of noting repeatedly mentioned concepts found within the data; a phrase such as “to me, the reservoir and its surroundings mean escaping from routine and a refuge”, was an example of the concepts of *escape* and *refuge*. Here, I also identified the underlying and implied experiences. While coding is sometimes straightforward, it is often difficult to generate an appropriate code for a segment of data. Therefore, although Charmaz (2006) recommends coding swiftly and spontaneously, this was not always possible. On some occasions I asked a colleague for their input about how a specific segment or phrase might be coded. Any differences of opinion were discussed and resolved. The aim of this was not to converge on a single truth, but to provide additional perspectives (Sale et al., 2002), which helped to assure the trustworthiness of the data analysis (Jordan et al., 2009). Furthermore, having coded the first three interviews I also met with a colleague to get feedback on the quality and consistency of the coding. The process of initial

⁸² Examples of such codes are: ‘feeling freedom’; ‘learning from family’; and ‘exploring the place’.

coding was challenging, due mainly to my lack of experience using grounded theory, my personal concerns about coding consistency, and the seemingly unconnected codes generated. The process of initial coding of all transcripts produced a large number of initial codes. These codes are based on the researchers' interaction with the data and are subjective. Although I was aware that having a large number of initial codes renders analysis more complicated, I was anxious not to 'force' the data into emerging categories at an early stage.

Focused coding - The ongoing generation of such a significant number of initial codes leads to the challenge of classifying these under broader conceptual categories (i.e., themes) to facilitate theoretical development (Charmaz, 2006, 2008). This is the primary aim of focused coding. Coffey and Atkinson (1996; p. 48) state that "the establishment of order relationships between codes and concepts is a significant starting point for reflection and for theory building from qualitative data". During the process of initial coding and data collection, it became apparent that certain categories (i.e., themes) were identifiable within the data. Therefore, as initial coding progressed, focused coding commenced. The transition from open coding to focused coding occurred at the third participant interview. This generated a much smaller number of categories (i.e., themes), under which the existing and emerging initial codes could be grouped. This enabled me to begin to see the "when, where, why, how and with what consequences" subcategories relate to categories (Strauss and Corbin, 1998; p. 125).

Over the course of the data collection and analysis the definitions and properties of these categories became increasingly clear, as each interview was used as an opportunity to explore emerging ideas. It should also be noted that during focused coding, certain codes which had been created during initial coding were grouped together or merged based on their close similarity to one another.

The process of categorisation was challenging, as I was trying not to force the data while also trying to keep the number of categories relatively small. As Creswell (1998) points out, not all coded data will be used in the theoretical development. Certain codes will simply not fit into the emerging conceptual categories and will be removed from the analysis. Here, Creswell (1998) recommends condensing the data into 25-30 categories, which are then further condensed into 5 or 6 main categories. However, if a large number of codes, some of which you feel are important, are not comfortably fitting into the proposed categories, then

you may need to reconsider your categorisation structure. Simply forcing these codes into existing categories will compromise the overall quality of the analysis.

In the current study this was initially an issue, as I was unable to categorise several codes I felt were important to the phenomenon. As a result, the categorisation process was reviewed twice. This involved returning to the initial codes and checking whether the categories I had assigned them were, on reflection, suitable. Although this was very time consuming and mentally demanding, it ultimately benefited the overall analysis. During this process some new categories were introduced, others eliminated, and others merged or renamed, so that all initial codes which I deemed relevant fit well. Overall, the process of focused coding generated two dominant conceptual categories (i.e., themes) to summarize existing and emerging initial codes, several of which included smaller sub-categories. The next challenge was to determine how these categories related to each other. This was done using theoretical coding.

- Theoretical coding - Finally theoretical coding pulled together the relationship between categories as theoretical propositions (Charmaz, 2006). I did this with the aid of memos so that I could track the ways that I thought about and categorized data, and how categories were conceptually ordered. In other words, the primary focus of this analysis was to identify possible connections among the meanings associated with the concepts and themes developed through the open and focused coding process.

Theoretical coding also forced me to constantly revisit the data to seek evidence for the factors and associations which I felt were underpinning residents' meanings and underlying experiences about the reservoir and its surroundings. This helped to clarify properties of concepts and the relationships among them (Glaser, 1978). Moreover, I conducted theoretical sampling to elaborate and refine my conceptual categories until no new properties emerged. For example, I gathered more data on how residents define 'gendered practices' meaning and, particularly, how gender differences emerged may influence residents' experiences within the place.

Completing 29 interviews, and no more, increased intimacy with the data and subsequently increased the flow in conceptualization. At this point I felt I had reached saturation, and that coherent, substantive ideas were evident within the data. Analysis revealed an overarching core-category called "Showcase of everyday life stories/memories" linking two categories. The themes mentioned are:

- Personal meanings and underlying experiences
- Social meanings and underlying experiences
- Showcase of everyday life stories/memories

Based on Jordan and colleagues approach (2009), I identified a conceptual ordering within the categories and themes, and engaged in concept mapping to examine these connections. The conceptual ordering was informed through focused attention on both the context (i.e., the conditions surrounding the meanings an individual ascribed to the reservoir and its surroundings) and process (i.e., experiences, actions, perceptions, beliefs, expectations and emotions) described in respondents accounts. Conceptual ordering was further informed by comparing and contrasting the emerged concepts and themes to develop a model (as will be shown in Fig. 6.2, chapter 6) based on the data and informed by the existing literature that focused on individual and social place meanings (discussed in chapter 2).

While data collection ceased at this point, analysis continued, particularly by engagement with theoretical concepts. Emergent theory was therefore compared to other literature and perspectives to capture holistic understandings and to validate or point out differences or gaps in current understandings of the phenomena. Validity is enhanced when emergent theory is compared to existing theory (Glaser, 1998). Overall, throughout, the coding framework, categories and themes were discussed with another researcher, to check the credibility and trustworthiness of the interpretation and analysis (Mays and Pope, 1995).

Memoing

Memo-writing represented my first attempt to articulate ideas and relationships which I identified during the data analysis. The process of initial coding produced many independent memos detailing my emerging thoughts on the nature of the phenomenon. While memo-writing was relatively unstructured during initial coding, it became increasingly structured and productive during focused coding and theoretical coding. In particular, the decision to write memos on a category-by-category basis forced me to define each category, explore relations between codes within the category, identify where the category fitted into the overall phenomenon, and also assisted in identifying gaps and apparent contradictions within the category. Writing memos in this fashion also was the crucial first step in producing draft chapters of data analysis. Here, memos conceptualized data, operationalized categories

through their extracted sub-categories, and provided hypothesized connections between categories. Memo sorting began the formulation of the theory for readability; that is, through sorting I worked on the theoretical integration of my categories.

In this study, an enormous amount of conceptual analysis took place during the memoing process; questions to pursue in future interviews emerge, as do hypotheses on linkages within the data, models are constructed, abstract concepts are fleshed out, and ideas on how to progress the study spring to mind. In particular, memo-writing enabled me to flag incomplete categories and gaps in my analysis, leading me directly to theoretical sampling, as explained before. Also, other forms of data (field notes and observations) were coded in the same way as interview data using the same constant comparison method (Strauss and Corbin, 1998).

4.2.9 Methodological issues

This section discusses some issues relating to the methodological approach, including trustworthiness and limitations of the study and the need for researcher reflexivity.

Trustworthiness

Like validity and reliability to a quantitative study, trustworthiness is of the utmost importance when conducting qualitative research. Glaser and Strauss (1967) say that when a researcher carefully follows the data analysis procedures outlined in the method, and they have ‘lived’ the experience from conducting the interviews through taking apart and reassembling the data using codified procedures, they can be confident in their ability to produce integrated theory from systematically ordered concepts. The issue to be addressed is how to convey credibility to those who read my work.

I addressed credibility by using quotes and passages from the data and my observations in the results chapter of this document that will allow the reader to ‘hear’ the voices of the research participants along with my explanation of how their words were interpreted by me into theoretical concepts.

Confirmability was substantiated through reviewing my memos, field notes, and interview transcripts with two colleagues and discussing the theoretical concepts with my dissertation advisor. I also brought my analysis back to ten of my research participants (via local meetings) to confirm that I had interpreted the data in a way that accurately captures their lived experience.

Transferability is not a goal in this research, as the most useful generalizations from qualitative studies are analytic, not sample-to-population (Miles and Huberman, 1994). I will come back to this point next.

Limitations of the methodological approach

The methodological approach of this ('Phase 2') qualitative study is subject to several limitations associated with qualitative inquiry. For example, given that the data was collected from a relatively small number of residents, the findings are not generalizable to the broader catchment population. Also, the use of purposive sampling also compromises the generalizability of findings (Gobo 2004). Coffey and Atkinson (1996), however, argue that qualitative research is not primarily concerned with producing scientifically generalizable findings. Furthermore, Gobo (2004) suggests there are two types of generalisations – (i) a generalization about a certain population, which is based on statistical logic and (ii) a generalization about the nature of a certain process, which is based on theoretical sampling. Indeed, Yin (1994; p. 122) argues that 'analytical generalization', defined as "the generalization of data to theory, not to a population", is a better indicator for qualitative research than statistical generalization. However, as adopted in this dissertation, Hesse-Biber (2010a) states that "conducting a quantitative survey on a random sample of the researcher's target population first, followed by a qualitative study, enables the researcher to select a qualitative subsample from this population that is representative of the target population" (p. 65).

Another limitation is the use of interviews. Interviews rely on participants' self-reported behaviour, and are based on an assumption that interviewees report their thoughts, experiences and behaviours honestly (Seidman, 2006). While I have no reason to believe residents' in the current study were deliberately withholding information or lying, I cannot say with certainty that their actual behaviours mirror their self-reported ones. Furthermore, although the process of coding provides an audit trail linking the raw data with the research findings, the researcher must recognise that the coding process is subjective and interpretive. Another researcher may interpret the data differently and assign a different code to a particular segment of data. This implies that two researchers would analyse and draw conclusions for the same data set in different ways. However, as Miles and Huberman (1994) and Charmaz (2006) point out, this is the nature of interpretive inquiry.

In addition to the aforementioned limitations, despite the rigorous process of data collection and analysis, there are limitations regarding one's ability to prove the resulting theory. With regard to this, Seale (2004; p. 413) quotes Cook and Campbell (1979; p. 22): "It is our inescapable predicament that we cannot prove a theory". However, in response to this we can refer to Taylor and Bogdan (1984; p. 126), who state that "in grounded theory, researchers do not seek to prove their theories, but merely to demonstrate plausible support for them". In the current study, this support is found in the voices of the residents and the codes and categories developed during data analysis. Also, the theory generated by this research is not generalizable to residents in other geographic places due to the sample selection technique and size of the sample.

Need for reflexivity in grounded theory research

Neill (2006) posits that since the central concern of grounded theory is often the nature of human interaction, it is axiomatic that the researcher should reflect on the actual researcher-participant relationship, which is itself an interactive experience. She argues that reflexivity can be "an important tool for researchers to be able to identify the effect of self in these relationships" (Neill, 2006; p. 259). Finlay (2002; p. 532) defines this reflexivity as "thoughtful, conscious self-awareness". Furthermore, Hall and Callery (2001) argue that reflexivity and relationality must be considered in order to improve the rigour in grounded theory research. They define reflexivity as "attending to the effects of researcher-participant interactions on the construction of data", while relationality is defined as "power and trust relationships between researcher and participants" (p. 257). They argue that both of these concepts have traditionally been given insufficient attention by grounded theorists. From their perspective an awareness of these issues is important for the quality of research. Reinharz and Chase (2002; p. 233) agree with this, suggesting that "it is crucial that the researcher take account of his or her own and the interviewee's social locations and how they might affect the research relationship".

Furthermore, reflexivity also requires that the researcher reflect on her/his own biases. Charmaz (2005; p. 510) encourages the researcher to recognise that "no analysis is neutral – despite research analysts' claims of neutrality". Referring to the experiences and ideas the researcher brings to any study, Charmaz points out that "we are not passive receptacles into which data are poured" (Charmaz, 2006; p. 15). This point, echoed by Boufoy-Bastick (2004), is particularly relevant to the analytic process, where subjective coding decisions are made.

Indeed, Etherington (2006; p. 77) suggests that as researchers, “simply by being there we influence the research that is being carried out”. It is the interaction between the researcher and the research that produces the data (Charmaz, 1995).

With this in mind, I attempted to apply reflexivity to the research in a number of ways, as initially explained in section 3.1. To recapitulate, I acknowledged that I speak from multiple and shifting positions and explained that the way in which I represent knowledge is influenced by these positions. The data I gathered and analysed in this study were not simply gathered and analysed by ‘a researcher’. They were, in part, obtained and interpreted by a ‘husband’, ‘father’, a ‘man’, and a ‘traveller’. In my research I do not deny the epistemic significance of these locations. Instead I was explicit about them and thus opened my work up in a way which was accountable and transparent. Moreover, conducting this study as a reflexive researcher, I engaged in writing and talking with colleagues, friends and research participants about a wide range of issues relating to the process of research. I took notes in the field and throughout data analysis, and verified the transcript and basic interpretation with study participants to ensure the study’s credibility or internal validity. In addition to this, during the coding process I regularly challenged myself to justify my decision for coding a segment of data in a certain way. Also, through memo-writing, I was able to continuously reflect on the process.

4.3 Linking Data Types

This section outlines how the quantitative and qualitative data were combined in the process of presenting and discussing the results of the project. Here, the mixed methods literature has not addressed the important issue of writing up the results of this type of study (Hesse-Biber, 2010a). Bryman (2007) wrote:

insufficient attention has been paid to the writing up of mixed methods findings and in particular to the ways in which such findings can be integrated. Indeed, it could be argued that there is still considerable uncertainty concerning what it means to integrate findings in mixed methods research. The relative absence of well-known exemplars of mixed methods research makes this exercise particularly difficult, as it means that scholars have few guidelines upon which to draw when writing up their findings. (p. 21)

Moreover, if a researcher decides to write up her or his research findings, few exemplary mixed methods projects exist that the researcher can use as a template (Hesse-Biber, 2010a). Here, what is important is to explain clearly how the results were integrated and the contribution to improved understanding that was achieved based on that integration (Mertens, 2011). Epistemological assumptions also affect the researcher's choice of writing style, because any particular view comes embedded with a set of writing paradigms (Hesse-Biber, 2010a).

Based on the qualitatively-driven approach to mixed methods research that Sharlene Hesse-Biber (2010a) advocate in her book, the author

view[s] the writing process as tightly linked to the research question(s) of the study. The extent to which the findings of both methods are integrated and what the "best" mix should be is guided by the research problem at hand. The research problem should dictate how results and conclusions from both methods are written up; that is, whether researchers should write up results separately and then combine them into a general conclusion or whether they should integrate the results in an ongoing process. (p. 84)

Also, Morse (1991) argued that "blending or merging of the data" (p. 121) should take place only after separate analyses have been completed; and Mertens (2011) argued that if one type of data was used as a basis for decisions about the collection of another type of data, then it makes sense to report them in chronological order.

Since the two studies were conducted and analyzed separately in sequence, the results will be reported separately (in chronological order) and brought together while presenting the ('Phase 2') qualitative study and discussing the whole study (as illustrated by the right black square box in Fig. 3.1, on page 80). Here, since the qualitative data was derived from a subset of the survey sample it was possible to relate the two data sets together. However, since the primary aim of the qualitatively-driven sociological analysis was to construct theory to understand respondents' subjective views and lived experiences, during the discussion of the whole study the quantitative study findings played a supporting role.

Chapter 5 – The Odivelas Reservoir and its Surroundings in Context

5.1 Regional Socio-Economic and Structural Aspects

The study area is located in Alentejo Region (NUTS2), the largest and most arid province of inland Portugal, situated towards the south of the country. This administrative region covers about one third of the total area of Portugal with half a million inhabitants, about 5% of the national population (Teigão dos Santos and Partidário, 2011). It is an area characterized by poor soils and dry Mediterranean climate (Santos et al., 2006). After a long steady and low development period, which led to great losses in population⁸³ and economic activities, the Region is making huge efforts to achieve economic convergence with other European regions; two decades of strong investments in physical and human capital have, however, been insufficient to overcome structural problems (e.g. in education, institutions, agriculture) which continue to inhibit a better development performance (Teigão dos Santos and Partidário, 2011). Therefore, the region has been facing serious social and economic problems (Matias et al., 2008). In particular, these problems are worse in rural areas, which are characterized by high unemployment rates and the abandonment of land by farmers (Mira da Silva et al., 2001).

In the Alentejo Region, agriculture is by far the most represented land use (Jones et al., 2011). The Agricultural Area in Use (AAU) accounts for 1,893,088 ha (72.6% of the Alentejo area); permanent pastures (60.1%), arable land (30.4%), and permanent crops (9.4%) cover the majority of the AAU, and the remaining area are kitchen garden, woodland and fallow areas (National Statistics Institute, 2010). The average AAU per holding is the largest in the country (56.1 ha); overall, holdings less than 5 ha of AAU represent 46.8% of the total holdings, while only 18.8% of holdings have more than 50 ha of AAU. Additional farm indicators for the Alentejo Region are shown as Appendix E. In 2009, 55.1% of the total agriculture labour force was of family origin. Maize (245,789 tones), wheat (86,297 tones), and barley (70,820 tones) are the three most import cereal crop products of the agriculture annual output; wine, rice, sunflower, tomato for industry and sugar beet are also other

⁸³ Portugal density in 2009 was 115.4 people per km²; Alentejo density in 2009 was 23.8 people per km² (National Statistics Institute, 2010).

important regional products; the main livestock products are milk, pigs, poultry and beef cattle (National Statistics Institute, 2010).

According to the National Strategic Plan for Tourism (Tourism of Portugal, 2007) the tourism performance of Alentejo shows a low growth and dependence on domestic market, low occupancy rate, being the region with the lowest revenue per available room. Employment in the tourism sector is often viewed as temporary, which results in a lower level of investment in training and a consequent decrease in the quality of service. The situation in the Alentejo Region reflects this fact, where an absence of qualifications may undermine the quality of services associated to new investments. Here, Nave (2003b) refers that the main barrier to growth is the adverse social and institutional context in which economic activity is developed, which can cut short endogenous development activities and reduced internal entrepreneurship to the bare minimum.

Notwithstanding the current situation, Alentejo have a set of diversified resources (cultural and natural heritage): castles and fortresses, architectural and archaeological heritage, typical villages, ‘Pousadas de Portugal’ (heritage hotels), gastronomy and wines, and a contrast between tranquillity and healthy amusement (Tourism of Portugal, 2007). Thus, the short-term development model for Alentejo involves the contrast between a quiet environment and a recreational area region, with several open-air activities, where the region's core attraction is diversity of culture and landscape. In particular, development of products in rural zones will be implemented in accordance with the national strategy for rural development (such as rural tourism accommodation), where the creation of a significant number of direct jobs is foreseen (such as the multipurpose Alqueva project⁸⁴; Tourism of Portugal, 2007). However, the fast and uncontrolled development of this activity, without conforming to a regional strategy, may cause major natural, socioeconomic, environmental and territorial unbalances (Serdoura et al., 2009).

5.2 Land Use Change in Alentejo Region

The Alentejo Region is characterized by gentle slopes (from 200m in the west to 400m in the east) and a Mediterranean climate (Pinto-Correia, 1993). Most cultural landscapes that developed within this large region are in origin multifunctional. However, the traditional

⁸⁴ The multipurpose Alqueva project comprises strategic water storage, hydropower production, irrigation, recreation and urban water supply, involving 19 municipalities in the Alentejo region, which will be fully implemented by the year 2015.

silvo-pastoral balance has been broken, and soils have been exhausted by an overly intensive dry cultivation since Salazar's 'wheat campaign' between 1929 and 1934 (Pinto-Correia and Vos, 2004). Up to 1985, cereals and pastures were the traditional main uses of soil in Alentejo, although land abandonment increased greatly since the 60's, when emigration, depopulation, and loss of soil fertility became major factors to the regional economy and society (Roxo et al., 1996).

Much of the area is now depopulated; the fields have been invaded by shrubs or have been planted with non autochthon eucalyptus and pines (Pinto-Correia and Mascarenhas, 1999). The extensive mono-species plantations of these exotics are not multifunctional at all⁸⁵; they are ecologically poor and socio-economically not integrated in local farm households; in the way they most often have been laid out, they wiped out the original cultural identities of the landscapes and they moreover became a risk because of wildfires (Pinto-Correia and Vos, 2004). Abandoned land, mostly located in erosion prone areas with high risk of desertification, is being used for hunting and other forestry multiple uses. These areas, usually the ones with steeper slopes, suffering higher degradation and in marginal locations, have a reduced capacity for self-regeneration, and therefore a slow recovery. In many areas, still, because of high value provided by subsidies, landowners tend to farm and grow cereal crops or make other intensive soil uses, such as heavy livestock densities or irrigated crops (Roxo et al., 1996).

Nevertheless, some landscapes kept their identity until today by the survival of traditional farming systems that developed through centuries in using all available natural resources, notwithstanding its abundant natural restrictions (Pinto-Correia and Vos, 2004). An example of landscapes that remained multifunctional at all levels is that of the agro-silvo-pastoral – actually mainly silvo-pastoral – system called *Montado* (Pinto-Correia, 1993). The *Montado* is the agro-silvo-pastoral system characteristic of southern Portugal, and the dominant land-use in the region of Alentejo (Meeus et al., 1990). Nutrient cycles are strongly influenced by pigs that feed on acorns, shrubs and grasses under the trees, and eventually also by other livestock. The animals drop their manure under the trees and loosen the soil. Careful tree management and controlled grazing promote the infiltration of precipitation into the soil.

⁸⁵ Multifunctionality refers to the combined outputs of the production functions of agriculture and forestry with those of the regulation functions of ecosystems and the information functions of nature, geology, history, scenery etc (Pinto-Correia and Vos, 2004). In doing so, they comprise combinations of food production, housing, recreation, water management, nature management and culture conservation within one and the same land-use system (Klijn and Vos, 2000). Multifunctionality at landscape level integrates the various functions in the same space (Brandt and Vejre, 2004).

The traditional field rotation is cereals–fallow–grazing. The livestock can be cattle, sheep, goats or Iberian black pigs. The livestock remains outside all year, eating grass and acorns, in some cases roots, and also hay or fodder produced in other parts of the farm unit. The livestock is crucial as it contributes to shrub control and soil fertilization. As farms are (on average) very large, livestock may circulate between different parcels of land, depending on the sensitivity and production capacity of the soil.

The *Montado* landscape has many qualities (Pinto-Correia and Vos, 2004): it has specific, even unique scenery, closely connected with the regional identity and charged with many cultural values, which support recreation and tourism. Even although similar elements occur over large distances, the variations in tree densities, grazing pressure, rotation, and thus shrub development, still create heterogeneous landscapes (Pinto-Correia, 1993). The production is varied and includes many secondary products such as honey, mushrooms and aromatic plants. Due to the extensive use and the diversity in land use and land cover, the biodiversity is high; multifunctionality at field, farm and landscape level is a main characteristic (Pinto-Correia and Vos, 2004). Montados may be exploited for cereal cultivation, cork, charcoal, game, honey, meat, and dairy products, the latter usually being obtained from animals that are bred extensively (Pereira and Pires da Fonseca, 2003). Some of these goals, however, may exclude each other. Where there is crop cultivation today it is to produce forage for the cattle, and so the system is now mainly a silvo-pastoral system (Surova and Pinto-Correia, 2008).

Despite the qualities described above, in the past decades the *Montado* has gone through major changes of both intensification and extensification of land use (Pinto-Correia and Mascarenhas, 1999). The results are a simplification of the landscape, and severe perturbations of the traditional balance between its components (Pinto-Correia, 1993). Often the trees were damaged and became vulnerable to diseases and drought, which contributed to increased tree mortality, while natural regeneration was not always maintained. The result has been, as referred to before, abandonment followed by a secondary succession with shrub encroachment or the replacement by monospecies plantations of eucalyptus and recently of pines (Pinto-Correia and Mascarenhas 1999).

In Alentejo Region Stoate et al. (2000) described two other land-use systems: *intensive* and *extensive* agriculture. The intensive agriculture category is characterized by a greater frequency of heavy soils, much of the area being irrigated. Wheat *Triticum aestivum* and barley *Hordeum distichum* are the main cereal crops, and silage grass *Lolium* sp.,

sunflower *Helianthus annuus*, sugar beet *Beta vulgaris* and oilseed rape *Brassica napus* are also grown. There are short rotations with little or no fallow (e.g., sunflower-1st cereal-2nd cereal). This system requires frequent use of fertiliser (Stoate et al., 2000) relative to the other land-use categories. With the exception of some olive *Olea europaea* groves, there is little tree cover.

The extensive agriculture category is characterized by thin soils and the largest average farm size. There is no irrigation, and fallow area is relatively high. A typical rotation takes the form: plough fallow-1st cereal-2nd cereal-fallow-fallow, with fallow periods often lasting five years or more (Rio Carvalho et al., 1995). Wheat yields are 1.5-2.5 tonnes ha⁻¹, with yields at the lower end of this range being more common (P. Eden, pers. comm., 1998 in Stoate et al., 2000). Triticale *Triticum aestivum x Secale cereale* and oats *Avena sativa* are frequently grown in the extensive category, and grazed or cut for silage. The incorporation of a fallow period into the rotation, and the relatively low potential yields are associated with considerably lower annual inputs than in the intensive category.

Sheep, cattle and pigs are kept in both land-use categories. Zero grazing is adopted on some farms in the intensive category, but livestock normally graze fallows. Public hunting of wild game is open to all licensed hunters over much of the area, with no control on the game bags taken and without any management. However, some areas are managed as private or associative game estates, implying a control on game bags and some management measures.

A problem common to all land use changes analysed is mismanagement; very often the good intentions of policies are perverted by lack of information and planning, poorly organized management structures, and a strict search for easy and fast profits (Roxo et al., 1996). Here, landscape changes are progressing faster than the rise of their understanding and awareness (Wascher et al., 1999). However, the European Landscape Convention (Council of Europe, 2000) states that the landscape is an important contributor to the quality of life of people everywhere. Landscapes are dynamic and change is one of their properties (Antrop, 2005). So, in order to guide future management and foresee the effect of change, the identification of existing valuable characteristics relating to new landscape functions needs to be studied (Surová and Pinto-Correia, 2008).

5.3 Water Resource Issues and Management in Alentejo Region

As referred to before, the region of Alentejo is characterized by a Mediterranean climate. As it lies in the southern part of the country, it is much warmer and receives less rainfall than the national average; maximum temperature during the summer goes up to 40 °C and minimum temperature in the winter drops down to 5 °C. Minimum and maximum temperatures occur during the month of December and July/August respectively (Roxo et al., 1996). Furthermore, it is characterised by a dry and very hot season (extending from May/June to September/October), with a very irregular distribution of rainfall over the wet season, as well as over the years, with very intense flood peaks and with frequent drought periods (Ó and Roxo, 2001). In particular, Paulo et al. (2005) computed for several sites of Alentejo a standardized precipitation index based on 68 years of precipitation data, showing that the region is frequently stricken by droughts, calling attention to the need of developing tools for water management both at farm and catchment scales.

In Portugal, there are 5 regions with semi-arid or scarcity issues (Estrela et al., 1996). Three of them (Guadiana, Sado and Mira River Basins) are located in Alentejo Region and were considered the most problematic zones in terms of scarcity, of both surface and groundwater. Under Mediterranean climatic conditions, the annual precipitation distribution determines that many streams have developed spatial and temporal discontinuities of flow regime with superficial flow interruption during the summer dry period, in contrast to high discharges, during floods, observed from late autumn to early spring. The superficial summer flow interruption represents a constraint, leading to stagnant pools or even to drying out completely (Morais et al., 2004). Such variations become very important as much as the human anthropogenic activities in the catchment. Therefore, the basic demand of having sufficient quantity and quality of water is one of the major concerns of governmental authorities (Matias, 2010). In the particular case of catchments situated in semi-arid regions the guarantee of adequate water resources is severely damaged through the dominance of unfavourable climatic conditions (Alvarez-Cobelas et al., 2010).

In Portugal, lakes are uncommon and reservoirs are the most important lentic water bodies, providing a significant amount of water for irrigation, domestic supply, energy generation, fishing and recreational purposes (Matias et al., 2008). Often these aquatic systems have received, over time, high nutrient loads from diffuse sources, resulting in

eutrophication⁸⁶ and associated loss of aesthetic quality, and increased managerial costs (Matias and Boavida, 2005). Hence, there is a growing need to restore eutrophic reservoirs and to prevent further degradation. This problem becomes more urgent in the Alentejo southern reservoirs because of the semi-arid climate, catchment land use (Matias and Boavida, 2005) and long residence times (Diogo et al., 2008). Here, Matias and Boavida (2005) mentioned that there is a lack of studies on Portuguese reservoirs at the catchment level, which may constitute an invaluable source of information to bring water management into compliance with the minimum standards advocated by the European Union Water Directives.

5.4 Site Selection

As mentioned before, the research was approached at the catchment level. Focus on a single catchment facilitated a study approach that considers the human and physical geography of the area and integrated consideration of place, culture, socioeconomics, and the physical environment (Golledge, 2002). The catchment approach is an essential tool in water management, because of the “highly significant differences that may exist among the [resident] populations in the catchment, yet all such [resident] populations must share an underlying unified relationship with the resource” (Trumbo and O’Keefe, 2001; p. 890). Broadly, the choice of the study area was influenced by geographic location, ease of access, and the fact that this area of Portugal has more eutrophic reservoirs than any other region in the country. In addition, following the input from the preliminary field-work analysis, because the reservoir and its surroundings are used for varied recreational activities besides the primary uses and the changing reservoir water quality throughout the year that may be useful to explore different interpretations held by residents.

5.5 The Odivelas Reservoir and its Surroundings

The study area is located in the Sado River basin in the Alentejo Region (Fig. 5.1a). The Odivelas reservoir together with other three reservoir ecosystems comprise one of the five

⁸⁶ Eutrophication is essentially a fertilisation of the water through nutrient enrichment (in particular phosphorus and/or nitrogen). Eutrophication is not bad in itself, since aquatic systems (particularly lakes) naturally progress from oligotrophic to eutrophic, eutrophication coming with ageing. The process of eutrophication becomes a problem because changes in the ecosystems related to eutrophication occur too fast as a consequence of human activities. Ecosystems are taken beyond their capacity to recover and problems arise.

homogeneous planning units of Sado River basin (Fig. 5.1b) defined in the respective River Basin Management Plan (INAG, 2002). The climate for the area shows a typical Mediterranean pattern with a four to five month period of water stress from late spring to the end of summer (INAG, 2002). The Odivelas Reservoir was built in 1972, and has been exploited since 1991 by the Odivelas Farmers' Association (Fig. 5.1c). The maximum water storage volume of the reservoir, spreading over 9.73 km², is 96.0 million cubic meters. Mean annual rainfall (1990-2009, N = 20; INAG, 2010) was 514.8 mm. Long term water quality data for the region are limited, but for those available for the period 1999-2010 are presented in Fig. 5.2 (INAG, 2010).

Agriculture dominates land use within the Odivelas catchment. Further, the evergreen oak woodlands form an important multiple use agro-silvo-pastoral system, the Montado. Forestry (e.g. cork harvesting) and extensive grazing are the dominant exploitation activities on these Montado areas. In terms of geomorphology, metamorphic Palaeozoic formations dominate; this polygenic erosion surface cuts through very different lithologies: clay schists, grauvachs, diorites and gabbros, granites, and quartzites, among others (INAG, 2002). Metamorphic formations, dominated by schists, have low susceptibility to chemical weathering, but favour superficial run-off action because of their relative impermeability (INAG, 2002). This geological setting, together with the regional weather patterns, is the cause of extreme runoff regime typical in these systems (Nunes et al., 2007), with mean annual runoff dominated by extreme events associated with intense rainfall episodes, predominantly in the winter. As a result the area has a strong temporal and spatial variability in its hydrological regime during the year (Matias, 2010). Such climatic variations become as important as anthropogenic activities in the catchment as an influence on intra-annual water quality variation.

The catchment population in 2008 was 2480 people (NG Matias unpublished data; see Appendix B for the characterisation of Odivelas catchment resident population). Based on the preliminary field-work, the main elements of the Odivelas Reservoir and its surroundings are illustrated in Fig. 5.3. The reservoir is included in the multipurpose Alqueva project⁸⁷, involving a significant area of agriculture in Alentejo. The reservoir water is primarily used

⁸⁷ The project is managed by EDIA the Alqueva Development and Infrastructures Company. The project objectives are: the setting up of a strategic water reserve in the Alentejo region; providing a guarantee of water supply to populations and industry; progressing change of the crop model in Alentejo's agriculture; electricity production; the development of tourism; the combat against physical desertification and climate changes; organized intervention in the domains of the environmental and national heritage; encouragement of the regional employment market.

for irrigation: supplying water to an area of 124.51 km² of agriculture land (outside the catchment area). The reservoir and its surroundings are also used for recreation. The direct influence of these activities is high in summer - between 100 and 150 recreational users per day during this period (Matias, 2010). Motor sports are not allowed, and motor boating is allowed only with restrictions. Further, the Odivelas reservoir ecosystem is considered an important area for bird and wildlife habitat; it is an 'attraction point' for the European otter in terms of water and prey availability, especially during summer when Mediterranean lotic systems usually dry up (Pedroso and Santos-Reis, 2006).

The inventory of water-related problems include: water pollution from sewage treatment works (STW) operations and farming activities, water level fluctuations because of climatic conditions and perennial water abstraction for irrigation, and inadequate control and monitoring activities regarding STW operations and water quality (INAG 2009a). The use of water for irrigation has been causing particular concern in regards to the upstream Alvito Reservoir which stores water for domestic supply purposes, since it may result in increasing negative impacts (e.g. loss of river continuity and water quality), as well as affecting recreational users of the beach during the summer months because of low water levels (Matias, 2010). Management measures include: the preservation of the landscape's beauty and tranquillity by supporting leisure and outdoor activities in balance with nature conservation, enforcement of water quality monitoring, control of STW operations, and projected areas for development of further infrastructure (e.g., sustainable rural tourism, environmental education centre, a youth centre, and an additional leisure area) in order to promote sustainable use of the reservoir and its surroundings (INAG 2009a, b).

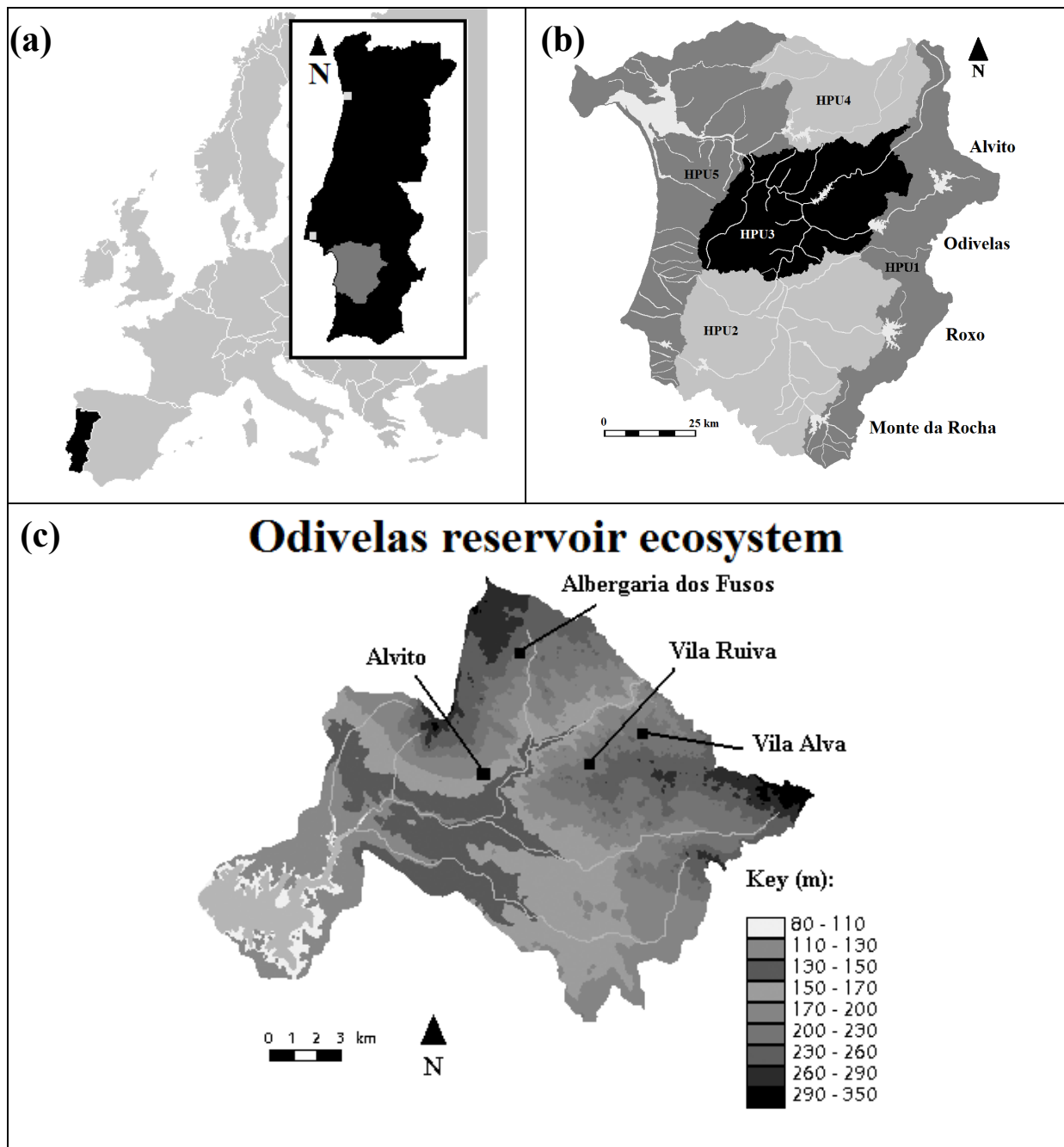


Fig. 5.1 Location of (a) Sado River Basin (grey area; Sado River total length = 180 km; basin area = 7692 km²), (b) comprising *Homogeneous Planning Units* (HPU 1-5)⁸⁸, and (c) topographic map of Odivelas reservoir and its catchment (black dots represent local villages). Catchment land uses: artificial areas, 0.3 %; agriculture, 62.9%; Montado, 23.5%; Woodland, 8.3%; natural areas, 1.8%; water body, 3.2%. Black dots represent local villages (Source: NG Matias unpublished data).

⁸⁸ Each unit is a sub-area of the Sado River Basin with quasi-homogeneous hydro-climatic, socio-economic, and nature conservation features for water resource planning and management purposes.

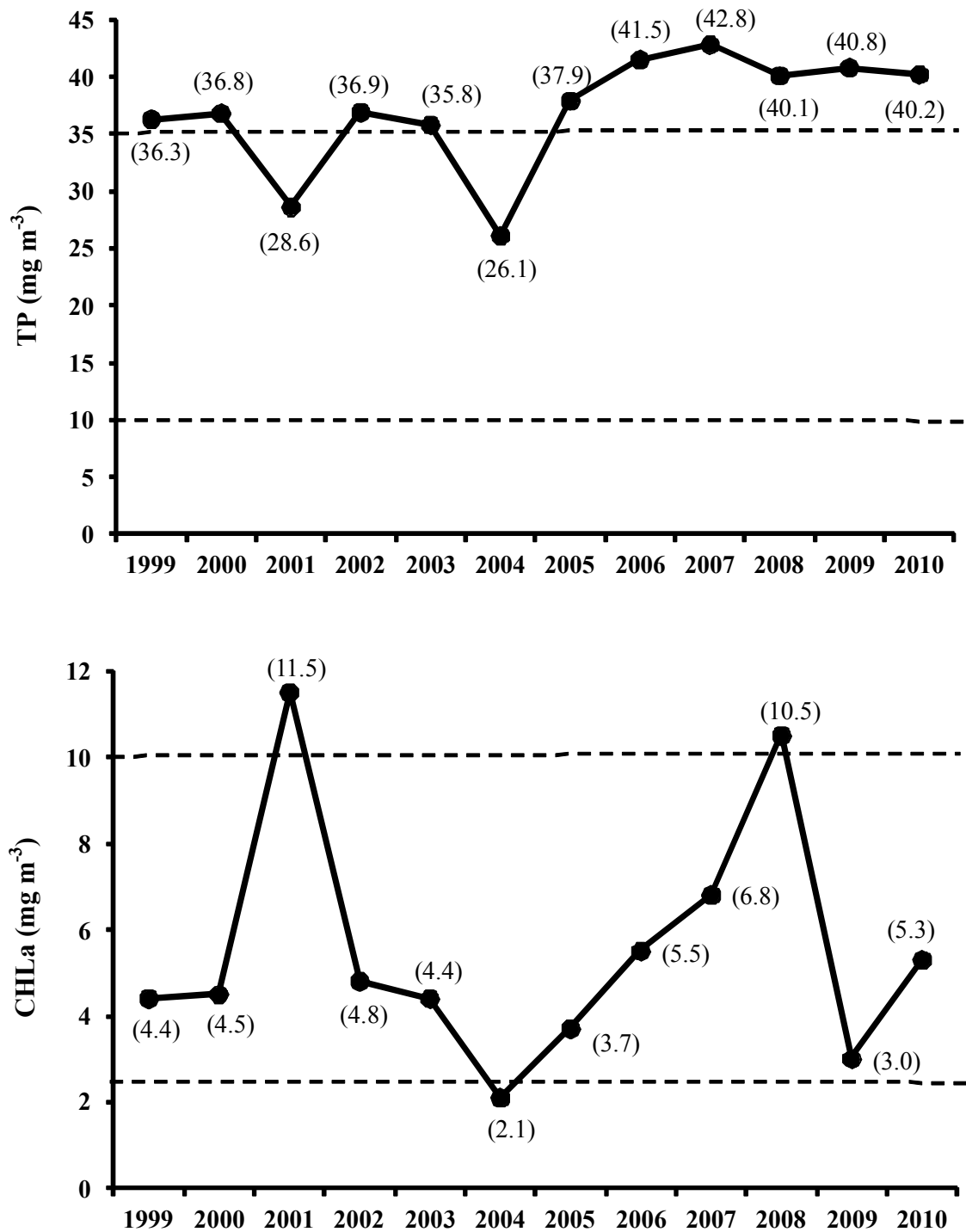


Fig. 5.2 Annual variation of total phosphorus (TP) and chlorophyll a (CHLa) concentrations between 1999 and 2010 (all figures shown between brackets refer to geometric means). Horizontal lines refer to trophic state classification boundaries: TP < 10.0 mg m⁻³ = oligotrophic, 10 mg m⁻³ < TP < 35 mg m⁻³ = mesotrophic, TP > 35 mg m⁻³ = Eutrophic; CHLa < 2.5 mg m⁻³ = oligotrophic, 2.5 mg m⁻³ < CHLa < 10.0 mg m⁻³ = mesotrophic, CHLa > 10.0 mg m⁻³ = eutrophic (INAG, 2010).

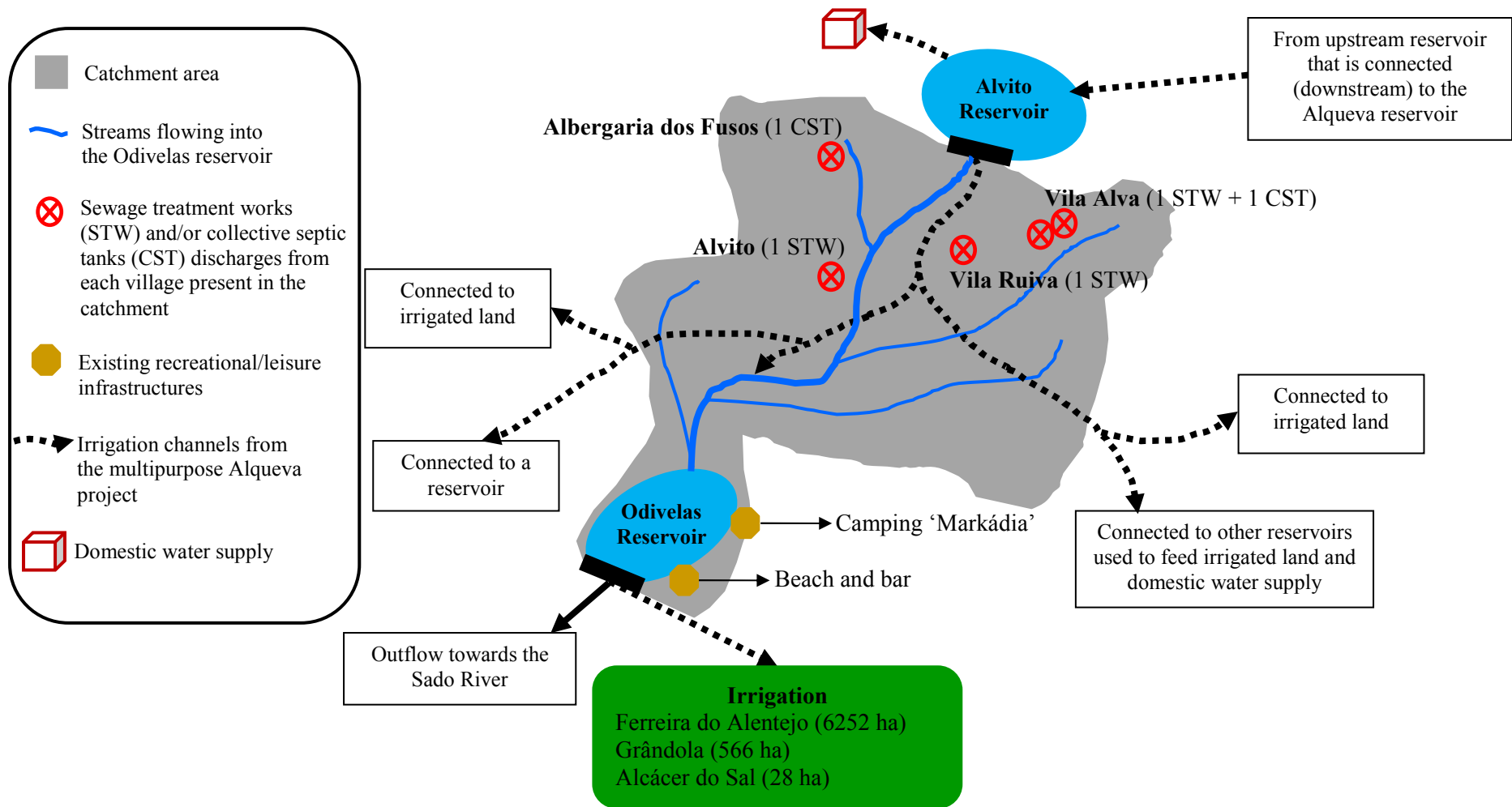


Fig. 5.3 Main elements of Odivelas Reservoir and its surroundings. Note: the Camping 'Markádia' uses water from the reservoir which is treated for domestic consumption.

5.6 The Origins of Eutrophication in the Study Area⁸⁹

5.6.1 Odivelas catchment: export coefficient model output

The total phosphorus loadings and the proportions of the total phosphorus loadings attributable to the various sources for 1990 and 2007 are presented in Figure 5.4. In 1990, the key sources of total phosphorus loading on the reservoir were the human population (59%) and agriculture (36%). The next most important contributors were, by decreasing order, rainfall (~2.5%) and livestock (~1.7%). Total phosphorus export decreased from 0.23 kg ha⁻¹ in 1990 to 0.22 kg ha⁻¹ in 2007, of which the key contributors were again the human population (56%) and agriculture (38%). Livestock (~3.0%) and rainfall (2.4%) were the next most important sources of phosphorus loading.

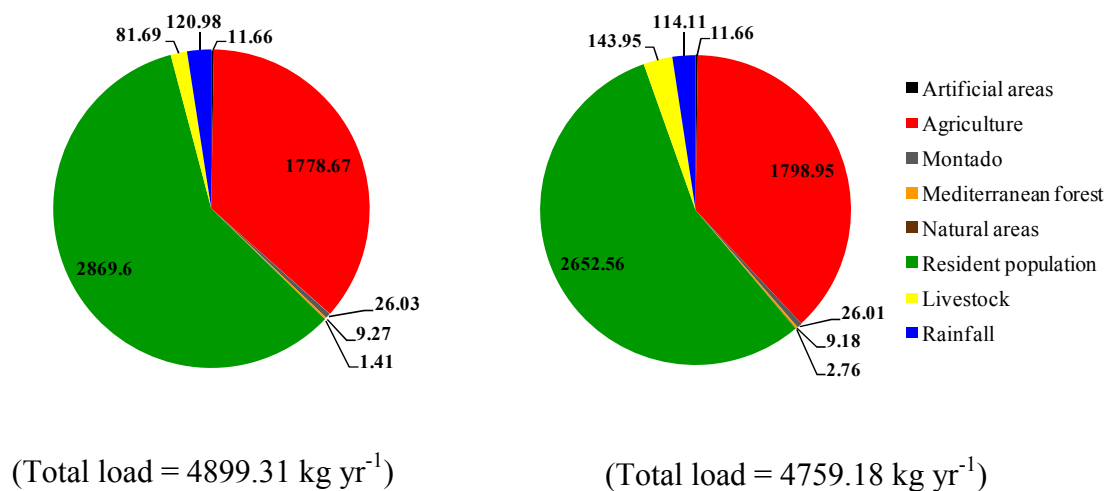


Fig. 5.4 Predicted total phosphorus exports (kg yr⁻¹) for 1990 (right pie) and 2007 (left pie) in the Odivelas catchment.

Overall, human contribution decreased between 1990 and 2007 because of resident population decline and, to a lesser extent, an increase in the size of the sewered population (with a concomitant decrease in the size of non-sewered population). The major sources of increase in

⁸⁹ The information presented in this section is based on an export coefficient model approach developed (during the preliminary field-work) with the four reservoir ecosystems comprising one of the five homogeneous planning units of Sado River basin (as shown in Fig. 5.1b) defined in the respective River Basin Management Plan (see INAG, 2002). For an explanation of the modelling approach, full results and discussion see Matias and Johnes (2012). Here, the outcomes of the analysis will be presented only for the study area, because of thesis aims and given page limitations it is not possible to include all the details of this analysis in this dissertation.

phosphorus loading from Odivelas catchment were an increase in the cattle population in the catchment, and an increase in the area of permanently irrigated land and vineyards. Overall, these results suggest that a reduction in the total phosphorus loading delivered to the drainage network in the catchment would require the introduction of management measures to reduce phosphorus export from farming as well as more efficient removal of phosphorus from human wastes prior to discharge to surface waters.

5.6.2 Scenario analysis: impacts of management intervention on phosphorus export to the Odivelas Reservoir

The impact of four possible scenarios (see Appendix F) on phosphorus export to the reservoir was evaluated. The data are presented as the change in predicted riverine total phosphorus concentrations from the 2007 baseline (Fig. 5.5a). Scenario 1 results in a small impact on predicted phosphorus loading (-2.0%). Scenario 2 produces a greater reduction in phosphorus loading (-7.6%). This scenario illustrates the need for suitable farming practices that can achieve a compromise between economic, social and environmental considerations, and it may be not necessarily be the cheapest option to implement. In particular, it may require a significant reduction in the agricultural output and efficiency (Johnes, 1996) with knock on consequences for food security and the local economy. Nevertheless, only a very small percentage of the farmer population in each catchment currently adheres to environmental schemes or good farming practices (National Statistics Institute, 2001). Thus, there may be the potential to achieve environmental benefit through encouragement of farmers to comply with this guidance. Scenario 3 also produces a significant reduction on predicted riverine phosphorus concentrations (-14.6%). Scenario 4 has the greatest effect on predicted riverine phosphorus concentrations (-54.8%). Accordingly, it is concluded that measures to reduce phosphorus inputs to reservoirs should focus on reducing effluent phosphorus concentrations by tertiary treatment (phosphorus-stripping) of effluents from residential areas, in combination with the introduction of measures to mitigate diffuse phosphorus export from agricultural land.

5.6.3 Changes in lake total phosphorus status predicted by the model run

The range of lake total phosphorus concentrations predicted by the model for the 2007 baseline and for the scenario runs is presented in Fig.5.5b. In terms of ecological status, for the 2007 baseline the model predicts mildly eutrophic conditions in Odivelas.

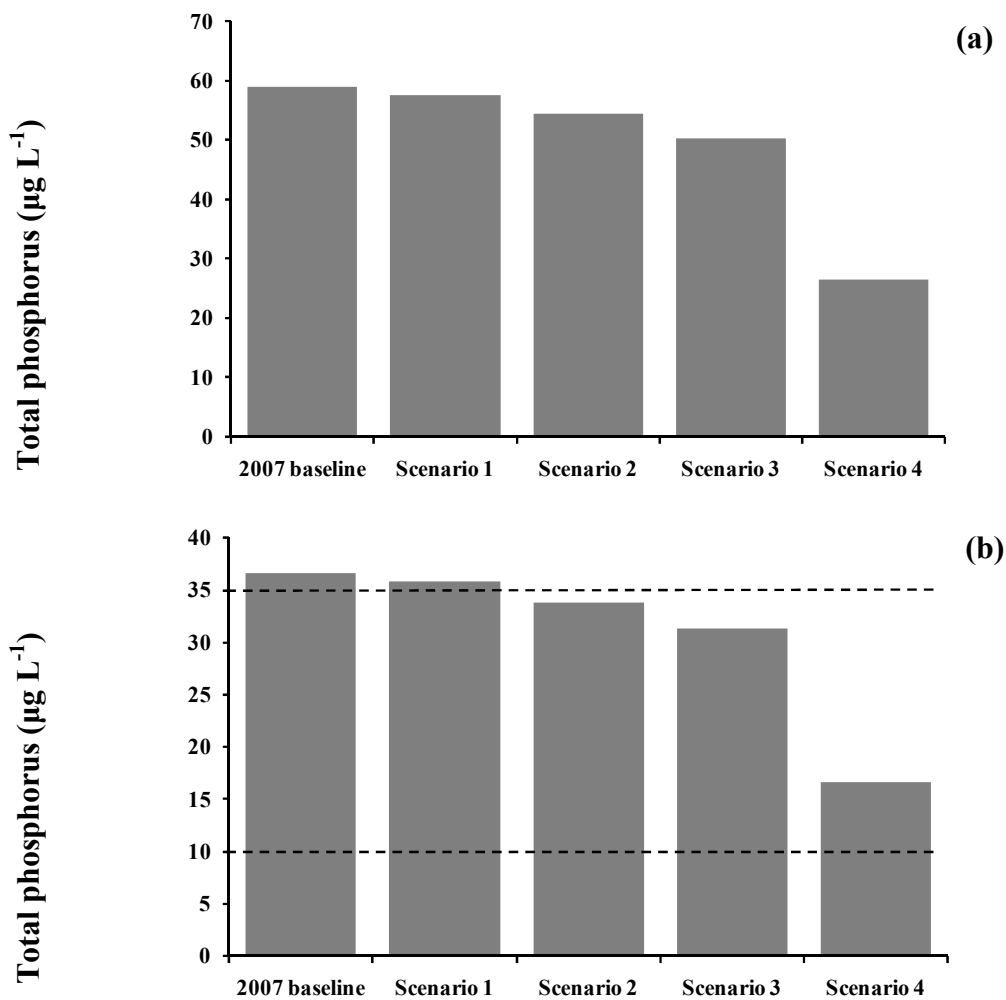


Fig. 5.5 Predicted riverine (a) and lake (b) total phosphorus concentrations of the study catchment for scenario runs (for description of scenarios see Appendix F) compared with the model 2007 baseline. Note: dashed horizontal lines refer to OECD (1982) trophic class boundaries: $TP < 10.0 \mu\text{g TP L}^{-1}$ = oligotrophic, $10 \mu\text{g TP L}^{-1} < TP < 35 \mu\text{g TP L}^{-1}$ = mesotrophic, $TP > 35 \mu\text{g TP L}^{-1}$ = Eutrophic.

The scenario analysis suggests only a slight improvement in the ecological status of the reservoir for scenarios 1 and 2. Here, to achieve a greater rate of phosphorus reduction from diffuse agricultural sources would require substantial changes in land use and management at a local scale, through the implementation of on-farm management measures, whole farm planning to achieve a phosphorus balance at farm scale, and the redistribution of high-risk

land uses to areas of the catchment with the lowest nutrient export potential (Johnes et al., 2007).

Model output for scenario 3 predicts a greater reduction in lake phosphorus concentration, suggesting a reduction in water column phosphorus concentrations to support moderately mesotrophic conditions in the reservoir. Model output for scenario 4 predicts an improvement in the ecological status of the reservoir; that is, Odivelas Reservoir is predicted to recreate mildly mesotrophic conditions. Overall, a programme with a dual focus on reducing effluent phosphorus concentrations by tertiary treatment (phosphorus-stripping) of effluents from residential areas, with a secondary focus on reducing phosphorus loss from fertilised, permanently irrigated land is likely to deliver the greatest reductions in water column total phosphorus concentrations.

5.6.4 Conclusions regarding the appraisal of eutrophication in the study area

The model application reported here highlight important principles underpinning the sustainable management of water resource quality in the Odivelas reservoir and its surroundings. In contrast to findings often reported for North Temperate European catchments, the dominant source of phosphorus loading in this semi-arid catchment is effluent discharge from point source STW and diffuse leakage from rural septic tank systems. In particular, the results suggest that a strategy based on transferring earlier published findings for North Temperate catchments to semi-arid Mediterranean catchments could lead to inefficient management of the reservoir resource, and only a slow improvement or maintenance of the current ecological status in the studied reservoir. Any management strategy targeting phosphorus export from agricultural sources in such a semi-arid region similar to those reported here would need to adopt alternative techniques that identify source areas of high phosphorus loss and offer the possibility of the proactive management of phosphorus loss at the farm and catchment scale. Overall, however, reduction of phosphorus loading on semi-arid region water resources will require improved control of phosphorus export from domestic effluents, including point source discharges from both small rural STWs and diffuse septic tank systems, if eutrophication problems are to be brought under control and good ecological status is to be supported.

Chapter 6 – Meanings and Underlying Experiences about a Reservoir and its Surroundings - Findings

6.1 Phase 1 – Quantitative Study: Representations about a Reservoir and its Surroundings

6.1.1 Response rate, refusals and sample characteristics

A total of 523 catchment residents (sampling error = $\pm 3.81\%$ at 95% confidence level) answered the questionnaire. A 98.3% response rate was achieved. Nine refused to participate in the survey because they had “No time” ($n = 5$), were “busy” ($n = 2$), “Don't know about the topic” ($n = 1$), or were “Not interested” ($n = 1$). Table 6.1 shows the socio-demographic characteristics of the final sample. Of the total respondents about 54% were woman. The age range varied from 16 to 93 years old ($M = 48.95$; $S.D. = 19.41$). About 53% of the respondents had received primary or secondary school education; 13.6% did not complete the primary school and 10.1% were illiterate, largely comprising higher age classes. The occupational structure of respondents was clearly dominated by people working in the services sector (53.4%) followed by pensioners (30.8%); students (8%) and farmers/agricultural workers (4.4%) were comparatively fewer.

The gender ($\chi^2 = 0.77$, d.f. = 1, $P = .38$) and age ($\chi^2 = 5.28$, d.f. = 2, $P = .07$) of survey sample were similar to the general population of the study area; however, there were proportionately less illiterate respondents and more respondents with upper-secondary school or further education ($\chi^2 = 71.3$, d.f. = 7, $P = .00$) than would be expected based on comparable data (NG Matias unpublished data; see Appendix B). Here, since the proportion of illiterate residents' increases with age and most of this people, as observed during the preliminary field-work, spend the day in ‘adult day centres’ or live in ‘nursing houses’⁹⁰, they were not sampled in the questionnaire survey. Accordingly, on the whole the survey sample reflects the catchment active population.

⁹⁰ The ‘adult day centers’ and ‘nursing homes’ (or ‘nursing facilities’; i.e., the institutional setting for long-term care) are community-based settings that provide an array of services such as health monitoring, social services, personal care services, meals, transportation, nursing services, medication management, and caregiver support services.

Table 6.1 Socio-demographic characteristics of the survey sample (N = 523)

Characteristic	Category	Respondents	
		%	n
Gender	Female	53.9	(282)
Age (years)	16-24	12.4	(65)
	25-34	14.3	(75)
	35-44	17.0	(89)
	45-54	17.0	(89)
	55-64	11.5	(60)
	65-74	14.3	(75)
	75-93	13.5	(70)
Education	No formal qualification ^a	23.7	(124)
	1st Cycle of basic education (4 yrs.)	20.5	(107)
	2nd Cycle of basic education (2 yrs.)	18.2	(95)
	Lower-Secondary school (3 yrs.)	14.5	(76)
	Upper-Secondary school (3 yrs.)	17.6	(92)
	University degree or equivalent	5.5	(29)
Occupation	Student	8.0	(42)
	Pensioner ^b	30.8	(161)
	Housekeeper	3.4	(18)
	Farmer ^c	1.9	(10)
	Agricultural worker ^d	2.5	(13)
	Employer or Self-employed ^e	5.0	(26)
	Full-time employee ^e	48.4	(253)

Note: In terms of 'current employment status' the sample comprise: employed, n=302; unemployed, n=14; retired, n=161; unable to work due to sickness or disability, n=4; not working (students), n=42.

^a Includes illiterate (n=53) and respondents who can read and write, but did not completed Primary School (n=71).

^b Includes: ex-Farmers, n=7; ex-Agricultural workers, n=93; ex-Housekeepers, n=12; ex-Full-time employees, n=37; ex-Self-employed, n=8; ex-Employers, n=4.

^c Refers to 'Employer' or 'Self-employed' respondents working in the primary sector.

^d Refers to 'Employee' respondents working in the primary sector.

^e Refer to respondents working in the services sector.

6.1.2 Reservoir and its surroundings uses

The survey results indicate that the majority of respondents favoured passive forms of recreation (i.e., walking/sightseeing, relaxing and picnicking); fishing and swimming were the following most favoured uses (Table 6.2). Not surprisingly, summer or spring-summer use was higher than autumn, or winter use of the reservoir and its surroundings for ‘recreational’ related activities. In addition, only a small proportion of respondents used the reservoir and its surroundings for economic related activities (i.e., livestock drinking water, livestock grazing and irrigation); these uses of the reservoir and its surroundings extended throughout the year.

6.1.3 Correspondence analyses of word associations

Figure 6.1 depicts the first two dimensions of the CA for each stimulus term (see Appendix G for contributions and models summary), suggesting a three-cluster structure of words for each semantic space, as highlighted by the dashed grey circles. To summarize the results, clusters that illustrate similar themes among the three CA were integrated and related with the ‘supplementary’ variables.

The results show a conceptualization of the study area as a productive waterbody. Namely, ‘Cluster 1’ includes words (e.g., ‘agriculture/farming land’ and ‘irrigation/irrigated land’) referring to the recognized function and importance of the study area for farming; and, specifically, the association of the “Lake” with its known primary use for irrigation (‘Cluster 5’; e.g., ‘irrigation/irrigated land’) and the “Catchment” with a traditional image of rural landscape (‘Cluster 7’; e.g., ‘Montado/oak trees’ and ‘agriculture/farming land’). These clusters tended to be associated with men, people with little or no formal education, pensioners or farmers, older respondents, and respondents who use the area for farming related activities.

Respondents also conceived the area as a place for recreation and a social space for the development and maintenance of relationships with family and friends. Namely, ‘Clusters 2 and 8’ include words related to the use of existing amenities for recreation (e.g., ‘picnicking’, ‘coffee house/campsite’, ‘fishing’, ‘recreational activities’ and ‘beach’) and leisure-based social activities (e.g., ‘get-together’, ‘friends’, and ‘celebrations/parties’), specifically, the association of the “Catchment” (‘Cluster 8’) with leisurely walks (i.e., ‘stroll’). These clusters tended to be associated with younger respondents, recreational users, students, agricultural workers or services sector workers, and moderately educated respondents.

Table 6.2 Percent of respondents using the reservoir and its surroundings for the considered activities and respective time of the year ($N = 523$)

Type of use	Acronyms	Respondents						
		Uses % (n)	Time of the year (no. of cases) ^a					
			Spring	Summer	Autumn	Throughout the year	Spring- Summer	Winter- Spring
Walking/sightseeing	WS	87.4 (457)	22	318	---	47	70	---
Relaxing	REL	56.4 (295)	11	215	---	24	45	---
Picnicking	PIC	45.1 (236)	10	175	---	12	39	---
Fishing	FSH	13.8 (72)	---	30	1	17	23	1
Swimming	SWI	9.4 (49)	---	36	---	5	8	---
Wildlife/nature watching	WNW	5.5 (29)	2	13	---	6	8	---
Boating/canoeing/sailing	BCS	4.8 (25)	1	15	---	4	5	---
Irrigation	IRR	3.1 (16)	---	2	---	10	4	--
Motor boating	MB	2.3 (12)	1	9	---	1	1	---
Livestock grazing	LG	2.1 (11)	---	---	---	10	1	---
Livestock drinking water	LDW	1.9 (10)	---	1	---	9	---	---

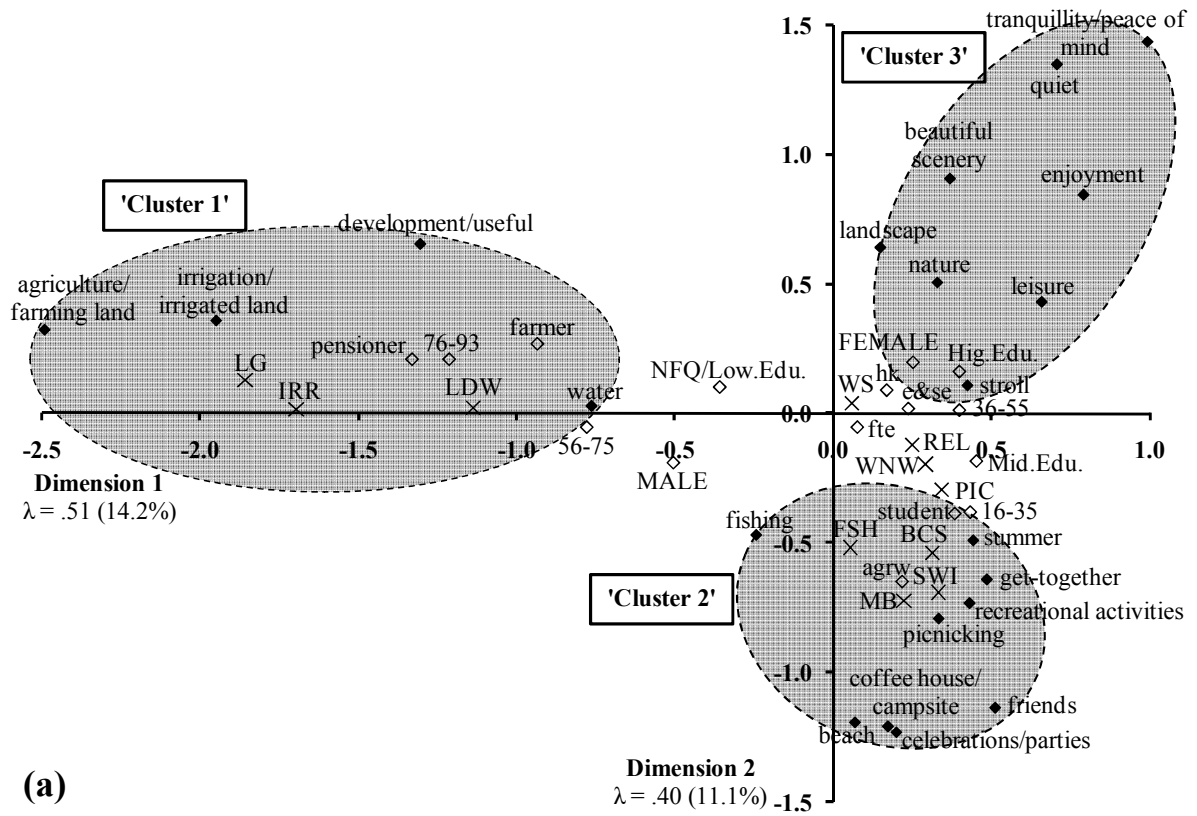
Note: figures about the number of users are based on the combined categories of ‘Once a month’ to ‘At least twice a week’; types of users are not mutually exclusive.

^a Based on respondents’ answers, a set of codes about the time of the year were developed in order to allocate the responses in categories regarding similar periods.

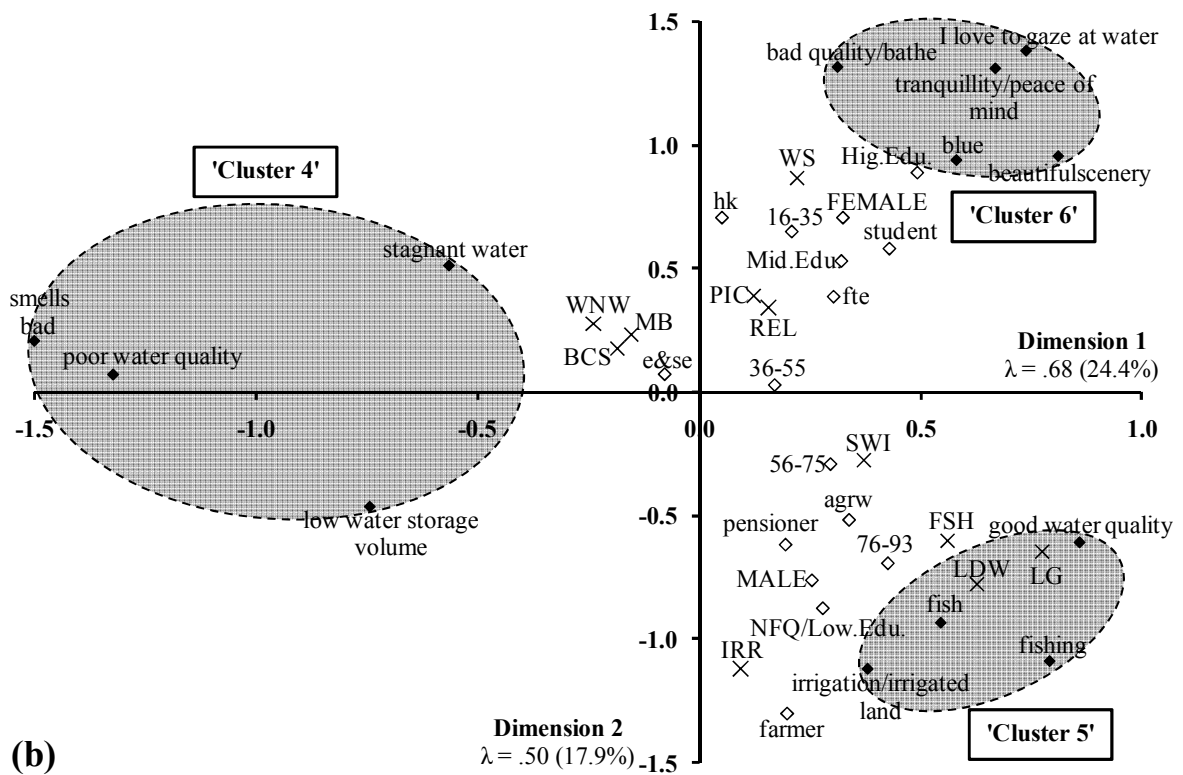
Moreover, respondents conceived the area as nature ('Clusters 3 and 9'; 'nature') associated with experiences of beauty, serenity and pleasure ('Clusters 3, 6 and 9'; e.g., 'beautiful scenery', 'tranquillity/peace of mind', 'quiet', 'enjoyment' and 'pleasant'), as well as statements suggesting that many people found the visual characteristics of water mesmerizing ('Cluster 6'; i.e., 'I love to gaze at water'). These clusters tended to be associated with women, housekeepers, more highly educated respondents, and people who use the area for walking/sightseeing.

Respondents had contradictory understandings about the "Lake" water quality. There were differences in words referring to negative and positive assessments of water ('Clusters 4 and 5', respectively; 'smells bad', 'poor water quality' and 'good water quality') and, specifically, to the poor quality of water for bathing ('Cluster 6'; i.e., 'bad quality/bathe'), which tended to be associated mainly with different types of recreational users. In the remaining paragraphs of this section, the above research findings are discussed with reference to previous empirical research.

For farmers and people with an agricultural background the study area is about its productive function, with the traditional cultivated landscapes as most characteristic. Nevertheless, Surová and Pinto-Correia (2008) mentioned that the demand for new uses of landscape such as leisure, recreation, and appreciation of traditional landscapes is increasing in Alentejo. Also, Buijs et al. (2006) reported that the European landscape is already much more associated with a 'consumption' landscape rather than a 'production' landscape. Our results also suggest this trend, where the contrast between the agricultural and recreation/leisure based representations are evident among generations. Functional ties with the landscape seem to be an important explanation of this contrast (Buijs et al., 2006). Namely, the use of existing amenities for recreation and leisure-based social activities tended to be associated with the varied types of recreational users of the area (e.g., anglers, swimmers, boaters, picnickers). Here, representations regarding social activities seem to parallel what Davenport and Anderson (2005) labelled as 'identity' meanings that tie a place to participants' sense of who they are as a family member and a member of the local community during local social meetings.



(a)



(b)

(Continue next page)

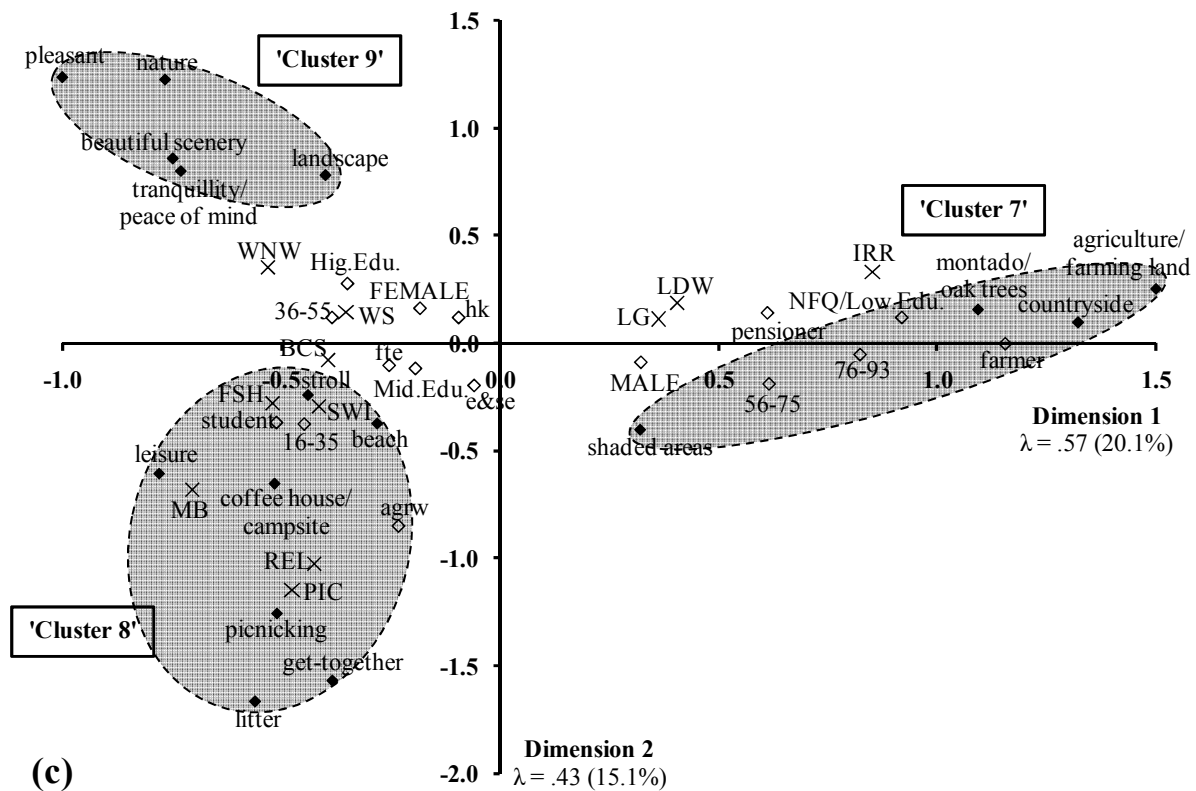


Fig. 6.1 Semantic spaces of word associations elicited for the stimulus terms (a) “Reservoir and its surroundings”, (b) “Lake” and (c) “Catchment” along the first two dimensions of correspondence analysis and supplementary variables: \diamond socio-demographic characteristics (Acronyms: NFQ/Low.Edu., no formal qualification/lower education that includes 1st and 2nd Cycle of basic education; Mid.Edu., middle education that includes Lower-Secondary school and Upper-Secondary school; Hig.Edu., higher education that includes University degree or equivalent; hk, housekeeper; e&se, employer or self-employed; fte, full-time employee; agrw, agricultural worker); \times type of reservoir and its surroundings uses (see Table 6.2 for acronyms). Note: ‘supplementary’ variables, which were projected a posteriori, do not contribute to the definition of each bi-dimensional space (i.e., semantic space) represented here; figures within brackets represent the percentage of total inertia (i.e., variance) depicted along each dimension; and dashed grey circles highlight clusters of words in each analysis (that are typical for certain groups) supported by word contributions to inertia of each dimension (see Appendix G).

Besides the associated functions, some respondents placed more value on the amenity features of the area. Specifically, the experiences of beauty and serenity seem to parallel what Buijs (2009a) called as the ‘aesthetic values’ of the landscape, or what Davenport and Anderson (2005) labelled as ‘tonic’ meanings encompassing experiences of tranquillity, enjoyment or viewing of an area scenic beauty. Also, these respondents seemed to evoke the ‘non-consumptive uses’ of nature (Buijs et al., 2006), since nature was seen as part of the study area, or what Davenport and Anderson (2005) labelled as ‘nature’ meanings, referring to the appreciation of the undisturbed/pristine character of the landscape. Here, women tended more to ‘appreciate’ than ‘act upon’ the study area when experiencing it, which may be explained by the nature of the demands placed on women by the unequal division of labour (in terms of child rearing and housework). Also, the results suggest that the study area has important restorative effects to local recreational users (see also Buijs et al., 2006).

Differences about the meanings placed upon the “Lake” water quality may be due to different levels of awareness of water problems. Which indicators and how they are selected to form judgments have both been found to vary mainly with access to the problem and personal use of resource (Faulkner et al., 2001). Our results suggest that different users (e.g., motor boaters vs. picnickers vs. anglers) may display different levels of awareness about water problems.

The implications of these findings and of data collection approach for water management will be discussed later in section 7.3. Next, I will present the research findings of the (‘Phase 2’) qualitative study, that helped explain and expand the above outcomes by exploring participants’ meanings and lived experiences more in-depth.

6.2 Phase 2 – Qualitative Study: Meanings and Underlying Experiences about a Reservoir and its Surroundings

Although it is not possible to convey the rich detail of the qualitative information in this dissertation, some sample quotes have been included with the themes (i.e., meanings and underlying experiences) to demonstrate the relationship between the interview material and the themes presented. Associated with each quote there is a reference number that points to the interview number (as indicated in Appendix C). The following two sub-sections will explore the intricacies of each emerged dominant thematic category and their associated meanings: *personal* and *social*. These two broad areas have been frequently cited in research

related to meanings of leisure and wilderness (e.g., Virden and Walker, 1999; Williams, 2000; Jordan et al., 2009); I will return to this in section 7.1. After, the interaction of personal and social meanings is highlighted. In the final sub-section, I will look at a unifying core-category called ‘Showcase of everyday life stories/memories’ that describes the connections between the previous two themes.

A conceptual ordering of the core processes (i.e., experiences, actions, perceptions, beliefs, expectations and emotions), core outcomes (i.e., meanings) and dominant thematic categories grounded in the data are illustrated in Figure 6.2. Since residents’ associated meanings were for the most part driven by what they believe and did in the setting and with whom (i.e., their lived experiences), this figure provides a framework in which I describe the meanings people associate with and the ways people experience the reservoir and its surroundings. Therefore, it may be useful to regularly refer to this figure while reading this section, as it may facilitate following the discussion as it moves from focusing on the meanings about the reservoir and its surroundings to their underlying conceptual dimensions. Moreover, since I found interrelated dimensions among some of the meanings, for clarity I provide a story-like account of the residents’ relationship with the place.

6.2.1 Personal meanings and underlying experiences

The reservoir and its surroundings engendered meanings that were psychological and intrinsically valued. These meanings seemed to relate to residents’ well-being derived from their experiences while at the reservoir and its surroundings or their fundamental beliefs about what the place symbolized to them. Here, I found that the residents’ meanings derived from individuals’ personal experiences while at the place varied within six main categories: *beauty*, *nature*, *escape and refuge*, *restoration*, *physical interaction* and *gendered practices*.

Beauty

The reservoir and its surroundings were frequently described by residents as a place to experience landscape’s *beauty*, which was often said to be the first thing they noticed. This meaning was conceptualised along three dimensions: *physical attributes*, *gazing at the place* and the *mesmerizing characteristics of water*.

Specifically, they find the reservoir and its surroundings beautiful because it offers a pleasing combination of water, trees/vegetation, Montado, and birds, among other attributes; as well as, by using words such as “amazing”, “beautiful” and “unique” in reference to the

area *physical attributes*, residents underscore the importance that they assigned to each of the physical attributes (e.g., water colour) within the setting. For example,

“I love the place. The scenery is extremely beautiful. It is a very green, rural place with a few farms, with the reservoir and surrounding woods. Every season has their special features that make the place so beautiful. Every day I realize how lucky I am to work at this beautiful place.” (Interviewee #2)

“The reservoir and its surroundings is a unique place with its vegetation, the blue water of the lake during sunny days... I really think that place is a unique amazing setting... And I think that to me it is a special place partly because of how visually spectacular it is.” (Interviewee #7)

Specifically, *gazing at the place* denotes how the experience of *beauty* is triggered by the enthralling features of the place that are enjoyed passively, either from a car window, a park bench, or while passing over it or next to it on foot. In other words, focuses upon the ways residents establish a contact or connection with meaningful characteristics of the place to illustrate the visual appeal of it. Examples of residents’ comments highlighting this include the following:

“People spend hours sitting beside the lake, simply gazing at the water and enjoying the scenery.” (Interviewee #3)

“When I visit the place I love to gaze at the reservoir and its surrounding landscape because of its beauty... It’s about enjoying the beauty of the place... enjoying the presence of the water in such an arid region, enjoying the presence of the shady trees in such a sunny and arid region, which all together is just beautiful... and that becomes the focal point of my attention. It’s pure enjoyment. I become absorbed by the beauty of the place... by the beauty of its elements... the water, trees, birds, cattle, Montado, etc.” (Interviewee #18)

Residents also believed that the lake contribute to the charming character of the place. Specifically, several residents mentioned that the *mesmerizing characteristics of water* are extremely important for the beauty of the scenery or uniqueness of the physical setting. Examples of residents’ comments are perhaps more compelling:

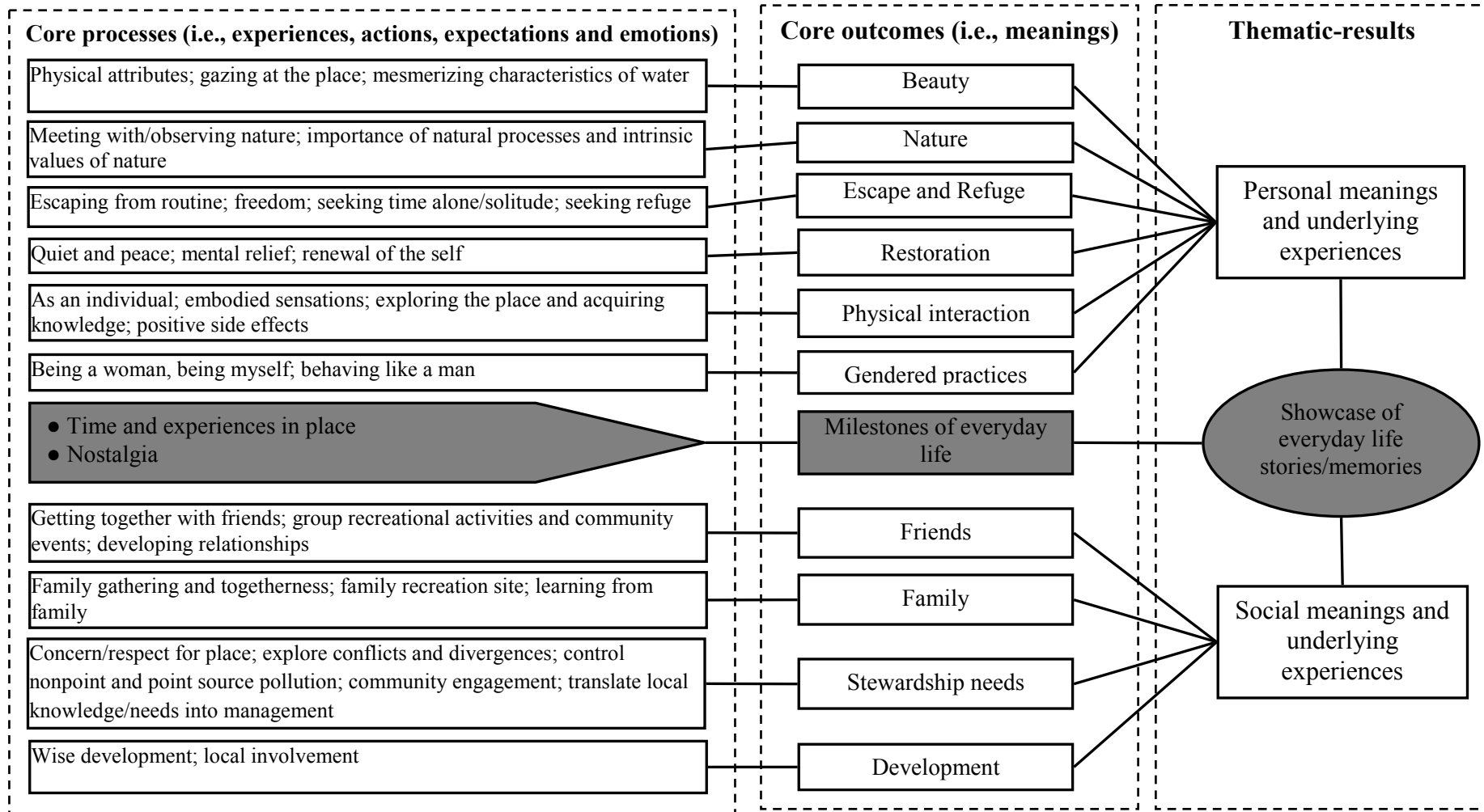


Fig. 6.2 Conceptual ordering of the emerged themes, associated meanings and underlying processes ascribed to the reservoir and its surroundings by residents. Note: the grey shaded circle highlight the emerged overarching core-category, associated meaning and its elements.

“It sort of mesmerises you doesn’t it, looking at the blue water... the continual change and movement, the noise of the water near the shoreline... and the light on the water is lovely... in such an arid region this immense quantity of water just makes the place so different and the landscape so beautiful. I believe that the mesmerizing characteristics of water are at the core of this place beauty. It gives the area a unique character.” (Interviewee #13)

“The presence of the reservoir in such a prevailing arid landscape it’s mesmerizing... It is wonderful and unique. For example, sometimes you start to get the breeze which just ripples the surface, and that’s always changing... is magical and fascinating. That’s why the place is unique and beautiful.” (Interviewee #25)

The above conceptualisation serve to reinforce the findings of the (‘Phase 1’) quantitative study, which also found that the *beauty* of the reservoir and its surroundings was one of the most frequently reported meanings (as shown in Fig. 6.1). To summarize, the *beauty* of the place is related to its meaningful physical attributes, including the uniqueness of the reservoir presence in the landscape, and how residents gaze at these attributes. Moreover, residents find the place beautiful particularly because it offers a pleasing combination of features pertaining to *nature*, as explained next.

Nature

Besides the experience of beauty, many residents associated the reservoir and its surroundings with *nature*. This personal meaning was characterized by an experience of the place through two conceptual dimensions evident in the way *nature* was manifested as a visual landscape; namely, a sense of immersion in the natural world and the importance of natural processes and intrinsic value of nature associated with the place.

Residents associated the visits to the reservoir and its surroundings with *meeting with/observing nature*. Specifically, several respondents mentioned that the area offers many natural features commonly associated with wild places, such as silence, water, flora, wildlife and a landscape void of human influences like roads and other developments, which provides them the place to meet up with nature and influences this meaning they attach to the place. Here, nature appreciation was expressed in various forms, as nature, natural, wild, and wilderness. Examples of residents’ comments are perhaps more compelling:

“It’s one place where we have that interplay with nature... with a landscape void of development and roads... with the silence of nature... in some areas it’s very pristine... the remoteness... it feels like rarely do people get up there. It’s about meeting with nature.” (Interviewee #17)

“When I stroll around the lake I watch the birds... sometimes flying near the water... sometimes just chirping away in the old oak trees. That’s beautiful! That’s really about observing nature... but also having nature around me.” (Interviewee #24)

“I associate the reservoir and its surroundings with nature because it assembles a lot of characteristics common to natural places. For example, in the spring I can see a variety of wild flowers as they begin to bloom... when I stroll in summer at dusk around the reservoir it is really quite common to watch a fox near the water... we stare at each other but eventually the fox runs away... I also like to walk among the shady trees with their copious green leaves. I really feel meeting with nature over there, I really do.” (Interviewee #5)

Beyond the above conceptualised dimension, some residents mentioned the importance of the place associated *natural processes and intrinsic value of nature*. Namely, respondents’ personal use of the reservoir and its surroundings is as important as knowing that the place is there and is in good condition for the fish, wildlife and for future generations; as well as, an understanding of the interconnectedness of the local ecosystem, and an appreciation for how human activity impacts the reservoir and its surroundings. Examples of residents’ comments highlighting this include the following:

“I like seeing the wild birds. It makes me happy that they are there. When they are there we know their habitat is still there. Also, my concern is with the protection of the nature for two reasons: for its intrinsic right to exist and because of its ecosystem function. The connectivity of everything, all components are critical to the function of the reservoir and its surroundings as part of nature, which in turn connects to ecosystem services useful to humans.” (Interviewee #4)

“Besides my personal use of the place I am also concerned that the area is there and in good condition for the fish and wildlife...and of course for my children and grandchildren. If I really had to choose, I would say that some areas should be kept away from people during some times of the year to assure that the place maintains its natural integrity and natural functions. For example, the nearby wetland called ‘Lagoa dos Patos’, which is a very important attraction point for a variety of aquatic birds... So, preserving this area will maintain the biodiversity and local vegetation that are important for the reservoir and its surroundings as a whole... The fact that it is there, we should be grateful.” (Interviewee #27)

Other respondents also mentioned worries about the variation of the reservoir water level, which they believe may cause problems by negatively impact the natural functioning of the place.

“I like to visit the area... A lot of birds live in this area, as well as fish, frogs, and many different plant species can be observed... but I am also concerned about some of the natural characteristics of the area... the importance of the reservoir... the role that it plays in the ecosystem as a whole and the interconnections between what we do on the land. My vision would include it as being actually quite a precious thing, instead of seeing it as something that’s just taken for granted. For example, too much water is pumped out of the reservoir during the summer for irrigation... so, the water level becomes so low that the water quality decreases and it harms the fish... a lot of times I see dead fish near the reservoir shore when the water level is low. I believe this is not good for this beautiful ecosystem... I believe that such abrupt water level variations will impact the local biodiversity on the long term.” (Interviewee #12)

To summarize, the whole concept of contact with *nature* was considered very important as well as the associated natural processes and intrinsic values. The above examples also reinforce the findings from the (‘Phase 1’) quantitative study, which found that respondents conceived the reservoir and its surroundings as *nature* (as shown in Fig. 6.1). In addition to the experience of *beauty* and *nature* associated with the reservoir and its surroundings, many residents denoted the ability of the area to facilitate *escape and refuge* from everyday life.

Escape and Refuge

This meaning was expressed by describing the reservoir and its surroundings as a place people escape to, where they experience freedom and solitude, and where they feel protected from everyday life. The concept was defined along four intertwined dimensions: *Escaping from routine, freedom, seeking time alone/solitude* and *seeking refuge*.

Escaping from routine highlights the way residents denote how the reservoir and its surroundings create opposing opportunities to their day-to-day experiences; in other words, residents described the physical setting as a place they escaped to in order to have some free time from the pressures of everyday life. Examples of residents’ comments are perhaps more compelling:

“I have found necessary to get out of Alvito from time to time... I am a very sociable person. I’m very involved in the community, but I also value my solitude extraordinarily... I also stroll with friends, but I value those times when just, there’s a sense of connection with the natural world around me... because I wasn’t distracted by talking... But for me a trip out of Alvito to the reservoir and its surroundings is to do things that I don’t do here... it’s an escape from my routine.” (Interviewee #15)

“This is a time I spend away from home. No laundry, no everyday headaches troubled me when I am out there near the reservoir away from my routine... I feel escaping from my everyday life with nature around me.” (Interviewee #21)

These interview quotes also illustrate how *nature* is important as an abstraction that emphasises *escape* meanings because of a sense of immersion in the natural world. Moreover, living in a small town also brings feelings of being stifled and a desire for anonymity at times. This interplay between recognition and anonymity ties directly into the idea of searching for *freedom*. Accordingly, several residents reflected on how the reservoir and its surroundings freed them from everyday life constrain. Examples of residents’ comments highlighting this include the following:

“One thing that I like about Alvito and this community is that I’ve been here all my life, so I know a lot of people and I have a lot of acquaintances and there’s a great support network... There would be a network of people who would come to my aid. And I would do that for them. So that’s a marvellous thing. But there’s also no way in this village to be anonymous, which is a great feeling. You go into a restaurant, the library, or the health centre and you know everyone. All this contact, you walk down the street, and it’s a wonderful feeling. But for me at least, I need to get away from that from time to time. And so it’s a great feeling of freedom, and that ties into a lack of responsibility for a given time of walking alone near the reservoir and nobody know who the hell you are.” (Interviewee #29)

“How to describe it... sometimes the ability to just take off from Alvito and go walk on a trail around the reservoir and go light, it’s a feeling of freedom.... where a person is allowed to be free... Of just being able to walk near that piece of nature... and that’s refreshing enough... it’s basically that feeling I get and associate with escaping from routine and feeling free.” (Interviewee #8)

The above examples of interview quotes describe how *escaping from routine* and sense of *freedom* interplay and are closely interconnected to meet residents’ needs of time-off from

their everyday life. Nevertheless, implicit in the above examples is also the need expressed by some residents of *time alone/solitude*. Specifically, some residents use trips away from their village to find time alone that fulfils their need of escape and freedom away from distractions and responsibility; as well as, a feeling of getting back to nature in solitude at the exclusion of all other outside distractions. So, they deliberately experienced the place alone. In addition, the idea of being alone, or needing solitude, was also mentioned by other residents as being connected to *seeking refuge*; namely, this dimension conceptualizes how residents associate the place with a refuge for them to be alone and away from everyday worries. An example of a resident comment highlighting this includes the following:

“I feel comfortable going out alone... it’s a very personal time. And that time to myself gives me a sense of freedom because I’m discovering things in myself. Feelings or emotions come up that I really enjoy. That place does that... you know, to me, it’s just being able to go there and becoming part of the area...becoming part of nature... like a refuge for myself. And just sitting down and letting the sun beat on you, and looking at the vegetation, looking at the reservoir and surrounding landscape, watching things happen... It’s discovery, but it’s also very complete self satisfaction... it’s time for myself in a place where I feel protected from everyday worries and responsibilities... away from everything... the wild, the loneliness of the place... and you get to feel pretty much away from things up there... but you also feel protected.” (Interviewee #11)

To summarise, the reservoir and its surroundings are conceptualized here as a place to get away from one’s everyday life, to experience freedom to move around and freedom of thought, having no people or being uncrowded, for being secluded and as a retreat for the self as important elements of residents connection to the place. *Escape and refuge* meaning emerged through the interviews, having not been mentioned during the (‘Phase 1’) quantitative study; I will come back to this in section 7.3.

Restoration

This meaning was conceptualized by describing the reservoir and its surroundings as a place where people sought and found *quiet and peace*, where they experienced *mental relief* and *introspection*, and *renewal of the self*. These are therapeutic elements that heal residents from the stress and pressures of everyday life, allow them to clear their minds, and they report this as a need in their lives. Moreover, this is a case where the social construct or relationship that

residents have with the reservoir and its surroundings supports or helps people reap the benefits of spending time on the area.

Restoration meaning is somehow interconnected with the previous personal meanings. That is, residents talked about the reservoir and its surroundings as a place that is beautiful, isolated, and natural, and how they usually experienced this setting alone. However, they also mentioned how important is the opportunity to escape to and seek refuge in a peaceful and quiet setting alone to clear their minds in order to think freely. Accordingly, several residents focused on *quiet and peace* as the main descriptors of the reservoir and its surroundings they felt attached to. Examples of residents' comments highlighting this include the following:

"I like the area mainly because it's a quiet place where I can go alone contemplate the scenery and enjoy some peace... Being surrounded by nature makes me feel calm... and this is very important to me... otherwise how could I have some time away from my daily problems and pressures?! Stay home and watch nature thru my house window? I don't think so... it's not the same..." (Interviewee #10)

"I need to escape from my everyday routine... and in order to do that I need a quiet place to find some peace... and the reservoir and its surroundings is the right place to me... it's so quiet that I automatically feel tranquil when I am up there... the birds, the smell of flowers, the quiet noise of the water against the reservoir shore... this quietness makes me feel good." (Interviewee #14)

"We are talking about a really quiet place... a place where I go to run away from my everyday worries and stresses... things to worry about and think about are all gone because it's a totally different space and a place... it's nature. It's really calming, no stress... It's actually a pleasure and enjoyment... Yes, calming and peaceful..." (Interviewee #19)

Briefly, the *quiet and peace* these residents describe provides them with an opportunity to disconnect from the distractions of their everyday life and clear their heads. Without these distractions they use their senses to connect with the surrounding natural setting (e.g., feeling nature around them, the sounds of bird songs, and the smells of the vegetation). Accordingly, *mental relief and introspection* is a conceptualization of how residents expressed a feeling of reassurance and relaxation following release from responsibilities of everyday life endorsed by the quiet (and natural) atmosphere of the place. Here, residents' relaxed examination of and attention to their own ideas, thoughts and feelings may come about, as a process of self reflection. An example of a resident comment highlighting this includes the following:

“I go a lot alone to the Odivelas reservoir. That’s a place where I go to contemplate life... a place where you can go, and be alone, and feel, I don’t know, somehow all of the cares of the world sort of drop away... the quietness of the place and the scenery sort of disconnects you from everything. It’s very, to me it’s kind of a Zen-thing, and you’re very in the moment, that’s my experience of it you know. I allow myself to think about my life in a very relaxed mood... Being able to step back from my own problems and worries and try a new angle on how to approach them and think about my life.” (Interviewee #16)

The above interview quote elucidates how stepping away from daily life into the reservoir and its surroundings allowed this resident (among others) to examine her everyday life with “new eyes”; in this sense, she was able to see the “bigger picture”. So, through an intertwined *mental relief and introspection* one may incur in what I conceptualized as a *renewal of the self*. That is, clarity of thought that lead to cope with the negative effects or problems of everyday life (e.g., rationalizing future decisions, deciding what is important, or processing significant life events) and applying these solutions to life. An example of a resident comment highlighting this includes the following:

“When I come back from the reservoir I kind of have a bigger picture of things because you've had a reprieve from it. I look at it in the same way as if I was standing on top of a mountain. And I don't think you can truly know something until you walk away from it and turn around and look back at it ... And so when I go up there, and I come back, I feel like I have stepped away from it, and I come back and look at it with whole new eyes... it revitalizes... I am able to cope with my life much better... I am able to redefine my priorities and what is important in my life... And this is something that I do a lot of times... It’s as necessary as having my family, as eating, and if it’s neglected one goes down... We all need it. The fresh air, blue sky, I don’t know... it is just something we really need.” (Interviewee #16)

To summarize, respondents described the reservoir and its surroundings as a place where they can be alone in a quiet and peaceful setting, and where they can shift their focus away from everyday life, and where they can clear their minds to think and sort out ideas and conflicts. These elements come together to heal people and restore them in a transformative process whereby they emerge from the setting with a clearer head and calmer state of mind. Throughout the interviews most of the participants said this was a very important meaning of the reservoir and its surroundings for them. Moreover, a crucial element was that this

experience occurs in the natural environment; in other words, sitting in a quiet room alone in the house looking out the window would not produce the same sort of transformation. The above conceptualisation serves to reinforce the findings of the ('Phase 1') quantitative study, which also found that the reservoir and its surroundings were associated with feelings related to restoration (as shown in Fig. 6.1, on pages 150-151).

Physical interaction

This personal meaning illustrates the elements of a solitary embodied activity with and in place. Moreover, is normally considered to be an activity with no obvious external forces driving one to attend. Specifically, *physical interaction* meaning was defined along four dimensions: *as an individual, embodied sensations, exploring the place and acquiring knowledge* and *positive side effects*. The activities that were discussed that fall under this category are: strolling, mountain biking, motorcycling, jogging (or trail running), fishing, canoeing, windsurfing and swimming.

Here, residents interact with the area in physically challenging and overwhelming ways, whereby interaction patterns are primarily focused on the individual's experiences and dependent upon an individual's perspective; this is precisely what characterizes the dimension *as an individual*, in contrast with the dimension *group recreational activities* presented later (in sub-section 6.2.2). Examples of residents' comments highlighting this include the following:

"I associate the reservoir and its surroundings with pure physical activity... I do mountain biking... and I go there a lot of times to do mountain biking... I go there alone...because this is about a personal time of pure physical interaction with the area... pure adrenaline... it's about challenging myself against nature, against the unexpected adversities of the surrounding environment..." (Interviewee #24)

"Almost every weekend I go to the reservoir canoeing alone... of course sometimes I go with friends, but I also enjoy go alone, by myself, with no rules and no expectations... I simply take myself into it and enjoy the moment and the place alone..." (Interviewee #20)

Embodied sensations dimension describes the role of the body in the physical activity practices at the reservoir and its surroundings. Specifically, people embodied experience is embedded in the physical setting as they see, smell and feel through their body (and skin) and as they move in relation to the changing dynamics of the wind and the land or water. For

example, when mountain biking the body reacts to and anticipates the continually changing environment; and perhaps the more so in water-based activities (such as canoeing, windsurfing or swimming) where the waterscape is mobile and fluid. Examples of residents' comments highlighting this include the following:

"I sail there regularly during the summer months and have spent much time there on and off the water since I was a kid. When I am windsurfing I feel the water rushing past my feet and legs... The wind in my hair... I sense the wind shifts in strength and direction and move my body in anticipation to the wind and the waves. I feel the power of the wind and the ability of my body to work with the wind and the ripples... Seeing the wild birds and the fish jump delight me further... the smell of mud... these are some of the beauties of windsurfing over there... and of my interaction with the area."(Interviewee #5)

"I love running next to the reservoir during the spring and summer months... there's something special about that place... that's why I go there running... there is a wide variety of ground... I feel the stones, the sand, the slopes... the dust left behind when I pass by... while running I love hearing the crickets chirping and the birds singing... the smell of the spring flowers... the summer heat, the squish of mud by the shoreline of the reservoir... and the sting of hot sand in the bare feet when I finish running by the reservoir beach." (Interviewee #28)

During these activities residents mentioned about observing or discovering special or unique attributes and phenomena while exploring the place. Accordingly, residents tend to explore the wildness, ruggedness, and uniqueness of the place and experience complexities and novel challenges associated with the physical activity. These individual experiences and challenges seemed to expand their *knowledge* about the setting. An example of a resident comment highlighting this includes the following:

I feel really excited when I get there... When you have a sunny day you get really excited. And then I feel like I want to explore. I just jump in and paddle along until I find something interesting... For example, the small islands that you find in the middle of the reservoir... where you can harbour for a moment... or where you can spot some wild birds... it fascinates me. I feel fascinated and explorative... when I am in the middle of the reservoir and looking out over the water surface... I feel humbling that nature is so huge and grand... I feel a big sense of accomplishment and experience." (Interviewee #20)

Moreover, in these activities the mindset is purely play-like, and that brings a certain amount of relaxation with it. So, even though outdoor physical activity has some positive effects, these effects seem to be *positive side effects*, rather than the main cause itself for attending.

“Well... mountain biking is one of my favourite sports... I like to explore the area while I am mountain biking... I like physical activity... and it’s nice to spend time outdoors... and that’s really how I enjoy a lot of my free time... that’s really how I seek and enjoy the area... it’s about an important part of my life style... and of course it’s usually pretty relaxing... the simple physical feeling it gives you is great I think... something breaks down... you don’t usually get wound up.” (Interviewee #24)

To summarize, *physical interaction* meaning is about solitary physical exercise in the reservoir and its surroundings, highlighting the significance of the senses, the character of discovery and acquired knowledge in these practices, and the associated positive side effects. Here, the interviews helped discover and conceptualize this personal meaning in relation to the *recreational activities* meaning already evident during the (‘Phase 1’) quantitative study; I will come back to this in section 7.3.

Gendered practices

During the first interview with a male resident the following comment was made:

Interviewer: During the survey, a number of you have associated words like ‘tranquillity’, ‘peace of mind’, ‘quiet’, ‘enjoyment’, ‘I love to gaze at the water’, ‘beautiful scenery’ with the reservoir and its surroundings. Thinking about your own experience, what specifically about the place do you feel attached to?

Interviewee #1: Well... I do not associate the area with such feelings of ‘peace of mind’, ‘tranquillity’ or ‘quietness’... well... I believe that’s more a woman thing... I believe that’s a woman thing visiting the place specifically for that kind of emotional feedback.

Moreover, the findings of the (‘Phase 1’) quantitative study (see sub-section 6.1.3) showed that women tend more to ‘appreciate’ than ‘act upon’ the place when experiencing it. Therefore, this demanded further analysis to understand if and how this may reflect differences in how women and men are attached to the place. Specifically, how are ‘gender

differences' understood from the perspective of the both male and female residents, and how is it (or not) manifested while experiencing the place.

Seen in this light, the analysis of the interviews suggested that residents associated the reservoir and its surroundings with *gendered practices*. Specifically, this meaning conceptualizes how gender figures subtly and pervasively in the way residents interact with the place. Many gendered practices are indeed over learnt and performed unconsciously. Here, many residents mentioned that the social norms and expectations around femininity and masculinity may shape differences between how women and men interact and therefore conceptualize the reservoir and its surroundings. However, this does not mean that an emotional attachment to the place is exclusive of women or men. Two dimensions characterize this meaning: *being a woman*, *being myself* and *behaving like a man*.

Being a woman, being myself illustrates the social expectations about women responsibilities (i.e., domestic work, shopping, child nurture, professional duties, etc) and how they may shape women experiences regarding the reservoir and its surroundings; namely, by comparing daily routines based on gender roles, respondents mentioned that women may need and value more time alone at the reservoir and its surroundings as an occasion to be away from everyday life routine/responsibilities and to be themselves. Examples of residents' comments highlighting this include the following:

“Being a woman it’s much more demanding than being a man... at least in this rural area... it means a week full of work and responsibilities... we have to take care of everything... there’s always something we have to take care of... the kids... the kids’ school... the work... the family... our boyfriend and after our husband... we have all these responsibilities on top of our heads... so... when we have the opportunity to be in such a quiet place it’s a moment of respite... as a woman, I will use that free time to relax... a time to disconnect from everyday responsibilities and worries... a time to have some freedom from our role of wife and mother... of care-giver... a time to be myself... maybe that’s why women, including me, tended more to associate the reservoir and its surroundings with ‘quiet’, ‘tranquillity’ and ‘peace of mind’... you know, being a man it’s a much more easier role... so maybe they don’t need to think about this kind of things... maybe that’s why they prefer to go to a bar meet up with friends and enjoy a beer... I believe that men have much more opportunities to relax than women... that’s why we value much more a place like that to relax.” (Interviewee #8; female)

“Women have their jobs... and when they return home they have to take care of the kids, of the laundry and all other domestic work... meanwhile men have their free time to relax and chat

with friends... we just have to go home and seat and the dinner is waiting for us... I have to admit that... I have heard once the expression "Is like living in a hotel" and it's true most of the times... and maybe still is among a lot of younger couples... that's the way people see it and do among these rural areas... So, maybe those times women have at the reservoir and its surroundings are times of escape from their routine and responsibilities... times they value as moments of solitude and peace to be themselves." (Interviewee #9; male)

These interview quotes also illustrate how *being a woman*, *being myself* dimension overlaps with meanings of *escape and refuge*, and *restoration* as outcomes of women (common) personal form of interaction with the reservoir and its surroundings. This also reinforces the findings of the ('Phase 1') quantitative study that women tend more to 'appreciate' than 'act upon' the study area when experiencing it.

Behaving like a man illustrates man-appropriate and man-typical behaviours regarding the reservoir and its surroundings; that is, the pattern of behaviour in man, accepted as 'normal' and to which a male individual is expected to conform. Accordingly, in some cases man-appropriate behaviours may encourage the absence of a statement and/or acknowledgement of an emotional attachment to the place. Here, statement means a clear expression of having an emotional attachment to the place whenever it happens; and acknowledgement means the recognition of the importance or value of emotional attachment to the place. Also, man-typical behaviours illustrate the more common type of physical interaction with the area associated with men, which (in turn) also contributes to the stereotype beliefs about typical leisure behaviours for women and men. An example of a resident comment highlighting this includes the following:

"On the one hand, I believe that we still live in a society with stereotype beliefs that attributes specific characteristics to women and men... and that determines whether specific behaviours are appropriate for a woman or a man... some attributes such as sensitivity or affection are considered more typical of women, whereas attributes such as aggression or courage are considered more typical of men... and in Alentejo there is a lot of pressure about what means to be a man... so they may be tempted to keep in with a stereotype to feel more safe... of course we man also cry and are emotive... but the outside pressure make us behave like 'real man'... so that's why some men may be restrained about stating any emotional attachment to the place...and maybe this may

explain why women tended more to associate the place with emotions comparatively to men. On the other hand, I also believe that men use and consequently associate the area more with physical activities, which may also contribute to the stereotype beliefs about typical leisure behaviours for a woman or a man...” (Interviewee #4; man)

The above interview quote also illustrates how *behaving like a man* conceptualization overlaps with the *physical interaction* meaning as an outcome of men (common) personal form of interaction with the reservoir and its surroundings.

To recapitulate, the above conceptualized personal meanings associated with the reservoir and its surroundings were related to the visual appeal of the place, to nature and, for some, even to become part of nature, escaping everyday life and seeking refuge, important qualities associated with peace and quiet, and solitude, presenting an opportunity to relax and calm down, was considered to be a place to heal or rejuvenate oneself, solitary physical interaction and gendered practices.

6.2.2 Social meanings and underlying experiences

Residents associated the meaning of the reservoir and its surroundings through personal, introspective, and affective terms as well as through a social context, which draws attention to the importance of shared experiences in creating meaning. Specifically, I found that the residents’ social meanings varied among four main categories: *friends, family, stewardship needs* and *development*.

Friends

Friends were often mentioned in explaining the meaning of the reservoir and its surroundings, which denotes being at and engaging with a place and one’s companions and/or find others/strangers who share their interests and viewpoints. Accordingly, this meaning was conceptualised along three dimensions: *getting together with friends, group recreational activities and community events* and *developing relationships*.

Getting together with friends denote how the place becomes meaningful because is where people meet with friends and acquaintances and provides a backdrop where friendships are strengthened. Examples of residents’ comments highlighting this include the following:

“I like being able to talk with my friends in such a tranquil surrounding... that’s such a beautiful place where I can spend hours with them... and the time I spend hanging out there with my friends helps me leave my worries behind... sometimes we forget about time... we chat all afternoon... and sometimes we wait until the sunset before we go back home.” (Interviewee #1)

“When I think of what the reservoir and its surroundings means to me, I think of friendship... I think about the times I spent over there with my friends enjoying the afternoon and talking about our worries and dreams... I think about how we keep meeting over there just to be together and enjoy it in a beautiful and quiet environment... surrounded by nature...”

(Interviewee #5)

Social physical activities in place were also important. Specifically, *group recreational activities* denote the enjoyment residents experience at the reservoir and its surroundings through group recreational pursuits and hobby-like activities. Some of the activities that were discussed and fall under this category are: canoeing, jogging, strolling, camping and picnicking. For example, exercise and recreation groups such as ‘canoeing friends’ or campers were common ways residents spoke about the joy of sharing the place with others and about how the interaction with others improved their experiences of the place. Examples of residents’ comments highlighting this include the following:

“I do a lot camping trips with my friends over there. That’s an important thing for us to do... we share several days together in the middle of nature... all together... that’s a great feeling you have when you are in a natural place that is stunningly beautiful together with a group of friends... and that freedom... we share a lot of moments... but is funny how we learn with each other about the different tasks we have to do during our stay... so, it’s not only about being together and about friendship... it’s also about sharing and learning... I am talking about simple things like learning how to assemble the tent, or about light the fire to cook the dinner... it’s also about these things... it’s about things going well by learning with each other and with the place.”

(Interviewee #28)

“We go a lot of times canoeing to the reservoir. It’s a way of being together and enjoying nature... You have a 360 degree water horizon when you are in the middle of the reservoir... It’s about a sense of being away from the world... but these trips are also very social... because you are sharing it. You have a bonding moment because you are in the middle of a natural setting... so, for example, you are very dependent on one another over there for your safety...”

(Interviewee #12)

Here, residents also associated the reservoir and its surroundings with *community events*, which complement *group recreational activities* by emphasising the importance of place-based festivals in outdoor social experiences. These place-based festivals tended to take people out of their ordinary circumstances and helped them to share experiences about the place; as well as provides a stimulus for children and adults to learn about their environment together and to celebrate being at that place. As such, *community events* helped people to consider the area from different perspectives and develop a shared sense of place. An example of a resident comment highlighting this includes the following:

“The area is very much associated with local festivals... such as the Alvito Municipal holiday in May....where everyone from the surrounding villages’ get-together over there... it’s nice because you get to see many friends and family that you don’t see all year round... we picnic, talk, children play... and we spend a very nice day over there away from our routines.” (Interviewee #1)

The reservoir and its surroundings was also associated with *developing relationships* with others/strangers. An example of a resident comment highlighting this includes the following:

“I also associate the area with becoming friends with people that I had never expected I would be friends with... I owe a lot of the friendships that I made to that place... because I would have never gotten to know some of my friends outside that place... you know... A lot of times we have the wrong idea about people... and that place seems to filter our everyday preconceptions about others...” (Interviewee #10)

The above conceptualisation serves to reinforce the findings of the (‘Phase 1’) quantitative study, which also found respondents to associate the reservoir and its surroundings with *friends* (as shown in Fig. 6.1, on pages 150-151). To summarise, residents associate the reservoir and its surroundings with social relations and recreational activities with friends, including place-based festivals, as well as with developing new relations with others/strangers.

Family

Respondents also spoke about experiences revolving around being with and bonding with *family*; this meaning was conceptualized along three dimensions: *family gathering and togetherness*, *family recreation site*, and *learning from family*.

Family gathering and togetherness dimension is about how the place is associated with a physical setting where family members get-together that sustains a sense of togetherness. Specifically, these outdoor family shared occasions encompass times when families are generally relaxing together, and ‘doing nothing’ is highly regarded. Here, togetherness is about the pleasant feeling of being united with other family members. An example of a resident comment highlighting this includes the following:

“The area is kind of a special place for our family because we gathered there so many times... and still gather... Is a place where your family is around you... just relaxing and doing nothing... and that really feels good... as little kids we went quite often over there... my grandmother used to call it “our second home” because we spent there so many good family times... .. and you have a sense of bonding with your relatives.” (Interviewee #23)

Moreover, family shared times may comprise a range of interactive shared activities, because many residents associated the reservoir and its surroundings with a *family recreation site*. Namely, the area is seen as a great place to go for enjoyment and recreation in the outdoors with family; a place where parents play with kids and/or enjoy watching their kids playing and that is regarded as an important aspect of both parenting and childhood; this conceptualisation resembles the *group recreational activities* dimension of *friends* meaning. Examples of residents’ comments highlighting this include the following:

“I have strolled the reservoir and its surroundings... parts of it anyway... we, my family and I use the area frequently... we have enjoyed a lot of family moments while exploring the area... we have also canoed the reservoir in one occasion and it was a very nice and unforgettable family experience... seeing my parents inside a canoe... it was really funny and inspiring. We also picnic there a lot...” (Interviewee #6)

“I associate the area with my family...I like to go there with my children because there is a playground and I like to sit and watch them play and enjoy the place... sometimes we also play together by the beach near the water... we like to wet our feet on the water... it makes me think

how important is my family and these shared times away from the daily routine.” (Interviewee #22)

Residents also associated the place with an important location for *learning from family* about nature. In particular, several residents emphasized learning about the place during childhood by accompanying their parents as they went about their outdoor leisure-based activities at the reservoir and its surroundings. This dimension entwined learning about the place with the ways people related to the area. For example, some residents picked wild food (e.g. asparagus, berries and mushrooms) in the surrounding woods of the reservoir and often highlighted the importance of passing on knowledge from generation to generation. This people who picked wild food spoke with affection and pride of their parents teaching them skills as young children, as well as the importance of preserving nature. An example of a resident comment highlighting this includes the following:

“I love the reservoir and its surroundings. It’s a special place that my family would always visit every year from the time I was a small kid. My parents taught me that everything in nature had a practical purpose...and near the reservoir or in the surrounding woods they found the right place to share this knowledge with me. They always told me that if you were clever and liked to spend time in the woods then you figured out the practical purpose of almost everything in nature... for example, they taught me how to pick up wild berries and asparagus...and also about secret spots... it’s something very important that I have learnt from my parents... it’s a place that means a lot to me... I have a lot of pride about this knowledge I received from my parents... Every year I continue to visit it as much as possible. It’s a place where I also take my children. I hope to carry on my family tradition in this way and have my children love and respect the area as much as my parents have taught me to do so.” (Interviewee #28)

To summarize, *family* meaning is associated with enjoyable experiences and recreational activities with family that sustain a sense of togetherness, as well as with passing family knowledge about the place to younger generations. Moreover, the above examples reinforce the findings from the (‘Phase 1’) quantitative study, which also found respondents to associate the reservoir and its surroundings with *family* (as shown in Fig. 6.1, on pages 150-151).

Stewardship needs

Stewardship means taking care of something or looking after something – a sense of commitment; in other words, stewardship means knowing something and how to take care of it. Here, Worrell and Appleby (2000) in their work defining the relationship between stewardship and ethics, proposed a new definition of stewardship as applied to management of natural resources drawn from their investigation into the existing discourse and definitions of the term: “Stewardship is the responsible use (including conservation) of natural resources in a way that takes full and balanced account of the interests of society, future generations, and other species, as well as of private needs, and accepts significant answerability to society” (p. 269) (see also Burger, 2002). Accordingly, a wide range of recurring *stewardship needs* about the reservoir and its surroundings emerged from the interviews with residents, which encompass five underlying conceptual dimensions:

- *concern/respect for place* – this theme focuses on residents’ concerns about littering of the area and lack of respect towards the environment by local users. Specifically, some residents talked about behaving appropriately, protecting the place, and noticing other visitors who they felt were less concerned about the place. Moreover, some residents stressed that in order to really make a long term impact on the problem it was needed to take a combined approach together with effective public awareness. An example of a resident comment highlighting this includes the following:

“It’s very disappointing when you go over there to relax and enjoy the scenery and you find that other users just don’t care about the place... it’s ignorance, is what it is... Some people do look after it and other people just couldn’t care less. I believe that authorities need to tackle this problem properly... I believe that they need to use environmental education campaigns, develop efficient litter removal and cleaning services... that place deserves more respect... I think there has to be rules... but there has to be also self-discipline.” (Interviewee #15)

- *explore divergences and conflicts* – some residents spoke about the need for decision makers to look at divergences and conflicts between different users. For example, several respondents were against motorized boats and motorcycles as it was thought to be against the whole ethos of nature and wilderness associated with the reservoir and its surroundings.

Those involved in motorized recreational activities saw the nature and wilderness advocates as extremists. An example of a resident comment highlighting this includes the following:

“It is clear to me that sometimes things are not so pretty as they look... some people believe that... for example, motorized recreational activities should be prohibited in the area because otherwise you cannot use the place to relax and to become part of nature... others believe that the area should be used for activities like motorized sports... and that these activities don't have necessarily to impact the natural atmosphere of the area... well... it seems obviously to me and to many other people that I talk with about these issues, that we need decision makers to look at these divergences... we may all benefit if associated conflicts are avoided.” (Interviewee #26)

● *control nonpoint and point source pollution* – some respondents highlighted the need of an adequate control on sewage treatment operations and preventing livestock grazing in the vicinity of streams and the reservoir. Here, it was also stressed that these issues may impact negatively the reservoir water quality and some of the associated recreational activities. Examples of residents' comments highlighting this include the following:

“I really don't understand how it's possible to have livestock grazing near the reservoir...if we all use the area as a recreational setting how can this happen?... of course livestock defecation will pollute the water... people like to swim or canoeing in the reservoir... so... I believe that managers should consider more closely the presence of livestock near the reservoir...pollution prevention is very important.” (Interviewee #14)

“It's a scandal the present condition of the sewage treatment works of the surrounding villages... it's amazing how they operate in such a poor condition... and no one seems to care... they need to be modernized because otherwise the reservoir water quality will be worst every year...” (Interviewee #7)

● *community engagement* – some residents stressed that local populations must be involved in the management of the reservoir and its surroundings. Specifically, it was felt that this is of value to the local populations because it sustains a shared vision of the area with experts and decision makers. An example of a resident comment highlighting this includes the following:

“We need more local engagement in the matters concerning the reservoir and its surroundings... managers and/or planners need to provide ways to bring all aspects of the local community

together to meet our needs about the area... we cannot keep being 'simple' users... we must feel we are part of it... that place is part of our lives... we care about that place and means a lot to our community... the everyday experiences upon which we build a knowledge about that place allow us to have opinions grounded in our reality of the place... and that, I believe, is how we could become involved in the discussion and debate of issues with experts, local authorities and decision makers." (Interviewee #19)

- *translate local lay knowledge/needs into management* – some respondents were concerned and frustrated by the lack of consideration of local lay actors opinions and experiences in the decision making process. Examples of residents' comments highlighting this include the following:

"What I can say is that my views are not taken in the decision making process because things always remain the same." (Interviewee #9)

"I must say my contribution does not affect the decision making because I don't see any changes." (Interviewee #6)

Subsequently, it was recognised that this limited the credibility which experts and decision makers have with the community, as well as increases confusion over who is actually responsible for on-ground actions and what knowledge about the area are actions based on:

"We always have the sensation that some outside expert draw up a plan about the management of the reservoir and its surroundings and say that this, this and this should be done... it doesn't mean that it's going to work in our local context... It doesn't mean that all parts affected by that plan were considered... I think there has to be cooperation between local authorities, scientists/experts, and decision makers to get local knowledge in consideration." (Interviewee #27)

To summarize, many residents emphasised considerable concern about the environmental condition and lack of respect towards the place, the need to control specific potential sources of water pollution, the need to address the diversity of views about the place, the importance of promoting community engagement to develop a shared vision for place management, and the need to consider community needs, rather than pre-empting those needs.

Development

Many residents associated the reservoir and its surroundings with *development*, which was characterized by two conceptual dimensions: *wise development*. and *local involvement*. Here, residents felt that young people leaving for bigger towns, low levels of local economic growth and lack of investment have had serious social and economic consequences for the local community. Moreover, the non-existence of services related to tourism (and publicity/promotion of the area), lack of recreational infrastructure (e.g., lifeguards and safety equipment, more green areas, etc.), and lack of outdoor activities were all perceived weak points of the reservoir and its surroundings.

Consequently, residents believe that a *wise development* of the area could bring economic and social benefits. Specifically, residents considered local investment to be important, particularly in services related to: sustainable rural tourism, recreational infrastructure at the reservoir (e.g., lifeguards, improved accessibility, more green areas), promotion of outdoor activities (e.g. water sports), and local transport services during late spring and summer. Here, residents' considerations reveal a considerable balance between the demands for development and environmental consciousness. In addition, some residents highlighted the importance of *local involvement* in the development of the reservoir and its surroundings. Namely, residents regarded the creation of facilities for sustainable rural tourism and on-site recreational activities as essential, feeling it would help promote job opportunities, develop the local economy, and encouraging involvement of local young people. An example of a resident comment highlighting this includes the following:

“A wise development of the reservoir and its surroundings would be beneficial to local populations...I really believe that's something we need in this region... we have a beautiful landscape, a varied and tasty gastronomy... and we have that beautiful water resource over there... so by developing the area and involving local populations maybe we can give a new economic and social dynamic to the area... these two aspects must be interconnected... I mean a wise development of the area and the participation of local populations...” (Interviewee #18)

The above conceptualisation serve to reinforce the findings of the ('Phase 1') quantitative study, which also found that *development* was one of the most frequently reported meanings (as shown in Fig. 6.1, on pages 150-151).

6.2.3 The interaction of personal and social meanings

Overall, the data also suggests that the two types of meanings often interacted simultaneously with each other to produce a matrix of both personal and social meanings about the reservoir and its surroundings. An example of a resident comment shows the interaction between the two main themes (and underlying meanings), which are identified with the words in italics identifying the associated meaning category:

“... sometimes I take my children with me. They love visit the area... they like to play in the beach sand or on the swings by the beach... and I love watching them playing and enjoying themselves and the place (*Family*)... sometimes we meet with friends over there and enjoy the afternoon together (*Friends*)... sometimes I take the opportunity to relax from my everyday routine and have some time to myself away from confusion (*Escape and refuge*) while I watch the kids playing (*Family*), enjoy the beautiful scenery (*Beauty*) and feel nature around me (*Nature*)... I manage to benefit from these moments... I feel much more relaxed and stress free when I come back to my responsibilities (*Restoration*).” (Interviewee #11)

6.2.4 Showcase of everyday life stories/memories

The reservoir and its surroundings did not end with the descriptions of personal outcomes and social associations/contexts. Several residents spoke about the reservoir and its surroundings in the abstract or noted their value to society, but most residents conveyed what the place meant through personal stories. The reservoir and its surroundings experience lingered and generated memories, which were illustrated by the stories conveyed in detail about the place experiences. Accordingly, an overarching core-category called ‘Showcase of everyday life stories/memories’ also emerged from the data, as explained next.

Showcase means a container with glass sides in which valuable or important objects are kept so that they can be looked at without being touched, damaged or stolen. Here, the term ‘showcase’ is used metaphorically⁹¹ to illustrate the collection and display of the artefacts of memory with strong symbolic connotations, which evidence satisfaction regarding the times spent at the reservoir and its surroundings alone, with friends and/or family. Their symbolic meaning can be understood on the basis of the personal outcomes and social context, because it characterizes experiences that sustain the development of a personal representation and reference to a shared socially constructed vision about the place. As such,

⁹¹ Social science often employs metaphors or linguistic tools to help think about and describe phenomena (Brooks et al., 2006).

these experiences more often perform a *milestone of everyday life* function. An example of a resident comment highlighting this includes the following:

“It’s funny you are asking me about the reservoir and its surroundings... I have a lot of nice stories and memories about that place... I believe almost everyone in the surrounding villages has... that’s an important place... we associate the area with many special occasions in our lives because we spent a lot of moments over there... some of them are more personal... like when I go fishing alone... and some of them are about times spent with friends and family... I would say that the reservoir and its surroundings represent some of the landmarks of our lives from childhood to adulthood... from the past to the present...” (Interviewee #7)

Milestones of everyday life was conceptualized along two dimensions. Specifically, *time and experiences in place* is about past experience or extent of contact and illustrates how accumulated experiences conceptualize a person’s history of visiting the place. In this case, residents developed an attachment over time by making return visits to the reservoir and its surroundings. Return visits allowed for memories and interpretations of multiple experiences, both personal and social, to accumulate. Making return visits also allowed for personal growth in one’s place relationship; that is, as residents gained knowledge about and became more familiar with the reservoir and its surroundings, their place relationships evolved as experience increased, and unawareness was replaced with familiarity and intimacy. An example of a resident comment highlighting this includes the following:

“Last week I was strolling with some friends and... the last time we were out here their daughter was 6 years old and now she is nine, and we were strolling the same trails and she is seeing this stuff again... it is neat to see that... so as I’ve grown older, I’ve seen it change... I just hope to be able to bring my kids up here someday and show them what I saw... there is something special about a parent passing on that to his son or daughter...” (Interviewee #26)

Residents also spoke about certain places because they symbolize critical benchmarks or milestones in their lives such as: childhood memories, where they first kissed their boy/girlfriend, where they used to go dating, where they lost their virginity, where they enjoy fishing, where they get-together with family and/or friends, where the ashes of a friend were released during a ‘farewell’ ceremony, where they play with their kids, or where they like to stop while canoeing, among other reasons. Accordingly, residents used important places in

the reservoir and its surroundings as backdrops for memories of enjoyable experiences with friends and family, coming of age stories, and passing family stories and knowledge to younger generations. Examples of residents' comments highlighting this include the following:

"I remember when I was a kid we used to picnic by the reservoir. It was pretty nice. It was great to bring some of our cousins and a lot of our friends... We used to organize a lot of family birthdays over there... once I remember my grandmother crying when she saw her birthday cake... it was her 70th birthday and she was crying because she remembered coming to the reservoir with her husband... So, I have a very big emotional tie to that area..." (Interviewee #10)

"I associate some of my best times with being there... I remember when I used to go and relax under a special tree by the reservoir with my husband... I remember how we used to spend the afternoon under that tree kissing and talking... but now I don't like to go there anymore since him passed away last year... it's very hard to go back there... it's very difficult to deal with the memories that come to my mind about us over there... I tried once but it's very hard..." (Interviewee #13)

For residents, making return visits, gaining knowledge and familiarity with the place integrated into a satisfying relationship with the reservoir and its surroundings and a general sense of well-being. Residents' stories provide an example of the unified holistic nature of people-place relationships, which as long-time visitors, for whom the self, family, friends, and the reservoir and its surroundings become connected. Accordingly, residents-place relationships may be best conceptualized as the incremental accumulation of meanings and not as predictable outcomes of single visits.

Interconnected with reported significant personal experiences, family traditions, and/or social ties that contributed to the attachment to the reservoir and its surroundings is the feeling of *nostalgia*. Nostalgia is most frequently defined as a longing for the past; this melancholy, sentimental feeling might be triggered by any number of events. Here, permeating residents' stories about experiences of the place was reminiscence for those special times in their lives that the reservoir and its surroundings represented. An example of a resident comment highlighting this includes the following:

“It’s a place I knew through my youth... I remember the first time I went canoeing with my father... I was fourteen years old... almost twenty years ago... we would paddle slowly for an hour while enjoying the scenery and picnicked at one of the small island in the middle of the lake... I remember to talk with my father, while paddling, about a lot of things... he used to give me a lot of good advises... I remember once I was really upset about my relationship with this girl and he told me to be more sensitive and patient... because being a girl in such a rural area can be hard... I also remember once I ended up falling in the water, losing my jacket and my food... and how my father hold me and told me not to worry... that made me a stronger and more confident person... good moments... deep nostalgia.” (Interviewee #4)

To summarize, an element essential to place meanings and underlying experiences is the recollections or memories that endure. Although the perceived benefits about the reservoir and its surroundings are numerous, memories may be the ultimate outcome of experiences at the reservoir and its surroundings. The unifying theoretical constructs of everyday life stories/memories and memory-making enabled me to understand the processes and contexts in which meanings emerged for residents. So, the overarching value of the reservoir and its surroundings for many people resided in the memories created during the place experiences, which resulted in rich lived experiences.

Chapter 7 – Meanings and Underlying Experiences about a Reservoir and its Surroundings – Theoretical Discussion and Implications

The findings of this research as a whole reveal important data about the process of developing meaning around the reservoir and its surroundings. Here, the attributes of the place and interactions that took place there were important to residents' meanings. It is evident, for example, that many places become meaningful through the steady accretion of experiences in them, such as Tuan (1974) hypothesized years ago. Repeated use of the reservoir and its surroundings enables residents to engage in a variety of experiences in the area. This added many facets and layers of meaning to the place, as people 'collected' experiences in the area. Accordingly, residents developed multi-faceted relationships with the place that sometimes transcended physical boundaries and coalesced around personal, emotional and social experiences.

To recapitulate, I identified two broad thematic categories (i.e., *personal* and *social* meanings) that led to the integrative theme of *showcase of everyday life stories/memories*. The personal and social meanings, in one form or another, often were conveyed through memories individuals linked with specific place experiences. Although both *personal* and *social* meanings ascribed to places are not new (e.g., Virden and Walker, 1999; Williams, 2000; Jordan et al., 2009), the exploration into reservoir and its surroundings meanings emphasized the processes associated with attributing symbolic meanings to the area. The findings also reiterated the role of contextualizing personal and social experiences in meaning-making (Watkins, 2000; Jordan et al., 2009). Next, I will discuss each emerged theme and their underlying meanings.

7.1 Personal and Social Meanings and Everyday Life Stories/Memories

The emerged categories of abstract personal place meanings represent important aspects of sense of place. Briefly, the conceptualized personal meanings associated with the reservoir and its surroundings were related to the visual appeal of the place, to nature and, for some, even becoming part of nature, to escaping everyday life and seeking refuge, to important qualities associated with peace and quiet, and solitude, presenting an opportunity to relax and

calm down, and was considered to be a place to heal or rejuvenate oneself; as well as associated with solitary physical interaction and gendered practices. Next, I will discuss each emerged personal meaning.

The importance of specific attributes is reflected in the meanings the individual ascribes to the place; individuals likely interact with the physical attributes of a setting as social objects when ascribing meaning to a place (Wynveen et al., 2010). Here, the physical attributes of the reservoir and its surroundings (i.e., water, trees/vegetation, Montado, birds, etc.) contributed to the residents' place meanings. For example, aesthetic *beauty* appears to be an important meaning associated with the area and one of the main reasons to use it. As in previous research (e.g., Bricker and Kerstetter, 2002; Gunderson and Watson, 2007; Wynveen et al., 2010), aesthetic *beauty* referenced landscapes and open vistas. Specifically, empirical studies show that several landscape characteristics correlate positively with scenic beauty. Vegetation, landscape variety, naturalness, the presence of water and the unity of the landscape (also called the “oneness” or “internal cohesion” of the landscape) are generally highly appreciated features of natural landscapes (Buijs, 2009b). Other valued features include spaciousness, presence of flora and fauna and the dynamic visual characteristics of the area, resulting from constantly changing water levels (Ryan, 1998; Tunstall et al., 2000).

Several residents mentioned that the mesmerizing characteristics of water are extremely important for the beauty of the scenery or uniqueness of the reservoir and its surroundings. In terrestrial settings the mere presence of a water feature is important (Wynveen et al., 2010). Water creates a multisensory experience: people can hear water, smell it, touch it, taste it—and can imagine and remember it (Strang, 2004). While rarely directly addressed in specific studies, the body of landscape perception research and the large intuitive literature suggests that the presence of visible water and the associated riparian vegetation should substantially increase the perceived beauty of semi-arid areas (Burmil et al., 1999). As mentioned by several residents, the rarity of water in the landscape, the increased spatial and temporal variability of vegetation that water produces, and the strong contrasts between the riparian area and the adjacent semi-arid lands, would all be expected to have positive effects on perceived scenic beauty.

Besides the experience of beauty, many residents associated the reservoir and its surroundings with *nature*. Several scholars have identified the same type of attribute as place meanings. For example, Buijs et al. (2006), Gunderson and Watson (2007) and Wynveen et al. (2010) studies found that participants placed significance on nature as an important part of

landscape. Moreover, Davenport and Anderson (2005) study was focused on exploring the meaning of the Niobrara National Scenic River for river stakeholders. Especially relevant here is the reported dimension of meaning on the Niobrara River as ‘nature’ described as “participants’ appreciation of the river’s undisturbed character and river ecology” (p. 633). This seems to parallel my study conceptualization of nature, as discussed next.

Specifically, several residents mentioned that the area offers many natural features commonly associated with wild places (e.g., silence, water, flora, wildlife and a landscape void of human influences like roads and other developments), which provides them the place to meet up with and develop a sense of immersion in nature. Likewise, one of the important aspects in landscape preference of Surová and Pinto-Correia (2008) study was about objective features (e.g., shrubs and trees) related to the appearance of nature. Also, especially relevant to this discussion is Buijs (2009c) study about images of nature. In particular, the author also found that “naturalness as the absence of human influence is considered an important attribute of nature” (p. 424), which was labelled as a ‘wilderness image’ of nature.

Although philosophical discussion exists on whether intrinsic value can exist without people actually assigning such a value, the intrinsic value of nature (or existence value) has been conceptualized in prior studies as the value people attach to nature, irrespective of the use they want to make of it (Buijs, 2009b). Beyond the above discussed dimension of nature, some residents mentioned the importance of the place associated natural processes and intrinsic value of nature. Specifically, respondents’ personal use of the reservoir and its surroundings was considered as important as knowing that the place is there and is in good condition for the fish, wildlife and for future generations. This seems to parallel the ‘arcadian’ view of the relationship between humans and nature that evokes the intrinsic value of nature and its preservation (Van Koppen, 2000). This also parallels a second important feature of the ‘wilderness image’ conceptualized by Buijs (2009c), which focus on holistic, ecocentric values, like the protection of species and ecosystems. Furthermore, the significance of the role natural settings play in regulating ecosystem services such as water and habitat protection was evident here (Anderson et al., 2010).

Here, several residents often used the concept of ecosystem to illustrate how a healthy place is characterized by a stable ecosystem, and how important is every animal and plant in maintaining that balance. This belief in a nature looking for balance is related to the belief that nature is fragile; that is, external influences may have severe consequences for the quality of nature areas, including the protection of biodiversity (Buijs, 2009b). As illustrated before,

residents also mentioned an understanding of the interconnectedness of the local ecosystem, and an appreciation for how human activity impacts the reservoir and its surroundings; this parallels “the normative component of images of nature” (Buijs et al., 2006; p. 377); namely, what is the relationship between man and landscape, and how should man act towards nature. Overall, this meaning is commensurate with Smith et al. (2011) ‘ecological meanings’ conceptualisation that represent beliefs about how the resource functions to preserve community open space and ecosystem health; and suggests a need to include ecological-related dimensions in scales measuring the bonds people have with places.

Another key personal meaning associated with the reservoir and its surroundings was *escape and refuge* from everyday life. For example, Pitkanen et al. (2010) found that some of the most prominent meanings given to cottages were related to escaping modernity and seeking refuge in nature. Moreover, in Laura Alexander (2008) study many of the participants described the physical setting as a place they escaped to in order to relax from the pressures of everyday life. However, this conceptualization was considered one of the elements of an overarching restoration theme. Although in my study both *escape and refuge* and *restoration* were very often intertwined according to residents stories, in some cases residents’ associated the area with a place they escaped to and seek refuge from everyday life but not necessarily to find restoration. Moreover, people who associated the area with restoration may also seek the area for escape and refuge from the everyday life worries. This is why in my study these two personal meanings were considered individually although being interrelated in some cases. Next, I will discuss the emerged elements of the *escape and refuge* meaning.

Residents described the physical setting as a place they escaped to in order to have some free time away from the pressures of everyday life. This parallels one of the constructs that Pohl and colleagues (2000) described about wilderness recreation and labelled as “escape from norms, everyday demands, and distractions” (p. 422). Moreover, in Wynveen et al. (2010) study one of the most prevalent meanings ascribed to the study area was that visiting a marine park allowed visitors to escape from the stress and constraints of their everyday lives. Here, the interview quotes also illustrate how *nature* is important as an abstraction that emphasises escape meanings because of a sense of immersion in the natural world. Likewise, in Smaldone et al. (2005) study many interviewees associated the study area with escaping from worries or problems together with a sense of connection to the natural world (see also Jordan et al., 2009 and Pitkanen et al., 2010).

Several residents also reflected on how the reservoir and its surroundings freed them from everyday life constrain. Here, some residents used trips away from their village to find time alone that fulfils their need of escape and freedom away from distractions and responsibility; as well as, a feeling of getting back to nature in solitude at the exclusion of all other outside distractions. In addition, residents associated the place with a refuge for them to be alone and away from everyday worries. A number of studies support these findings, as discussed next.

Smaldone et al. (2008) found that visitors to the Grand Teton National Park frequently reported feelings of freedom and solitude about the place. Likewise, Wynveen et al. (2010) found that for many of the informants, solitude was essential to the feeling that recreating in the marine park allowed escaping from everyday life. Also, in Perry (2009) research, the Lower Neponset River was associated with a place of refuge from the everyday stresses of urban living, an unhappy home life, or stressful work. Overall, the physical attributes of the reservoir and its surroundings (e.g., water, trees and large open spaces that lack built structures) may well drew the individuals' thoughts toward the contrast between this setting and that of their daily lives.

As mentioned before, *restoration* meaning is somehow interconnected with the previous personal meanings. That is, residents talked about the reservoir and its surroundings as a place that is beautiful, isolated, and natural, and how they usually experienced this setting alone. However, they also mentioned how important is the opportunity to escape to and seek refuge alone, in a peaceful and quiet setting, to clear their minds in order to think freely. Briefly, the quiet and peace these residents describe provides them with an opportunity to disconnect from the distractions of their everyday life and clear their heads. Without these distractions they use their senses to connect with the surrounding natural setting. Here, residents' relaxed examination of and attention to their own ideas, thoughts and feelings may come about, as a process of self reflection. Several scholars have identified the same types of attributes as place meanings, but have assigned a different theme name to them.

Smaldone et al. (2005) study found that many interviewees mentioned a variety of feelings that could be classified as restorative, including relaxation, being free from distractions, contemplation, a sense of connection to the natural world, renewal, and other similar feelings. Alexander (2008) research participants talked about the natural environment as a place where they find peace and quiet, and where they are able to think freely. Pitkanen et al. (2010) also found that interviewees associated cottages with peace and quiet, presenting an

opportunity to relax and calm down; for most interviewees the cottage was considered to be a place to heal or rejuvenate oneself and, for some, even to become part of nature. Davenport and Anderson (2005) reported a dimension of meaning on the Niobrara River as “tonic” described as “good for the mind, body and soul”, and where their participants found peace, solitude and “pure enjoyment” (p. 633). Moreover, Manzo (2005) found in her study that certain places become meaningful specifically because they afford people the opportunity for privacy, introspection and self-reflection. Overall, these descriptors play a key role in both restoration and perhaps even more in identity (Alexander, 2008), as discuss next.

Environmental psychologists Kaplan and Kaplan (1989) classify nature as places where people can forget their worries, enjoy solitude, think, and regain sanity and serenity. My research supports this classification as these attributes are very similar to the ones that residents used to describe their restorative experience in the reservoir and its surroundings. The physical environment as a restorative setting is discussed in the environmental psychology literature, linked to Attention Restoration Theory and the idea that natural settings contain the four aspects identified as central to attention restoration: they can escape or withdraw from everyday life, to a place that feels other-worldly, where they will find a source of soft fascination, and the setting is compatible with their needs and abilities (Kaplan and Kaplan, 1989; Kaplan, 1995; Korpela and Hartig, 1996; Korpela et al., 2001). The physical setting does serve a restorative function for my research participants, and they provided evidence for that in our conversations. For example, some residents talked about “escaping into nature”, others described isolated areas that feel like a “whole other world”, many residents described being captivated by scenery (a source of soft fascination), and the fact that they are using the setting for these things confirms compatibility.

The physical environment as a restorative setting is not discussed in the place literature, and linking this function of the physical setting to that literature can help people recognize this important role (Alexander, 2008). While my research supports the work of the environmental psychologists, it also helps us understand that this is a necessity that people make time for in their lives. Participants talked about recognizing when they had “had enough” and needed to escape into the reservoir and its surroundings. I did not ask specifically, but I imagine that the frequency with which they need to experience restoration varies individually. Also, it seems apparent a common thread of meaning in *escape and refuge* and *restoration* – caring for the self. *Escape and refuge* provides security for the self, and *restoration* heals the self from mental fatigue (cf. Alexander, 2008).

An aspect of place connected to identity formation and maintenance that emerged in this study is the utilization of the reservoir and its surroundings as a place where residents go to clear their minds, gather their thoughts, and take stock of their priorities. Environmental psychologists Lynne Manzo and Susan Clayton explain how. Manzo (2005) reported that natural settings were significant to forming and altering a person's identity through reflection, introspection, self-understanding and personal growth processes. Several of her research participants talked about how their understanding of themselves changed through their relationship with place and how place made them who they are. Clayton (2003) says that ecological identity has the capacity to change our self through reflection, and that in order for the natural world to be considered an aspect of identity it would have to influence the way people think about themselves (their self). She links this to ecological identity through the work of Korpela and Harting (1996) and Kaplan (Kaplan and Kaplan, 1989; Kaplan, 1995) on nature as a restorative environment.

The process of identity formation and maintenance is largely an unselfconscious process, and therefore it would be hard for me to imagine that participants would characterize (and perhaps even to recognize) their quiet, reflective time as important to their identity maintenance, but since participant's did tell me that they relied on the visits to the reservoir and its surroundings to "clear their heads" and "think about things", I posit that my research supports Manzo's and Clayton's assertion that the natural environment influences how people conceive of their identity. Moreover, going to the area reinforces their sense of personal identity because residents' very often mentioned that they see themselves as a part of the area, and spoke about how they needed some type of connection to this natural place in their lives. Therefore, part of residents' identity was tied to that belief and, by going to the area, they regulated and affirmed this aspect of their 'self'.

Physical interaction meaning illustrates the elements of a solitary embodied activity with and in place. This resembles how place relationships were found to be reciprocal in nature, suggesting that the experience of a setting is interactive (Greider and Garkovich, 1994; Gustafson, 2001; Manzo, 2003, 2005). Specifically, residents embodied experience is embedded in the physical setting as they see, smell and feel through their body (and skin) and as they move in relation to the changing dynamics of the wind and the land and/or the water. As Barbara Humberstone (2011) argued "most certainly it is through our senses that we engage with the world and particularly make our relationships with nature and the elements" (p. 497). Also, Hockey and Allen-Collinson (2007) signal attention to the sensory elements of

physical experiences locating the body as central in the self-consciousness and self nexus. More specifically, Hockey (2006) identifies feelings associated with the sensations and practices of running.

During these activities (such as running, mountain biking or canoeing) residents mentioned about observing or discovering special or unique attributes and phenomena while exploring the place. Accordingly, residents tend to explore the wildness, ruggedness, and uniqueness of the place to experience complexities and novel challenges associated with the physical activity. Similar findings were observed in previous studies (e.g., Chhetri et al., 2004; Brooks et al., 2006) where, for example, visitors hiking in wild lands tend to explore the wildness, ruggedness, and uniqueness of the place to experience complexities and novel challenges.

Moreover, physically interactive behaviours with a setting seem to shape visitors' knowledge about places (Gustafson, 2001). As Ingold (2000) notes, "people see as they move" (p. 230) and "our knowledge of the environment undergoes continuous formation in the very course of [our] moving in it" (p. 230). Further, such "mobile, embodied practices are central to how we experience the world (...) our mobilities create spaces and stories – spatial stories" (Cresswell and Merriman, 2011; p. 5). Also, one of the patterns to emerge in Jordan et al. (2009) study was how parks were associated with places to learn; in particular, participants noted specific activity skills they had learned while at a park such as how to swim, camp, and water ski. In my study, individual physical experiences and challenges that residents spoke about seemed to expand their skills and knowledge about the setting.

Embodied motion in nature where the senses, physical practice and engagement with nature come together in some sort of increased consciousness has been identified as moments of flow (Csikzentimihalyi, 1975) or understood alternatively in some sense as a 'spiritual' experience expressed as such by many nature-based practitioners, such as 'oneness' or connection with nature (Humberstone, 2011). This notion of spirituality resembles the positive side effects associated with the physical activity with and in place, as told me by one participant "... of course it's usually pretty relaxing... the simple physical feeling it gives you is great I think... something breaks down...".

Overall, drawing from residents' stories, these nature-based physical activities' embodied practices were made available, accessible, and meaningful. This brings into play personal experiences in physical activities to uncover connections between body, affects, emotions and the senses as the body engages with the physical setting elements. In contrast,

research on the sociology of the body and embodiment has been chastised for privileging theorizing, of bracketing out the individual, and for ignoring the practical experiences of embodiment (Humberstone, 2011). In sum, social scientists need to pay greater attention to issues of embodiment in the process of meaning-making about places.

To recapitulate, gendered practices are institutionalized systems of action that continually reconstitute normative gender stereotypes, expectations and behaviours (Martin, 2003b). In my study the analysis of the interviews suggested that residents associated the reservoir and its surroundings with *gendered practices*. That is, many residents mentioned that the social norms and expectations around femininity and masculinity may shape differences between how women and men interact and therefore conceptualize the reservoir and its surroundings.

Specifically, respondents mentioned that social expectations about women responsibilities (i.e., professional duties, domestic work, shopping, child nurture, etc) may shape women experiences regarding the reservoir and its surroundings. In this regard, men's leisure time is constrained mainly by the time devoted to paid work, whereas women's leisure time is primarily constrained by housework (Bittman and Wajcman, 2003). That is, when returning home from paid work, women continue to do the majority of the housework. As a result, employed women (as was the case in my qualitative study) have less time for leisure than employed men (Mattingly and Bianchi, 2003). This seems to explain why respondents mentioned that women may need and value more time alone in the reservoir and its surroundings as an occasion to be away from everyday life routine and responsibilities.

The reservoir and its surroundings played an integral part in the life of interviewed women's well being during their leisure time away from everyday life routine and responsibilities as reported through stories of their experiences. Specifically, women spoke of feeling alive, "grounded" and empowered; for these women, the reservoir and its surroundings is a place to be themselves and to recreate, a place of personal connection with nature, and self-expression. So, these findings are commensurate with studies that demonstrated how nature-based leisure is beneficial for women's well being (Pohl et al., 2000; Cosgriff et al., 2009), can provide the life-space for women to step away from gender stereotyping and find a new sense of self (Henderson, 1996a), and can also engender independence and self-sufficiency in women, which is then transferred to their everyday lives (Pohl et al., 2000).

Using the freedoms and possibilities of nature-based leisure at the reservoir and its surroundings, it seems that women resisted the societal expectations they grew up with such as the ethic of care and domestic responsibility. However, a persistent and somewhat ironic legacy resulting from gendering nature is that although women are seen as akin to nature, outdoor activities and pursuits have historically been masculinised and viewed as the preserve of men (Cosgriff et al., 2009). Specifically, popular culture persists in constructing the outdoors as a space for active men rather than women (McDermott, 2004). For example, McDermott (2004) highlighted “the masculinization of the outdoors” in her study on gender and canoeing in Canada and noted that “despite [women] being linked to nature through the mind/body dichotomy, *being* in nature/wilderness has not been readily condoned for females” (p. 285, emphasis in original).

The above examples seem to parallel the underlying ‘man-appropriate and man-typical behaviours’ of *gender practices* meaning; that is, the need to go hard in nature or to enact the macho competitive ideology that historically has been seen as integral to outdoors pursuits in popular culture (Cosgriff et al., 2009). Moreover, because people occupy a variety of roles throughout the day, they also interact with multiple social worlds that accompany these roles (e.g., family, leisure, work). Of particular importance within the context of my investigation is the influence of social world perspectives on members’ perceptions and behaviours. Evidence suggests that the meanings individuals associate with specific leisure experiences can be understood by examining the perspective of their social world (Kyle and Chick, 2007). In particular, as Judith Butler explains, the use of space in gendered practices helps provide ontological security⁹² for individuals across time and space (Butler, 1990). Here, social groups in leisure develop particularistic meanings of activity and develop norms of behaviour associated with the activity (Kyle and Chick, 2007).

These findings also reveal that there are other qualities to the dynamics between identity and place that warrant further attention. In particular, the ways that socially constructed identities influence individual relationship to place. That is, based on residents’ comments, gender seems to create different potentials and restrictions on the use and enjoyment of space, thereby influencing people’s ability to be themselves. Thus, these

⁹² Giddens (1984) described ontological security as the “confidence or trust that the natural and social worlds are as they appear to be, including the basic existential parameters of self and social identity” (p. 375). He argues that this is reliant on people’s ability to give meaning to their lives. Turner further explained the concept as “one of the driving but highly diffuse forces behind action is the desire to sustain ontological security or the sense of trust that comes from being able to reduce anxiety in social situations. Actors need to have this sense of trust” (Turner, 1991; p. 532).

dimensions of identity go beyond individual characteristics; they are part of a larger socio-political reality that affects the way people are treated and how they experience the world around them (Manzo, 2005).

Evidence that sociocultural elements are important is revealed when people talk about their relationships in places with friends, family and/or community members (Alexander, 2008). Stories of place include traditions and practices, often describing interactions with others that are rooted in habit and culture and tied to place (Gustafson, 2001). Examples of the friends and family meanings could be identified in transcripts of every interview. Specifically, as research participants described their attachment it was obvious that an important part of their place attachment is social, developed through their relationship with friends and family. This observation has two implications. First, it confirmed that social interaction was important to the formation of place meanings. Second, interaction with family and friends may influence the formation of other meanings; I will return to this later in this section. Next, I will discuss these two social meanings together because they are very often interrelated

Many residents' stories described past experiences revolving around being with and bonding with *friends* and/or *family*. Meanings that dealt with the familiarity and/or the historic or traditional importance of a place to friends and family were also reported in several studies. For example, Bricker and Kerstetter (2002) reported that the meanings river rafters associated with the South Fork of the American River included their shared experiences with friends and family. Kyle and Chick (2004) investigated enduring leisure involvement for long-time participants at an annual agricultural fair and encampment held in a set locale; they found that experiences of informants with friends and family emerged as the most important and meaningful elements of the experience. Chris Wynveen and colleagues (2010) also found that experiences with friends and family is an important meaning ascribed to a marine environment.

Social meanings are articulated through the ability of the place to facilitate social togetherness (Jordan et al., 2009). Here, research has shown that people seek and achieve collective benefits associated with, for example, family cohesion from recreation settings (e.g., Anderson et al., 2008; Davenport et al., 2010). In my study participants mentioned a sense of togetherness that was enabled through several place related social (and physical) processes manifested in the data (e.g., group recreational activities and community events, developing relationships, family shared activities and learning from family about the place).

These findings are commensurate with Jordan et al. (2009) study where social togetherness was enhanced through gatherings around food, natural features, amenities, and recreational activities.

As mentioned above, group recreational activities and community events in the place facilitated the process of social meaning-making. Specifically, Susie Scott (2009) argues that social recreational activities bring people together as a way of marking special occasions or simply breaking the routine; and the ultimate purpose of these activities is their ability to bring people together to participate in a collective ritual which provides an opportunity for social bonding. Also, 'festive sociability' grounded in regular sociable encounters and meetings is central for the transmission of tradition and a fundamental field of interaction between tradition and modernity (Costa 2001), as illustrated in my study by place-based festivals (such as the Alvito Municipal Holiday). Similar to Kyle and Chick (2004) study, these place-based festivals tended to take people out of their ordinary circumstances and helped them to share experiences about the place. As such, community events helped residents to consider the place from different perspectives and develop a shared sense of place (cf. Measham, 2006). In addition, people meet strangers' on site. So, informal conversations with new acquaintances is also typical of these recreational settings (as is overheard conversations from unknown others) (Stokowski, 2008; Jordan et al., 2009).

Family shared activities and learning from family were also important processes of social meaning-making about the place. These findings have resonance with other studies. For example, Simona Perry (2009) found that participants associated the study area with a great location for family picnics and educating their children about nature and the Neponset River. Elisabeth O'Brien (2006) reported that some respondents picked wild food in the woodlands and highlighted the importance of passing on knowledge from parents to young children. In addition, Thomas Measham (2006) research found that the relevance of childhood learning is due to its connection to learning from family. A key finding of this research is the importance of early life experiences which influence our behaviour later in life (Measham, 2007). The point here is emphasising the importance of involving family in children's experiential learning. I will come back to this in section 7.3.

The above findings highlight the construct that Williams et al. (1992) and Stedman (2002) have measured and labelled as place identity. However, this study further uncovered two different roles that the reservoir and its surroundings play in participants' identity maintenance, including family identity and community identity. Likewise, Davenport and

Anderson (2005) reported meanings that tie a river to participants' sense of who they are as a family member and a member of the community. As Smith et al. (2011) highlighted, strong social bonds and memories formed through the experience of a resource are examples of meanings that reflect the family and community identity constructs. Family identity extends the concept of individual place identity and represents the extent to which the place defines one's belief about their family's unique identity (Kruger and Shannon, 2000). Here, family history in the reservoir and its surroundings provided the time, rituals, and social interactions necessary for the development of attachment to the place and for strengthening family relationships. Community identity meanings represent beliefs about the extent to which a place contributes to local culture, character, and identity (Smith et al., 2011), as illustrated in my study by the place-based festivals.

Overall, I observed that the *friends* and *family* meanings were connected to other meanings. Here, the social milieu through which places become meaningful has been noted by numerous researchers (Sack, 1997). Some scholars have focused on what could be termed a limited social context, involving family and friends (Smaldone et al., 2005), while others have described wider cultural and socio-political contexts from which places derive meaning (Greider and Garkovich, 1994; Manzo, 2003). In particular, the intimacy between the individual and others within a setting plays a role in the meanings ascribed to a setting (Wynveen et al., 2010). Given the universality of the prominence of intimate social worlds in meaning formation Wynveen and colleagues suggest that meanings involving family and friends may be a precursor to the formation of other meanings (see also Kyle and Chick, 2007). However, based on my research findings, I would suggest that this may be the case regarding *gendered practices* meaning (as discussed before) and the other emerged social meanings (i.e., *stewardship needs* and *development*, discussed later), but not necessarily regarding the more personal meanings ascribed to the reservoir and its surroundings.

Instead, it seems to be an interchangeable influence. That is, while the meanings ascribed to elements of the physical setting may be socially conditioned, the foundation of their attachment emanated from processes that more explicitly linked meanings to attributes within the setting (e.g., aesthetic beauty, solitude). In fact, Kyle and Chick (2007) acknowledged that the extent to which social worlds influence the development of other place meanings is likely to vary by context. Therefore, my study findings seem to be consistent with Gustafson's description of a 'self-others' dimension. As he noted, "instead of a three-part division [of self-others-setting], I therefore settled for a three-pole triangular model within

which various meanings of place could be mapped – not only at the three poles, but also between them” (p. 9). Accordingly, it often seems quite difficult to tease out a singular meaning from which a particular place derives meaning (Smaldone et al., 2005).

Before I go further in this discussion, it is important to recall some of the terms presented earlier (in section 2.7). Ecological identity is that part of a person’s identity that is linked to the natural world. It expands the notion of place identity (who we are in relation to a particular place) to encompass ecological knowledge⁹³ and a person’s beliefs about how they should act in relation to their physical environment. Moreover, ecological knowledge, gained through personal observation and from external sources (others, reading, etc), combined with a person’s values, leads to the formation of a land ethic, which is the way that person believes s/he should act toward the physical environment (Alexander, 2008).

A tangible aspect of ecological identity was its expression through the *stewardship needs* about the reservoir and its surroundings emerged from the interviews with residents. Here, it became clear to me that residents possess both ecological and place identity and that together they are an important part of how they define themselves, to the extent that their place identity would be more accurately named an ecological identity. Accordingly, residents described their land ethic as stewards of the reservoir and its surroundings and as interpreters of local ecological knowledge of what is going on in the area.

The physical setting is the basis for the development of ecological identity because people acquire their ecological knowledge through accretion of experience in the local environment, making observations and making sense of what they see, especially over time (Alexander, 2008). Residents’ attachment and experiences in place give them a feeling of belonging to this place, and they have intimate knowledge of the physical setting that guides their actions on the reservoir and its surroundings according to their land ethic.

Ecological knowledge is the primary factor that defines participants’ identity as an ecological identity rather than just a place identity (Alexander, 2008). Participants demonstrated over and over that they possess ecological knowledge by talking about what lives and grows in the area, and by describing ecological processes about the place. They gain this knowledge by paying attention (being attuned) to the reservoir and its surroundings. Thomashow (2002) says people do this through a ‘deliberate gaze’, which he defines this way:

⁹³ Here, ecological knowledge includes comprehending complex ecological concepts such as forest succession, partitioning of resources and predator-prey relationships as well as possessing knowledge of what lives and grows in an area (Alexander, 2008).

to gaze is to look intently with curiosity and wonder. To deliberate is to consider what you are viewing in an unhurried, well-considered manner. The deliberate gaze combines wonder, intent and consideration. (p. 83)

It is crucial, he says, to engage in this state of mind while observing nature and to demonstrate patience and attention to detail in order to answer some of the questions that one's curiosity and attentiveness raises. Residents' gave examples of their deliberate gaze when they talked about the ways they spend time in the place: comparing bird species, observing the *Montado* succession process from cut to re-growth, tracking animals, and so on.

Additional support for the idea that ecological knowledge develops intimacy with the physical setting is found in environmental education literature, called place-based knowledge that strengthens both place attachment and ecological identity by grounding people in a deep understanding (knowing) of their natural world. Environmental writers and educators have lamented the loss of place knowledge in recent decades and have called for the resurgence of place-based education in order that people might feel more connected to place (Snyder, 1990; Thomashow, 1995, 2002). Here, these writers have linked ecological knowledge to our ability to recognize environmental problems. I will return to the *stewardship needs* mentioned by residents in section 7.3, when discussing the contribution of my study to water management.

Many residents associated the reservoir and its surroundings with *development*. In particular, residents believe that a wise development around the reservoir and its surroundings could bring economic and social benefits to the area, but with a balance between the demands for development and environmental consciousness. Moreover, some residents highlighted the importance of local involvement in the development of the place. These findings have resonance with other studies. For example, Elisabeth O'Brien (2006) research emphasizes that the ways in which people value trees and forests and the meanings they associate with specific places are linked to wider issues of concern over development and people's well being and quality of life. Also, this finding seems to parallels the mosaic of cultural and economic meanings of forests that Henwood and Pidgeon (2001) discovered and were linked to community well being in North Wales. In Davenport and Anderson (2005) study, development in the river valley was a common topic. For example, several participants asserted that recreation or tourism-based development would foster economic security in the

community; a few participants called for more public access points to the river; other participants saw a need for increased visitor accommodations.

Research has shown that people seek diverse benefits from recreation settings associated with local tourism-based economies (Davenport et al., 2010). While a number of economic impact assessments have examined how forests, for example, contribute to a community's economic stability, according to Kusel (2003), these traditional investigations have ignored the multiple ways in which natural landscapes contribute to community well-being:

As a playground, sacred place, or resource, the forest supports local residents and contributes to the definition they have of themselves and their understanding of who they are. The lifeways of community members and the landscapes are intertwined. Thus, when discussing dependence, one must recognize that the forest provides not only the means of production, diversely defined, but sustenance to the local living tradition, economically, socially, and spiritually. (p. 91)

However, previous models of place attachment have not considered measures of community character, such as regional economy (Davenport et al., 2010). Accordingly, this finding indicates that the extent to which recreation areas reflect the local culture or add value to the development of the local community may be important.

Visiting the reservoir and its surroundings for leisure and recreation alone or with familiar people can make the experience of the place part of a person's broader life. That is, the place becomes associated with memories of personal times and interactions with family, friends, and significant others (Gustafson, 2001; Kyle and Chick, 2004). Here, an element essential to place meanings and underlying experiences is the recollections or memories that endure (Jordan et al., 2009). Moreover, Manzo (2005) reported that past experiences in currently used places were integral components of the equation of people, places, experiences and feelings that made up participants' lives. It is through places that people can make connections between a whole collection of feelings and experiences in the present and the past (Smaldone et al., 2005). In some cases, places enabled the memory of people and events to emerge; in other cases, the memories of people and events enable places to emerge as significant (Manzo et al., 2005).

The unifying theoretical constructs of *everyday life stories/memories* and memory-making enabled me to understand the processes and contexts in which meanings about the

reservoir and its surroundings emerged for residents. Specifically, it illustrates the collection and display of the artefacts of memory with strong symbolic connotations, which evidence satisfaction and/or nostalgia regarding the times spent at the reservoir and its surroundings alone, with friends and/or family; and, therefore, characterizes experiences that sustain the development of a personal representation and/or reference to a shared socially constructed vision about the place.

An important theme here is the life path of the individual: places where the respondents have lived for long periods or to which they have returned many times, are associated with roots and continuity; the life path theme is often related to important life stages – childhood, adolescence, parenthood – and expressed in terms of experience and memories (Gustafson, 2001). This commensurate with residents' stories and experiences and has been noted in previous research (e.g., Hummon, 1992; Low and Altman, 1992; Twigger-Ross and Uzzell, 1996; Manzo, 2005; Smaldone et al., 2005). Accordingly, not only can experiences that come with time create and strengthen emotional attachments to places, but places can become even more significant by helping to actually define a significant life stage for a person (Manzo, 2005). Life-stages therefore also affect connections to places; growing older and moving through one's life can change one's relationships with places and hence their meanings (Hay, 1998), as elaborated below.

Rather than the place simply capturing an extended series of events and experiences and thus meaning, a place can sometimes actually become so intertwined with a person's life that the place is then associated with an important time in one's life (Smaldone et al., 2005). Tuan (1977; p. 185), for example, noted that "in relating the passage of time to the experience of place it is obviously necessary to take the human life cycle into account". This phenomenon of place as a marker or container of meaning is also linked to the idea of using place in the maintenance of one's identity (Twigger-Ross and Uzzell, 1996), as discussed before (regarding *restoration*, *friends* and *family* meanings). In this way, connections to place help some people establish who they are, and provide self continuity throughout their lives (Smaldone et al., 2005). Also, relationships with place represent people's ever-evolving identity and self-awareness because they provide opportunities for self-development (Twigger-Ross and Uzzell, 1996; Hay, 1998; Gustafson, 2001).

Accordingly, the place becomes a marker for certain life experiences and stages, which seems to happen in two general ways: (i) significant experiences or 'milestone

moments' or (ii) experiences of change and transition (Manzo 2005).⁹⁴ Altogether they parallel my conceptualization of *milestones of everyday life* meaning. Accordingly, residents' stories and memories highlighted not only significant experiences (such as childhood memories or when research participants first kissed their boy/girlfriend) as well as experiences of change and transition (such as the 'farewell' ceremony of a deceased friend). For better or worse, they were events that helped move people's life journey forward; hence, places in which these events occurred served as markers in their journey and become significant because of that (Manzo, 2005). Furthermore, past experiences with the reservoir and its surroundings enabled residents to make comparisons between where they once were, and where they are now, literally and in their personal development. For example, residents' childhood experiences comparatively to their current relationship with the place. Likewise, Smaldone et al. (2008) study findings showed how participants' place meanings evolved over time because of their changing experiences at the place.

Overall, people's experiences of places remain with them over time, either through memories of places from their past, or through repeated use of the same places over time (Manzo, 2005). Here, accumulated recreation experiences conceptualized as a person's history of visiting a place or the frequency of trips have been a useful indicator of place bonding (Brooks et al., 2006). Specifically, previous studies measuring visitors' past experience in wild land settings demonstrated positive statistical relationships between place bonding and past experience or extent of contact (Williams et al., 1992; Williams and Vaske, 2003). Accordingly, people may develop a sense of place or an attachment orientation over time by making return visits to a place. For example, in Brooks et al. (2006) study returning to the study area enabled some participants to both strengthen existing and create new place and interpersonal meanings that transferred to their daily life beyond the one-time experience of the place.

Likewise, residents' stories provided examples of the unified holistic or gestalt nature of people-place relationships (see Kyle and Chick, 2004), as long-time visitors for whom the self, family, friends, and the reservoir and its surroundings become connected. Strong connections and rootedness in a place were associated with emotional and cognitive bonds, social relationships, and temporal aspects (e.g., Low and Altman, 1992). For residents these dimensions integrated into a satisfying relationship with the reservoir and its surroundings and

⁹⁴ The author mentioned that these two types of experiences are not mutually exclusive, but milestone moments are not always about change; they include moments of realization, clarification of goals, and, for example, a first experience with sex, while the latter include events such as a fight with a lover that ended their relationship.

a general sense of well-being and *nostalgia*. For example, Gottlieb (2007) shares his experience of overhearing long-term residents of the Los Angeles River speaking with a sense of ‘nostalgia’, what he defines as a descriptive longing for things to be like they were, from fishing along the banks of the river to going for a leisurely swim in the river’s waters. In this way, such nostalgic remembrances concerning connections to specific natural places implies a relationship with a place, a river for instance, akin to that between persons and their family or old friends – a sense that nature plays a role in people’s lives that is akin to a character in the stories of their lives (Perry, 2009). Moreover, some place relationships may be best conceptualized as the incremental accumulation of meanings and not as predictable outcomes of single visits (Brooks et al., 2006). In fact, residents’ return visits allowed for memories and interpretations of multiple experiences, both personal and social, to incrementally accrue.

7.2 Revisiting Research Questions

This section addresses each research question in turn with a brief discussion of what the major findings contribute to answering each question. To recapitulate, the aim of this dissertation is to explore how catchment residents understand, experience and give meaning to a reservoir and its surroundings to inform subsequent water management. Here, by developing an interpretative mixed methods study approach I consolidated local interpretations about a reservoir and its surroundings as told to me by catchment residents. Specifically, this study combines the notion of social representation within the interpretative approach to describe understandings catchment residents assign to a reservoir and its surroundings, as it is a useful way to explore the content of place-related knowledge and meanings. Moreover, an interpretative approach assumes a subjective reality that consists of stories or meanings grounded in ‘natural’ settings. Therefore, a reservoir and its surroundings is part of a particular ecosystem, but it is also a place of significance – a source of livelihood or inspiration. Thinking of environments as places facilitates acknowledging the different meanings that environments have for different people, as well as how these are constructed and change over time according to the different ways we relate to them.

The (‘Phase 1’) quantitative study empirically describes catchment residents’ representations using a word association task as a consultation tool. The three stimulus terms were: “Reservoir and its surroundings”, “Lake”, and “Catchment”. Words associated with each stimulus term were analyzed by a correspondence analysis to identify underlying

structures according to word co-occurrence and their associations with socio-demographic characteristics and type of reservoir and its surroundings uses. Specifically, this study sought to answer two key questions:

How a reservoir and its surroundings is represented in the everyday language of catchment residents?

Conceptualized as a social representation, the reservoir with its surroundings becomes more than an individual's opinion or perception; it is an understanding constructed and shaped by the exchange and interaction processes (e.g., discussions with friends and family) that operate within society. These representations are the terms through which residents understand, explain, and articulate the complex social and physical environment of the reservoir and its surroundings of which they are part.

The results show a conceptualization of the study area as a productive water body; that is, residents stated words referring to development and the recognized function and importance of the study area for farming; and, specifically, the association of the "Lake" with its known primary use for irrigation and the "Catchment" with a traditional image of rural landscape. Respondents also conceived the area as a place for recreation and a social space for the development and maintenance of relationships with family and friends. Specifically, residents stated words related to the use of existing amenities for recreation and leisure-based social activities, specifically, the association of the "Catchment" with leisurely walks. Moreover, respondents conceived the area as nature associated with experiences of beauty, serenity and pleasure, as well as statements suggesting that many people found the visual characteristics of water mesmerizing. Respondents also had contradictory understandings about the "Lake" water quality. Overall, the CA integrated the word associations into a limited number of comprehensive representational components of the social representation about the study area (i.e., "functional", "aesthetic", "nonconsumptive uses" of nature, and "restorative", emphasized by the clusters of Figure 6.1, on pages 150-151).

And how these representations relate to socio-demographic characteristics and type of reservoir and its surroundings uses?

According to the theoretical framework developed, even if members of a given population share common understandings and views about a certain social issue/object, the members could vary in their adherence to various aspects of the social representation and hold different

positions. In this sense, social representations are considered as organizing principles of individual differences or positions, anchored in collective symbolic realities, in social experience, and in beliefs about social reality. Analyzing how individuals vary in their adherence to the various aspects of the social representation is an important methodological device for linking the study of a common reference system and individual differentiated anchoring in the social representation components.

The results show that the conceptualization of the place as a productive water body tended to be associated with men, people with little or no formal education, pensioners or farmers, older respondents, and respondents who use the area for farming-related activities. The conceptualization of the area as a place for recreation and a social space for the development and maintenance of relationships with family and friends tended to be associated with younger respondents, recreational users, students, agricultural workers or services sector workers, and moderately educated respondents. The conceptualization of the place as nature associated with experiences of beauty, serenity, pleasure, and with the mesmerizing characteristics of water tended to be associated with women, housekeepers, more highly educated respondents, and people who use the area for walking/sightseeing. Finally, the differences in words referring to negative and positive assessments of water and, specifically, to the poor quality of water for bathing tended to be associated mainly with different types of recreational users.

In addition, the ('Phase 2') qualitative study of the dissertation sought to arrive at a deeper understanding of these representations by exploring in-depth residents' representations about the reservoir and its surroundings. In this way, the interviews were flexible and variable to accommodate the way that participants understood, described, and talked about their experiences (i.e., the processes of meaning-making) and associated meanings (i.e., the outcomes) regarding the reservoir and its surroundings. Here, the interpretations of meanings about the reservoir and its surroundings appeared indicative of individual experiences (i.e., individual's cognitions and perceptions related to the setting) as well as social interactions with others and the natural environment. Specifically, the questions guiding this study were:

How do residents describe their experiences about a reservoir and its surroundings? And what are the outcomes of these experiences (i.e., meanings) about the reservoir and its surroundings?

The reservoir and its surroundings engendered meanings that seemed to relate to residents' well-being derived from their experiences while at the reservoir and its surroundings or their fundamental beliefs about what the place symbolized to them. Specifically, I found that the residents' meanings derived from individuals' personal experiences while at the place varied within six main categories:

- Beauty - the reservoir and its surroundings were frequently described by residents as a place to experience landscape's beauty, which is related to its meaningful physical attributes, including the uniqueness of the reservoir presence in the landscape, and how residents gaze at these attributes.
- Nature - many residents associated the reservoir and its surroundings with nature; which was characterized by an experience of the place through a sense of immersion in the natural world and the importance of natural processes and intrinsic value of nature associated with the place.
- Escape and refuge - this meaning was expressed by describing the reservoir and its surroundings as a place people escape to, where they experience freedom and solitude, and where they feel protected from everyday life.
- Restoration - describes the reservoir and its surroundings as a place where people sought and found quiet and peace, where they experienced mental relief, introspection, and a renewal of the self.
- Physical interaction - is about solitary physical exercise in the reservoir and its surroundings, highlighting the significance of the senses, the character of discovery and acquired knowledge in these practices, and the associated positive side effects.
- Gendered practices - conceptualizes how gender figures subtly and pervasively in the way residents experience the place. That is, many residents mentioned that the social norms and expectations around femininity and masculinity may shape differences between how women and men interact and therefore conceptualize the reservoir and its surroundings.

Residents associated the meaning of the reservoir and its surroundings also through a social context, which draws attention to the importance of shared experiences in creating meaning. Specifically, I found that the residents' social meanings varied among four main categories:

- Friends - residents associate the reservoir and its surroundings with social relations and recreational activities with friends, including place-based festivals, as well as with developing new relations with others/strangers.
- Family - respondents spoke about experiences revolving around being with and bonding with family; specifically, the place is associated with enjoyable experiences and recreational activities with family that sustain a sense of togetherness, as well as with passing family knowledge about the place to younger generations.
- Stewardship needs - residents described their land ethic as stewards of the reservoir and its surroundings and as interpreters of local ecological knowledge of what is going on in the area; specifically, many residents emphasised considerable concern about the environmental condition and lack of respect towards the place, the need to control specific potential sources of water pollution, the need to address the diversity of views about the place, the importance of promoting community engagement to develop a shared vision for place management, and the need to consider community needs, rather than pre-empting those needs.
- Development - residents believe that a wise development of the area could bring economic and social benefits. Here, residents' considerations reveal a considerable balance between the demands for development and environmental consciousness. In addition, some residents highlighted the importance of local involvement in the development of the reservoir and its surroundings, which they felt it would help promote job opportunities, develop the local economy, and encouraging involvement of local young people.

The reservoir and its surroundings did not end with the descriptions of personal outcomes and social associations/contexts. The reservoir and its surroundings experience lingered and generated memories, which were illustrated by the stories conveyed in detail about the place experiences. Accordingly, an element essential to place meanings and underlying experiences is the recollections or memories that endure. Although the perceived benefits about the reservoir and its surroundings are numerous, memories may be the ultimate outcome of experiences at the reservoir and its surroundings. The unifying theoretical constructs of everyday life stories/memories and memory-making enabled me to understand the processes and contexts in which meanings emerged for residents. So, the overarching value of the reservoir and its surroundings for many people resided in the memories created during the place experiences, which resulted in rich lived experiences.

As such, these experiences more often perform a milestone of everyday life function. For residents, making return visits, gaining knowledge and familiarity with the place

integrated into a satisfying relationship with the reservoir and its surroundings and a general sense of well-being. Interconnected with reported significant personal experiences, family traditions, and/or social ties that contributed to the attachment to the reservoir and its surroundings is the feeling of nostalgia. Here, permeating residents' stories about experiences of the place was reminiscence for those special times in their lives that the reservoir and its surroundings represented.

How (if they do) the outcomes of experiencing the reservoir and its surroundings influence residents' everyday lives?

Some of the outcomes (i.e., meanings) of experiencing the reservoir and its surroundings seem to influence residents' everyday lives. For example, a change in perspective was described by study participants as a shift in their point of view in understanding or judging things about their everyday life. Here, the reservoir and its surroundings provided an optimal setting for inducing a shift in perspective because it offered an escape, solitude and reprieve from daily life, which contributed to slowing down and increased awareness of what was going on around oneself. In addition, the place facilitated a deep connection with nature. A shift in perspective resulted in feeling calm and grounded and confident about one's place in the world. Being able to step back from everyday life offered some residents a new angle on life, and allowed them to examine their everyday life with 'new eyes' and be able to see the 'bigger picture'.

The mental clarity that some of the interviewees accrued from being at the reservoir and its surroundings filtered into their everyday lives. For example, freedom from distractions and solitude contributed to self-reflection, offering individuals insight into self-purpose and self-worth. Mental clarity also resulted in feeling at peace and feeling grounded. Some residents expressed a desire for additional solitude in their everyday lives, noting the energy and mental inspiration they got from being alone at the reservoir and its surroundings. Furthermore, clarity of thought lead to solving problems (e.g., rationalizing future decisions, deciding what is important, or processing significant life events) and applying these solutions to everyday life.

Moreover, the reservoir and its surroundings ability to promote a distraction-free environment were also ideal for connecting with friends and family. Furthermore, the place was particularly conducive to promoting group connection and growth in that it incorporated shared goals and a common experience (such as group recreational activities, place-based

festival, family shared activities and learning from family), sometimes leading to a supportive atmosphere and increased communication. In particular, some residents noted how some of their strongest relationships in life revolve around sharing periodic visits with friends and family to the reservoir and its surroundings. These experiences and their memories continue to be an important part of their lives.

Finally, I sought to answer the question *how the research approach and findings may provide an opportunity to capture the views of lay people to assist water management and for future use in participatory processes?*, which I will answer in the following section after discussing the contribution to knowledge of my study.

7.3 Contribution to Knowledge and Water Management

Prior research on place attachment has mostly been focused on affect rather than meaning and on sociocultural elements more than on the relationship between people and the physical setting (Alexander, 2008). Without question people feel emotional attachment for places and their attachment is a complex array of multifaceted elements comprised of both the sociocultural and physical dimensions. Nevertheless, the focus of my research is a shift from asking how much place means to what place means to people. It ties the image of the reservoir and its surroundings with memories and experiences in place that become the story or image that pops into residents' minds when they think about the place. Here, the importance of memories and memory-making as both outcomes and processes for experiencing a place is an area that has not been previously interrogated (Jordan et al., 2009).

The interpretative framework that I used to explore residents' relationship with the reservoir and its surroundings and the processes for forming these relationships compliment Hay's (1998) conceptualization of sense of place and his emphasis on 'personal meaning' and the 'social context'. Following from Kyle and Chick (2007) and others (e.g., Greider and Garkovich, 1994; Davenport and Anderson, 2005; Manzo, 2005; O'Brien, 2006; Jordan et al., 2009; Wynveen et al., 2010), my study suggests that meanings emerge and evolve through ongoing interaction with others and the environment, as well as are reflections of individual and social identity (cf. Kyle and Chick, 2007).

Cheng et al. (2003) argue the fact “that places are intertwined with one’s sense of self points to deeply personal connections people have to natural resources and the environment” (p. 96). Moreover, as Irwin (2001) in his argument for co-construction illustrates:

Socially generated knowledges and understandings are not relegated - by comparison with the knowledges and understandings of science - to the level of (mere) perceptions, but represent an important means of interpreting (or making sense of) the world in which we live. (p. 177)

My research also contributes to the debate concerning how people interpret nature (Irwin, 2001; Macnaghten and Urry, 1998; O’Brien, 2004) by exploring in depth how residents interact with and construct a reservoir and its surroundings as a natural place.

Although both personal and social meanings ascribed to a place are not new, my exploration into place meanings emphasized the processes associated with attributing symbolic meanings to a reservoir and its surroundings, which the author is unaware of any published literature on meanings about this type of physical setting. Specifically, the findings reiterated the role of contextualizing personal and social experiences in meaning-making and provide insights for scholars about place and leisure. Here, leisure experiences are often described through cross-sectional methodologies that depict experience as a static phenomenon that leaves the multiphasic, dynamic, and context-driven state of mind of leisure unappreciated (Jordan et al., 2009).

The use of an interpretative approach in this study provided an alternative analytic perspective on how individuals ascribed meanings to a place and experiences through spatial and temporal frames. Also, this study used an interpretive approach to identify meanings and, in turn, offered a more sophisticated and constructive perspective, based on a *mélange* of place-based meanings. The meanings of place emerging from my empirical investigation converge in important respects with theoretical conceptualizations of place, as discussed before. This, in my view, supports my argument that empirical studies, although investigating specific places may also contribute to more general discussions about the roles and meanings of place in contemporary society (cf. Gustafson, 2001).

Prior research by environmental psychologists identified the natural environment as restorative, in that it helps people recover from directed attention fatigue, allows people to clear their minds and sort out conflicts, it is where they can be alone in peaceful quiet settings, and where they can shift their focus. This function of the physical environment is not found in

the place literature, but making the link between natural settings and their restorative capacity can help people recognize that the physical environment can fulfil this important need (Alexander, 2008). Moreover, this dimension of place meanings has received little attention in sense of place or place attachment literature. Accordingly, study findings expand on current conceptualizations of sense of place and place attachment and suggest that “current place attachment scales may not do justice to the complexities of community members’ connections to natural areas” (Davenport and Anderson, 2005; p. 637). Also, my research finding supports Stedman’s (2003) assertion that ‘landscape characteristics matter’ in the production of place meanings and subsequently place attachment.

By classifying places into general categories, the dominant groups in natural resource management have developed a fairly narrow set of place meanings considered in natural resource decision making, whereas the meanings people assign to places and the connections people form with places can be extremely diverse, nuanced, and multilayered (Cheng et al., 2003). This relatively narrow set of place meanings serves to legitimize the existing power of the dominant groups, benefiting both organized environmental groups and commodity industries, as well as scientific experts and resource specialists (Davenport and Anderson, 2005). Missing are the rich, layered place meanings that are expressed and valued by people not strongly affiliated with organized interest groups or industries (often referred to as the ‘silent majority’). Place-based interpretivist research (such as the approach used in my research) uncovers and brings to the fore these meanings with the goal of enhancing dialogue and deliberation that may not otherwise occur in natural resource decision making (Cheng et al., 2003). Next, I will briefly explore the main implications of my research in terms of water management and possible use in participatory processes.

The catchment approach used in my research provides a broader, more complex and integrated scale of analysis when pursuing residents’ experience of a reservoir and its surroundings. Specifically, enabled me to explore the ways residents’ experience and meanings they attribute to a reservoir and its surroundings can involve both common and divergent elements within the catchment. Here, conflicts are inevitable because communities offer multiple representations of a single place (Williams, 2002). However, managers and decision makers often fail to appreciate or recognize this wide range of meanings and this could lead to conflict (O’Brien, 2004). For example, Cloke et al. (1996) outlined the range of meanings individuals and communities attribute to forests and suggest that these are often

more complex than the concerns of forest managers and planners focused on timber production, recreation and conservation.

My research comes to a similar conclusion by highlighting the diverse range of meanings that were identified (see Figures 6.1 and 6.2 on pages 150-51 and 155, respectively), which underline the ambiguity, diversity and complexity of people's perceptions about the reservoir and its surroundings, and also their worries about changes that would impact on personal and community identity; particularly those that they felt they could not influence (e.g., concerns about littering of the area and lack of respect towards the environment by local users, and control of nonpoint and point source pollution). Accordingly, residents' experience and knowledge of the reservoir and its surroundings emphasize the importance of acknowledging the human and environmental contexts in which a catchment is understood.

Residents participating in this research were able to communicate their diverse (situated) experiences that reflected the various areas and lifestyles that exist across the catchment. The significance of these differences is pertinent for water management and planning authorities and professionals if the benefits of collaborative and multi-stakeholder models of planning and catchment management are to be advanced (Panelli and Robertson, 2006). To date, some planning and environmental management theorists have called for greater participation of diverse groups and the application of integrated, multiple-stakeholder approaches but determining relevant stakeholders and linkages is crucial to such endeavours (Parkes and Panelli, 2001). While integrated management enables biophysical and human relations to be explored in a catchment, further opportunities exist to recognize the rights, knowledges and interests of residents as one heterogeneous but valid stakeholder group. Specifically, this research shows that residents' location-specific environmental knowledge and catchment interaction may be relevant to a raft of water quality and recreational management issues.

Using an interpretative mixed methods study approach, this study has shown how place experiences are indissolubly connected to our embodied, lived experiences. This perspective enables a dynamic view on how people relate to a reservoir and its surroundings, because it connects people's place experiences to their being-in-the-world, both as individuals and as part of their cultural and social context. According to Sharlene Hesse-Biber (2010b), such a qualitative mixed methods approach "privileges the lived experiences of individuals with the goals of understanding and uncovering subjugated knowledge" (p. 467), such as

catchment lay residents' knowledge about a reservoir and its surroundings. Overall, the data generated allowed for a richer and deeper understanding of the research problem than would have been possible from either method of data collection in isolation. Next, I will discuss how each phase of the interpretative mixed methods study approach used may assist water management and future participatory processes.

Since 'place' matters (i.e., locations are in many ways unique in terms of problems, solutions and the needs of local communities), successful water management should recognize the importance of local people's knowledge (besides other stakeholders) and provide an opportunity for meaningful catchment consultation in the development of water management plans (Matias, 2010, 2012). In this regard, a social representation approach values local knowledge by paying attention to the lived dimensions of knowledge and the traditions in which they are grounded (Wagner and Hayes, 2005).

The ('Phase 1') quantitative study adopted a social representations theory perspective to explore the understandings and meanings about a reservoir and its surroundings by means of a word association task as a consultation tool. Here, the CA provided a simple and quick method for representing the word associations into a limited number of comprehensive representational components of the social representation about the reservoir and its surroundings (emphasized by the clusters of Figure 6.1, on pages 150-151) and illustrated how they are associated across the considered subgroups of residents. In line with previous research, these findings may aid planners/managers to understand the diversity of lay people's representations and identify appropriate goals and means for resource management (cf. Davenport and Anderson, 2005; Buijs, 2009b).

Since lay people's attitudes toward specific management practices are related to perceptions of nature/landscape (Buijs, 2009b), the consideration of these differences in the management of the study area can contribute to the fulfilment of local social needs and avoid potential conflicts among uses. Moreover, the study findings can assist planners/managers by highlighting those areas where more information is required (e.g., information about water quality, since the results suggest contradictory understandings about water quality).

In contrast with previous research about representations of somehow conceptual terms like "nature", "environment", and "biodiversity", this study uses the notion of social representations to describe understandings catchment residents assign to a specific physical setting to explore the content of place-related knowledge and meanings. Overall, although the content of the representations regarding freshwater ecosystems may differ between

places/cultures, the study approach itself may be applicable in other geographic/cultural contexts.

The ('Phase 2') qualitative study findings, as anticipated, provided explanation and expansion to the ('Phase 1') quantitative study findings. Here, the inductive research approach allowed study participants to describe what is meaningful and salient to them without the researcher presupposing what the important dimensions of the phenomenon under study were. Specifically, the meaning and underlying experiences of some of the stated words in the quantitative study (e.g., 'beautiful scenery', 'nature', 'friends', 'family', and 'development') were explained/elaborated; and further meanings and underlying experiences emerged from the interviews (e.g., 'escape and refuge', 'restoration', 'physical interaction', 'gendered practices', and 'stewardship needs'), which expanded the quantitative study findings.

Accordingly, the results of this study provide new insights into the nature of residents' meanings and underlying experiences about a reservoir and its surroundings. It can be used as a tool for initiating dialogue, framing negotiations, or interpreting action alternatives. Interpretive research into the place-based meanings that people ascribe to natural areas and their perceptions of landscape change imparts an in-depth and integrative understanding of these problems (Davenport and Anderson, 2005). Providing community members with a multifaceted community-based vision for the reservoir and its surroundings will increase their awareness of diverse perspectives, and perhaps will improve community cohesion and cooperation. Furthermore, the research process and outputs described here provide managers with several opportunities for validating public perspectives and facilitating public engagement in planning processes.

Place relationships are often unique to individuals and therefore may be best understood in interview narrative form rather than operationalized, measured, and analyzed as individual or group differences in intensity of place attachment; this suggestion poses a challenge for integration with technical natural resource management that values statistical generalizability and replication of results (Brooks et al., 2006). Despite challenges, continued efforts to understand the meanings of places for people and society promises to provide a better understanding of how lasting place relationships affect experiences at a given time, help water managers protect a diversity of visitor experiences (including residents), and improve the long-term quality of place relationships. Moreover, including residents in the planning process can contribute to well-designed water management schemes, which not only improve

ecological quality, but also conserve or improve the perceptual and identity-related values of the area to local residents (Buijs, 2009a).

Therefore, I recommend directly incorporating the meanings and underlying experiences/stories of residents into education and stewardship programs. Perhaps residents, as long-time committed visitors, should be involved in some aspects of decision-making as well. Moreover, a key finding of my research is the importance of involving family in children's experiential learning. That is, my research findings emphasize the significance of playing and exploring during childhood and learning directly from family about how to engage with the reservoir and its surroundings as a natural place. We all have primal landscapes based on experiential learning of our childhoods. So, the opportunity is to influence primal landscapes through expanding the range of environmental experiences available to children, and to sensitise young eyes, ears, noses, hands and feet to the natural systems that surround us (Measham, 2006). Accordingly, engaging family in environmental education is more likely to make a lasting impression on children because of the significance that these figures play in the total learning environment of the child (Measham, 2007).

This research also raises questions about the management of the reservoir and its surroundings, such as who is involved in decision making in relation to what takes place in the area, and who is not currently involved, but should be. Respondents in this study expected to have greater input into decision making about the management of the area. The findings have resonance with other studies, such as those by Macnaghten et al. (1998), Henwood and Pidgeon (2001) and Bishop et al. (2002), which reveal the complex social constructions of nature by communities in relation to their local environments. Bishop et al. (2002) highlight that the ways in which people value the places surrounding them is often subconscious and only revealed when people get the opportunity to discuss and think about their locality and community from the outside.

The remainder of this section discusses some of the key findings from the application of the interpretive mixed methods approach by comparing them with some relevant literature. For example, the analysis of five water related projects regarding the application of participatory processes for the sustainable river basin governance showed that the consultation techniques used (public hearings and public comments) fell short of including the interests, perceptions and values of the participants (Antunes et al., 2009). In contrast, respondents of the present study felt consulted and valued, positively surprised by the scope

of the survey questionnaire and interviews, and stated that they were able to say what they considered to be important about the reservoir and its surroundings key issues.

In another public consultation study, participatory modelling workshops used in the scoping of river basin problems, pressures, and impacts (Videira et al., 2009) showed that the participation rate decreased dramatically over the workshops, and therefore that the model failed to achieve full potential in terms of engaging people. In contrast with the participants of the present study, those participants may well have regarded time-consuming modelling events as relatively unimportant, especially given the travel costs to attend the meetings.

Also, without adequate time to deliberate over important issues, constructive debate can be difficult with large numbers of people. It is inevitable that people voice their opinions strongly with so little time available, or decline to attend, daunted by the task of speaking in front of a lot of other people. Accordingly, the issue of representation - one of the major weaknesses of participatory modelling workshops - was another strong point of this study. This may be explained by respondents' feeling that in such a consultation approach they could speak about their own individual experience without the constraints of a group discussion.

Accordingly, the primary advantage of ensuring representative participation is for decision-makers to get an accurate picture of the range of knowledge and thoughts about a particular issue. In this study, catchment populations stressed that formal, legally required participation methods in decision making do not incorporate a broad spectrum of the public. Rather, these methods often discourage busy and thoughtful individuals from wasting their time going through what appear to be nothing more than rituals designed to satisfy legal requirements. However, respondents felt the approach used in this study to be simple, stimulating, and inclusive.

One premise of participation lies in the assumption that the integration of plural perspectives may lead to better decisions by creating a holistic view of key issues (Videira et al., 2009). The consultation-based approach helped collect and structure the diversity of ideas, knowledge and opinions of catchment residents about the reservoir and its surroundings. Consequently, valuing and harnessing local knowledge and locally perceived needs about water resources can lead to greater public involvement, and promote environmental citizenship and social learning.

The endeavour of this research project was also to provide a framework to facilitate the participatory analysis of reservoir water management in which multiple local social actors' perspectives can be represented and explored. The perceived value of such a

consultative practice lies not in the fact that the public has any direct involvement in, or control over, decision making. Their potential lies instead in features such as the information they provide to decision makers, the legitimacy they add to policy outcomes, and the positive effect they have on civil society.

Also, the research approach is not seen as a one-way process leading just to better decisions by water managers. Social studies can form part of a public education programme, as participation in such interviews invariably leaves the participants both better informed, as information was often provided during the questionnaire survey and interviews, and more reflective than before, as few people will previously have spent an hour or more deliberating on the issues raised by the survey and interviews. Here, the high participation rate in the research project seems to suggest the interest of catchment residents in the study topic. Moreover, such a public consultation exercise should be gauged at an early stage within the planning and design phases of water management, and certainly by the point at which possible options are being considered (House and Fordham, 1997).

Finally, as each public participation method has advantages and disadvantages, a combination of methods appropriate to different decision-making needs vis-à-vis policy or planning stages, appears a much better strategy than relying on a single method (Kallis et al., 2006). There is no reason why the in-use open call for public views and public hearings about water issues cannot be complemented by such a straightforward public consultation exercise, as well as integrating it at scoping stage with other participatory approaches (namely, participatory modelling workshops). In particular, the study approach may help integrate public perspectives in planning/management and to sensitize policymakers about types of lay knowledge (cf. Buijs, 2009a).

7.4 Limitations of the Study and Recommendations for Further Research

During the writing of this dissertation, some limitations and areas needing further research became evident, as discussed in detail below:

- As mentioned above, catchment residents' meanings and underlying experiences may give decision makers and water managers' new insights into choosing the most appropriate strategies for sustainable management of the reservoir and its surroundings. Nevertheless, an interesting development of this study would be presenting the findings to a range of

stakeholders (representative of users' interests, such as farm lobbies) and water managers (e.g., from the National Water Institute and Alentejo Hydrographic Region Administration) to compare and contrast the possible discrepancy between decision-makers/experts and stakeholder groups. For example, in Jacobs and Buijs (2011) case studies experts did not live in the places under study and did not feel personally attached to them. Their set of place meanings was more selective than the sets of other stakeholders, and they predominantly looked at the places from the perspective of characteristics that are directly relevant to their goals. For some, 'hands-off' management is preferable (wilderness image of nature), while for others, nature should be managed in order to optimize human use (functional image of nature). Others take a stance between these extremes and adhere to a coexistence management strategy, which is focused on interaction between man and nature. Therefore, comparing and combining decision-makers/experts' and lay people's knowledge may contribute to a better understanding of processes in social-ecological systems (Gonzales et al., 2009), such as a reservoir and its surroundings. Rather than seeking to iron out local and cultural differences within environmental policy-making, the challenge for both sociologists and decision-makers is to build creatively upon an awareness of difference as well as similarity (Irwin, 2001). In particular, discussing place meanings during participatory planning processes could contribute substantially to successful water management (Jacobs and Buijs, 2011).

- Simply documenting and being aware of the meanings individuals attach to managed landscapes, as done in this research project, is of limited use without connecting those meanings to individual's desired management actions and outputs (Smith et al., 2011). It is unlikely for resource planners to "develop a shared future sense of place", as Williams and Stewart suggest (1998; p. 23), without also understanding how specific types of meanings affect the desired outcomes that individuals would like to see the resource managed for. For example, Jacobs and Buijs (2011) study results suggest that stakeholders' attitudes toward proposed interventions are, to a great extent, derived from their place meanings. Also, contentious issues like development can be better understood by identifying and examining place meanings and understanding that the issue at hand is whether impending development interferes with those place meanings (Davenport and Anderson, 2005). Therefore, assessing both beliefs and attitudes toward interventions as well as place meanings provides a better basis to understand, and hence deal with, stakeholders (Jacobs and Buijs, 2011). Equipped with an understanding of the complex bonds individuals form with natural landscapes and how those bonds affect beliefs about how the resource should be managed, resource planners

can be more proactive in developing socially acceptable management strategies that ideally lead to a shared sense of place.

- Physically interactive behaviours with the reservoir and its surroundings seemed to shape (some) residents' knowledge and memories of the place. As Carolan (2008; p. 419) highlighted "social scientists need to pay greater attention to issues of embodiment. (...) [T]he body can no longer be ignored by social scientists and theorists. (...) [W]e do not think about [places] as brains-in-a-vat but rather as bodies-in-the-world". Accordingly, I emphasise the significance of embodiment and senses in and through physical practices at the reservoir and its surroundings but argue that there is potential for further exploring how the body comes to 'know' through such practices and how these embodied experiences give expression at the personal, social and 'political' levels. Specifically, how these physically interactive behaviours affect the accumulation of place meanings and the development of a sense of place about a reservoir and its surroundings warrants further research to better inform local management.

- I acknowledge the importance of a plurality of models and methods for studying people's experiences and suggest that meaning-based and relationship-oriented frameworks, as the one developed in this research project, account well for emergent experiences and subjective place meanings. However, how place relationships contribute to well-being and 'good' experiences or a tolerance for 'bad' experiences for people should be studied to gain a more complete understanding of the quality of the residents' experience of the reservoir and its surroundings. Also, meanings may emerge with any kind of interaction, but with repeated interaction it is likely that meanings will bear greater significance to the individual. Future research should also explore how the mode of interaction (i.e., type and intensity) with the reservoir and its surroundings attributes influences the formation and maintenance of place meanings.

- Based on my research findings, the extent to which the strength of the relationship an individual shares with members of their social worlds shapes place meaning and whether or not meanings centred on the individual's interaction with their social world is an antecedent to other meanings was unclear. Therefore, further investigation concerning the degree to which the setting, the individual and social worlds each influence meaning formation is needed. In particular, how physical attributes in the setting contribute to the meanings ascribed to the place as the individual interacts with the setting and their salient social worlds.

- Some indication of the complexity and developmental role of the reservoir and its surroundings in women's lives was evident. However, my study's findings give only a

snapshot of how women understand and value their nature-based leisure and the relationship women have with the reservoir and its surroundings in the context of their lives. Therefore, how women themselves understand and experience nature from their own worldview warrants further research. For example, future research could explore the balance between positive and negative aspects of nature-based leisure at the reservoir and its surroundings for women. Here, exploring how women may apply outcomes from nature-based leisure at the reservoir and its surroundings toward their everyday lives may be an important step toward understanding outdoor recreation as a mechanism for building transferable skills for a number of populations. In addition, just as women derive different kinds of benefits from different settings, different women derive different benefits from various settings and activities (Pohl et al., 2000). Not every person enjoys being at the reservoir and its surroundings. So, what effect do this study's results have upon women who do not desire or are not able to recreate at the reservoir and its surroundings?

- Finally, current scales of place attachment in natural resources research have concentrated on the identity and recreation-related meanings of natural areas, which have simplified this complex phenomenon. One reason for this may be that most of the place attachment research in the field has focused on visitors' attachments to recreation areas, which may be less complicated than or at least fundamentally different from those of local residents (Davenport and Anderson, 2005). Accordingly, this study supports the need for more holistic and integrative models of the human-environment relationship and suggests a need to include, for example, restoration-related dimensions in scales measuring the bonds people have with places. Here, the next step in this line of research could be the design of a survey instrument, using an index based on the meanings identified and a place attachment scale, to quantify the relationship between certain meanings and intensities of attachment. Overall, this type of study would be helpful in future scale development and further assessing the construct validity of current quantitative measures of place attachment.

CONCLUSIONS

This research explores the ways in which a reservoir and its surroundings is being embodied, valued and experienced in an array of personal and social meanings and everyday life stories/memories. The emerged thematic categories result from an inductive approach and explain how people understand a reservoir and its surroundings and ascribe meaning to aspects of the setting that are important from a subjective point of view. The research further highlights the significance of such embodied practices as significant yet undervalued points of connection for wider, water management issues. These local views and lived experiences are separate from, and often in opposition to, the bureaucratic, scientific, and technical scripts of water management used by various experts and government and non-government organizations.

Cheng et al. (2003) argued that the politics of place should be an evolving effort to create more equitable, democratic ways of defining, expressing, and valuing places. Hence, place-based research may contribute to empower all citizens not affiliated with organized interest groups or industries or not trained in a natural resource discipline to participate in decisions that affect places they care about and to which they share common identities. A core goal of place-based social research is to contribute to this effort through rigorous, systematic methods and analysis (Davenport and Anderson, 2005). Place-based research is emancipating, allowing expression of place-based experiences and affiliations that may not otherwise be heard or considered legitimate (Cheng et al., 2003).

The most important conclusion of this research is the need to consider social change in order to improve resource management in the area (cf. Gonzales et al., 2009). The involvement of catchment residents in this research project was very positive. It markedly incorporated an enormous amount of knowledge and visions that would otherwise be inaccessible, and it identified a basis for dialog, out of which a point of departure for the referred social change may arise. Studying meanings and underlying experiences by means of a survey questionnaire and semi-structured interview instruments is one way of doing that. But if time and money constraints do not allow planners and managers to do so, a discussion with stakeholders and decision makers about place meanings would probably contribute to successful collaborative planning and to public support for water management projects. The personal and social categories of place meanings emerged from this research (see Fig. 6.2, on page 155) provide a good entry for such a discussion.

Moreover, place meanings and underlying experiences about a reservoir and its surroundings can function as ‘sensitizing concepts’⁹⁵ for managers, decision makers, and policy makers – as a looking glass that helps them to focus on important aspects of a phenomenon. I would like to suggest using place meanings and underlying experiences of a reservoir and its surroundings as a sensitizing concept for anyone who is trying to understand public views on such a resource and its management. That is, the emerged thematic categories of place meanings can help practitioners who want better to understand the diversity of lay people’s views on reservoirs and their surroundings, by suggesting a direction in which to look. Understanding the different place meanings encourages actors to acknowledge the existence of different values and beliefs related to such a freshwater ecosystem, and can also suggest directions in which to look for the most important differences between decision makers/experts and the public.

Availability to listen and to dedicate time to this task is crucial for its success. Here, sociology can “help to illuminate the socially varied ways in which an environment can be seen, interpreted and evaluated” (Macnaghten and Urry, 1998; p. 19). In particular, the task of sociology is not to produce undying truths but rather to engage, provoke and reconstruct; therefore, an argument is also being made for an empirically grounded sociology that does not simply trade in sweeping generalizations but also considers the complexities (and contextual specificities) of environmental understanding (Irwin, 2001). Here, the social researcher may take an active role by not only gathering data, running statistics, and publishing a summary report, but also designing and facilitating processes where a rich diversity of place meanings can be expressed, negotiated, and transformed (Cheng et al., 2003). In the end, the practical role for sociology is not that of environmental arbiter or judge; the challenge is to open up new possibilities for reflexive and democratic engagement and debate that do not reduce environment issues to narrow technical disputes (Irwin, 2001: 183).

From a personal perspective, the self-awareness needed for reflexivity is not always easy to achieve. However, I would certainly like to think that the process of conducting this research has improved me as a social researcher in terms of planning research projects, collecting and rigorously analysing data, and communicating findings in an accessible manner. A further bonus has been, as Daniels (1983) observed, in her own reflexive account

⁹⁵ As mentioned before, in grounded theory, social scientists use sensitizing concepts to guide their research until their very tentative ideas about their subject have become more concrete (Charmaz, 2006). Sensitizing concepts then function as interpretive devices to investigate the results of a qualitative study, without fully defining and delimiting the boundaries of the concept. “Whereas definitive concepts provide prescriptions of what to see, sensitizing concepts merely suggest directions along which to look” (Blumer, 1954; p. 7).

of the research process “you inevitably learn a lot about yourself when doing fieldwork” (p. 203). It is a perspective which may appear self-evident when one considers the potential impact of travelling to new locations, being in situations quite dissimilar from one’s own and interacting with people one would otherwise not meet. Despite this, it is not a view of research which is widely acknowledged in the social research literature. “In contrast, research accounts typically avoid any personal references. The practice of research is traditionally thought to be about instructing others, not necessarily learning about oneself” (Pini, 2004; p. 177). This has not been my experience. Further, it has been, I believe, my embracing of critical reflexivity which has enabled this self-learning to occur. In the end, I come away from this research project with as many questions as I found answers, and thrilled about the prospect of continuing this research agenda.

References

- Abrie, J.-C. (1994), *Pratiques sociales et représentations*, Paris, Presses Universitaires de France.
- Abbott, A. (1999), *Department and Discipline: Chicago Sociology at One Hundred*, Chicago, IL, University of Chicago Press.
- Agnew, J.A. (1989), “The devaluation of place in social science”, in J.A. Agnew and J.S. Duncan (Eds.), *The Power of Place: Bringing Together Geographical and Sociological Imaginations*, Boston, Unwin Hyman (pp. 9-29).
- Agyeman, J., R. Bullard, B. Evans (2003), *Just sustainabilities: development in an unequal world*, London, MIT Press.
- Agyeman, J. and B. Evans (2004), “‘Just sustainability’: the emerging discourse of environmental justice in Britain?”, *The Geographical Journal*, 170 (2), pp. 155-164.
- Alexander, L. (2008), *Meaning of place: exploring long-term resident’s attachment to the physical environment in Northern new Hampshire*, Unpublished Doctoral dissertation, New England, Antioch University.
- Alford, R.R. (1998), *The Craft of Inquiry: Theories, Methods, and Evidence*, New York, Oxford University Press.
- Allon, F., and Z. Sofoulis (2006), “Everyday water: cultures in transition”, *Australian Geographer*, 37, pp. 45-55.
- Almeida, J.F. (Org.) (2000), *Os Portugueses e o Ambiente. I Inquérito Nacional às Representações e Práticas dos Portugueses sobre Ambiente*, Oeiras, Celta/Observa.
- Almeida, J.F. (Org.) (2004), *Os Portugueses e o Ambiente. II Inquérito Nacional às Representações e Práticas dos Portugueses sobre Ambiente*, Oeiras/Lisboa, Celta/Observa.
- Altheide, D.L. and J.M. Johnson (1994), “Criteria for assessing interpretive validity in qualitative research”, in N. K. Denzin and Y.S. Lincoln (eds), *Handbook of Qualitative Research*, Thousand Oaks, CA, Sage Publications (pp. 485-499).
- Alvarez-Cobelas, M., R. Sánchez-Andrés, S. Sánchez-Carrillo, D.G. Angeler (2010), “Nutrient contents and export from streams in semiarid catchments of central Spain”, *Journal of Arid Environments*, 74 (8), pp. 933-945.
- Alvesson, M. and K. Sköldbberg (2000), *Reflexive Methodology: New Vistas for Qualitative Research*, London, Sage.
- Anderson, D.H., and D.C. Fulton (2008), “Experience Preferences as Mediators of the Wildlife Related Recreation Participation: Place Attachment Relationship”, *Human Dimensions of Wildlife: An International Journal*, 13 (2), pp. 73-88.
- Anderson, D.H., S. Wilhelm Stanis, I. Schneider, J.E. Leahy (2008), “Proximate and distant visitors: Differences in importance ratings of beneficial experiences”, *Journal of Park and Recreation Administration*, 26 (4), 47-65.
- Anells, M. (1996), “Grounded Theory Method: Philosophical Perspectives, Paradigm of Inquiry, and Postmodernism”, *Qualitative Health Research*, 6 (3), pp. 379-393.
- Antrop, M. (2005), “Why landscapes of the past are important for the future”, *Landscape and Urban Planning*, 70, pp. 21-34.
- Antunes, P., G. Kallis, N. Videira, R. Santos (2009), “Participation and evaluation for the sustainable river basin governance”, *Ecological Economics*, 68, pp. 931-939.
- Appelstrand, M. (2002), “Participation and societal values: the challenge for lawmakers and policy practitioners”, *Forest Policy and Economics*, 4, pp. 281-290.
- Armengol, J., J.C. Garcia, M. Comerma, M. Romero, J. Dolz, M. Roura, B.-H. Han, A. Vidal, and K. Simek (1999), “Longitudinal processes in canyon type reservoirs: the case of Sau (N.E. Spain)”, in

- J.G. Tundisi and M. Straškraba (Eds.), *Theoretical reservoir ecology and its applications*, São Carlos, International Institute of Ecology, Brazilian Academy of Sciences and Backhuys Publishers (pp. 313-345).
- Avis, M. (2005), "Is there an epistemology for qualitative research?", in I. Holloway (Ed.), *Qualitative Research in Health Care*, Maidenhead, McGraw-Hill International (pp1-16).
- Babbie, E. (1990), *Survey research methods*, 2nd Edition, Belmont, CA, Wadsworth.
- Bakker, K. (2007), "The 'commons' versus the 'commodity': alter-globalization, anti-privatization and the human right to water in the global south", *Antipode*, 39, pp. 430-455.
- Bang, M., D.L. Medin, S. Atran (2007), "Cultural mosaics and mental models of nature", *PNAS* 104 (35), pp. 13868-13874.
- Barker, C., and D. Galasiński (2001), *Cultural studies and discourse analysis*, London, Sage.
- Barraque, B. (2003), "Past and future sustainability of water policies in Europe", *Natural Resources Forum*, 27, pp. 200-211.
- Barroso, F.L., T. Pinto-Correia, I.L. Ramos, D. Surováa, H. Menezes (2012), "Dealing with landscape fuzziness in user preference studies: Photo-based questionnaires in the Mediterranean context", *Landscape and Urban Planning*, 104, pp. 329-342.
- Beck, U. (1992), *Risk society: towards a new modernity*, London, Sage publications.
- Beierle, T.C. and D.M. Konisky (2001), "What are we gaining from stakeholder involvement? Observations from environmental planning in the Great Lakes", *Environment and Planning C: Government and Policy*, 19, pp. 515-527.
- Bell, M. (1994), *Childerley: Nature and morality in a country village*, Chicago, University of Chicago Press.
- Berger, P.L. and T. Luckmann (1966), *The Social Construction of Reality: A Treatise in the Sociology of Knowledge*, Garden City, NY, Doubleday.
- Berkes, F., J. Colding and C. Folke (2000). "Rediscovery of traditional ecological knowledge as adaptive management", *Ecological Applications*, 10, pp. 1251-1262.
- Blasius, J., M. Greenacre (1998), *Visualization of Categorical Data*, London, Academic Press.
- Biel, A., and A. Nilsson (2005), "Religious Values and Environmental Concern: Harmony and Detachment", *Social Science Quarterly*, 86, pp. 178-91.
- Billig, M. (1988), "Social representation, objectivation and anchoring: A rhetorical analysis", *Social Behaviour*, 3, pp. 1-16.
- Bittman, M., and J. Wajcman (2000), "The rush hour: The character of leisure time and gender equity", *Social Forces*, 79 (1), 165-189.
- Blomquist, W., E. Schlager (2005), "Political pitfalls of integrated watershed management", *Society & Natural Resources*, 18 (2), pp. 101-117.
- Blumer, H. (1954), "What is wrong with social theory?", *American Sociological Review*, 18, pp. 3-10.
- Blumer, H. (1969), *Symbolic interactionism: Perspective and method*, Berkeley, CA, University of California Press.
- Blunt, A., and R. Dowling (2006), *Home*, London, Routledge.
- Bodin, M., and T. Hartig (2003), "Does the outdoor environment matter for psychological restoration gained through running?", *Psychology of Sport Exercise*, 4 (2), pp. 142-153.
- Boland, RJ and R.V. Tenkasi (1995), "Perspective Making and Perspective Taking in Communities of Knowing", *Organization Science*, 6(4), pp. 350-372.
- Bondi, L. (2005), "Making connections and thinking through emotions: between geography and psychotherapy", *Transactions of the Institute of British Geographers*, 30, pp. 433-448.
- Bong, S.A. (2002), "Debunking Myths in Qualitative Data Analysis", *Forum: Qualitative social Research*, 3 (2). Available from: <http://www.qualitative-research.net/fqs-texte/2-02/2-02bong-e.pdf>

- Boothroyd, R.I., S.B. Fawcett and P.G. Foster-Fishman (2004), "Community development: enhancing the knowledge base through participatory research", in L.A. Jason, C.B. Keys, Y. Suarez-Balcazar, R.R. Taylor and M.I. Davis (Eds.), *Participatory Community Research: Theories and Methods in Action*, Washington, D.C., American Psychological Association
- Boufof-Bastick, B. (2004), "Auto-Interviewing, Auto-Ethnography and Critical Incident Methodology for Eliciting a Self-Conceptualised Worldview", *Forum: Qualitative social Research*, 5 (1), Article 37. Available from: <http://www.qualitative-research.net/index.php/fqs/article/view/651>
- Bourdieu, P. (2004), *Science of science and reflexivity*, Palo Alto, CA, Stanford University Press.
- Bourdieu, P., and L.J.D. Wacquant (1992), *An invitation to reflexive sociology*, Cambridge, UK, Polity Press.
- Brandenburg, A.M. and M.S. Carroll (1995), "Your place or mine? The effect of place creation on environmental values and landscape meanings", *Society & Natural Resources*, 8, pp. 381-398.
- Brandt, J., and H. Vejre (2004), "Multifunctional landscapes, motives, concepts and perceptions", in J. Brandt and H. Vejre (Eds.), *Multifunctional landscapes. Vol.1. Theory, values and history*, Southampton, WIT Book Press.
- Brannen, J. (2005), "Mixing Methods: The Entry of Qualitative and Quantitative Approaches into the Research Process", *International Journal of Social Research Methodology*, 8(3), pp. 173-184.
- Braun, B., and N. Castree (Eds.) (1998), *Remaking reality: nature at the millennium*, London, Routledge.
- Brewer, G.D., and P.C. Stern (Eds.) (2005), *Decision Making for the Environment: Social and Behavioral Science Research Priorities*, Washington D.C., The National Academies Press.
- Bricker, K.S., and D.L. Kerstetter (2002), "An interpretation of special place meanings whitewater recreationists attach to the South Fork of the American River", *Tourism Geographies*, 4 (4), 396-425.
- Brierley, G.J., and K. Fryirs, (2009), "Don't fight the site: Geomorphic considerations in catchment-scale river rehabilitation planning", *Environmental Management*, 43 (6), pp. 1201-1218.
- Brooks, J.J., G.N. Wallace, and D.R. Williams (2006), "Place as Relationship Partner: An Alternative Metaphor for Understanding the Quality of Visitor Experience in a Backcountry Setting", *Leisure Sciences*, 28 (4), pp. 331-349.
- Brouwer, R., S. Georgiou, and R.K. Turner (2003), "Integrated assessment and sustainable water and wetland management: A review of concepts and methods", *Integrated Assessment*, 4 (3), pp. 172-184.
- Brown, G. (2005), "Mapping spatial attributes in survey research for natural resource management: Methods and applications", *Society & Natural Resources*, 18, pp. 17-39.
- Bryant, A. (2002), "Re-grounding grounded theory", *Journal of Information Technology Theory and Application*, 4(1), pp. 25-42.
- Bryant, A. (2003), "A constructive/ist response to Glaser", *FQS: Forum for Qualitative Social Research*, 4(1). Available from <http://www.qualitative-research.net/fqs-texte/1-03/1-03bryant-e.htm>
- Bryant, A., and K. Charmaz (2007), "Grounded theory in historical perspective: An epistemological account", in A. Bryant and K. Charmaz (Eds.), *The SAGE handbook of grounded theory*, London, Sage (pp. 31-57).
- Bryman, A. (1988), *Quantity and quality in social research*, London, Routledge.
- Bryman, A. (2004), *Social Research Methods*, 2nd Edition, Oxford, Oxford University Press.
- Bryman, A. (2006), "Integrating quantitative and qualitative research: How is it done?", *Qualitative Research*, 6(1), pp. 97-113.
- Bryman, A. (2007), "Barriers to integrating quantitative and qualitative research", *Journal of Mixed Methods Research*, 1(1), pp. 8-22.

- Bryman, A., S. Becker and J. Sempik (2008), "Quality Criteria for Quantitative, Qualitative and Mixed Methods Research: A View from Social Policy", *International Journal of Social Research Methodology*, 11(4), pp. 261-276.
- Buijs, A.E. (2000), "Nature images of Dutch inhabitants", *Landschap*, 17, pp. 97-112 (in Dutch).
- Buijs, A.E. (2009a), *Public Natures: Social representations of nature and local practices*, Unpublished Doctoral dissertation, Wageningen University.
- Buijs, A.E. (2009b), "Public support for river restoration: A mixed-method study into local residents' support for and framing of river management and ecological restoration in the Dutch floodplains", *Journal of Environmental Management*, 90, pp. 2680-2689.
- Buijs, A.E. (2009c), "Lay people's images of nature: frameworks of values, beliefs and value orientations", *Society & Natural Resources*, 22 (5), 417-432.
- Buijs, A.E., B. Pedroli, and Y. Luginbühl (2006), "From hiking through farmland to farming in a leisure landscape: changing social perceptions of the European landscape", *Landscape Ecology*, 21, 375-89.
- Buijs, A.E., A. Fischer, D. Rink, and J.C. Young (2008), "Looking beyond superficial knowledge gaps: understanding public representations of biodiversity", *International Journal of Biodiversity Science & Management*, 4, pp. 65-80.
- Buijs, A.E., B.H.M. Elands, F. Langers (2009), "No wilderness for immigrants: cultural differences in images of nature and landscape preferences", *Landscape and Urban Planning*, 91, 113-123.
- Buijs, A.E., B.J.M. Arts, B.H.M. Elands, J. Lengkeek (2011), "Beyond environmental frames: The social representation and cultural resonance of nature in conflicts over a Dutch woodland", *Geoforum*, 42 (3), 329-341.
- Budruk, M., S.A.W. Stanis, I.E. Schneider, D.H. Anderson (2011), "Differentiating Place Attachment Dimensions Among Proximate and Distant Visitors to Two Water-Based Recreation Areas", *Society & Natural Resources*, 24 (9), 917-932.
- Burger, J. (2002), "Restoration, stewardship, environmental health, and policy: understanding stakeholders' perceptions", *Environmental Management*, 30 (5), 631-640.
- Burmila, S., T.C. Daniel J.D. Hetherington (1999), "Human values and perceptions of water in arid landscapes", *Landscape and Urban Planning*, 44, 99-109.
- Burton, J. (2003), *Integrated Water Resources Management on a Basin Level: A Training Manual*, Canada, UNESCO, Institut de l'énergie et de l'environnement pour la Francophonie, and Éditions MultiMondes.
- Butler, J. (1990), *Gender Trouble: feminism and the subversion of identity*, New York, Routledge.
- Buttel, F.H. 1978. "Environmental Sociology: A New Paradigm?", *The American Sociologist*, 13, 252-256.
- Buttel, F.H. (1987), "New Directions in Environmental Sociology", *Annual Review of Sociology*, 13, 465-488.
- Buttel, F. H. and C. R. Humphrey (2002), "Sociological theory and the natural environment", in R.E. Dunlap and W. Michelson (Eds.), *Handbook of Environmental Sociology*, Westport, Greenwood Press.
- Butz, J., and J. Eyles (1997), "Reconceptualising senses of place: Social relations, ideology and ecology", *Geografiska Annaler*, 79B (1), 1-25.
- Caine, K.J., C.M. Davison and E.J. Stewart (2009), "Preliminary field-work: methodological reflections from northern Canadian research", *Qualitative Research*, 9 (4), 489-513.
- Calder, I.R. (1999), *The blue revolution: land use and integrated water resources management*, London, Earthscan Publications.

- Callier-Boisvert, C. (1994), "Rendre l'eau propre: nettoyage d'un réseau collectif d'irrigation à Soajo, Portugal", *Ethnologie Française*, XXIV (4).
- Carmo, R. (2010), "'Suburbanism as a Way of Staying Alive': Reinventing the Rural", *Journal of Rural and Community Development*, 5 (3), 78-93.
- Carolan, M.S. (2008), "More-than-representational knowledge/s of the countryside: how we think as bodies", *Sociologia Ruralis*, 48, 408-422.
- Carolino, J. (2010), "The Social Productivity of Farming: A Case Study on Landscape as a Symbolic Resource for Place-making in Southern Alentejo, Portugal", *Landscape Research*, 35 (6), 655-670.
- Carrier, J. (2006), "Fieldwork on Urban Male Homosexuality in Mexico", in D. Hobbs and R. Wright (Eds.), *The SAGE Handbook of Fieldwork*, Thousand Oaks, CA, Sage.
- Carter, J., and J. Howe (2006), "Stakeholder participation and the water framework directive: The case of the Ribble Pilot", *Local Environment*, 11 (2), 217-231.
- Carvalho H. (2008), *Análise Multivariada de Dados Qualitativos. Utilização da Análise de Correspondências Múltiplas com o SPSS*, Lisboa, Edições Sílabo.
- Castree, N., and B. Braun (Eds.) (2001), *Social Nature: Theory, Practice, and Politics*, Oxford, Blackwell Publishers.
- Castro, P. (2006), "Applying social psychology to the study of environmental concern and environmental worldviews: contributions from the social representations approach", *Journal of Community and Applied Social Psychology*, 16, 247-266.
- Castro, P., and I. Gomes (2005), "Genetically modified organisms in the Portuguese press: Thematization and anchoring", *Journal for the Theory of Social Behaviour*, 35 (1), 1-17.
- Catt, H., and M. Murphy (2003), "What voice for the people? Categorising methods of public consultation", *Australian Journal of Political Science*, 38 (3), 407-421.
- Catton, W.R. Jr., and R.E. Dunlap (1978a), "Environmental Sociology: A New Paradigm", *The American Sociologist*, 13, 41-49.
- Catton, W.R. Jr., and R.E. Dunlap (1978b), "Paradigms, theories and the primacy of the HEP-NEP distinction", *The American Sociologist*, 13, 256-259.
- Catton, W. R., and R. Dunlap (1980), "A new ecological paradigm for post-exuberant sociology", *American Behavioral Scientist*, 24, 15-47.
- Chan, T., and J.H. Goldthorpe (2007), "Social Stratification and Cultural consumption: music in England", *European Sociological Review*, 23 (1), 1-19.
- Chaney, D. (2002), *Cultural Change and Everyday Life*, Basingstoke, Palgrave.
- Charmaz, K. (1991), "Translating graduate qualitative methods into undergraduate teaching: Intensive interviewing as a case example", *Teaching Sociology*, 19, 384-395.
- Charmaz, K. (1995), "Grounded theory", in J. Smith, R. Harrow and L. Van Langenhove (Eds.), *Rethinking methods in psychology*, London, Sage (pp. 27-49).
- Charmaz, K. (2000), "Constructivist and objectivist grounded theory", in N.K. Denzin and Y.S. Lincoln (Eds.), *Handbook of qualitative research*, Thousand Oaks, CA, Sage (pp. 509-535).
- Charmaz, K. (2002), "Qualitative Interviewing and Grounded Theory Analysis", in *Handbook of Interview Research: Context and Method*, J. Gubrium and J. Holstein (Eds.), Thousand Oaks, CA, Sage (pp. 675-694).
- Charmaz, K. (2005), "Grounded theory in the 21st century: A qualitative method for advancing social justice research", in N.K. Denzin and Y.S. Lincoln (Eds.), *The SAGE handbook of qualitative research*, Thousand Oaks, CA, Sage (pp. 507-535).
- Charmaz, K. (2006), *Constructing grounded theory: A practical guide through qualitative analysis*, London, Sage.

- Charmaz, K. (2008), "Grounded Theory as an Emergent Method", in S.N. Hesse-Biber and P. Leavy (Eds.), *Handbook of Emergent Methods*, London and New York, The Guilford Press (pp. 155-170).
- Charmaz, K. and A. Bryant (2008), "Grounded theory", in L.M. Given (Ed.), *The Sage encyclopaedia of qualitative research methods*, London, Sage (pp. 374-377).
- Chen, H. (1997), "Applying mixed methods under the framework of theory-driven evaluations", in T.H. Gary and C.G. Jennifer (Eds.), *Advances in Mixed-Method Evaluation: The Challenges and Benefits of Integrating Diverse Paradigms*, San Francisco, Jossey-Bass.
- Cheng, A.S., L.E. Kruger, and S.E. Daniels (2003), "'Place' as an integrating concept in natural resource politics: Propositions for a social science research agenda", *Society & Natural Resources*, 16, 87-104.
- Chhetri, P., C. Arrowsmith, and M. Jackson (2004), "Determining hiking experiences in nature-based tourist destinations", *Tourism Management*, 25, 31-43.
- Clausen, S.E. (1998), *Applied Correspondence Analysis: An Introduction. Series: Quantitative Applications in the Social Sciences*, London, Sage.
- Clayton, S. (2003), "Environmental identity: A conceptual and operation definition", in S. Clayton and S. Opatow (Eds.), *Identity and the natural environment: The psychological significance of nature*, Cambridge, MA, MIT Press (pp. 45-66).
- Clayton, S., and S. Opatow (2003), "Introduction: Identity and the natural environment", in S. Clayton and S. Opatow (Eds.), *Identity and the natural environment: The psychological significance of nature*, Cambridge, MA, MIT Press (pp. 1-24).
- Clemence, A. (2001), "Social Positioning and Social Representations", in K. Deauz and G. Philogene (Eds.), *Representations of the Social*, Oxford, Blackwell.
- Cloke, P., and P. Milbourne (1992), "Deprivation and lifestyles in rural Wales. II: rurality and the cultural dimension", *Journal of Rural Studies*, 8, 359-371.
- Cloke, P., P. Milbourne, C. Thomas (1996), "The English National Forest: local reactions to plans for renegotiated nature – society relations in the countryside", *Transactions of Institute of British Geographers*, 21, 552-571.
- Coffey, A. and P. Atkinson (1996), *Making sense of qualitative data: Complementary research strategies*, Thousand Oaks, CA, Sage Publications.
- Connelly, S., and C. Anderson (2007), "Studying water: reflections on the problems and possibilities of interdisciplinary working", *Interdisciplinary Science Reviews*, 32 (3), 213-220.
- Cook, T.D. and D.T. Campbell (1979), *Quasi-Experimentation: Design and Analysis Issues for Field Settings*, Chicago, Rand McNally.
- Cooke, B., and U. Kothari (Eds.) (2001), *Participation: The New Tyranny?*, London and New York, Zed Books.
- Cordell, H.K., A.P. Hoover, G.R. Super, C.H. Manning (1999), "Adding human dimensions to ecosystem based management of natural resources", in H.K. Cordell and J.C. Bergstrom (Eds.), *Integrating Social Sciences with Ecosystem Management: Human Dimension in Assessment, Policy, and Management*, Champaign, Illinois, Sagamore Publishing (pp. 1-12).
- Cosgriff, M., D.E. Little and E Wilson (2009), "The Nature of Nature: How New Zealand Women in Middle to Later Life Experience Nature-Based Leisure", *Leisure Sciences*, 32 (1), 15-32.
- Costa X. (2001), "Festivity: Traditional and modern forms of sociability", *Social Compass*, 48 (4), 541-548.
- Council of Europe (2000), European Landscape Convention, Florence, 20.X.2000, ETS No. 176. Available at: <http://conventions.coe.int/Treaty/en/Treaties/Html/176.htm>
- Coyne, I., and S. Cowley (2006), "Using grounded theory to research parent participation", *Journal of Research in Nursing*, 11 (6), 501-515.

- Cresswell, T. (2003), *Place. A short introduction*, Malden, Oxford and Victoria, Blackwell Publishing.
- Cresswell, T., and P. Merriman (2011), "Introduction", in T. Cresswell and P. Merriman (Eds.), *Geographies of mobilities: Practices, spaces, subjects*, Farnham, Ashgate Publishing (pp. 1-15).
- Cresswell, J.W. (1995), *Research design: Qualitative and quantitative approaches*, Thousand Oaks, CA, Sage.
- Cresswell, J. (1998), *Qualitative Inquiry and Research Design: Choosing Among Five Traditions*, Thousand Oaks, CA, Sage.
- Cresswell, J.W. (2003), *Research design: Qualitative, quantitative, and mixed methods approaches*, 2nd Edition, Thousand Oaks, CA, Sage.
- Cresswell, J.W. and V.L. Plano Clark (2007), *Designing and Conducting Mixed Methods Research*, London, Sage.
- Cresswell, J.W., L.F. Goodchild and P.P. Turner (1996), "Integrated qualitative and quantitative research: Epistemology, history, and designs", in J.C. Smart (Ed.), *Higher education: Handbook of theory and research*, New York, Agathon Press (pp. 90-136).
- Cresswell, J.W., V.L. Plano Clark, M.L. Gutmann and W.E. Hanson (2003), "Advances in mixed methods research design", in A. Tashakkori and C. Teddlie (Eds.), *Handbook of mixed methods in social and behavioural research*, Thousand Oaks, CA, Sage.
- Cresswell, J.W., M.D. Fetters and N.V. Ivankova (2004), "Designing a mixed methods study in primary care", *Annals of Family Medicine*, 2 (1), 7-12.
- Cresswell, J.W., R. Shope, V.L. Plano Clark, D.O. Green (2006), "How Interpretive Qualitative Research Extends Mixed Methods Research", *Research in the Schools*, 13 (1), 1-11.
- Cuba, L., and D. Hummon (1993), "A place to call home: Identification with dwelling, community, and region", *The Sociological Quarterly*, 34 (1), 111-131.
- Cutcliffe, J.R. (2000), "Methodological issues in grounded theory", *Journal of Advanced Nursing*, 31 (6), 1474-1484.
- Daniels, A.K. (1983), "Self-deception and self-discovery in fieldwork", *Qualitative Sociology*, 6 (3), 195-214.
- Darlington, Y. and D. Scott (2002), *Qualitative Research in practice: Stories from the field*, Buckingham, Open University Press.
- Davenport, M.A. and D.H. Anderson (2005), "Getting From Sense of Place to Place-Based Management: An Interpretive Investigation of Place Meanings and Perceptions of Landscape Change", *Society & Natural Resources*, 18 (7), 625-641.
- Davenport, M.A., M.L. Baker, J.E. Leahy, D.H. Anderson (2010), "Exploring multiple place meanings at an Illinois state park", *Journal of Park and Recreation Administration*, 28 (1), 52-69.
- Davidson, J., and L. Bondi (2004), "Spatialising affect; affecting space: an introduction", *Gender, Place and Culture*, 11 (3), 373-374.
- Davidson, J., L. Bondi, M. Smith (2005), *Emotional Geographies*, Ashgate, London.
- Davidson, J., and E. Stratford (2007), "En(gender)ing the debate about water's management and care – views from the Antipodes", *Geoforum*, 38, 815-827.
- De Certeau, M. (1984), *The Practice of Everyday Life*, Berkeley, University of California Press.
- De Groot, W.T., and R.J.G. Van den Born (2003), "Visions of nature and landscape type preferences: an exploration in The Netherlands", *Landscape and Urban Planning*, 63, 127-138.
- De Vaus, D.A. (2002), *Surveys in Social Research*, Routledge, London.
- De Vries, P. (1992), "A Research Journey", in N. Long and A. Long (Eds.), *Battlefields of knowledge: The interlocking of theory and practice in social research and development*, London, Routledge.
- Deaux, K., and G. Philogene (Eds.) (2001), *Representations of the social*, Oxford, Blackwell Publishers.

- Delgado, J.V. and M. Zwartveen (2007), "The Public and Private Domain of the Everyday Politics of Water: The Constructions of Gender and Water Power in the Andes of Peru", *International Feminist Journal of Politics*, 9 (4), 503-511.
- Denscombe, M. (1998), *The good research guide: For small-scale social research projects*, Buckingham, Open University Press.
- Denzin N.K. (1989a), *Interpretive Biography*, Thousand Oaks, CA, Sage.
- Denzin, N.K. (1989b), *The Research Act: A Theoretical Introduction to Sociological Methods*, Englewood Cliffs, NJ, Prentice Hall.
- Denzin, N. K. (1994), "The art and politics of interpretation", in N.K. Denzin and Y.S. Lincoln (Eds.), *Handbook of qualitative research*, Thousand Oaks, CA, Sage (pp. 500-515).
- Denzin, N.K. (1995), "The Poststructuralist Crisis in the Social Sciences", in R.H. Brown (ed.), *Writing Postmodernism*, Urbana, University of Illinois Press.
- Denzin, N.K. (1997), *Interpretive Ethnography: Ethnographic Practices for the 21st Century*, London, Sage.
- Denzin, N.K. and Y.S. Lincoln (1994), "Introduction: Entering the field of qualitative research", in N.K. Denzin and Y.S. Lincoln (eds.), *Handbook of Qualitative Research*. Thousand Oaks, CA, Sage (pp. 1-17).
- Denzin, N.K. and Y.S. Lincoln (1998), *Strategies of qualitative inquiry*, Thousand Oaks, CA, Sage.
- Denzin, N.K. and Y.S. Lincoln (2000), *Handbook of Qualitative Research*. Thousand Oaks, CA, Sage.
- Denzin, N.K., and Y.S. Lincoln (2005), "Introduction: The discipline and practice of qualitative research", in N.K. Denzin and Y.S. Lincoln (Eds.), *The handbook of qualitative research*, 3rd edition, Thousand Oaks, CA, Sage (pp. 1-32).
- Derr, V. (2002), "Children's Sense of Place in Northern New Mexico", *Journal of Environmental Psychology*, 22 (1-2), 125-137.
- Descola, P. and G. Palsson (Eds.) (1996), *Nature and Society: Anthropological Perspectives*, London, Routledge.
- Deutscher, I. (1984), "Choosing ancestors: Some consequences of the selection from intellectual traditions", in R. Farr and S. Moscovici (Eds.), *Social representations*, Cambridge, UK, Cambridge University Press (pp. 71-100).
- Dey, I. (1993), *Qualitative data analysis: A user friendly guide for social scientists*, London, Routledge.
- Dey, I. (1999), *Grounding grounded theory: Guidelines for qualitative inquiry*, San Diego, CA, Academic Press.
- Dey, I. (2004), "Grounded theory", in C. Seale, G. Gobo, J.F. Gubrium, and D. Silverman (Eds.), *Qualitative research practice*, London, Sage (pp. 80-93).
- Dick, B. (2005), "Grounded Theory : a thumbnail sketch", Resource papers in action research. Available from: <http://www.scu.edu.au/schools/gcm/ar/arp/grounded.html>
- Dickens, P. (1992), *Society and Nature: Towards a Green Sociological Theory*, Philadelphia, Temple University Press.
- Dietz, T., P.C. Stern, and G.A. Guagnano (1998), "Social Structural and Social Psychological Bases of Environmental Concern", *Environment and Behavior*, 30, 450-71.
- Dietz, T., A. Fitzgerald, and R. Schwom (2005), "Environmental Values", *Annual Review of Environment and Resources*, 30, 335-72.
- Diogo, P.A., M. Fonseca, P.S. Coelho, N.S. Mateus, M.C. Almeida, A.C. Rodrigues (2008), "Reservoir phosphorus sources evaluation and water quality modelling in a transboundary watershed", *Desalination*, 226, 200-214.

- Doise, W. (1992), "L'ancrage dans les études sur les représentations sociales", *Bulletin de Psychologie*, 45, 189-195.
- Doise, W., A. Clémence and F. Lorenzi-Cioldi (1993), *The quantitative analysis of social representations*, London, Harvester-Wheatsheaf.
- Doise, W., D. Spini, and A. Clemence (1999), "Human rights studied as social representations in a cross-cultural context", *European Journal of Social Psychology*, 29, 1-29.
- Drafting Group (2002), 'Guidance on public participation in relation to the water framework directive. Active involvement, consultation and public access to information', Document prepared in the framework of the common implementation strategy of the European Commission and the EU member states, endorsed by the EU water directors in Copenhagen. Available from: http://www.eau2015-rhin-meuse.fr/fr/ressources/documents/guide_participation-public.pdf
- Dryzek, J.S. (1997), *The Politics of the Earth: Environmental Discourses*, Oxford, Oxford University Press.
- Dudgeon, D., A. Arthington, M.O. Gessner, Z.-I. Kawabata, D.J. Knowler, C. Lévêque, R.J. Naiman, A.-H. Prieur-Richard, D. Soto, M.L.J. Stiassny, C.A. Sullivan (2006), "Freshwater biodiversity: importance, threats, status and conservation challenges", *Biological Reviews*, 81 (2), 163-182.
- Dunlap, R. (2002), "Paradigms, theories and environmental sociology", in R. Dunlap, F. H. Buttell, P. Dickens, and A. Gijswijt (Eds.), *Social theory and the Environment: Classical Foundations, Contemporary Insights*, New York, Rowman and Little Publishers (pp. 329-350).
- Dunlap, R., and W. R. Catton (1979), "Environmental sociology", *Annual Review of Sociology*, 5, 243-273.
- Dunlap, R.E., and B.K. Marshall 2007, "Environmental Sociology", in C.D. Bryant and D.L. Peck (Eds.), *21st Century Sociology: A Reference Handbook*, Thousand Oaks, CA, Sage (pp. 329-340).
- Dunlap, R.E., G. Gallup Jr., and A.M. Gallup (1993), "Of Global Concern: Results of the Health of the Planet Survey", *Environment*, 35, 7-39.
- Dunlap, R.E., and A.G. Mertig (1995), "Global Concern for the Environment: Is Affluence a Prerequisite?", *Journal of Social Issues*, 51, 121-37.
- Dunlap, R.E., and K.D. van Liere (1978), "The 'New Environmental Paradigm': A proposed measuring instrument and preliminary results", *Journal of Environmental Education*, 9, 10-19.
- Dunlap, R.E., and R. York (2008), "The Globalization of Environmental Concern and the Limits of the Post-Materialist Explanation: Evidence from Four Cross-National Surveys", *Sociological Quarterly*, 49 (3), 529-563.
- Dunlap, R.E., F.H. Buttell, P. Dickens, and A. Gijswijt (Eds.) (2002a), *Sociological Theory and the Environment: Classical Foundations, Contemporary Insights*, New York, Rowman & Littlefield.
- Dunlap, R., W. Michaelson, and G. Stalker (2002b), "Environmental sociology: An introduction", in R. Dunlap and W. Michaelson (Eds.), *The Handbook of Environmental Sociology*, London, Greenwood Press (pp. 1-32).
- Dunlap, R.E., C. Xiao, and A.M. McCright (2001), "Politics and Environment in America: Partisan and Ideological Cleavages in Public Support for Environmentalism", *Environmental Politics*, 10 (4), 23-48.
- Dunne, C. (2011), "The place of the literature review in grounded theory research", *International Journal of Social Research Methodology*, 14 (2), 111-124.
- Durand, J.-Y. (2003), "A diluição do consenso: a água, de 'fonte de vida' a 'patrimônio coletivo'", *Etnográfica*, VII (1), 15-31
- Duveen, G., and B. Lloyd (1993), "An ethnographic approach to social representations", in G. Breakwell and D. Canter (Eds.), *Empirical approaches to social representations*, Oxford, Clarendon Press.

- EEA (European Environmental Agency) (1999), *Lakes and reservoirs in the EEA area report*, Copenhagen, Denmark, European Environmental Agency.
- Eder, K. (1996), *The Social Construction of Nature*, London, Sage Publications.
- Eisenhardt, K.M. (2002), "Building theories from case", in M. Huberman and M.B. Miles (Eds.), *The qualitative researcher's companion*, Thousand Oaks, CA, Sage (pp. 5-36).
- Eisenhauer, B.W., R.S. Krannich, and D.J. Blahna (2000), "Attachments to special places on public lands: An analysis of activities, reason for attachments, and community connections", *Society & Natural Resources*, 13, 421-441.
- Emerson, R.M. (2004), "Working with 'Key Incidents'", in C. Seale, G. Gobo, J.F. Gubrium and D. Silverman (Eds.), *Qualitative Research Practice*, London, Sage (pp. 457-472).
- Escobar, A. (1999), "After nature: Steps to an antiessentialist political ecology", *Current Anthropology*, 40 (1), 1-30.
- Estrela, T., C. Marcuello and A. Iglesias (1996), *Water Resources Problems in Southern Europe*, Topic report 15/96, European Topic Centre on Inland Waters, Copenhagen, European Environment Agency.
- Etherington, K. (2006), "Reflexivity: using our 'selves' in narrative research", in S. Trahar (Ed.), *Narrative Research on Learning: Comparative and international perspectives*, Oxford, Symposium Books (pp. 77-92).
- EUROPA (2003a), *WFD-Introduction and Overview*, European Commission, Available from: <http://europa.eu.int/comm/environment/water/water-framework/overview.html>
- EUROPA (2003b), *Implementing the EU Water Framework Directive*, European Commission, Available from: <http://europa.eu.int/comm/environment/water/water-framework/implementation.html>
- European Commission, (2000), Document 300L0060, Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy, Luxembourg, Official Journal of European Commission, Available at: <http://europa.eu.int/eur-lex>
- European Commission (2002), *Common Implementation Strategy for the Water Framework Directive, Guidance Document No. 3, Analysis of Pressures and Impacts*, Brussels, The Directorate General Environment of the European Commission.
- European Commission (2003), *The common strategy on the implementation for the Water Framework Directive, Guidance document n. 8: public participation in relation to the Water Framework Directive*, Luxembourg, Office for Official Publications of the European Communities.
- Fairclough, N. (1992), *Discourse and social change*, Oxford, Polity Press.
- Farr, R.M. (1993), "Theory and method in the study of social representations", in G. Breakwell and D. Canter (Eds.), *Empirical approaches to social representations*, Oxford, Clarendon Press (pp. 15-38).
- Farr, R.M. and S. Moscovici (Eds.) (1984), *Social Representations*, Cambridge, Cambridge University Press.
- Faulkner, H., A. Green, K. Pellaumail, and T. Weaver (2001), "Residents' perceptions of water quality improvements following remediation work in the Pymme's Brook catchment, North London, UK", *Journal of Environmental Management*, 62 (3), 239-254.
- Felski, R. (2002), "The invention of everyday life", *New Formations*, 39, 15-31.
- Ferguson, H. (2006), *Phenomenological Sociology: Insight and Experience in Modern Society*, Londond, Sage.
- Fielding, N. and H. Thomas (2001), "Qualitative Interviewing", in N. Gilbert (Ed.), *Researching Social Life*, 2nd edition, London, Sage (pp. 123-144).

- Figari, H., and K. Skogen (2011), "Social representations of the wolf", *Acta Sociologica*, 54 (4), 317-332.
- Fine, M., and L. Weis (2005), "Compositional studies, in two parts: Critical theorizing and analysis on social (in)justice", in N.K. Denzin and Y.S. Lincoln (Eds.), *Handbook of qualitative research*, 3rd edition, Thousand Oaks, CA, Sage (pp. 65-84).
- Finlay, L. (2002), "Pearls, pith, and provocation. 'Outing' the researcher: the provenance, process, and practice of reflexivity", *Qualitative Health Research*, 12 (4), 531-545.
- Fischer, F. (2000), *Citizens, experts and the environment: The politics of local knowledge*, Durham and London, Duke University Press.
- Fischer, A., and R. Van der Wal (2007), "Invasive plant suppresses charismatic seabird - the construction of attitudes towards biodiversity management options", *Biological Conservation*, 135 (2), 256-267.
- Fischer, A., V. Peters, M. Neebe, J. Vávra, A. Kriel, M. Lapka, and B. Megyesi (2012), "Climate Change? No, Wise Resource Use is the Issue: Social Representations of Energy, Climate Change and the Future", *Environmental Policy and Governance*, 22, 161-176.
- Fraser, N. (1993), "Rethinking the public sphere: a contribution to the critique of actually existing democracy", in C. Calhoun (Ed.), *Habermas and the Public Sphere*, Cambridge, Massachusetts, MIT Press.
- Frederiksen, P., and M. Maenpaa (Eds.) (2007), *Analysing and synthesising European legislation in relation to water. A Watersketch Report under WPI*, Denmark, National Environmental Research Institute, NERI Technical report no 603. Available at: <http://www.dmu.dk/Pub/FR603.pdf>
- Freitas, A. (2008), "Para uma sociologia da sociologia do ambiente em Portugal: um olhar sobre a estrutura de uma comunidade científica", in *Actas do 6º Congresso Português de Sociologia, Mundos Sociais: Saberes e práticas, Área temática: Desenvolvimento Sustentável e Ambiente*, Lisboa, APS.
- Freudenburg, W.R. (2008), "Thirty Years of Scholarship and Science on Environment-Society Relationships", *Organization Environment*, 21 (4), 449-459.
- Freudenburg, W.R., S. Frickel, and R. Gramling (1995), "Beyond the nature-society divide: Learning to think like a mountain", *Sociological Forum*, 10 (3), 361-392.
- Fries, C.J. (2009), "Bourdieu's Reflexive Sociology as a Theoretical Basis for Mixed Methods Research: An Application to Complementary and Alternative Medicine", *Journal of Mixed Methods Research*, 3 (4), 326-348.
- Fulton, D.C., M.J. Manfredo, and J. Lipscomb (1996), "Wildlife value orientations: A conceptual and measurement approach", *Human Dimensions of Wildlife*, 1 (2), 24-47.
- Funtowicz S., and J.R. Ravetz (1992), "Science for the post-normal age", *Futures*, 25 (7), 739-756.
- Gadgil, M., F. Berkes, C. Folke (1993), "Indigenous knowledge for biodiversity conservation", *Ambio*, 22, 151-156.
- Galasiński, D. (2008), "Constructions of the self in interaction with the Beck Depression Inventory", *Health: An Interdisciplinary Journal for the Social Study of Health, Illness and Medicine*, 12, 515-533.
- Galasiński, D., and O. Kozłowska (2010), "Questionnaires and Lived Experience: Strategies of Coping with the Quantitative Frame", *Qualitative Inquiry*, 16 (4), 271-284.
- Garfinkel, H. (1963), *Studies in Ethnomethodology*, Englewood Cliffs, NJ, Prentice-Hall.
- Garin, P., J.-D. Rinaudo, and J. Ruhlmann (2002), "Linking expert evaluation with public consultation to design water policy at the watershed level", *Water Science and Technology*, 46 (6-7), 263-271.
- Gary, T., and D. James (2006), "Reinventing grounded theory: some questions about theory, ground and discovery", *British Educational Research Journal*, 32 (6), 767-795.

- Gaskell, G. (2001), "Attitudes, social representations and beyond", in K. Deaux and G. Philogene (Eds.), *Representations of the social*, Oxford, UK, Blackwell (pp. 228-241).
- Gayo-Cal, M., M. Savage, and A. Warde (2006), "A Cultural Map of the United Kingdom, 2003", *Cultural Trends*, 15 (2/3), 213-237.
- Geraldes, A.M., and M.J. Boavida (2003), "Distinct age and landscape influence on two reservoirs under the same climate", *Hydrobiologia*, 504 (1-3), 277-288.
- Geraldes, A.M., and M.J. Boavida (2007), "Zooplankton assemblages in two reservoirs: one subjected to accentuated water level fluctuations, the other with more stable water levels", *Aquatic Ecology*, 41 (2), 273-284.
- Geertz, C. (1973), *The interpretation of cultures: Selected essays*, New York, Basic Books.
- Geertz, C. (2000), *Local knowledge: Further essays in interpretive anthropology*, 3rd edition, New York, Basic Books.
- Gibbs, L.M. (2009), "Water Places: Cultural, Social and More-Than-Human Geographies of Nature", *Scottish Geographical Journal*, 125 (3-4), 361-369.
- Gibbs L.M. (2010), "'A beautiful soaking rain': environmental value and water beyond Eurocentrism", *Environment and Planning D: Society and Space*, 28 (2), 363-378.
- Giddens, A. (1976), *New Rules of Sociological Method*, New York, Basic Books.
- Giddens, A. (1984), *The Constitution of Society*, Berkeley, CA, University of California Press.
- Giddens, A. (1990), *The Consequences of Modernity*, Cambridge, Polity.
- Giddens A (1991), *Modernity and Self-Identity: Self and Society in the Late Modern Age*, Stanford, CA, Stanford University Press.
- Gieryn, T.F. (2000), "A space for place in sociology", *Annual Review of Sociology*, 26, 463-496.
- Gieryn, T.F. (2006), "City as Truth-Spot: Laboratories and Field-Sites in Urban Studies", *Social Studies of Science*, 36 (1), 5-38.
- Giuliani, M.V. and R. Feldman (1993), "Place attachment in a developmental and cultural context", *Journal of Environmental Psychology*, 13, 267-274.
- Glaser, B.G. (1978), *Theoretical sensitivity*, Mill Valley, CA, Sociology Press.
- Glaser, B.G. (1992), *Basics of grounded theory analysis*, Mill Valley, CA, Sociology Press.
- Glaser, B.G. (1998), *Doing Grounded Theory: Issues and Discussions*, Mill Valley, CA, Sociology Press.
- Glaser, B.G. (2001), *The grounded theory perspective: Conceptualisation contrasted with description*, Mill Valley, CA, The Sociological Press.
- Glaser, B. and A. Strauss (1967), *The Discovery of Grounded Theory: Strategies for Qualitative Research*, Chicago, Aldine.
- Glaser, B., and J. Holton (2004), "Remodelling Grounded Theory", *Forum: Qualitative Social Research*, 5 (2), Article 4. Available from: <http://www.qualitative-research.net/fqs-texte/2-04/2-04glaser-e.htm>
- Gleick, P.H. (1996), "Water resources", in S. H. Schneider (Ed.), *Encyclopaedia of Climate and Weather*, New York, Oxford University Press (pp. 817-823).
- Gleick, P.H. (1998), "Water in crisis: paths to sustainable water use", *Ecological Applications*, 8 (3), 571-579.
- Gobster, P.H. (1996), "Forest aesthetics, biodiversity, and the perceived appropriateness of ecosystem management practices", in M.W. Brunson, L.E. Kruger, C.B. Tyler, and S.A. Schroeder (Eds.), *Defining social acceptability in ecosystem management: workshop proceedings*, Kelso, WA. Gen. Tech. Rep PNW-GTRR369.
- Gobo, G. (2004), "Sampling, representativeness and generalizability", in C. Seale, G. Gobo, J.F. Gubrium and D. Silverman (Eds.), *Qualitative Research Practice*, London, Sage (pp. 435-456).

- Golledge, R.G. (2002), "The nature of geography knowledge", *Annals of the Association of American Geographers*, 92, 1-14.
- Gomm, R. (2004), *Social research methodology: A critical introduction*, Basingstoke, UK, Palgrave Macmillan.
- Gonzalez, C., A. Clemente, K.A. Nielsen, C. Branquinho, and R. Ferreira dos Santos (2009), 'Human-nature relationship in Mediterranean streams: integrating different types of knowledge to improve water management', *Ecology and Society*, 14 (2), 35. Available from <http://www.ecologyandsociety.org/vol14/iss2/art35/>
- Green, A. and J. Preston (2005), "Editorial: Speaking in Tongues - Diversity in Mixed Methods Research", *International Journal of Social Research Methodology*, 8 (3), 167-171.
- Greenacre, M.J. (1994), *Theory and applications of correspondence analysis*, London, Academic Press.
- Greenacre, M. (2007), *Correspondence analysis in practice*, 2nd edition, London, Chapman & Hall/CRC.
- Greenacre, M.J., and J. Blasius (Eds.) (1994), *Correspondence Analysis in the Social Sciences*, London, Academic Press.
- Greenacre, M.J. and J. Blasius (Eds.) (2006), *Multiple Correspondence Analysis and Related Methods*, London, Chapman & Hall/CRC.
- Greene, J.C., V.J. Caracelli and W.F. Graham (1989), "Toward a conceptual framework for mixedmethod evaluation designs", *Educational Evaluation and Policy Analysis*, 11 (3), 255-274.
- TCNT
- Greider, T., and L. Garkovich (1994), "Landscapes: The social construction of nature and the environment", *Rural Sociology*, 59(1), 1-24.
- Guba, E.G. and Y.S. Lincoln (1994), "Competing paradigms in qualitative research", in N.K. Denzin and Y.S. Lincoln (Eds.), *Handbook of Qualitative Research*, Thousand Oaks, CA, Sage Publications (pp. 105-117).
- Gunderson, K., and A. Watson (2007), "Understanding place meanings on the Bitterroot National Forest, Montana", *Society & Natural Resources*, 20, 705-721.
- Gunter, B. (2000), *Psychology of the home*, Philadelphia, PA, Whurr Publications, Ltd.
- Gustafson, P. (2001), "Meanings of Place: Everyday Experience and Theoretical Conceptualizations", *Journal of Environmental Psychology*, 21(1): 5-16.
- Haartsen, T., P. Groote, and P.P.P. Huigen (2000), "Continuities and discontinuities in representations of the rural in the Netherlands", in T. Haartsen, P. Groote, and P.P.P. Huigen (Eds.), *Claiming Rural Identities. Dynamics, Contexts, Policies*, Assen, van Gorcum (pp. 11-23).
- Haartsen, T., P. Groote, and P.P.P. Huigen (2003), "Measuring age differentials in representations of rurality in the Netherlands", *Journal of Rural Studies*, 19 (2), 245-252.
- Habermas, J. (1976), *The legitimation crisis*, London, Heinemann.
- Haenn, N., and R.R. Wilk (2006), *The Environment in Anthropology: A Reader in Ecology, Culture, and Sustainable Living*, New York and London, New York University Press.
- Hair, J.F., R.E. Anderson, R.L. Tatham, and W.C. Black (1998), *Multivariate data analysis*, 5th edition, Upper Saddle River, NJ, Prentice-Hall.
- Halfacree, K.H. (1993), "Locality and social representation: Space, discourse and alternative definitions of the rural", *Journal of Rural Studies*, 9 (1), 23-37.
- Halfacree, K.H., (1994), "The importance of 'the rural' in the constitution of counter urbanization", *Sociologia Ruralis*, 34, 164-189.
- Halfacree, K.H. (1995), "Talking about Rurality: Social representations of the rural expressed by residents of six English Parishes", *Journal of Rural Studies*, 11 (1), 1-20.

- Hall, W., and P. Callery (2001), "Enhancing the Rigor of Grounded Theory: Incorporating Reflexivity and Relationality", *Qualitative Health Research*, 11 (2), 257-272.
- Hannigan, J. (1995), *Environmental Sociology*, 1st edition, New York, Routledge.
- Hannigan, J. (2006), *Environmental Sociology*, 2nd edition, New York, Routledge.
- Haraway, D.J. (1991), *Simians, Cyborgs and Women: The Reinvention of Nature*, London, Free Association Books.
- Harrison, P. (2007), "Making sense: embodiment and the sensibilities of the everyday", *Environment and Planning D*, 39, 497-517.
- Harrison, C.M., J. Burgess (1994), "Social constructions of nature: a case study of conflicts over the development of Rainham Marshes", *Transactions - Institute of British Geographers*, 19 (3), 291-310.
- Hartig, T., and G. Evans (1993), "Psychological foundations of nature experience", in T. Garling and R. Golledge (Eds.), *Behavior and environment: Psychological and geographical approaches*, Bridgewater, NJ, Elsevier Science (pp. 427-457).
- Hartig, T., M. Mang, G. Evans (1991), "Restorative effects of natural environment experiences", *Environment and Behavior*, 23 (1), 3-26.
- Hartig, T.A., A. Book, J. Garvill, T. Olsson, T. Garling (1996), "Environmental influences on psychological restoration", *Scandinavian Journal of Psychology*, 37, 378-393.
- Hartig, T.A., K. Korpela, G.W. Evans, T. Garling (1997), "A measure of restorative quality in environments", *Scandinavian Housing & Planning Research*, 14:175-194.
- Hartsock, N.C.M. (1998), *The Feminist Standpoint Revisited and Other Essays*, Boulder, CO, Westview Press.
- Hawkins, R., and D. Ojeda (2011), "Gender and Environment: Critical Tradition and New Challenges", *Environment and Planning D: Society and Space*, 29 (2), 237-253.
- Hawley, A. (1950), *Human Ecology: A Theory of Community Structure*, New York, Ronald Press.
- Hay, R. (1998), "Sense of Place in Developmental Context", *Journal of Environmental Psychology*, 18 (1), 5-29.
- Head, L., and P. Muir (2007), "Changing cultures of water in eastern Australian backyard gardens", *Social and Cultural Geography*, 8, 889-905.
- Hedelin, B. (2007), "Criteria for the assessment of sustainable water management", *Environmental Management*, 39 (2), 151-163.
- Henderson, K. (1996a), "One size doesn't fit all: The meanings of women's leisure", *Journal of Leisure Research*, 28 (3), 139-154.
- Henderson, K. (1996b), "Women and the outdoors: Towards spiritual empowerment", in K. Warren (Ed.), *Women's voices in experiential education*, Dubuque, IA, Kendall/Hunt (pp. 193-202).
- Henn, M., M. Weinstein and N. Foard (2006), *A Short Introduction to Social Research*, Thousand Oaks, CA, Sage.
- Henwood, K.L. and N.F. Pidgeon (2001), "Talk about forests, woods and trees : Threat of urbanization, stability, and biodiversity", *Journal of Environmental Psychology*, 21, 125-147.
- Henwood, K., and N. Pidgeon (2006), "Grounded theory", in G.M. Breakwell, S. Hammond, C. Fife-Shaw, and J.A. Smith (Eds.), *Research methods in psychology*, 3rd edition, Thousand Oaks, CA, Sage (pp. 342-365).
- Herda-Rapp, A., and T.L. Goedeke (2005), *Mad about wildlife: Looking at social conflict over wildlife*, London, Brill.
- Herzog, T.R., A.M. Black, K.A. Fountaine, D.J. Knotts (1997), "Reflection and attentional recovery as distinctive benefits of restorative environments", *Journal of Environmental Psychology*, 17:165-170.

- Herzog, T.R., C.P. Maguire, M.B. Nebel (2003), "Assessing the restorative components of environments", *Journal of Environmental Psychology*, 23:159-170.
- Hesse-Biber, S.N. (2007), *The cult of thinness*, New York, Oxford University Press.
- Hesse-Biber, S.N. (2010a), *Mixed methods research: merging theory with practice*, New York, The Guilford Press.
- Hesse-Biber, S.N. (2010b), "Qualitative Approaches to Mixed Methods Practice", *Qualitative Inquiry*, 16 (6), 455-468.
- Hidalgo, M.C. and B. Hernandez (2001), "Place attachment: Conceptual and empirical questions", *Journal of Environmental Psychology*, 21, 273-281.
- Higgs, E. (2003), *Nature by Design: People, Natural Process and Ecological Restoration*, Cambridge, Massachusetts, MIT Press.
- Highmore, B. (2002a), *Everyday Life and Cultural Theory: An Introduction*, London, Routledge.
- Highmore, B. (2002b), *The Everyday Life Reader*, London, Routledge.
- Hinchcliffe, F., I. Guijt, J.N. Pretty, P. Shah (1995), *New horizons: the economic, social and environmental impacts of participatory watershed development*, London, IIED.
- Hirsh, K.W. and J.J. Tree (2001), "Word association norms for two cohorts of British adults", *Journal of Neurolinguistics*, 14 (1), 1-44.
- Hobbs, D. and T. May (Eds.) (1993), *Interpreting the Field: Accounts of Ethnography*, Oxford, Clarendon Press.
- Hockey, J. (2006), "Sensing the run: The senses and distance running", *Senses and Society*, 1 (2), 183-202.
- Hockey, J., and C. Allen-Collinson (2007), "Grasping the phenomenology of sporting bodies", *International Review for Sociology of Sport*, 42 (2), 115-131.
- Hodge, R. and G. Kress (1993), *Language as ideology*, London, Routledge.
- Hodgson, S.M., and J.W.N. Smith (2007), "Building a research agenda on water policy: An exploration of the Water Framework Directive as an interdisciplinary problem", *Interdisciplinary Science Reviews*, 32, 187-202.
- Hollway, W. and T. Jefferson (2000), *Doing Qualitative Research Differently: Free Association, Narrative and the Interview Method*, London, Sage.
- Holmes, S.J. (2003), "Some lives and some theories", in S. Clayton and S. Opatow (Eds.), *Identity and the natural environment: the psychological significance of nature*, Cambridge, MA: MIT Press (pp. 25-41).
- Hophmayer-Tokich, S. and Y. Krozer (2008), "Public participation in rural area water management: experiences from the North Sea countries in Europe", *Water International*, 33 (2), 243-257.
- House, M., and M. Fordham (1997), "Public perceptions of river corridors and attitudes towards river works", *Landscape Research*, 22 (1), 25-44.
- Hovardas, T., and K.J. Korfiatis (2006), "Word associations as a tool for assessing conceptual change *in science education", *Learning and Instruction*, 16 (5), 416-432.
- Hovardas, T., and G.P. Stamou (2006a), "Structural and narrative reconstruction of rural residents' representations of 'nature', 'wildlife', and 'landscape'", *Biodiversity and Conservation*, 15 (5), 1745-1770.
- Hovardas, T., and G.P. Stamou (2006b), "Structural and narrative reconstruction of representations of 'environment', 'nature', and 'ecotourism'", *Society & Natural Resources*, 19 (3), 225-237.
- Hovardas, T., K.J. Konstantinos and J.D. Pantis (2009), "Environmental representations of local communities' spokespersons in protected areas", *J. Community Appl. Soc. Psychol*, 19, 459-472.
- Howe, K.R. (2004), "A critique of experimentalism", *Qualitative Inquiry*, 10 (1), 42-61.

- Howitt, R., and S. Suchet-Pearson (2006) "Rethinking the building blocks: ontological pluralism and the idea of 'management'", *Geografiska Annaler, Series B, Human Geography*, 88, 323-335.
- Hull, R.B. (1990), "Moods as product of leisure: Causes and consequences", *Journal of Leisure Research*, 22, 99-111.
- Hull, R.B., and A. Harvey (1989), "Explaining the emotion people experience in suburban parks", *Environment and Behavior*, 21, 323-345.
- Hull, R.B., D.P. Robertson, and A. Kendra (2001), "Public understandings of nature: A case study of local knowledge about "natural" forest conditions", *Society & Natural Resources*, 14, 325-340.
- Humberstone, B. (2011), "Embodiment and social and environmental action in nature-based sport: spiritual spaces", *Leisure Studies*, 30 (4), 495-512.
- Hummon, D.M. (1992), "Community attachment: Local sentiment and sense of place", in Altman and S. M. Low (Eds.), *Place attachment*, New York, Plenum Press (pp. 253-278).
- Humphrey, C.R., T.L. Lewis, and F.H. Buttel (2003), "Introduction: the development of environmental sociology", in C.R. Humphrey, T.L. Lewis, and F.H. Buttel (Eds.), *Environment, Energy, and Society: Exemplary Works*, Belmont, CA, Wadsworth / Thomson Learning.
- Hunter, L.M., A. Hatch, and A. Johnson (2004), "Cross-National Gender Variation in Environmental Behaviors", *Social Science Quarterly*, 85, 677-94.
- Hunter, L.M., S. Strife, and W. Twine (2010), "Environmental Perceptions of Rural South African Residents: The Complex Nature of Environmental Concern", *Society & Natural Resources*, 23 (6), 525-541.
- Illbery, B. (1998), "Dimensions of rural change", in B. Illbery (Ed.), *The geography of rural change*, Harlow, Longman (pp. 1-10).
- INAG (Instituto da Água) (2001), *National Water Plan, Vols. I & II* (In Portuguese), Lisboa, Ministério do Ambiente e Ordenamento do Território.
- INAG (Instituto da Água) (2002), *Sado River Basin Management Plan – Final Report*, Lisboa, Ministério do Ambiente e do Ordenamento do Território.
- INAG (Instituto da Água) (2009a), *Sado and Mira Hydrographic Region: Water Management Issues*, Lisboa, National Water Institute and Administration of Alentejo Hydrographic Region. Available from <http://www.ccdr-a.gov.pt/app/pbhsado/index.html>
- INAG (Instituto da Água) (2009b), *Odivelas Reservoir Management Plan*. Available from <http://inag.pt>
- INAG (Instituto da Água) (2010) National Information System of Hydrologic Resources. Available from <http://snirh.pt>
- Ingold, T. (1993), "The temporality of the landscape", *World Archaeology*, 25, 152-174.
- Ingold, T. (1995), "Building, Dwelling, Living", in M. Strathern (Ed.), *Shifting Contexts: Transformations in Anthropological Knowledge*, London and New York, Routledge. (pp.57-80).
- Ingold, T. (2000), *The perception of the environment: essays in livelihood, dwelling and skill*, London and New York: Routledge.
- Involve (2005), *People and Participation: How to put citizens at the heart of decision making*, London, Involve.
- Ioris, A.A.R. (2008), "Regional Development, Nature Production and the Techno-Bureaucratic Shortcut: the Douro River Catchment in Portugal", *European Environment*, 18 (6), 345-358.
- Irwin, A. (1995), *Citizen Science: a study of people, expertise, and sustainable development*, London, Routledge.
- Irwin, A. (2001), *Sociology and the Environment: a critical introduction to society, nature and knowledge*, Oxford, Polity Press.

- Ivankova, N.V., J.W. Creswell and S.L. Stick (2006), "Using mixed-methods sequential explanatory design: From theory to practice", *Field Methods*, 18 (1), 3-20.
- Jacobs, M.H. (2006), *The production of mindscapes: a comprehensive theory of landscape experience*, Unpublished Doctoral dissertation, Wageningen, Wageningen University.
- Jacobs, M., and A.E. Buijs (2008), *Het hoofd boven water: omgaan met beleving in het waterbeheer*, Wageningen, Wageningen UR, Alterra.
- Jacobs, M.H., and A.E. Buijs (2011), "Understanding stakeholders' attitudes toward water management interventions: Role of place meanings", *Water Resource Research*, 47, W01503, doi:10.1029/2009WR008366.
- James, J.J., R.D. Bixler and C. Vadala (2010), "From Play in Nature, to Recreation then Vocation: A Developmental Model for Natural History-Oriented Environmental Professionals", *Children, Youth and Environments*, 20 (1), 231-256.
- Jick, T.D. (1979), "Mixing qualitative and quantitative methods: Triangulation in action", *Administrative Science Quarterly*, 24 (4), 602-611.
- Jodelet, D. (2002), "Perspectives d'étude sur le rapport croyances/représentations sociales", *Psychologie et Société*, 5, 157-178.
- Johnes, P.J. (1996), "Evaluation and management of the impact of land use on the nitrogen and phosphorus load delivered to surface waters: the export coefficient modelling approach", *Journal of Hydrology*, 183, 323-349.
- Johnes, P.J., R. Foy, D. Butterfield and P.M. Haygarth (2007), "Land use scenarios for England and Wales: evaluation of management options to support 'good ecological status' in surface freshwaters", *Soil Use Management*, 23, 176-194.
- Johnson, R.B. and A.J. Onwuegbuzie (2004), "Mixed methods research: A research paradigm whose time has come", *Educational Researcher*, 33 (7), 14-26.
- Johnson, R.B. and L.A. Turner (2003), "Data collection strategies in mixed methods research", in A. Tashakkori and C. Teddlie (Eds.), *Handbook of mixed methods in social and behavioural research*, Thousand Oaks, CA, Sage (pp. 297-319).
- Johnson, R.B., A.J. Onwuegbuzie, and L.A. Turner (2007), "Toward a definition of mixed methods research", *Journal of Mixed Methods Research*, 1 (2), 112-133.
- Jollivet, M. (Org.) (1997), *Vers un Rural Postindustriel*, Paris, Éditions L'Harmattan.
- Jones, R.E., and R.E. Dunlap (1992), "The Social Bases of Environmental Concern: Have They Changed Over Time?", *Rural Sociology*, 57, 28-47.
- Jones, N., J. de Graaff, I. Rodrigo, and F. Duarte (2011), "Historical review of land use changes in Portugal (before and after EU integration in 1986) and their implications for land degradation and conservation, with a focus on Centro and Alentejo regions", *Applied Geography*, 31, 1036-1048.
- Jordan, D.J., J. Smith, A. Cox, T. Thompson, J. Jeon, I. Palacios, A. Patterson, J. Peel, K.A. Henderson (2009), "An Exploration of the Meanings of Parks in Oklahoma", *Journal of Park and Recreation Administration*, 27 (2), 17-32.
- Jorgensen, B.S., and R. Stedman (2001), "Sense of place as an attitude: lakeshore property owners' attitudes toward their properties", *Journal of Environmental Psychology*, 21, 233-248.
- Jovchelovitch, S. (1996), "In defence of representations", *Journal for the Theory of Social Behaviour*, 26, 121-135.
- Jovchelovitch, S. (2007), *Knowledge in Context: Representations, community and culture*, London, Routledge.
- Kaika, M. (2003), "The Water Framework Directive: A new directive for a changing social, political and economic European framework", *European Planning Studies*, 11 (3), 299-316.
- Kaika, M. (2005), *City of Flows: Modernity, Nature, and the City*, New York and London, Routledge.

- Kalof, L., A. Dan, and T. Dietz (2008), *Essentials of Social Research*, Berkshire, Open University Press.
- Kaplan, R. (1993), "The role of nature in the context of the workplace", *Landscape and Urban Planning*, 26:193-201.
- Kaplan, S. (1995), "The restorative benefits of nature: Toward an integrative framework", *Journal of Environmental Psychology*, 15, 169-182.
- Kaplan, R., and S. Kaplan (1989), *Experience of nature: a psychological perspective*, Cambridge, Cambridge University Press.
- Kapoor, I. (2008), *The Postcolonial Politics of Development*, London and New York, Routledge.
- Karjalainen, P.T. (1986), *Geodiversity as a lived world: On the geography of existence*, Joensuu, University of Joensuu publications in social sciences.
- Kelle, U. (2001), "Sociological explanations between micro and macro and the integration of qualitative and quantitative methods", *Qualitative Research*, 2 (1). Available from <http://qualitative-research.net/fqs>
- Kenwick, R.A., M.R. Shammin, W.C. Sullivan (2009), "Preferences for riparian buffers", *Landscape and Urban Planning*, 91, 88-96.
- Keppel, G. (1991), *Design and analysis: A researcher's handbook*, 3rd Edition, Englewood Cliffs, NJ, Prentice-Hall.
- Keulartz, J., H. Van der Windt, J. Swart (2004), "Concepts of nature as communicative devices: the case of Dutch nature policy", *Environmental Values*, 13, 81-99.
- Klijin, J. and W. Vos (2000), "A new identity for landscape ecology in Europe: a research strategy for the next decade", in J. Klijin and W. Vos (Eds.), *From landscape ecology to landscape science*, Dordrecht, Kluwer Academic Publishers (pp. 149-162).
- Korpela, K. and T. Hartig (1996), "Restorative qualities of favourite places", *Journal of Environmental Psychology*, 16 (3), 221-233.
- Korpela, K.M., T. Hartig, F.G. Kaiser, U. Fuhrer (2001), "Restorative experience and self-regulation in favourite places", *Environment and Behavior*, 33 (4), 572-589.
- Korpela, K.M., T. Klemettila, J.K. Hietanen (2002), "Evidence for rapid affective evaluation of environmental scenes", *Environment and Behavior*, 34 (5), 634-650.
- Kruger, L.E. M.A. Shannon (2000), "Getting to know ourselves and our places through participation in civic social assessment", *Society & Natural Resources*, 13 (5), 461-478.
- Kuhn, T. (1962/1996), *The structure of scientific revolutions*, 3rd Edition, Chicago, University of Chicago Press.
- Kyle, G.T., and G. Chick (2007), "The social construction of a sense of place", *Leisure Sciences*, 29 (3), 209-225.
- Kyle, G.T., A.R. Graefe, R.E. Manning, and J. Bacon (2003), "An examination of the relationship between leisure activity involvement and place attachment among hikers along the Appalachian Trail", *Journal of Leisure Research*, 35 (3), 249-273.
- Kyle, G.T., A.R. Graefe, R.E. Manning, and J. Bacon (2004), "Effects of place attachment on users' perceptions of social and environmental conditions in a natural setting", *Journal of Environmental Psychology*, 24, 213-225.
- Langton, R. (2000), "Feminism in epistemology: Exclusion and objectification", in M. Fricker and J. Hornsby (Eds.), *The Cambridge Companion to Feminism in Philosophy*, Cambridge, UK, Cambridge University Press (pp. 127-145).
- Larson, K.L. and M.V. Santelmann (2007), "An analysis of the relationship between residents' proximity to water and attitudes about resource protection", *The Professional Geographer*, 59 (3), 316-333.

- Larson, K.L. and D. Lach (2008), "Participants and non-participants of place-based groups: An assessment of attitudes and implications for public participation in water resource management", *Journal of Environmental Management*, 88, 817-830.
- Laszlo, J. (1997), "Narrative organisation of social representations", *Papers on Social Representations*, 6 (2), 155-172.
- Latorre, J.G., J. García-Latorrea, A. Sanchez-Picón (2001), "Dealing with aridity: socio-economic structures and environmental changes in an arid Mediterranean region", *Land Use Policy*, 18, 53-64.
- Lavin, M.W., and R. Agastein (1984), "Personal identity and imagery of place: Psychological issues and literary themes", *Journal of Mental Imagery*, 8, 51-66.
- Lawrence, R. (2001), "Human ecology", in M.K. Tolba (Ed.), *Our Fragile World: Challenges and Opportunities for Sustainable Development*, Vol. 1, Oxford, Eolss Publishers (pp. 675-693).
- Lawrence, R.J. (2003), "Human ecology and its applications", *Landscape and Urban Planning*, 65 (1-2), 33-42.
- Layder, D. (1998), *Sociological practice: linking theory and social research*, London, Sage.
- Leech, N.L. and A.J. Onwuegbuzie (2009), "A typology of mixed methods research designs", *Quality & Quantity International Journal of Methodology*, 43, 265-275.
- Lefebvre, H. (1971), *Everyday Life in the Modern World*, London, Allen Lane.
- Lefebvre, H. (2002), *Critique of Everyday Life*, London, Verso.
- Letcher, R.A., and C. Giupponi (2005), "Policies and tools for sustainable water management in the European Union", *Environmental Modelling & Software*, 20 (2), 93-98.
- Lima, A.V., e L. Schmidt (1996), "Questões ambientais - conhecimentos, preocupações e sensibilidades", *Análise Social*, 31 (135), 205-227.
- Lima, A.V., e J. Guerra (2004), "Ambiente e cidadania: dimensões da mobilização ambiental em quatro países europeus", in L. Lima, M. Villaverde Cabral e J. Vala (Orgs.), *Ambiente e Desenvolvimento*, Lisboa, ICS.
- Lima, L. (2004), "Percepção de riscos ambientais: realismo ou ilusão", in L. Lima, M. Villaverde Cabral, J. Vala (Org.), *Atitudes Sociais dos Portugueses – 4: Ambiente e Desenvolvimento*, ICS / ISSP (pp. 157-192).
- Little, J., and P. Austin (1996), "Women and the rural idyll", *Journal of Rural Studies*, 12 (2), 101-111.
- Lobao, L. (1996), "A sociology of the periphery versus a peripheral sociology: Rural sociology and the dimension of space", *Rural Sociology*, 61 (1), 77-102.
- Lockwood, M., J. Davidson, A. Curtis, E. Stratford and R. Griffith (2010), "Governance Principles for Natural Resource Management", *Society & Natural Resources*, 23 (10), 986-1001.
- Low, S.M., and I. Altman (1992), "Place attachment: A conceptual inquiry", in I. Altman and S. M. Low (Eds.), *Place attachment*, New York, Plenum Press (pp. 1-12).
- Lundvall, B.A., and B. Johnson (1994), "The learning economy", *Journal of Industry Studies*, 1, 23-42.
- Macnaghten, P., and J. Urry (1998), *Contested natures*, London, Sage.
- Mactavish, J.B., and S.J. Schleien (2004), "Re-injecting spontaneity and balance in family life: Parents' perspectives on recreation in families that include children with developmental disability", *Journal of Intellectual Disability Research*, 48 (2), 123-141.
- Maharaj, R., S. Andrew, L. O'Brien and D. Gillies (2009), "A Mixed Methods Sequential Explanatory study: Police referrals to a psychiatric facility", in S. Andrew and E.J. Halcomb (Eds.), *Mixed Methods Research for Nursing and the Health Sciences*, Chichester, Wiley-Blackwell (pp. 181-194).

- Maia, R. (2003), "The Iberian Peninsula's shared rivers harmonization of use: A Portuguese perspective", *Water International*, 28 (3), 389-397.
- Maines, D.R. (2000), "The social construction of meaning", *Contemporary Sociology*, 29, 577-584.
- Maller, C., M. Townsend, A. Pryor, P. Brown, L. St. Leger (2006), "Healthy nature healthy people: 'Contact with nature' as an upstream health promotion intervention for populations", *Health Promotion International*, 21, 45-54.
- Mansinho, M.I., e L. Schmidt (1994), "A emergência do ambiente nas ciências sociais: análise de um inventário bibliográfico", *Análise Social*, 29 (125-126), 441-481.
- Manzo, L.C. (2003), "Beyond house and have: Towards a revisioning of emotional relationships with places", *Journal of Environmental Psychology*, 23, 47-61.
- Manzo, L.C. (2005), "For better or worse: Exploring multiple dimensions of place meaning", *Journal of Environmental Psychology*, 25 (1), 67-86.
- Marquart-Pyatt, S.T. (2007), "Concern for the Environment among General Publics: A Cross-National Study", *Society & Natural Resources*, 20 (10), 883-98.
- Marsden, T., P. Milbourne, L. Kitchen and K. Bishop (2003), "Communities in Nature: The Construction and Understanding of Forest Natures", *Sociologia Ruralis*, 43 (3), 238-256.
- Marshall, C. And G.B. Rossman (1999), *Designing Qualitative Research*, 3rd edition, Newbury Park, CA, Sage.
- Martin, F. (Ed.) (2003a), *Interpreting Everyday Culture*, London, Arnold.
- Martin, P.Y. (2003b), "'Said and done' vs. 'saying and doing'—gendered practices/practicing gender", *Gender and Society*, 17, 342-366.
- Martinez-Alier, J. (2002), *The Environmentalism of the Poor: A Study of Ecological Conflicts and Valuation*, Cheltenham, UK, Edward Elgar.
- Marvasti, A.B. (2004), *Qualitative Research in Sociology: An Introduction*, London, Sage Publications.
- Mason, J. (1996), *Qualitative Researching*, London, Sage.
- Mason, J. (2006), "Mixing methods in a qualitatively driven way", *Qualitative Research*, 6 (1), 9-25.
- Mathieu, N., and M. Jollivet (Org.) (1989), *Du Rural à l'environnement: La Question de la Nature Aujourd'Hui*, Paris, A.R.F Editions.
- Matias, N.G. (2003), *One-and-one-half-bound Dichotomous Choice Contingent Valuation: measure of individual's benefits from avoiding eutrophication impacts in rivers and lakes of East Anglia*, Unpublished MSc dissertation, School of Environmental Sciences, University of East Anglia.
- Matias, N.G. (2010), "Catchment Residents-Based SWOT Analysis of a Reservoir Ecosystem for Sustainable Water Management: A Case Study from the Region of Alentejo, Portugal", *Water Quality Research Journal of Canada*, 45 (3), 295-306.
- Matias, N.G. (2012), "Seeing a Reservoir and Its Surroundings through the Residents' Eyes in Alentejo Region, Portugal: A Social Representation Perspective", *Society & Natural Resources*, 25 (8), 808-820.
- Matias, N.G., and M.J. Boavida (2005), "Effects of catchment development on the trophic status of a deep and a shallow reservoir in Portugal", *Lake and Reservoir Management*, 21 (3), 350-360.
- Matias, N.G., and P.J. Johnes (2012), "Catchment phosphorous losses: An export coefficient modelling approach with scenario analysis for water management", *Water Resources Management*, 26, 1041-1064.
- Matias, N.G., J. Gago, and M.J. Boavida (2008), "Catchment consultation for water management: the case of two Portuguese reservoirs with different water quality", *International Journal of Environmental Studies*, 65 (6), 737-754.

- Mattingly, M.J., and S.M. Bianchi (2003), "Gender differences in the quantity and quality of free time: The U.S. experience", *Social Forces*, 81 (3), 999-1030.
- Mauthner, N., and A. Doucet (2003), "Reflexive accounts and accounts of reflexivity in qualitative data analysis", *Sociology*, 37 (3), 413-431.
- Mauthner, N.S., O. Parry and K. Backett-Milburn (1998), "The Data are out There, or are They? Implications for Archiving and Revisiting Qualitative Data", *Sociology*, 32, 733-45.
- Mayer, F.S., C.M. Frantz, E.Bruehlman-Senecal, K. Dolliver, (2009), "Why Is Nature Beneficial? The Role of Connectedness to Nature", *Environment and Behavior*, 41 (5), 607-643.
- Mays, N. and C. Pope (1995), "Rigour and qualitative research", *British Medical Journal*, 311, 109-112.
- Maxwell, J., and D. Loomis (2003), "Mixed methods design: An alternative approach", in A. Tashakkori and C. Teddlie (Eds.), *Handbook of mixed methods in social and behavioural research*, Thousand Oaks, CA, Sage (pp. 241-272).
- McCann, T., and E. Clark (2003), "Grounded theory in nursing research: Part 1 – Methodology", *Nurse Researcher*, 11 (2), 7-18.
- McCracken, G. (1988), *The Long Interview*, Newbury Park, CA, Sage.
- McDermott, L. (2004), "Exploring intersections of physicality and female-only canoeing experiences", *Leisure Studies*, 23 (3), 283-301.
- McGhee, G., G.R. Marland, and J. Atkinson (2007), "Grounded theory research: Literature reviewing and reflexivity", *Journal of Advanced Nursing*, 60 (3), 334-342.
- McIntyre, N., J. Moore, and M. Yuan (2008) "A Place-Based, Values-Centred Approach to Managing Recreation on Canadian Crown Lands", *Society & Natural Resources*, 21 (8), 657-670.
- McManus, P. (2008), "Their grass is greener but ours is sweeter – thoroughbred breeding and water management in the Upper Hunter Region of New South Wales, Australia", *Geoforum*, 39, 1296-1307.
- Mead, G.H. (1934), *Mind, self and society*, Chicago, University of Chicago Press.
- Meadowcroft, J. (2004), "Deliberative Democracy", in R. Durant, D. Fiorino and R. O'Leary (Eds.), *Environmental Governance Reconsidered: Challenges, Choices, and Opportunities*, Cambridge, MA, MIT Press.
- Measham, T.G. (2006), "Learning about Environments: The Significance of Primal Landscapes", *Environmental Management*, 38 (3), 426-434.
- Measham, T.G. (2007), "Primal landscapes: insights for education from empirical research on ways of learning about environments", *International Research in Geographical and Environmental Education*, 16 (4), 339-350.
- Measham, T., and R. Baker (2005), "Combining people, place and learning", in M. Keen, V. Brown and R. Dyball (Eds.), *Social Learning in Environmental Management: Towards a Sustainable Future*, London, James & James/Earthscan (pp. 91-103).
- Meeus, J.H.A., M.P. Wijermans, and M.J. Vroom (1990), "Agricultural landscapes in Europe and their transformation", *Landscape and Urban Planning*, 18 (3-4), 289-352.
- Meinzen-Dick, R., and M. Zwarteveen (1998), "Gendered participation in water management: Issues and illustrations from water users' associations in South Asia", *Agriculture and Human Values*, 15, 337-345.
- Mertens D.M. (2011), "Publishing mixed methods research", *Journal of Mixed Methods Research*, 5 (1), 3-6.
- Michel-Guillou, E., and G. Moser (2006), "Commitment of farmers to environmental protection: From social pressure to environmental conscience", *Journal of Environmental Psychology*, 26 (3), 227-235.

- Miguel, I., J.P. Valentim, F. Carugati (2010), "Intelligence and its development: Social representations and social identities", *Papers on Social Representations*, 19, 20.1-20.33.
- Miles, M.B., and A.M. Huberman (1994), *Qualitative data analysis*, 2nd Edition, Thousand Oaks, CA, Sage.
- Miller, K.K., and T.K. McGee (2001), "Toward incorporating human dimensions information into wildlife management decision-making", *Human Dimensions of Wildlife*, 6, 205-221.
- Milton, K. (1996), *Environmentalism and cultural theory: exploring the role of anthropology in environmental discourse*, London and New York, Routledge.
- Milton, K. (2002), *Loving Nature: Towards an Ecology of Emotion*, London and New York, Routledge.
- Milton, K. (2005), "Meanings, feelings, and human ecology", in K. Milton and M. Svašek (Eds.), *Mixed emotions: Anthropological studies of feeling*, Oxford, Berg (pp. 25-41).
- Mira da Silva L, J.R. Park, J.D.H. Keatinge, P.A. Pinto (2001), "II. The use of the DSSIPM in the Alentejo region of southern Portugal", *Agricultural Water Management*, 51 (3), 203-215.
- Mishler, E.G. (1991), *Research interviewing: Context and narrative*, Cambridge, MA, Harvard University Press.
- Mitchell, J.C. (1983), "Case and situation analysis", *Sociological Review*, 31 (2), 187-211.
- Mitchell, M.Y., J.E. Force, M.S. Carroll, and W.J. McLaughlin (1993), "Forest places of the heart: Incorporating special spaces into public management", *Journal of Forestry*, 91(4), 32-37.
- Moghaddam, FM, B.R. Walker, and R. Harre (2003), "Cultural distance, levels of abstraction, and the advantages of mixed methods", in A. Tashakkori and C. Teddlie (Eds.), *Handbook of mixed methods in social and behavioural research*, Thousand Oaks, CA, Sage (pp. 51-89).
- Mollinga, P.P. (2008), "Water, politics and development: Framing a political sociology of water resources management", *Water Alternatives*, 1(1), 7-23.
- Moraes, A., and P.E. Perkins (2007), "Women, equity, and participatory water management in Brazil", *International Feminist Journal of Politics*, 9 (4), 485-493.
- Morais, M., P. Pinto, P. Guilherme, J. Rosado and I. Antunes (2004), "Assessment of temporary streams: the robustness of metric and multimetric indices under different hydrological conditions", *Hydrobiologia*, 516, 229-249.
- Moran, J. (2004), *Reading the Everyday*, Abingdon and New York, Routledge.
- Mormont, M. (1987), "Rural nature and urban nature", *Sociologia Ruralis*, 27 (1), 4-20.
- Mormont, M. (1994), *Vers un encadrement environnemental des agriculteurs?*, Belgique, Fondation Universitaire Luxembourgeoise.
- Morris, P., J. Biggs, and A. Brookes (2001), "Water", in P. Morris and R. Therivel (Eds.), *Methods of environmental impact assessment*, 2nd Edition, London and New York, Spon Press (pp. 197-242).
- Morse, J.M. (1991), "Approaches to qualitative-quantitative methodological triangulation", *Nursing Research*, 40 (1), 120-123.
- Morse J. (1995), "The significance of saturation", *Qualitative Health Research*, 5, 147-149.
- Moscovici, S. (1982), 'The coming era of representations', in J.P. Forgas (Eds.), *Social Cognition: Perspectives on Everyday Understanding*, London, Academic Press (pp. 181-209).
- Moscovici S. (1984), "The phenomenon of social representations", in R. Farr and S. Moscovici (Eds.), *Social representations*, Cambridge, Cambridge University Press (pp. 3-69).
- Moscovici, S., (2000), *Social Representations. Explorations in Social Psychology*, Cambridge, Polity Press.
- Moss, B. (1998), *Ecology of freshwaters: Man and medium, past to future*, .3rd Edition, London, Blackwell Science.

- Mouffe, C. (1992), *Dimensions of Radical Democracy: Pluralism, Citizenship, Community*, London, Routledge.
- Mouro, C., and P. Castro (2010), “Local communities responding to ecological challenges: A psychosocial approach to the Natura 2000 Network”, *Journal of Community & Applied Social Psychology*, 20, 139-155.
- Mullen, M.W. and B.E. Allison (1999), “Stakeholders involvement and social capital: keys to watershed management success in Alabama”, *Journal of the American Water Resources Association*, 35 (3), 655-662.
- Murphy, A.P. (1996), *The meaning of wilderness (landscape, aesthetics, solitude)*, Columbus, Ohio State University.
- Nastasi, B.K., J.H. Hitchcock and L.M. Brown (2010), “An inclusive framework for conceptualizing mixed methods design typologies: Moving toward fully integrated synergistic research models”, in A. Tashakkori and C. Teddlie (Eds.), *Sage Handbook Of Mixed Methods In Social And Behavioral Research*, Thousand Oaks, CA, Sage (pp. 305-338).
- Nathaniel, A.K. (2006), “Thoughts on the literature review and GT”, *Grounded Theory Review*, 5 (2/3), 35-41.
- Nave, J.G. (2001), “Non-Governmental Groups and the State - Environmental Politics in Portugal”, in K. Eder and M. Kousis (Ed.s), *Environmental Politics in Southern Europe: Actors, Institutions and Discourses in a Europeanizing Society*, London, Kluwer Academic Publications (pp. 343 – 364).
- Nave, J.G. (2003a), “Mobilização e acção popular na defesa do ambiente local: alguns elementos de análise sobre o efeito nimby em Portugal”, in J. Rebelo (Ed.), *Novas Formas de Mobilização Popular*, Lisboa, Gradiva (pp. 209-235).
- Nave, J.G. (2003b), “O rural e os seus duplos”, in J. Portela and J.C. Caldas (Eds.), *Portugal Chão*, Lisboa, Celta Editora (pp. 129-148).
- National Statistics Institute (Instituto Nacional de Estatística, Portugal) (2001), *Agricultural Census*, Lisboa, National Statistics Institute of Portugal.
- National Statistics Institute (Instituto Nacional de Estatística, Portugal) (2010), *Statistical yearbook of Alentejo Region 2009*, Lisboa, National Statistics Institute of Portugal.
- Neill, S.J. (2006), “Grounded theory sampling: The contribution of reflexivity”, *Journal of Research in Nursing*, 11 (3), 253-260.
- Newig, J., C. Pahl-Wost, and K. Sigel (2005), “The role of public participation in managing uncertainty in the implementation of the water framework directive”, *European Environment*, 15 (6), 333-343.
- Nunes, J.P., J. Seixas and N.R. Pacheco (2007), “Vulnerability of water resources, vegetation productivity and soil erosion to climate change in Mediterranean watersheds”, *Hydrological Processes*, 22 (16), 3115-3134.
- Ó, A., and M. Roxo (2001), “Driving forces of land use changes in Alentejo and its impact on soil and water”, in *Workshop in Land Use Changes & Cover and Water Resources in the Mediterranean Region*, RICAMARE, Medenine, Tunisia, Institute des Regions Arides (20-21 April).
- O'Brien, E.A. (2006), “A question of value: What do trees and forests mean to people in Vermont?”, *Landscape Research*, 31 (3), 257-275.
- O'Riordan, T. (1971), “Public opinion and environmental quality: a reappraisal”, *Environment and Behaviour*, 3, 191-214.
- O'Riordan, T. (1989), “The challenge for environmentalism”, in R. Peet and N. Thrift (Eds.), *New Models in Geography: The Political–Economy Perspective*, UK, Unwin Hyman (pp. 77-102).
- O'Toole, K., A. Wallis, and B. Mitchell (2009), “Place-based knowledge networks: The case of water management in south-west Victoria, Australia”, *Water Alternatives*, 2(1), 101-114.

- OECD (1982), *Eutrophication of waters: Monitoring, assessment, and control*, Paris, Organisation for Economic Co-operation and Development.
- OECD (2001), *Citizens as partners – Information, Consultation, and Public Participation in Policy-Making*, Paris, Organization for Economic Co-operation and Development.
- Olsson, P., and C. Folke (2001), “Local ecological knowledge and institutional dynamics for ecosystem management: a study of Lake Racken Watershed, Sweden”, *Ecosystems*, 4, 85-104.
- Orona, C.J. (2002), “Temporality and Identity Loss Due to Alzheimer’s disease”, in A.M. Huberman and B.M. Miles (Eds.), *The Qualitative Researcher’s Companion*, Thousand Oaks, CA, Sage (pp. 367-392).
- Pais, J.P. (2002), *Sociologia da Vida Quotidiana. Teorias, Métodos e Estudos de Caso*, Lisboa, ICS.
- Pais, J.P. (2010), *Lufa-lufa quotidiana: Ensaio sobre cidade, cultura e vida urbana*, Lisboa, ICS.
- Panelli, R., and G. Robertson (2006), “Catchment contrasts: Comparing young people’s experiences and knowledge of a river environment”, *Geoforum*, 37 (4), 455-472.
- Parés, M. (2011), “River Basin Management Planning with Participation in Europe: From Contested Hydro-politics to Governance-Beyond-the-State”, *European Planning Studies*, 19 (3), 457-478.
- Park, A., E. Burgess, R. McKenzie (1925), *The City*, Chicago, University of Chicago Press.
- Parkes, M., and R. Panelli (2001), “Integrated catchment ecosystems and community health: the value of participatory action research”, *Ecosystem Health*, 7, 85-106.
- Pato, J. (2004), “As vivências comunitárias da água”, in *Actas do 5º Congresso Português de Sociologia, Sociedades Contemporâneas: Reflexividade e Acção, Atelier: Ambiente*, Lisboa, APS.
- Pato, J.H. (2008), *O valor da água como bem público*, Unpublished Doctoral dissertation, Lisboa, ICS-UL.
- Pato, J.H. (2009), “Water governance, CPR’s and public participation – Challenges to water policies in Portugal”, in J. Feyen, K. Shannon, and M. Neville (Eds.), *Water and Urban Development Paradigms Towards an Integration of Engineering, Design and Management Approaches*, London, Taylor & Francis (pp. 681-686).
- Patton, M.Q. (2002), *Qualitative Research and Evaluation Methods*, 3rd edition, Thousand Oaks, California, Sage.
- Paulo, A.A., E. Ferreira, C. Coelho, and L.S. Pereira (2005), “Drought class transition analysis through Markov and Loglinear models, an approach to early warning”, *Agricultural Water Management*, 77 (1-3), 59-81.
- Payne, S. (2007), “Grounded theory”, in E. Lyons and A. Coyle (Eds.), *Analysing qualitative data in psychology*, London, Sage (pp. 65-86).
- Payne, G., and J. Payne (2004), *Key concepts in social research*, London, Sage.
- Pedroso, N.M., and M. Santos-Reis (2006), “Summer diet of Eurasian otters in large dams of south Portugal”, *Hystrix: Italian Journal of Mammalogy*, 17(2), 117-128.
- Pellizzoni, L., (2003), “Uncertainty and participatory democracy”, *Environmental Values*, 12 (2), 195-224.
- Pereira, P.M., and M. Pires da Fonseca (2003), “Nature vs. nurture: the making of the Montado ecosystem”, *Conservation and Ecology*, 7(3), 7. Available from: <http://www.consecol.org/vol7/iss3/art7>
- Perkins, P.E. (2010), “Public participation in watershed management: International practices for inclusiveness”, *Physics and Chemistry of the Earth*, 36 (5-6), 204-212.
- Perry, S.L. (2009), *More than one river: local, place-based knowledge and the political ecology of restoration and remediation along the lower Neponset river, Massachusetts*, Unpublished Doctoral dissertation, Boston, University of Massachusetts Amherst.

- Petrzelka, P. (2004), "The new landform's here! The new landform's here! We're somebody now!! The role of discursive practices on place identity", *Rural Sociology*, 69 (3), 386-404.
- Petts, J. (2006), "Expert conceptualisations of the role of lay knowledge in environmental decisionmaking: Challenges for deliberative democracy", *Environment and Planning A*, 38 (6), 1045-1059.
- Phillips, M. (1998), "The restructuring of social imaginations in rural geography", *Journal of Rural Studies*, 14, 121-153.
- Phillips, M., R. Fish, and J. Agg (2001), "Putting together ruralities: towards a symbolic analysis of rurality in the British mass media", *Journal of Rural Studies*, 17, 1-27.
- Pile, S. (2010), "Emotions and affect in recent human geography", *Transactions of the Institute of British Geographers*, 35, 5-20.
- Pini, B. (2004), "On being a nice country girl and an academic feminist: using reflexivity in rural social research", *Journal of Rural Studies*, 20, 169-179.
- Pinto-Correia, T. (1993), "Threatened landscape in Alentejo, Portugal: the 'montado' and other 'agro-silvo-pastoral' systems", *Landscape and Urban Planning*, 24 (1/4), 43-48.
- Pinto-Correia, T. (2000), "Future development in Portuguese rural areas: how to manage agricultural support for landscape conservation?", *Landscape and Urban Planning*, 50 (1-3), 95-106.
- Pinto-Correia, T. and J. Mascarenhas, (1999), "Contribution to the extensification/intensification debate: new trends in the Portuguese Montado", *Landscape and Urban Planning*, 46 (1/3), 125-131.
- Pinto-Correia, T. and W. Vos (2004), "Multifunctionality in Mediterranean landscapes – past and future", in R. Jongman (Ed.), *The New Dimensions of the European Landscape*, Wageningen UR Frontis Series, Vol. 4, London, Springer (pp. 135-164).
- Pinto-Correia T., F. Barroso, D. Surová, and H. Menezes (2010), "The fuzziness of Montado landscapes: progress in assessing user preferences through photo-based surveys", *Agroforestry Systems*, 82 (2), 209-224.
- Pitkanen, K., R. Puhakka, and M. Sawatzky (2010), "The role of nature in the place meanings and practices of cottage owners in northern environments", *Norsk Geografisk Tidsskrift-Norwegian Journal of Geography*, 65 (3), 175-187.
- Pohl, S.L., W.T. Borrie, and M.E. Patterson (2000), "Women, wilderness, and everyday life: A documentation of connection between wilderness recreation and women's everyday lives", *Journal of Leisure Research*, 32 (4), 415-434.
- Pottier, J., and P. Orone (1995), "Consensus or cover-up? the limitations of group meetings", in IIED (Ed.), *Critical reflections from Practice*, PLA notes, No. 24, London, IIED (pp. 38-42).
- Postel, S. (2000), "Entering an era of water scarcity: the challenges ahead", *Ecological Applications*, 10 (4), 941-948.
- Proshansky, H.M. (1978), "The city and self-identity", *Environment and Behaviour*, 10 (2), 147-169.
- Proshansky, H.M., A.K. Fabian, and R. Kaminoff (1983), "Place-identity: Physical world socialization of the self", *Journal of Environmental Psychology*, 3, 57-83.
- Proshansky, H.M., A.K. Fabian, and R. Kaminoff (1995), "Place identity: Physical world socialization of the self", in L. Groat (Ed.), *Giving places meaning: Readings in environmental psychology*, London, Academic Press (pp. 87-113).
- Purcell, A.T., and R.J. Lamb (1998), "Preference and naturalness: An ecological approach", *Landscape and Urban Planning*, 42 (1), 57-66.
- Pyne, S.J. (1998), *How the Canyon became Grand: a short history*, New York, Penguin group.

- Quétier, F., F. Rivoal, P. Marty, J. de Chazal, W. Thuiller, S. Lavorel (2010), "Social representations of an alpine grassland landscape and socio-political discourses on rural development", *Regional Environmental Change*, 10, 119-130.
- Rapley, T. (2004), "Interviews", in C. Seale, G. Gobo, J.F. Gubrium, and D. Silverman (Eds.), *Qualitative Research Practice*, London, Sage (pp. 15-33).
- Redclift, M., and G. Woodgate (1994), "Sociology and the environment: Discordant discourse?", in M. Redclift and T. Benton (Eds.), *Social Theory and the Global Environment*, London, Routledge (pp. 51-66).
- Reed, M.S. (2008), "Stakeholder participation for environmental management: a literature review", *Biological Conservation*, 141, 2417-2431.
- Reinharz, S. (1992), *Feminist Methods in Social Research*, Oxford, Oxford University Press.
- Reinharz, S. and S.E. Chase (2002), "Interviewing Women", in J. Gubrium and J. Holstein (Eds.), *Handbook of Interview Research: Context and Method*, Thousand Oaks, CA, Sage (pp. 221-238).
- Relph, E. (1976), *Place and placelessness*, London, Pion.
- Relph, E. (1985). "Geographical experiences and being-in-the-world: the phenomenological origins of geography", in D. Seamon and R. Mugerauer (Eds.), *Dwelling, Place and Environment*, New York, Columbia University Press.
- Riggin, L.J. (1997), "Advances in mixed-method evaluation: A synthesis and comment", in J.C. Greene and V.J. Caracelli (Eds.), *Advances in mixed-method evaluation: The challenges and benefits of integrating diverse paradigms*, San Francisco: Jossey-Bass (pp. 87-94).
- Rinaudo, J.D., P. Garin (2005), "The benefits of combining lay and expert input for water-management planning at the watershed level", *Water Policy*, 7, 279-293.
- Rink, D. (2005), "Surrogate nature or wilderness? Social perceptions and notions of nature in an urban context", in I. Kowarik and S. Körner (Eds.), *Wild Urban Woodlands*, Berlin, Springer (pp. 67-80).
- Rio Carvalho, C., R. Borralho, J. Bugalho, and A. Barreto (1995), "A exploração dos recursos bravios e a sua relação com a economia agrícola: perspectivas actuais", *Revista de Ciências Agrárias*, 18, 11-22.
- Ritchie, J., J. Lewis and G. Elam (2003), "Designing and Selecting Samples", in J. Ritchie and J. Lewis (Eds.), *Qualitative Research Practice: A Guide for Social Science Students and Researchers*, London, Sage (pp. 77-108).
- Robbins, C. (2002), *Real world research: A resource for social scientists and practitioner-researchers*, Cambridge, MA, Blackwell.
- Rowe, G., L.J. Frewer (2005), "A typology of public engagement mechanisms", *Science, Technology and Human Values*, 30 (2), 251-290.
- Roxo, M.J., P.C. Casimiro, and R.S. Brito (1996), "Inner lower Alentejo field site: cereal cropping, soil degradation and desertification", in J. Brandt and J. Thornes (Eds.), *Mediterranean Desertification and Land use*, Chichester, Wiley (pp. 111-135).
- Ruane, J.M. (2005), *Essentials of Research Methods: A Guide to Social Science Research*, Oxford, Blackwell Publishing.
- Russell, A. (2011), "A Grounded Theory of Liberated Identity: Lesbians transcending oppression", *The Grounded Theory Review*, 10 (1), 59-83.
- Russell, S., C. Lux, G. Hampton (2009), "Beyond "Information": Integrating Consultation and Education for Water Recycling Initiatives", *Society & Natural Resources*, 22 (1), 56-65.
- Ryan, R.L. (1998), "Local perceptions and values for a midwestern river corridor", *Landscape and Urban Planning*, 42 (2), 225-237.
- Ryan, R.L. (2006), "Comparing the attitudes of local residents, planners, and developers about preserving rural character in New England", *Landscape and Urban Planning*, 75, 5-22.

- Saar, M., and H. Palang (2009), "The Dimensions of Place Meanings", *Living Reviews in Landscape Research*, 3. Available from: <http://www.livingreviews.org/lrlr-2009-3>
- Sack, R.D. (1992), *Place, modernity, and the consumer's world: A relational framework for geographic analysis*, Baltimore, MD: Johns Hopkins University Press.
- Sack, R. (1997), *Homo Geographicus*, Baltimore, MD, Johns Hopkins University Press.
- Sale, J.E.M., L.H. Lohfeld and K. Brazil (2002), "Revisiting the qualitative-quantitative debate: implications for mixed method research", *Quality and Quantity*, 36, 43-53.
- Salesse, E. (2003), "Os que "sabiam" e os que "andam baralhados": funcionamento técnico e social de um regadio", *Etnográfica*, 7 (1), 33-61.
- Sanoff, H. (2000), *Community participation methods in design and planning*, New York, John Wiley & Sons.
- Santos R., P. Antunes, G. Baptista, P. Mateus, L. Madruga (2006), "Stakeholder participation in the design of environmental policy mixes", *Ecological Economics*, 60 (1), 100-110.
- Schatzki, T.R. (2005), The sites of organizations, *Organization Studies*, 26 (3), 465-484.
- Schutz, A. (1962), *Collected papers I: The problem of social reality*, The Hague, Martinus Nijhof.
- Schmidt, L. (1996), 'Televisão: da natureza ao ambiente', in *Actas do 3º Congresso Português de Sociologia, Práticas e Processos da Mudança Social, D- Território e dinâmicas regionais e locais, D1. Ambiente e qualidade de vida*, Lisboa, APS.
- Schmidt, L. (1999), "Sociologia do Ambiente", *Análise Social*, 34 (150), 175-210.
- Schmidt, L., J. Gil Nave, and J. Guerra (2005), *Autarquias e Desenvolvimento Sustentável: Agenda 21 Local e Novas Estratégias Ambientais*, Porto, Fronteira do Caos.
- Schmidt, L., J. Gil Nave, and J. Guerra (2006), "Who's afraid of Local Agenda 21? Top-down and bottom-up perspectives on local sustainability", *International Journal of Environment and Sustainable Development*, 5 (2), 181-198.
- Schmidt, L., J. Guerra, and J. Gil Nave (2010), "The role of non-scholar organisations in environmental education: a case study from Portugal", *International Journal of Environment and Sustainable Development*, 9 (1/2/3), 16-29.
- Schroeder, H.W. (1996a), "Ecology of the heart: Understanding how people experience natural environments", in A.W. Ewert (Ed.), *Natural resource management: The human dimension*, Boulder, CO: Westview Press (pp. 13-27).
- Schultz, A., and T. Luckmann (1973), *The Structures of the Life-World, Vol. II*, Evanston, IL, Northwestern University Press.
- Schwandt, T.A. (1994), "Constructivist, interpretivist approaches to human inquiry", in K. Denzin and Y.S. Lincoln (Eds.), *Handbook of qualitative research*, Thousand Oaks, CA, Sage.
- Scott, S. (2009), *Making Sense of Everyday Life*, London, Polity.
- Seale, C. (2004), "Quality in qualitative research", in C. Seale, G. Gobo, J.F. Gubrium and D. Silverman, *Qualitative Research Practice*, London, Sage (pp. 409-419).
- Seamon, D. (1987), "Phenomenology and environment-behavior research", in E. H. Zube and G. T. Moore (Eds.), *Advances in environment, behavior, and design, Vol. 1*, New York, Plenum Press (pp. 3-27).
- Seamon, D. (1999), "A way of seeing people and place: Phenomenology in environment-behavior research", in S. Wapner, J. Demick, T. Yamamoto, and H. Minami (Eds.), *Theoretical perspectives in environment-behaviour research*, New York, Springer (pp. 157-178).
- Selge, S., and A. Fischer (2011), "How people familiarize themselves with complex ecological concepts—anchoring of social representations of invasive non-native species", *Journal of Community & Applied Social Psychology*, 21 (4), 297-311.

- Seidman, I. (2006), *Interviewing as Qualitative Research: A Guide for Researchers in Education and the Social Sciences*, 3rd edition, New York, College Press.
- Serdoura, F., G. Moreira, and H. Almeida (2009), "Tourism Development in Alentejo Region: A Vehicle for Cultural and Territorial Cohesion", in S.M. Fortea and J. Al-Qawasmi (Eds.), *Proceedings of Conference Sustainable Architecture and Urban Development*, Vol. 2, CSAAR Press (pp. 619-634).
- Serra, P.C. (2003), "Política da água em Portugal: as tarefas da sustentabilidade", in V. Soromenho-Marques (Coord. Cient.), *O desafio da água no século XXI – Entre o conflito e a cooperação*, Lisboa, Notícias Editorial (pp. 85-119).
- Shamsuddin, S., and N. Ujang (2008), "Making places: The role of attachment in creating the sense of place for traditional streets in Malaysia", *Habitat International*, 32 (3), 399-409.
- Shaw, S.M. (1994), "Gender, leisure, and constraint: towards a framework for the analysis of women's leisure", *Journal of Leisure Research*, 26 (1), 8-22.
- Shove, E. (2003), *Comfort, cleanliness and convenience: the social organization of normality*, Oxford, Berg.
- Silvano, R.A.M., S. Udvardy, M. Ceroni, and J. Farley (2005), "An ecological integrity assessment of a Brazilian Atlantic forest watershed based on surveys of stream health and local farmers' perceptions: implications for management", *Ecological Economics*, 53 (3), 269-385.
- Silverman, D. (1993), *Interpreting Qualitative Data: Methods for Analysing Talk, Text and Interaction*, London, Sage.
- Sharp, J. (2009), "Geography and gender: what belongs to feminist geography? Emotion, power and change", *Progress in Human Geography*, 33 (1), 74-80.
- Short, J.R. (1991), *Imagined Country: Society, Culture and Environment*, London, Routledge.
- Skogen, K. (2008), "Wolves in Context: Using Survey Data to Situate Attitudes Within a Wider Cultural Framework", *Society & Natural Resources*, 21 (1), 17-33.
- Smaldone, D., C. Harris, and N. Sanyal (2005), "An exploration of place as a process: The case of Jackson Hole, WY", *Journal of Environmental Psychology*, 25 (4), 397-414.
- Smaldone, D., C. Harris, and N. Sanyal (2008), "The Role of Time in Developing Place Meanings", *Journal of Leisure Research*, 40 (4), 479-504.
- Smith, B. (1994), "The Medway River Project: an example of community participation in integrated river management", in C. Kirby and W.R. White (Eds.), *Integrated River Basin Development*, Chichester, Wiley.
- Smith, J. K. (1983), "Quantitative versus qualitative research: An attempt to clarify the issue", *Educational Researcher*, 12, 6-13.
- Smith, J.K. (2008), "Interpretative inquiry", in L.M. Given (Ed.), *The Sage encyclopaedia of qualitative research methods*, London, Sage (pp. 459-461).
- Smith, K., and F. Bailey (1997), "Understanding grounded theory principles and evaluation", *Nurse Researcher*, 4 (3), 17-30.
- Smith, P.D., M.H. McDonough (2001), "Beyond Public Participation: Fairness in Natural Resource Decision Making", *Society & Natural Resources*, 14 (3), 239-249.
- Smith, M., J. Davidson, L. Cameron, L. Bondi (2009), *Emotion, Place and Culture*, Ashgate, London.
- Smith, J.W., M.A Davenport, D.H. Anderson, and J.E. Leahy (2011), "Place meanings and desired management outcomes", *Landscape and Urban Planning*, 101, 359-370.
- Smith, J.W., C. Siderelis, R.L. Moore, D.H. Anderson (2012), "The effects of place meanings and social capital on desired forest management outcomes: A stated preference experiment", *Landscape and Urban Planning*, 106, 207-218.

- Spaargaren, G., and A. P. J. Mol (1992), "Sociology, environment, and modernity: Ecological modernization as a theory of social-change", *Society & Natural Resources*, 5 (4): 323-344.
- Snyder, G. (1990), *The practice of the wild*, New York, North Point Press.
- Speer, S. (2002), "'Natural' and 'contrived' data: A sustainable distinction?", *Discourse Studies*, 4, 511-525.
- Spini, D. (2002), "Multidimensional scaling: A technique for the quantitative analysis of the common field of social representations", *Review of Applied Psychology*, 52 (3-4), 231-240.
- Spini, D, and W. Doise (1998), "Organising principles of involvement in human rights and their social anchoring in value priorities", *European Journal of Social Psychology*, 28, 603-622.
- Spink, A., M. Hillman, K. Fryirs, G. Brierley, K. Lloyd (2010), "Has river rehabilitation begun? Social perspectives from the Upper Hunter catchment, New South Wales, Australia", *Geoforum*, 41, 399-409.
- Stedman, R. (2002), "Toward a social psychology of place. Predicting behaviour from place-based cognitions, attitude and identity", *Environment and Behavior*, 34, 561-581.
- Stedman, R.C. (2008), "What do we "mean" by place meanings? Implications of place meanings for managers and practitioners", in L.E. Kruger, T.E. Hall, M.C. Stiefel (Eds.), *Understanding concepts of place in recreational research and management*, PNW-GTR-744, Portland, USDA Forest Service, Pacific Northwest Research Station (pp. 61-82).
- Stedman, R.C., and R.B. Hammer (2006), "Environmental Perception in a rapidly Growing, Amenity-Rich Region: The Effects of Lakeshore Development on Perceived Water Quality in Vilas County, Wisconsin", *Society & Natural Resources*, 19(2), 137-151.
- Stern, P.C. (2000), "Toward a coherent theory of environmentally significant behaviour", *Journal of Social Issues*, 56 (3), 407-424.
- Stoate, C., R. Borralho, and M. Araújo (2000), "Factors affecting corn bunting *Miliaria calandra* abundance in a Portuguese agricultural landscape", *Agriculture, Ecosystems & Environment*, 77 (3), 219-226.
- Stokowski, P.A. (2002), "Languages of place and discourses of power: Constructing new senses of place", *Journal of Leisure Research*, 34 (4), 368-382.
- Stokowski, P.A. (2008), "Creating social senses of place: new directions for sense of place research in natural resource management", in L. Kruger, T.E. Hall, M.C. Stiefel (Eds.), *Understanding concepts of place in recreation research and management*, PNW-GTR-744, Portland, USDA Forest Service, Pacific Northwest Research Station (pp. 31-60).
- Strang, V. (2004), *The Meaning of Water*, Oxford and New York, Berg.
- Strang, V. (2005), "Common senses: water, sensory experience and the generation of meaning", *Journal of Material Culture*, 10 (1), 93-121.
- Strang, V. (2009), "Integrating the social and natural sciences in environmental research: a discussion paper", *Journal of Environment, Development and Sustainability*, 11 (1), 1-18.
- Strang, V. (2010), "Water, Culture and Power: anthropological perspectives from 'down under'", *Insights*", *Journal of the Institute of Advanced Study, University of Durham*, 3 (14), 2-26.
- Straškraba, M., and J.G. Tundisi (1999), *Reservoir water quality management, Guidelines of lake management*, Volume 9, Kusatsu, Shig, International Lake Environment Committee Foundation.
- Strauss, A., and J. Corbin (Eds) (1997), *Grounded theory in practice*, Thousand Oaks, CA, Sage.
- Strauss, A., and J. Corbin (1998), *Basics of qualitative research: Grounded theory procedures and techniques*, 2nd edition, Thousand Oaks, CA, Sage.
- Surová, D. and T. Pinto-Correia (2008), "Landscape preferences in the cork oak Montado region of Alentejo, southern Portugal: searching for valuable landscape characteristics for different user groups", *Landscape Research*, 33 (3), 311-330.

- Surová D., P. Surový, N.A. Ribeiro and T. Pinto-Correia (2011), “Integrating differentiated landscape preferences in a decision support model for the multifunctional management of the Montado”, *Agroforestry Systems*, 82 (2), 225-237.
- Sutton, P. W. (2004), *Nature, Environment and Society*, New York, Palgrave MacMillan.
- Szerszynski, B., S. Lash and B. Wynne (1996), “Introduction: ecology, realism and the social sciences”, in S. Lash, B. Szerszynski, and B. Wynne (Eds.), *Risk, environment and modernity: towards a new ecology*, London, Sage (pp. 1-26).
- Tashakkori, A., and J.W. Creswell (2007a), “The new era of mixed methods”, *Journal of Mixed Methods Research*, 1 (1), 3-7.
- Tashakkori, A. And J. Creswell (2007b), “Exploring the nature of research questions in mixed methods research”, *Journal of Mixed Methods Research*, 1 (3), 207-211.
- Tashakkori, A., and C. Teddlie (2003), *Handbook of Mixed Methods in the Social and Behavioral Research*, Thousand Oaks, CA, Sage.
- Tashakkori, A., and C. Teddlie (2006), “A general typology of research designs featuring mixed methods”, *Research in the Schools*, 13 (1), 12-28.
- Taylor, S. and R. Bogdan (1984), *Introduction to qualitative research methods*, 2nd edition, New York, John Wiley and Sons.
- Teel, T.L., M.J. Manfredo, F.S. Jensen, A.E. Buijs, A. Fischer, C. Riepe, R. Arlinghaus, and M.H. Jacobs (2010), “Understanding the cognitive basis for human-wildlife relationships as a key to successful protected-area management”, *International Journal of Sociology*, 40 (3), 104-123.
- Teigão dos Santos, F., and M.R. Partidário (2011), “SPARK: Strategic Planning Approach for Resilience Keeping”, *European Planning Studies*, 19 (8), 1517-1536.
- Thomas, J.R., J.K. Nelson, and S.J. Silverman (2005), *Research Methods in Physical Activity*, 5th edition, Champaign, IL, Human Kinetics.
- Thomashow, M. (1995), *Ecological identity*, Cambridge, MA, MIT Press.
- Thomashow, M. (2002), *Bringing the biosphere home: Learning to perceive global environmental change*, Cambridge, MA, MIT Press.
- Thomason, B.C. (1982), *Making Sense of Reification: Alfred Schutz and Constructionist Theory*, London, Humanities Press.
- Thrupp, A., E. Clift, D. Estes (1994), “Women and sustainable development”, in D.H. Hanson (Ed.), *World resources 1994–95: a guide to the global environment*, New York, Oxford University Press, Inc. (pp. 43–60).
- Tourism of Portugal (2007), *National Strategic Plan for Tourism - Fostering the Development of Tourism in Portugal*, Lisboa, Ministry of Economy and Innovation and Tourism of Portugal. Available from: <http://www.turismodeportugal.pt/Portugu%C3%AAs/turismodeportugal/planoestrategiconacionaloturismo/Anexos/PENT%20VER%20INGLES.pdf>
- Trentelman, C.K. (2009), “Place Attachment and Community Attachment: A Primer Grounded in the Lived Experience of a Community Sociologist”, *Society & Natural Resources*, 22 (3), 191-210.
- Thrift, N. (1985), “Flies and germs: a geography of knowledge”, in D. Gregory and J. Urry, (Eds.), *Social Relations and Spatial Structures*, London, Macmillan.
- Trentelman, C.K. (2009), “Place Attachment and Community Attachment: A Primer Grounded in the Lived Experience of a Community Sociologist”, *Society & Natural Resources*, 22 (3), 191-210.
- Trumbo, C.W., and G.J. O’Keefe (2001), “Intention to conserve water: Environmental values, reasoned action, and information effects across time”, *Society & Natural Resources*, 14, 889-899.
- Tuan, Y.-F. (1971), “Geography, phenomenology, and the study of human nature”, *Canadian Geographer/Le Géographe Canadien*, 15 (3), 181-192.

- Tuan, Y.-F. (1974), *Topophilia: a study of environmental perception, attitudes, and values*, Englewood Cliffs, New Jersey, Prentice-Hall Inc.
- Tuan, Y. (1975), "Place: An experiential perspective", *The Geographical Review*, 65 (2), 151-165.
- Tuan, Y. (1977), *Space and place: The perspective of experience*, Minneapolis, University of Minnesota Press.
- Tuan, Y. (1991), "Language and the making of place: A narrative-descriptive approach", *Annals of the Association of American Geographers*, 81 (4), 684-696.
- Tunstall, S.M., E.C. Penning-Roswell, S.M. Tapsell, S.E Eden (2000), "River restoration: Public attitudes and expectations", *Journal of the Chartered Institution of Water and Environmental Management*, 14 (5), 363-370.
- Turner, J.H. (1991), "Structuration Theory of Anthony Giddens", in *The Structure of Sociological Theory* (5th ed.), California, Wadsworth (pp. 519-539).
- Turner, R.K., I.J. Bateman, S. Georgiou, A. Jones, I.H. Langford, N.G. Matias, L. Subramanian (2004), "An ecological economics approach to the management of a multi-purpose coastal wetland", *Regional Environmental Change*, 4 (2-3), 86-99.
- Tveit, M., A. Ode, G. Fry (2006), "Key concepts in a framework for analysing visual landscape character", *Landscape Research*, 31 (3), 229-255.
- Twigger-Ross, C.L., and D.L. Uzell (1996), "Place identity processes", *Journal of Environmental Psychology*, 16, 205-220.
- Udas, P.B., and M.Z. Zwartveen (2010), "Can water professionals meet gender goals? A case study of the Department of Irrigation in Nepal", *Gender & Development*, 18 (1), 87-97.
- Ulrich, R.S. (1979), "Visual landscapes and psychological well-being", *Landscape Research*, 4:17-23.
- Ulrich, R.S. (1981), "Natural versus urban scenes: Some psychophysiological effects", *Environment and Behavior*, 13 (5), 523-553.
- Ulrich, R.S. (1983), "Aesthetic and affective response to natural environment", in I. Altman and J.F. Wohlwill (Eds.), *Behavior and the natural environment: Human behavior and environment advances in theory and research, Vol. 6*, New York, Plenum Press (pp. 85-125).
- Ulrich, R.S. (1984), "View through a window may influence recovery from surgery", *Science*, 224, 420-421.
- Ulrich, R.S. (1986), "Human responses to vegetation and landscapes", *Landscape and Urban Planning*, 13, 29-44.
- UNCED (United Nations Conference on Environment and Development) (1992), *Agenda 21*, New York, United Nations.
- van Dam, F., S. Heins, and B.S. Elbersen (2002), "Lay discourses of the rural and stated and revealed preferences for rural living. Some evidence of the existence of a rural idyll in the Netherlands", *Journal Rural Studies*, 18, 461-476.
- van den Berg, A.E. (1999), *Individual differences in the aesthetic evaluation of natural landscapes*, Unpublished Doctoral dissertation, Groningen, University of Groningen.
- van den Born, R.J.G., R.H.J. Lenders, W.T. De Groot, E. Huijsman (2001), "The new biophilia: an exploration of visions of nature in western countries", *Environmental Conservation*, 28, 65-75.
- Van den Born, R.J.G. (2007), *Thinking nature: Everyday philosophy of nature in the Netherlands*, Unpublished Doctoral dissertation, Nijmegen, Radboud University.
- van Koppen, C.S.A. (2000), "Resource, Arcadia, Lifeworld. Nature Concepts in Environmental Sociology", *Sociologia Ruralis*, 40 (3), 301-318.
- van Teijlingen, E.R., and V. Hundley (2001), "The importance of pilot studies", *Social Research Update*, 35. Available from: <http://sru.soc.surrey.ac.uk/SRU35.pdf>

- Vasconcelos, L. (2007), "Participatory governance in complex projects", in G. Gunkel and M.C. Sobral (Eds.), *Reservoir and river basin management: Exchange of experiences from Brazil, Portugal and Germany*, Berlin, Technical University of Berlin (pp. 114–124).
- Ventura, J. E. (2003), "A nova cultura da água: Do aumento da oferta à gestão da procura e ao planeamento dos recursos hídricos", *GeoINova*, 7, 129-150.
- Videira, N., P. Antunes, R. Santos (2009), "Scoping river basin management issues with participatory modeling: The Baixo Guadiana Experience", *Ecological Economics*, 68 (4), 965-978.
- Viriden, R.J., and G.J. Walker (1999), "Ethnic/racial and gender variations among meanings given to, and preferences for, the natural environment", *Leisure Sciences*, 21, 219-239.
- Vorkinn, M., Riese, H. (2001), "Environmental Concern in a Local Context: The Significance of Place Attachment", *Environment and Behavior*, 33 (2), 249-263.
- Wagner, W. (1996), "Queries about social representation and construction", *Journal for the Theory of Social Research*, 26, 95-120.
- Wagner, W. (1997a), "Local knowledge, social representations and psychological theory", in K. Leung, U. Kim, S. Yamaguchi and Y. Kashima (Eds.), *Progress in Asian Social Psychology*, Vol. 1, Singapore, Wiley.
- Wagner, W. (1997b), *Word associations in questionnaires: a practical guide to design and analysis*, Papers in Social Research Methods/Qualitative Series No 3, London School of Economics and Political Science Methodology Institute.
- Wagner, W. (1998), "Social representations and beyond: brute facts, symbolic coping and domesticated worlds", *Culture & Psychology*, 4 (3), 297-329.
- Wagner, W., J. Valencia and F. Elejabarrieta (1996), "Relevance, discourse and the 'hot' stable core of social representations: a structural analysis of word associations", *British Journal of Social Psychology*, 35, 331-352.
- Wagner, W., G. Duveen, R. Farr, S. Jovchelovith, F. Lorenzi-Cioldi, I. Marková, and D. Rose (1999), "Theory and method of social representations", *Asian Journal of Social Psychology*, 2, 95-125.
- Wagner, W. and N. Hayes (2005), *Everyday discourse and common sense: the theory of social representations*, New York, Palgrave Macmillan.
- Walker, D., and F. Myrick (2006), "Grounded theory: An Exploration of process and procedure", *Qualitative Health Research*, 16 (4), 547-559.
- Walmsley, C.J. (2004), "Social representation and the study of professional practice", *International Journal of Qualitative Methods*, 3(4), Article 4. Available from http://www.ualberta.ca/~iiqm/backissues/3_4/pdf/walmsley.pdf
- Walmsley, D.J., and G.J. Lewis (1993), *People and environment: Behavioural approaches in Human Geography*, Harlow, Longman.
- Warren, T. (2010), "Work time. Leisure time. On women's temporal and economic well-being in Europe", *Community, Work & Family*, 13 (4), 365-392.
- Wascher, D., M. Múgica, and H. Gulinck (1999), "Establishing targets to assess agricultural impacts on European landscapes", in F.M. Brouwer and J.R. Crabtree (Eds.), *Environmental Indicators and Agricultural Policy*, Wallingford, New York, CAB International.
- Wateau, F. (1999), "Barrages, identités et frontières: des barrages sur rivières frontalières (Sela et Alqueva)", in J. Pujadas, E. Martín, e J. Pais de Brito (Orgs.), *Globalización, Fronteras Culturales y Políticas y Ciudadanía*, Actas del VIII Congreso de Antropología, 20-24 de Setembro, Santiago de Compostela.
- Wateau, F. (2000), *Conflitos e Água de Rega: Ensaio sobre a Organização Social no Vale de Melgaço*, Lisboa, Publicações Dom Quixote.

- Wateau, F. (2002), "Du Portugal à l'Europe Effets d'échelles, de Melgaço à Alqueva", *Lusotopie*, 2, 165-176.
- Wateau, F. (2004), "De l'eau en Alentejo. Marge, barrage et patrimonialisation", *Revue géographique des Pyrénées et du Sud-ouest*, 18, 53-59.
- Wateau, F. (2010), "Contester un barrage : anthropologie d'un processus de gestion sociale à Alqueva (Portugal)", in G. Schneier-Madanes (Éd.), *L'eau mondialisée : la gouvernance en question*, Paris, La Découverte (pp. 271-284).
- Watkins, M. (2000), "Ways of learning about leisure meanings", *Leisure Sciences*, 22, 93-107.
- Weigert, A.J. (1997), *Self, interaction, and the natural environment: Refocusing our eyesight*, Albany, NY, State University of New York Press.
- Weller, S.C., and A.K. Romney (1990), *Metric Scaling: Correspondence Analysis*, London, Sage.
- Wetzel, R.G. (1990a), "Reservoir ecosystems: Conclusions and speculations", in K.W. Thornton, B.L. Kimmel, and F.E. Payne (Eds.), *Reservoir Limnology: Ecological Perspectives*, New York, Wiley (pp. 227-238).
- Wetzel, R.G. (1990b), Land-water interfaces: Metabolic and limnological regulators, *Verh. Internat. Verein. Limnol.*, 24, 6-24.
- Wetzel, R. (2001), *Limnology: lake and river ecosystems*, San Diego, Academic Press.
- Wetzel, R.G., and G.E. Likens (2000), *Limnological analyses*, 3rd Edition, New York, Springer-Verlag.
- White, M.J., and L.M. Hunter (2009), "Public Perception of Environmental Issues in a Developing Setting: Environmental Concern in Coastal Ghana", *Social Science Quarterly*, 90 (4), 960-982.
- Whittaker, D., J.J. Vaske, and M.J. Manfredi (2006), "Specificity and the cognitive hierarchy: Value orientations and the acceptability of urban wildlife management actions", *Society & Natural Resources*, 19 (6), 515-530.
- Williams, D.R. (2000), "Personal and social meanings of wilderness: Constructing and contesting places in a global village", in A.E. Watson, G.H. Aplet, H. Greg, J.C. Hendee (Eds.), *Personal, societal, and ecological values of wilderness: Sixth World Wilderness Congress proceedings on research, management, and allocation*, Volume II; 1998 October 24-29; Bangalore, India. Proc. RMRS-P-14. Ogden, UT: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station (pp. 77-82).
- Williams, D.R. (2002), "Leisure identities, globalization, and the politics of place", *Journal of Leisure Research*, 34 (4), 351-367.
- Williams, D.R. (2008), "Pluralities of place: A user's guide to place concepts, theories, and philosophies in natural resource management", in L.E. Kruger, T.E. Hall, M.C. Stiefel (Eds.), *Understanding concepts of place in recreation research management*, PNW-GTR-744, Portland, USDA Forest Service, Pacific Northwest Research Station (pp. 7-30).
- Williams, D.R., and M.E. Patterson (1996), "Environmental meaning and ecosystem management: Perspectives from environmental psychology and human geography", *Society & Natural Resources*, 9(5), 507-521.
- Williams, D.R., and S.I. Stewart (1998), "Sense of place: An elusive concept that is finding a home in ecosystem management", *Journal of Forestry*, 96, 18-23.
- Williams, D.R., and J.J. Vaske (2003), "The measurement of place attachment: Validity and generalizability of a psychometric approach", *Forest Science*, 49, 830-840.
- Williams, D.R., M.E. Patterson, J.W. Roggenbuck, and A.E. Watson (1992), "Beyond the commodity metaphor: Examining emotional and symbolic attachment to place", *Leisure Sciences*, 14 (1), 29-46.

- Williams, J. (2001), "Phenomenology in Sociology", in N.J. Smelser and P.B. Baltes (Eds.), *International Encyclopedia of the Social & Behavioral Sciences*, London, Elsevier Science Ltd. (pp. 11361-11363)
- Winter, C. (2005), "Preferences and values for forests and wetlands: A comparison of farmers, environmentalists, and the general public in Australia", *Society & Natural Resources*, 18 (6), 541-555.
- Witz, K.G. (2007), "Awakening to" an aspect in the other: On developing insights and concepts in qualitative research", *Qualitative Inquiry*, 13, 235-258.
- Woods, N.E. (2006), *Place attachment, place identity, self-formation, and imagination: a narrative construction*, Unpublished Doctoral dissertation, San Diego, Alliant International University.
- Woolley, C.M. (2009), "Meeting the mixed methods challenge of integration in a sociological study of agency and structure", *Journal of Mixed Methods Research*, 3 (1), 7-25.
- World Commission on Dams (2000), *Dams and development: A new framework for decision-making – The report of the World Commission on Dams*, London and Sterling, VA, Earthscan Publications.
- Worrell, R., and M.C. Appleby (2000), "Stewardship of natural resources: definition, ethical and practical aspects", *Journal of Agricultural and Environmental Ethics*, 12 (3), 263-277.
- Wynveen, C.J., G.T. Kyle, and S.G. Sutton (2010), "Place Meanings Ascribed to Marine Settings: The Case of the Great Barrier Reef Marine Park", *Leisure Sciences*, 32 (3), 270-287.
- Yin, R.K. (1994), *Case Study Research: Design and Methods*, Thousand Oaks, CA, Sage.
- Young, G. (Ed.) (1983), *Origins of Human Ecology*, Stroudsburg, Hutchinson Ross.
- Xiao, C., and A.M. McCright (2007), "Environmental Concern and Sociodemographic Variables: A Study of Statistical Models", *Journal of Environmental Education*, 38 (2), 3-14.
- Zavestoski, S. (2003), "Constructing and maintaining ecological identities: The strategies of deep ecologists", in S. Clayton and S. Opatow (Eds.), *Identity and the natural environment: The psychological significance of nature*, Cambridge, MA, MIT Press (pp. 297-315).
- Zwarteveen, M. (2009), "The Virtues of New Water Knowledge", *Irrigation and Drainage*, 58, S188-S194.
- Zwarteveen, M. (2010), "Gendered water politics and the politics of gender in water", in J. Warner and K. Wegerich (Eds.), *The Politics of Water*, London, Routledge.
- Zwarteveen, M. (2011), "Questioning Masculinities in Water", *Review of Women's Studies*, XLVI (18), 40-48.

APPENDICES

Appendix A



Instituto Superior de Ciências
do Trabalho e da Empresa

Survey ‘Social Representations’

Nuno Gonçalo Matias, Ph.D. student at the Department
of Sociology, I.S.C.T.E., Lisboa. Contact: 961112259

Hello, my name is Nuno from I.S.C.T.E. [SHOW I.D. CARD] and I’m conducting a survey of **people’s understandings** about the Odivelas Reservoir and its surroundings. This survey is part of a research project so the results are completely independent and I’m not trying to sell anything! The survey takes about 20 minutes and all answers are **confidential**. Would you be willing to help me with this? [If YES: Carry on with interview. If NO: write the reason _____ and say “Thank you and I’m sorry for any inconvenience caused”]

PART 1: Information about place of residence and knowledge of the reservoir area

Q1. Where do you live within this area/region? (Please select one response number)

Vila Alva (1)	Vila Ruiva (2)	Albergaria dos Fusos (3)	Alvito (4)	Other, which one? (5)
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Q2. How long have you lived in this area/at this address? _____ (years)

Q3 Do you like/dislike your current place of residence? (Please select one response number)

Strongly dislike (1)	Dislike (2)	Like (3)	Strongly like (4)	No opinion (5)
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Q4. What do you like/dislike about living here?

Q5. How would you rate your knowledge of the Odivelas Reservoir and its surroundings? (Please select one response number)

Poor (1)	Fair (2)	Good (3)	Excellent (4)	Don’t know/ No opinion (5)
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Q6. How would you rate your knowledge of the reservoir area in comparison to other residents?
(Please select one response number)

Less knowledge (1)	About the same knowledge (2)	More knowledgeable (3)	Don't know/ No opinion (4)
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

PART 2: Representations about the reservoir and its surroundings

Q7. Think briefly about what the ‘Odivelas Reservoir and surrounding area’ means to you. Then tell me three (3) words or statements that express your thoughts. The words could stand for thoughts, feelings, behaviours or anything else. **Don't think about it too much! Just say whatever words pop into your head.**

- 1) _____
- 2) _____
- 3) _____

Q8. Now, think briefly about what the ‘Odivelas Reservoir’ means to you. Then tell me three (3) words or statements that express your thoughts. The words could stand for thoughts, feelings, behaviours or anything else. **Don't think about it too much! Just say whatever words pop into your head.**

- 1) _____
- 2) _____
- 3) _____

Q9. This time, think briefly about what the ‘Reservoir’s surrounding area’ means to you. Then tell me three (3) words or statements that express your thoughts. The words could stand for thoughts, feelings, behaviours or anything else. **Don't think about it too much! Just say whatever words pop into your head.**

- 1) _____
- 2) _____
- 3) _____

PART 3: Reservoir and its surroundings uses and considered importance for local communities

Q10. For this list of uses and activities [**Show the Table**] please tell me how often you use the reservoir and its surroundings to participate in the respective activity during visits to the reservoir area ‘never’, ‘once a month’, ‘once fortnightly’, ‘once a week’ or ‘twice a week or more’. Also, for each

use or activity undertaken please tell me whether you undertake it during ‘spring’, ‘summer’, ‘autumn’, ‘winter’, or ‘the whole year’.

Use/Activity	Never (1)	Once a month (2)	Once fortnightly (3)	Once a week (4)	Twice/week or more (5)
1) Domestic consumption					
2) Livestock drinking water					
3) Livestock grazing					
4) Irrigation					
5) Tourism					
6) Recreational fishing					
7) Swimming					
8) Boating/sailing/windsurfing					
9) Motor Boating					
10) Picnicking					
11) Relaxing					
12) Walking/enjoying scenery					
13) Wildlife/nature watching					
14) Other(s), which one? _____					

Q11. What do you consider to be the important uses of the reservoir in the future for the local populations? For each use and/or activity please tell me whether you consider it ‘not at all important’, ‘of little importance’, ‘important’, or ‘very important’.

Use/Activity	Not at all important (1)	Of little importance (2)	Neutral (3)	Important (4)	Very important (5)
1) Domestic consumption					
2) Livestock drinking water					
3) Livestock grazing					
4) Irrigation					
5) Tourism					
6) Recreational fishing					
7) Swimming					
8) Boating/sailing/windsurfing					
9) Motor Boating					

- 10) Picnicking
- 11) Relaxing
- 12) Walking/enjoying scenery
- 13) Wildlife/nature watching
- 14) Other(s), which one?

PART 4: Perception about reservoir water quality

Q12. I now want you to think about the water quality of the Odivelas Reservoir. How would you rate the water quality of the reservoir? (Please select one response number)

Very Poor (1)	Poor (2)	Fair (3)	Good (4)	Very good (5)	Don't know/ No opinion (6)

Q13. Here are the most often evoked sources of water pollution (see the list below). In your opinion, are these sources actually responsible for the Reservoir's water pollution? Using a scale where a value of one means '*Strongly disagree*' and four means '*Strongly agree*', please select one response number for each source.

	Strongly disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly agree (5)	Don't know (6)
Cause						
1) Sewage treatment works						
2) Agriculture						
3) Livestock						
4) Recreational users						
5) Other(s), which one? _____						

PART 5: Level of knowledge and the respective sources of information available on reservoir water management

Q14. Who do you consider to be responsible for the Odivelas Reservoir's water management?

Q15. In general, how well informed would you consider yourself to be concerning Odivelas Reservoir’s water management? (Please select one response number)

Not informed (1)	Somewhat informed (2)	Informed (3)	Very well informed (4)	Don’t know/ No opinion (5)

Q16. If you consider yourself at least ‘*somewhat informed*’, please tell me from the following options your sources of information?

Source	No	Yes	If yes, which one?
1) Government authorities/agencies			
2) Local authorities			
3) The National Water Institute			Do not apply
4) Technical experts			
5) Environmental organisations			
6) Television/radio			
7) Newspapers			
8) Interaction with family/friends			
9) School/University			
10) Other(s), which one?			

Q17. Who do you consider to be the main beneficiary of the reservoir and its surroundings?

Agriculture (1)	Local populations (2)	Recreational users (3)	Other, which one? (4)	Don’t know (5)

PART 6: Socio-demographic characteristics

Finally, I would like to know just a little about your background so I can see how different people feel about the topics about which you’ve answered questions.

Q18. Please tell me your age or year of birth? _____

Q19. Gender: Female Male

Q20. Do you have children? Yes No

Q21. What is the highest level of formal education you have completed? (Please select one response)

- | | |
|---|--------------------------|
| 1) Can't read and write | <input type="checkbox"/> |
| 2) Read and write, but did not completed the Primary School | <input type="checkbox"/> |
| 3) 1st Cycle of basic education (4 years) | <input type="checkbox"/> |
| 4) 2nd Cycle of basic education (2 years) | <input type="checkbox"/> |
| 5) Lower-Secondary school (3 years) | <input type="checkbox"/> |
| 6) Upper-Secondary School (3 years) | <input type="checkbox"/> |
| 7) Professional qualification | <input type="checkbox"/> |
| 8) University degree or equivalent | <input type="checkbox"/> |

Q22. Please tell me what is your current or last profession/occupation?

Q23. Could you please describe the main responsibilities/tasks of your current or last profession/occupation?

Q24. Please tell me which one of the following options best describes your current employment status:

Employed (1)	Unemployed (2)	Retired (3)	Unable to work due to sickness or disability (4)	Other, which one? (5)
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Q25. Please tell me which one of the following options best describes your position in your current or last profession/occupation:

Employer (1)	Self- employed (2)	Full-time employee (3)	Part-time employee (4)	Family work with remuneration (5)	Family work without remuneration (6)	Other, which one? (7)
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Q26. Please tell me if you are a member of any organisation (e.g., sports club, religious/charity group, scout group, angling club, social group, hunting group, etc.)?

Yes

No

If yes, which one(s)? _____

That's the end of the interview!
Thank you very much for your time and help, it is very much appreciated!

Appendix B Socio-demographic characterisation of Odivelas catchment resident population for 2008 (N = 2480; Source: NG Matias unpublished data).

Characteristic	%	<i>n</i>
Gender		
Women	51.8	(1285)
Age (years)		
0-13	10.1	(240)
14-24	10.5	(270)
25-64	47.8	(1185)
65 or more	31.6	(785)
Educational attainment		
Can't read and write (Illiterate)	20.3	(503)
Read and write, but did not completed the Primary School	5.3	(132)
1st Cycle of basic education (4 years)	29.4	(730)
2nd Cycle of basic education (2 years)	19.2	(477)
Lower-Secondary school (3 years)	13.4	(332)
Upper-Secondary School (3 years)	9.2	(229)
Professional qualification	1.4	(35)
University degree or equivalent	1.7	(42)
Pensioners	31.6	(784)
Unemployed population	6.2	(56)
Employment population	34.4	(853)
Employed in the Primary sector ^a	13.7	(117)
Employed in the Secondary sector ^a	20.9	(178)
Employed in the Tertiary sector ^a	65.4	(558)
Active population	36.7	(909)

Note: The National Statistics Institute of Portugal does not work at catchment level but at district, county or parish level, which in some cases may include data organized by geographical sectors of villages. The data organized by geographical sectors of villages present in my catchment area was available, but I had to buy it. Also, for 2008, the available data (2001 resident population) could not be used directly. However, this purchased population data were also organized into different socio-demographic variables: gender; age; educational attainment. Hence, the 2001 population data (for each village present in the catchment) were compared and adjusted with reference to the 2008 records of school attendance and people entitled to vote held by each parish of/in the catchment.

^a The Portuguese classification of Economic activities 'CAE-Rev.3' was used in this study. Percent of employed population per sector of main activity (refer to primary, secondary, and tertiary, respectively): Portugal, 11.8 %, 30.6 %, 57.6 %; Alentejo Region, 13.4 %, 24.2 %, 62.4 %.

Appendix C Profiles of Research Participants (Note: the confidentiality of all participants' details has been maintained, with each participant identified by a number).

No.	Age	Gender	Education	Occupation
1	28	Male	University degree	Male Nurse
2	45	Female	Lower-Secondary school	Employee at Camping 'Markádia'
3	42	Female	Lower-Secondary school	Employee at Camping 'Markádia'
4	33	Male	University degree	School teacher
5	29	Male	Professional Qualification	Multimedia designer
6	33	Female	Upper-Secondary school	Librarian
7	45	Male	University degree	Administration Clerk
8	36	Female	Upper-Secondary school	Administration Clerk
9	42	Male	Upper-Secondary school	Administration Clerk
10	33	Female	Upper-Secondary school	Administration Clerk
11	40	Female	Lower-Secondary school	Teacher Assistant
12	29	Male	Professional Qualification	Librarian
13	28	Female	Upper-Secondary school	Administration Clerk
14	45	Female	Lower-Secondary school	Administration Clerk
15	58	Female	Lower-Secondary school	Administration Clerk
16	34	Female	University degree	Psychologist
17	51	Female	Upper-Secondary school	HC Administrator
18	32	Male	University degree	School teacher
19	44	Male	University degree	Lawyer
20	25	Male	University degree	School teacher
21	49	Female	Professional Qualification	Administration Clerk
22	44	Female	University degree	Employee at Tourism Office
23	50	Female	Professional Qualification	Administration Clerk
24	28	Male	Upper-Secondary school	Employee at Cultural Centre
25	56	Female	University degree	Doctor
26	35	Male	University degree	Administration Clerk
27	55	Male	University degree	School teacher
28	30	Male	Upper-Secondary school	Employee at Tourism Office
29	51	Male	Upper-Secondary school	Accountant

Appendix D

In section 4.2.7 the development of the interview guide used for the interviews with residents was discussed. It was stated that following engagement with existing literature and preliminary field-work together with the input from the findings of the (Phase 1) quantitative study a list of interview questions was compiled to guide initial interviews. These questions were grouped under five topics. These topics and the questions underpinning them are listed below.

Topic 1: Reactions/comments about the survey questionnaire results (respondents were presented with the card showed bellow) and meanings associated with the place



Questions: What comes to your mind when you think about these results?
(Probes: Where do you locate yourself among the dominant ways of representing the reservoir and its surroundings? Do you consider that other ways of representing the reservoir and its surroundings are missing from this card?)
What does the reservoir and its surroundings mean to you?

How would you characterize the reservoir and its surroundings?

How important do you regard the reservoir and its surroundings for yourself?

What activities do you perform at the reservoir and its surroundings?

What are your favourite characteristics of the reservoir and its surroundings?

Topic 2: emotions/feelings about the reservoir and its surroundings

Questions: During the survey, a number of you have associated words like ‘tranquillity’, ‘peace of mind’, ‘quiet’, ‘enjoyment’, ‘I love to gaze at the water’, ‘beautiful scenery’ with the reservoir and its surroundings. Thinking about your own experience, what specifically about the place do you feel attached to?

(Probe: Can you tell me how these feelings have come about?)

How important is this emotional experience about the reservoir and its surroundings for your everyday life?

(Probes: Does it change the way you live your life? Do your emotional experiences in the reservoir and its surroundings change the way you act when you return from the reservoir and its surroundings?)

Topic 3: perception about the water quality of the reservoir

Questions: During the survey, some people mentioned that the water quality was ‘good’ and some that was ‘poor’. Why do you think there are these different opinions regarding the reservoir water quality??

(Probe: You mentioned _____. Could you talk to me a bit more about that?)

What features do you consider make the water quality ‘good’/’poor’?

(Probe: Why is that a factor?)

Topic 4: social interaction with family and friends at the reservoir area

Questions: During the survey, a number of you have mentioned words like ‘get-together’, ‘picnicking with friends and/or family’, ‘celebrations/parties’, ‘friends’, ‘dating’, etc. Thinking about your own experience, how important is the

reservoir and its surroundings for the development and maintenance of social relationships with family and friends?

(Probe: Do you go there frequently or for special occasions?)

How important are these social relationships at the reservoir and its surroundings for your everyday social life?

(Probes: In what way? Why do you think that?)

Topic 5: the reservoir and its surroundings management and local development

Questions: Do you experience any problems with respect to the reservoir and its surroundings?

Do you feel that anyone represent you or your views (such as the ones discussed here) about the management of the reservoir and its surroundings?

How do you think these findings could be used in the reservoir water management?

(Probe: Imagine you are talking to the main decision maker who decides how the reservoir and its surroundings will be managed and water delivered to populations/irrigation/etc. What would you advise her/him to do?)

How do you think the reservoir and its surroundings could be useful for the development of this region?

END

As stated in section 4.2.7, the interview questions changed over the course of the data collection process. This is in keeping with grounded theory research. Therefore, as issues emerged, questions were added which explored these issues in greater depth. Examples of some of the questions which relate to the emerging codes are listed below.

Emergent codes	Examples of questions
Escape	You have been using the term “escape” during our conversation. What does that term mean to you? How important are these escapes to the reservoir and its surroundings

	<p>for your everyday life?</p> <p>(Probes: In what way? Why do you think that?)</p>
Refuge	<p>You have been using the term “refuge” during our conversation. What does that term mean to you?</p> <p>How important is the reservoir and its surroundings as a refuge from your everyday life?</p> <p>(Probes: In what way? Why do you think that?)</p>
Renewal of the Self	<p>What do you mean with a “renewed self? Could you talk to me a bit more about that?</p>
Physical interaction	<p>How does “physical interaction” with the place differ from other activities you perform in the reservoir and its surroundings?</p>
Milestones of everyday life	<p>Are there particular areas or landscape attributes about the reservoir and its surroundings that evoke strong memories for you?</p> <p>Are there particular areas from your past that are important to you, which you haven’t been to lately but would like to go to again?</p> <p>Are there any places that you still go to that were once special but have lost their meaning for you?</p>

Appendix E Farm indicators for the Alentejo Region (Source: National Statistics Institute, 2010).

Farm indicator	Alentejo Region
Agricultural Area in Use (AAU) per annual work unit ^a	42.4 ha
Annual work unit per farm	1.3
Standard gross margin per farm ^b	18,494 Euros
Standard gross margin per AAU	329 Euros ha ⁻¹
Economic size ^c	
< 2ESU	48.9%
2-3 ESU	14.2%
4-7 ESU	10.5%
8-15 ESU	8.3%
≥ 16 ESU	18.1%

^a The number of hours of 1 annual work unit (AWU) corresponds to the number of hours actually worked in a normal full-time job; the System of National Accounts states that full-time equivalent employment in a given country is defined as the total hours worked divided by the average annual number of hours worked in full-time jobs within the economic territory; for Portugal 1 AWU = 1920 hours (240 days of 8 hours of daily work).

^b The standard Gross Margin (SGM) of a crop or livestock item is defined as the value of output from one hectare or from one animal less the cost of variable inputs required to produce that output. The concept of Standard Gross Margin (SGM) is used to determine the economic size of farms, which is expressed in terms of European Size Units (ESU).

^c The economic size of farms is expressed in terms of European Size Units (ESU). The value of 1 ESU = 1200 € of Standard Gross Margin of the holding (Community typology for agricultural holdings -Commission decision 85/377/EEC). For Portugal those farms which exceed 2 ESU are defined as commercial.

Appendix F Scenarios run (Source: Matias and Johnes, 2012)

Dimension	Trends	Scenario	Modelled change
Land use	Decrease in cereal production; elderly farm population and abandonment of agricultural land.	1	Reduction in cereals planted area by 7.5 %
	Adoption of good farming practices by farmers	2	Reduction in P rates from arable land by 20%
Human population	Sewage treatment works deficient operation, lack of maintenance and upgrade programmes; fixing failing sewage treatment works and upgrading septic systems.	3	All sewers connected at least to secondary treatment plants (biological removal of P)
		4	All sewers connected to tertiary treatment plants (P stripping)

Appendix G Contribution of words to the inertia of each dimension and models' summary for each stimulus term.

Stimulus term	Word	Dimension 1	Dimension 2	Mass ^a
"Reservoir and its surrounding" ($\chi^2 = 9503.14, P < 0.001$)	'water'	.086	.000	.105
	'stroll'	.027	.002	.105
	'beautiful scenery'	.018	.125	.097
	'irrigation/irrigated land'	.352	.013	.066
	'tranquillity/peace of mind'	.075	.177	.055
	'celebrations/parties'	.003	.113	.047
	'coffee house/campsite'	.002	.114	.050
	'beach'	.000	.105	.047
	'leisure'	.029	.014	.048
	'picnicking'	.008	.048	.049
	'summer'	.013	.018	.046
	'fishing'	.003	.013	.038
	'get-together'	.010	.032	.038
	'development/useful'	.062	.018	.026
	'friends'	.011	.063	.031
	'agriculture/farming land'	.249	.004	.025
	'enjoyment'	.024	.030	.027
	'landscape'	.001	.017	.026
	'nature'	.004	.010	.026
	'recreational activities'	.008	.016	.025
'quiet'	.016	.065	.023	
	<u>Singular value (eigenvalues)</u>	<u>.714</u>	<u>.632</u>	
	<u>Inertia^b</u>	<u>.510</u>	<u>.400</u>	
"Lake" ($\chi^2 = 5393.79, P < 0.001$)	'poor water quality'	.357	.001	.168
	'good water quality'	.131	.077	.147
	'irrigation/irrigated land'	.021	.214	.120
	'tranquillity/peace of mind'	.044	.195	.080
	'low water storage volume'	.065	.029	.097
	'beautiful scenery'	.058	.094	.072
	'fishing'	.030	.067	.040
	'stagnant water'	.020	.020	.052
	'I love to gaze at water'	.024	.096	.035
	'blue'	.025	.075	.060
	'bad water quality/bathing'	.003	.062	.025
'fish'	.020	.067	.054	

	‘smells bad’	.203	.003	.049
	<u>Singular value (eigenvalues)</u>	<u>.823</u>	<u>.704</u>	
	<u>Inertia^c</u>	<u>.677</u>	<u>.495</u>	
“Catchment”	‘beautiful scenery’	.085	.130	.116
($\chi^2 = 7361.09, P < 0.001$)	‘Montado/oak trees’	.243	.006	.154
	‘agriculture/farming land’	.298	.009	.091
	‘coffee house/campsite’	.032	.059	.091
	‘shaded areas’	.009	.017	.067
	‘picnicking’	.025	.178	.074
	‘stroll’	.013	.004	.050
	‘countryside’	.104	.001	.045
	‘pleasant’	.061	.107	.046
	‘tranquillity/peace of mind’	.027	.037	.038
	‘leisure’	.029	.020	.036
	‘litter’	.016	.163	.038
	‘landscape’	.008	.037	.040
	‘nature’	.041	.120	.053
	‘beach’	.003	.007	.034
	‘get-together’	.005	.105	.028
	<u>Singular value (eigenvalues)</u>	<u>.758</u>	<u>.656</u>	
	<u>Inertia^d</u>	<u>.574</u>	<u>.430</u>	

Note: significant words’ contributions to the dimensions are shown in bold.

^a The higher a word’s mass the closer it appears to the origin of coordinates; in practice this means that the most consensual words will be the central ones.

^b Total Inertia = 3.60

^c Total Inertia = 2.77

^d Total Inertia = 2.85

CV

PERSONAL DETAILS

Name:	Nuno Gonçalo Cerqueira Gonçalves Noceda Matias
Name in Publications:	Nuno-Gonçalo Matias
Place and date of birth:	Lisbon, 5th of June of 1972
Nationality:	Portuguese
Email:	nunogonca@gmail.com

ACADEMIC QUALIFICATIONS

Year	Qualification
2005-2006	Post-Graduated Studies in Sociology , Instituto Superior das Ciências do Trabalho e da Empresa – Lisbon University Institute
2002-2003	Master of Science in Environmental Sciences , School of Environmental Sciences, University of East Anglia, U.K.
1999-2001	Master of Science in Agricultural Economics and Rural Sociology , Higher Institute of Agronomy, Technical University of Lisbon, Portugal
1992-1997	Five year degree in Applied Biology , University of Lisbon, Faculty of Sciences, Portugal (Last year degree at School of Biological Sciences, University of Manchester, UK- <i>Erasmus</i>)

EMPLOYMENT HISTORY

Year	Details
Oct. 2005-Jun. 2012	Institution: Instituto Superior de Ciências do Trabalho e da Empresa - Lisbon University Institute, Portugal, Department of Sociology Position: Ph.D. Student in Sociology with a Doctoral fellowship Work description: An interpretative mixed methods study about residents' experiences and meanings ascribed to a Reservoir and its Surroundings and implications for Water Management
Nov. 2004-Aug. 2005	Institution: Faculty of Sciences (University of Lisbon) Position: Ph.D. Student in Ecology with a Doctoral fellowship Work description: Seasonal dynamics of water quality in two

	Ramsar wetlands: Limnology and catchment socio-economic influence
Dec. 2002-Aug. 2003	Institution: UEA and CSERGE (Prof. Ian Bateman) Position: Research Project (MSc Student) Work description: Study of individual's benefits (i.e., willingness to pay) from avoiding eutrophication impacts upon open water in the Norfolk Broads
Nov. 1998-Sep. 2002	Institution: Limnology Research Group (University of Lisbon), Position: Researcher Work description: Limnological study of two reservoirs in Alentejo Region (Portugal); the study of catchment populations' uses, attitudes and perceptions in respect to reservoir ecosystem, as well as the motivation and expected effects of involvement in water management.
Jan.-Aug. 1996	Institution: Faculty of Sciences Foundation (University of Lisbon) Position: Researcher Work description: Study of Lagoons in the Serra da Estrela Natural Park
Oct. 1995-Jun. 1996	Employer: Quercus (NGO), Position: Environmental Education Work description: Primary School environmental education activities

PUBLICATIONS

Articles in peer-reviewed journals

Year	Publication
2012	Matias, N.G. (2012), "Seeing a reservoir and its surroundings through the residents' eyes in Alentejo Region, Portugal: a social representation perspective", <i>Society & Natural Resources</i> , 25 (8), 808-820.
2012	Matias, N.G. , and P.J. Johnes (2012), "Catchment phosphorous losses: An export coefficient modelling approach with scenario analysis for water management", <i>Water Resources Management</i> , 26, 1041-1064.

2010	Matias, N.G. (2010), “Catchment residents-based SWOT analysis of a reservoir ecosystem for sustainable water management: a case study from the Region of Alentejo, Portugal”, <i>Water Quality Research Journal of Canada</i> , 45 (3), 295-306.
2009	Parra, G., N.G. Matias , F. Guerrero, M.J. Boavida (2009), “Short term fluctuations of zooplankton abundance during autumn circulation in two reservoirs with contrasting trophic state”, <i>Limnetica</i> 28 (1), 175-184.
2008	Matias, N.G. , J. Gago, and M.J. Boavida (2008), “Catchment consultation for water management: The case of two Portuguese reservoirs with different water quality”, <i>International Journal of Environmental Studies</i> , 65 (6), 737-754.
2005	Matias, N.G. , and M.J. Boavida (2005), “Effects of catchment development on the trophic status of a deep and a shallow reservoir in Portugal”, <i>Lake and Reservoir Management</i> , 21 (3), 350-360.
2004	Turner, R.K., I.J. Bateman, S. Georgiou, A. Jones, I.H. Langford, N.G. Matias , L. Subramanian (2004), “An ecological economics approach to the management of a multi-purpose coastal wetland”, <i>Regional Environmental Change</i> , 4 (2-3), 86-99.

Chapters in Books

Year	Publication
2006	Bateman, I.J., B.H. Day, D. Dupont, S. Georgiou, N.G. Matias , L. Subramanian (2006), ‘Cost–Benefit Analysis and the Prevention of Eutrophication’, in D.W. Pearce (Ed.). <i>Environmental Valuation Developed Countries (Case Studies)</i> , Cheltenham, Edward Elgar.

Refereed conference papers

Year	Publication
2003	Bateman, I.J., D. Dupont, S. Georgiou, N.G. Matias , L. Subramanian (2003), “OOH la la: Bid Range and Direction Effects in the One-and-One-Half Bound Dichotomous Choice Approach”, <i>Fifth Annual Heartland Environmental and Resource Economics (HERE) Workshop</i> . Iowa State University (September 21-22, USA).

Book reviews

Year	Publication
2005	Matias, N.G. (2005), <i>The Lakes Handbook: Limnology and Limnetic Ecology</i> , Volume I. Edited by P.E. O’Sullivan and C.S. Reynolds, + 699 pp., hardback, ISBN 0-632-04797-6; UK£ 125.00, Oxford, Blackwell Publishing (December 2003), <i>Environmental Sciences: Journal of Integrative Environmental Sciences</i> , 2 (1), 57-58.

Dissertation Thesis

Year	Details
2003	Matias, N.G. (2003), <i>One-and-one-half-bound Dichotomous Choice Contingent Valuation: measure of individual’s benefits from avoiding eutrophication impacts in rivers and lakes of East Anglia</i> . MSc in Environmental Sciences, School of Environmental Sciences, University of East Anglia. 89 pp.
2001	Matias, N.G. (2001), <i>Comparative study of two reservoirs with different catchment characterization</i> . MSc in Agricultural Economics and Rural Sociology, Technical University of Lisbon, Higher Institute of Agronomy. 110 pp.