

Fertile Grounds

Cultivating an Identity Through Architecture

by

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Author's Declaration

I hereby declare that I am the sole author of this thesis. This is a true copy of the thesis, including any required final revisions, as accepted by my examiners.

I understand that my thesis may be made electronically available to the public.

ABSTRACT

This thesis explores the contributive role of architecture to the prosperity of a place. The research addresses the challenges and opportunities that rural regions face today by analyzing the general factors of marginalized rural communities through the lens of a specific community in mainland Portugal. A new approach for maintaining an authentic character, and a “sense of place” is presented which defends rural space as a genuinely experiential realm.

The thesis proposes the design of a modern day treatment and research centre in the rural town of Manteigas, situated on one of the largest glacier valleys in Europe in the heart of the Serra da Estrela mountain range. Once alive with all the quaint characteristics that typify an idyllic rural identity, this town now faces a steep population decrease. Situated in the centre of the Zêzere glacial valley overlooking the town, the design accepts and interprets the natural geology of the site, harnessing the therapeutic thermal waters that continue to flow from the glacier line of the valley. The new centre represents not just a place for leisure and relaxation, but also an investigative laboratory for modern day natural healing therapies.

The town of Manteigas is situated within three very distinct landscapes: a fertile landscape, a socio-cultural landscape, and a landscape of health and wellness. The design intervention responds to all these conditions and is dependent on each in its operation. This thesis is a proposal for a sustainable cycle of local and regional rejuvenation that will not be easily broken. The design proposal aims to build an infrastructure that will revive the identity of the community as a place of study and implementation of natural healing. The proposed design will also act as a catalyst to fuel future development and stimulate the local and regional economies.

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TABLE OF CONTENTS

List of Illustrations	xii
PROLOGUE	1
INTRODUCTION	13
PART I: Understanding the Rural	21
1.0 Rural Areas	23
1.1 Rural Areas and Agriculture	24
1.2 Relationship Between Rural Areas and Cities	26
1.3 The Continuing Allure of the Rural	28
1.4 The Genius Loci of a Rural Place	34
PART II: Challenges Facing Rural Areas	63
2.0 Rural Abandonment	65
2.1 The Ambivalence Towards and Stigma of Rural Areas	66
2.2 Decline of Rural Areas in Portugal	69
2.3 Attempts at Rural Development in Portugal	74
PART III: Finding a Way Forward	81
3.0 Exploring Strategies to Offset Rural Abandonment	83
3.1 Integrating Tourism in the Rural Economy	85
3.2 The Inherent Potential of Portugal's Mountain Ranges	100
3.3 Healing Myth of the <i>Serras</i>	101
PART IV: Precedents and Design Principles	147
4.0 Rurality as a Synonym of Modernity	149
4.1 Precedents of Successful Development in Rural Areas	150
4.2 A Template for Architectural Interventions in the Rural	154
4.3 Improve the Quality of Life	157
4.4 Prevent the Loss of Local Assets	172
4.5 Establish a Healthy Rural Economy	178
4.6 Establish a Long-term Vision for the Rural	185
PART V: Design Intervention	195
5.0 A Place for Leisure, Wellbeing, Research and Reflection	197
5.1 Site Analysis	204
5.2 The Design Intent	214
5.3 Design Outcome	252
CONCLUSION	257
Bibliography	260
Appendices	265

LIST OF ILLUSTRATIONS

Pg. Fg. Description and Source

xxii 0.1 Panoramic View of Manteigas
Photograph by author

PROLOGUE

2 0.2 Location of the Rural Village of Cipreste
Drawing by author

3 0.3 Life in Cipreste from Author's Memory
Drawing by author

4 0.4 Map of the Rural Village of Cipreste
Drawing by author
Map Source: www.google.com

5 0.5 Sketch of Fountain/Laundry in Cipreste
Drawing by author

7 0.6 Family Photo 1
Author's photograph

7 0.7 Family Photo 2
Author's photograph

8 0.8 Sketch of Village in Serra da Estrela
Sketch by author

9 0.9 Sketch of Torre in Serra da Estrela
Sketch by author

INTRODUCTION

10 0.10 Manteigas and the Zêzere River Valley
Photograph by author

12 0.11 Rural Town of Belmont, Serra da Estrela
Photograph by author

18 0.12 Geographic Location of Thesis References
Drawing by author

PART I – UNDERSTANDING THE RURAL

22 1.1 Rural Town of Manteigas, Serra da Estrela
Photograph by author

25 1.2 Digging of Troughs and Planting of Vines
Stanislawski, Dan. *Landscape of Bacchus; The Vine in Portugal*, p. 100.

25 1.3 Vine Terraces Above the Douro River
Stanislawski, Dan. *Landscape of Bacchus; The Vine in Portugal*, p. 100.

25 1.4 Vine Terraces Above the Douro River
Stanislawski, Dan. *Landscape of Bacchus; The Vine in Portugal*, p. 100.

26 1.5 Industrial Town of Staffordshire, England
(<http://geopolicraticus.wordpress.com/2010/03/04/counterfactual-conditionals-of-the-industrial-revolution/>)

26 1.6 *The Cornfield* by John Constable, 1826
(<http://www.nationalgallery.org.uk>)

27 1.7 The Discovery of Romulus and Remus
(<http://www.masterart.com>)

28 1.8 Hadrian's Villa in the Roman Campagna
Photograph by author

29 1.9 Display Model of Villa Adrianna
Photograph by author

30 1.10 *Sanatório das Penhas da Saúde*
Biblioteca de Arte
(<http://www.biblarte.gulbenkian.pt>)

30 1.11 Outdoor Gardens at the Rusk Institute
Johansson Design Collaborative
(<http://www.johanssondesign.com>)

31	1.12	Folklore Dancers – Manteigas (http://www.portugal-villa.com)	41	1.27	Valleys and Rivers of the Serra da Estrela Photograph by author
32	1.13	Olive Museum – Manteigas, Serra da Estrela Photograph by author	42	1.28	<i>Rio Zêzere</i> and the <i>Rio Mondego</i> Drawing by author
32	1.14	Bread Museum – Seia, Serra da Estrela Photograph by author	43	1.29	The Zêzere Stream Near Manteigas Photograph by author
33	1.15	Agritourism in the Douro Valley (http://www.flickr.com/photos/a2z-adventures/4397408463/)	44	1.30	The Sky Conditions Over Manteigas Photograph by author
34	1.16	Delphi, Tholos of Athena Norberg-Schultz, Christian, <i>Genius Loci, Towards a Phenomenology of Architecture</i> , p. 18.	46	1.31	Higher Plateaus Over Manteigas Photograph by author
35	1.17	The Roman Forum Photograph by author	47	1.32	Zêzere Valley Looking South Photograph by author
36	1.18	Aerial Photo of the Zêzere Valley Interpretation Center of the Serra da Estrela (CISE)	48	1.33	Section Key Drawing by author Topography: Municipality of Manteigas
37	1.19	Norberg-Schulz's Concept Diagram by Author	48	1.34	Site Section A Drawing by author Topography: Municipality of Manteigas
39	1.20	Topographical Conditions of Manteigas GoogleEarth	50	1.35	Site Section B Drawing by author Topography: Municipality of Manteigas
39	1.21	Ice Over Manteigas at the Last Ice Age Vieira, Concalo. "Combined Numerical and Geomorphological Reconstruction of the Serra da Estrela Plateau Icefield, Portugal," p. 201.	51	1.36	Site Section C Drawing by author Topography: Municipality of Manteigas
39	1.22	Glacier Ice Tongues Over Manteigas Vieira, Concalo. "Combined Numerical and Geomorphological Reconstruction of the Serra da Estrela Plateau Icefield, Portugal," p. 202.	52	1.37	Aerial Image of Manteigas Interpretation Center of the Serra da Estrela (CISE)
40	1.23	Textures in and Around Manteigas Image by author	52	1.38	Population Distribution in Manteigas Drawing by author Diagnóstico Social Manteigas
41	1.24	Central Plateaus of the Serra da Estrela Photograph by author	53	1.39	<i>Casais</i> House in Manteigas Photograph by author
41	1.25	Lower Plateaus of the Serra da Estrela Photograph by author	53	1.40	The Man-made Conditions in Manteigas Photograph by author

53	1.41	Cobbled Road in Manteigas and St. Peter's Church Photograph by author	70	2.9	First Migratory Wave (http://en.wikipedia.org)
55	1.42	The Fertile Landscape of Rural Manteigas Drawing by author	70	2.10	Second Migratory Wave (http://www.germany.info)
56	1.43	The Region of Serra da Estrela Drawing by author	71	2.11	Ceramic Tile Mural in Toronto Photograph by author
56	1.44	Traditional Activities in the Serra da Estrela (http://www.antonioluiscampos.com)	72	2.12	Salazar's Era Poster (http://www.encyclopedia.com.pt/articles.php?article_id=1094)
57	1.45	Region of Serra da Estrela Map Drawing by author Map Source: (http://www.visitportugal.com)	73	2.13	Poster of the Carnation Revolution (http://www.encyclopedia.com.pt/articles.php?article_id=1094)
59	1.46	Goat and Sheep Herding on the Plateaus (http://www.rt-serradaestrela.pt)	73	2.14	Iconic Photo of the Carnation Revolution (http://www.encyclopedia.com.pt/articles.php?article_id=1094)
PART II – CHALLENGES FACING RURAL AREAS			75	2.15	Population Density Map of Portugal (http://en.wikipedia.org/wiki/Demographics_of_Portugal)
64	2.1	Rural Town of Linhares, Serra da Estrela Photograph by author	76	2.16	<i>Minifundios</i> and <i>Latifundios</i> Image by author
66	2.2	<i>Within the Darkened Wood</i> Jackson, Matthew, <i>The Epic of Gilgamesh</i> , p. 22.	PART III – FINDING A WAY FORWARD		
67	2.3	Fading Places; Town of Folgoso Photograph by author	82	3.1	The Fertile Slopes of Manteigas Photograph by author
67	2.4	Urban Landscape - Times Square, New York Photograph by author	84	3.2	Quaint Town of Linhares, Serra da Estrela Photograph by author
68	2.5	Density Population (1991–2001) Maslanka, Jadwiga. "Demographic Changes in Portugal at the Turn of the 21 st Century," p. 89.	85	3.3	Example of Historic and Cultural Tourism (http://www.wikioutdoor.com/machu-picchu/)
68	2.6	Population Over 65 (1991–2001) Maslanka, Jadwiga. "Demographic Changes in Portugal at the Turn of the 21 st Century," p. 92.	86	3.4	The Douro River Valley in Portugal (http://www.dourovillarental.com)
69	2.7	Predominantly Rural Remote Regions (http://epp.eurostat.ec.europa.eu)	87	3.5	Sun and Sand Tourism in Algarve, Portugal Photograph by author
70	2.8	Portugal's Two Main Migratory Waves BAGANHA, Maria Marques, Jose. <i>Historic Population of Portugal</i> . p. 43.	87	3.6	Lisbon Harbor, Portugal Photograph by author
			87	3.7	Tourism in Serra da Estrela, 1960 (http://www.rt-serradaestrela.pt)

- 88 3.8 Serra da Estrela's Winter Landscape
(<http://www.rt-serradaestrela.pt>)
- 89 3.9 Skiing Chalet in Serra da Estrela
(<http://www.rt-serradaestrela.pt>)
- 89 3.10 Skiers Climbing Ski Slopes
(<http://www.rt-serradaestrela.pt>)
- 90 3.11 Early 20th Century: Tourism in the Serra
(<http://www.rt-serradaestrela.pt>)
- 90 3.12 Tobogganing in Serra da Estrela
(<http://www.rt-serradaestrela.pt>)
- 90 3.13 Skiing Competition, Serra da Estrela
(<http://www.rt-serradaestrela.pt>)
- 91 3.14 The 'Good Star' Monument
(<http://www.rt-serradaestrela.pt>)
- 91 3.15 Tourists in Serra da Estrela
(<http://www.rt-serradaestrela.pt>)
- 92 3.16 Zêzere Glacier Route Trail
Diagram by author
Source: (<http://www.manteigastrilhosverdes.com>)
- 93 3.17 Elevations Along the Glacier Route
(<http://www.manteigastrilhosverdes.com>)
- 94 3.18 The Torre Monument
Photograph by author
- 94 3.19 The Iron Covão Dam
Photograph by author
- 95 3.20 St. Anthony Mountain Meadow
Photograph by author
- 95 3.21 Covão da Metade Picnic Park
Photograph by author
- 96 3.22 Glacier Route Along the Zêzere Valley
Photograph by author
- 97 3.23 Pasture Farming Along the Glacier Route
Photograph by author
- 97 3.24 Placards on the Glacier Route
Photograph by author
- 97 3.25 Points of Interest in the Natural Park
Photograph by author
- 98 3.26 Typical Stone House in the Foreground
Photograph by author
- 99 3.27 Approach from the North to Manteigas
Photograph by author
- 99 3.28 St. Peter's Church, Manteigas
Photograph by author
- 101 3.29 Manteigas Valley
Photograph by author
- 102 3.30 Ancient Sumerian Clay Tablet
(<http://www.fotolibra.com/gallery/49901/ancient-sumerian-clay-tablet-illustration/>)
- 102 3.31 Ancient Chinese Emperor Shennong
(http://www.sccfsac.org/agriculture_livestock.html)
- 102 3.32 Cinchona Bark Layers
(<http://alan.worsley.users.btopenworld.com/pharmacognosy/index.htm>)
- 104 3.33 *Lycopodium Clavatum*
CISE, *Plantas Aromaticas e Mediciniais do Parque Natural da Serra da Estrela: Guia Ethnobotanico*, p. 26.
- 104 3.34 *Vaccinium Uliginosum*
CISE, *Plantas Aromaticas e Mediciniais do Parque Natural da Serra da Estrela: Guia Ethnobotanico*, p. 26.
- 104 3.35 *Silene Foetida*
CISE, *Plantas Aromaticas e Mediciniais do Parque Natural da Serra da Estrela: Guia Ethnobotanico*, p. 27.
- 104 3.36 Elevations on the Serra da Estrela
CISE, *Plantas Aromaticas e Mediciniais do Parque Natural da Serra da Estrela: Guia Ethnobotanico*, p. 27.
- 105 3.37 Oriental Herbal Market
Photograph by author

- 106 3.38 **Athletes Bathing in the *Palaestra***
Yegul, Fikret. *Bathing in the Roman World*, p. 41.
- 106 3.39 **Humoural Medical Doctrine**
Yegul, Fikret. *Bathing in the Roman World*, p. 41.
- 107 3.40 **Ruins at Baiae**
Photograph by author
- 108 3.41 **Greek Baths in Gortys**
Yegul, Fikret. *Baths and Bathing in Classical Antiquity*. p. 28.
- 109 3.42 **Greek Baths in Piraeus**
Yegul, Fikret. *Baths and Bathing in Classical Antiquity*. p. 27.
- 109 3.43 **Greek Baths in Cyrene**
Yegul, Fikret. *Baths and Bathing in Classical Antiquity*. p. 26.
- 110 3.44 **Thermo-mineral Complex in Baiae**
Yegul, Fikret. *Baths and Bathing in Classical Antiquity*. p. 100.
- 110 3.45 **Thermo-mineral Complex in Baiae**
Yegul, Fikret. *Bathing in the Roman World*. p. 49.
- 111 3.46 **Miróbriga Roman-era Baths**
Yegul, Fikret. *Baths and Bathing in Classical Antiquity*. p. 79.
- 111 3.47 **Conímbriga Baths**
Yegul, Fikret. *Baths and Bathing in Classical Antiquity*. p. 81.
- 111 3.48 **Roman-era Baths in Conímbriga**
Yegul, Fikret. *Bathing in the Roman World*. p. 65.
- 111 3.49 **Miróbriga and Conímbriga**
Diagram by author
- 112 3.50 ***Los Baños del Alcázar Califal***
(http://www.fmschmitt.com/travels/spain/cordoba_province/cordoba/CordobaArabBaths.html)
- 112 3.51 **Cemberlitas Hammam**
(<http://www.cemberlitashamami.com>)
- 113 3.52 **Section of the *Cemberlitas Hammam***
(<http://www.cemberlitashamami.com>)
- 113 3.53 **Plan of *Cemberlitas Hammam***
(<http://www.cemberlitashamami.com>)
- 114 3.54 ***De Thermis***
(http://books.google.ca/books?id=d6r4mmZocacC&source=gbs_similarbooks)
- 114 3.55 **Vicenz Priessnitz**
(http://en.wikipedia.org/wiki/Vincenz_Priessnitz)
- 114 3.56 **Sebastian Kneipp**
(http://www.amaluxherbal.com/amodality/sebastian_kneipp_hydrotherapy.html)
- 115 3.57 ***Salon de Conversation, Baden-Baden***
(<http://www.hberlioz.com/Germany/baden9.htm>)
- 116 3.58 **High Rock Spring, New York**
Spas and Balneology in the United States
(<http://geoheat.oit.edu/pdf/bulletin/bi034.pdf>)
- 116 3.59 **Caracalla Spa Complex in Baden-Baden**
(http://www.carasana.de/home/en/ct_plan.html)
- 116 3.60 **Population Growth in Baden-Baden**
Sanner, Burkhard, *Baden-Baden a Famous Thermal Spa with a Long History*, p. 17.
- 117 3.61 **Blue Lagoon, Iceland**
(<http://travelmodus.com/blue-lagoon-iceland.html>)
- 121 3.62 **Recharging of Aquifer in Manteigas**
(http://projects.itn.pt/Paula_Carreira/Carreira%20et%20al%202011.pdf)
- 123 3.63 **Map of Spa Resorts in Portugal**
Diagram by author
Source: (<http://www.saudelar.com>)
- 123 3.64 **Existing Spa in Manteigas**
Photograph by author
- 124 3.65 ***Wanderer Above the Sea of Fog***
(http://en.wikipedia.org/wiki/Wanderer_above_the_Sea_of_Fog)
- 125 3.66 **Brehmer's Hospital in Görbersdorf**
(http://www.uwec.edu/jolhm/EH4/TB/Earlytuberculosis_treatments.htm)
- 125 3.67 **Brehmer's Hospital in Görbersdorf**
Dr. Brehmer's Sanatorium
(<http://www.akpool.co.uk/postcards>)

127	3.68	<i>Sanatório das Penhas da Saúde</i> Biblioteca de Arte (http://www.biblarte.gulbenkian.pt)	133	3.80	<i>Sanatório das Penhas da Saúde</i> (2007) Biblioteca de Arte (http://www.biblarte.gulbenkian.pt)
127	3.69	<i>Sanatório das Penhas da Saúde</i> Biblioteca de Arte (http://www.biblarte.gulbenkian.pt)	134	3.81	<i>Sanatório das Penhas da Saúde</i> (2007) Biblioteca de Arte (http://www.biblarte.gulbenkian.pt)
127	3.70	<i>Sanatório das Penhas da Saúde</i> Biblioteca de Arte (http://www.biblarte.gulbenkian.pt)	135	3.82	<i>Sanatório das Penhas da Saúde</i> (2007) Biblioteca de Arte (http://www.biblarte.gulbenkian.pt)
127	3.71	<i>Sanatório das Penhas da Saúde</i> Biblioteca de Arte (http://www.biblarte.gulbenkian.pt)	135	3.83	<i>Sanatório das Penhas da Saúde</i> (2007) Biblioteca de Arte (http://www.biblarte.gulbenkian.pt)
128	3.72	<i>Sanatório das Penhas da Saúde</i> Biblioteca de Arte (http://www.biblarte.gulbenkian.pt)	138	3.84	Sanatorium at Paimio Fleig, Karl, <i>Alvar Aalto</i> , p. 23.
128	3.73	<i>Sanatório das Penhas da Saúde</i> Biblioteca de Arte (http://www.biblarte.gulbenkian.pt)	138	3.85	<i>Paimio Chair</i> Fleig, Karl, <i>Alvar Aalto</i> , p. 25.
129	3.74	<i>Sanatório das Penhas da Saúde</i> Biblioteca de Arte (http://www.biblarte.gulbenkian.pt)	139	3.86	Lovell Health House Fritz, Schmid, <i>Richard Neutra, Building and Projects</i> , p. 39.
129	3.75	<i>Sanatório das Penhas da Saúde</i> Biblioteca de Arte (http://www.biblarte.gulbenkian.pt)	139	3.87	Falling Water (http://www.wright-house.com/frank-lloyd-wright/fallingwater.html)
131	3.76	<i>Sanatório das Penhas da Saúde</i> (2007) Biblioteca de Arte (http://www.biblarte.gulbenkian.pt)	140	3.88	The Salk Institute (http://fojumo.wordpress.com/2010/03/25/the-key-to-the-work-of-kahn/)
131	3.77	<i>Sanatório das Penhas da Saúde</i> (2007) Biblioteca de Arte (http://www.biblarte.gulbenkian.pt)	141	3.89	Assisi, Italy (http://pinayflyinghigh.wordpress.com/category/featured-destination)
132	3.78	<i>Sanatório das Penhas da Saúde</i> (2007) Biblioteca de Arte (http://www.biblarte.gulbenkian.pt)	141	3.90	Manteigas, Portugal Photograph by author
132	3.79	<i>Sanatório das Penhas da Saúde</i> (2007) Biblioteca de Arte (http://www.biblarte.gulbenkian.pt)	PART IV – PRECEDENTS AND DESIGN PRINCIPLES		
			148	4.1	Village of Lingares, Serra da Estrela Photograph by author
			150	4.2	Panorama of Vals (http://goeurope.about.com/od/cinqueterehiking/ss/cinque_hiking.html)
			150	4.3	Vals Thermae Baths Peter Zumthor and Sigrid Hauser, Peter Zumthor, <i>Therme Vals</i> , 144

151	4.4	<i>Vals Thermae</i> Baths Interior Peter Zumthor and Sigrid Hauser, Peter Zumthor, Therme Vals, 130	170	4.21	Section of Thermal Water Pools Rendering by author
152	4.5	<i>Cinque Terre</i> Coastline (http://www.agriturismo.st/it/italia/Cinque-Terre/)	171	4.22	Outdoor Pools Rendering by author
152	4.6	<i>Cinque Terre</i> Connecting Trail (http://www.destination360.com/europe/italy/cinque-terre-hiking)	173	4.23	Material Palette Rendering by author
153	4.7	Trail Map of the <i>Cinque Terre</i> (http://goeurope.about.com/od/cinqueterrhiking/ss/cinque_hiking.html)	174	4.24	Courtyard Rendering by author
154	4.8	Town of Manteigas Photograph by author	175	4.25	Stone Sauna Room Rendering by author
155	4.9	House Against Granite Rock Photograph by author	176	4.26	Thermal Water Bath Rendering by author
156	4.10	Design Principles Diagram by author	177	4.27	Aroma Therapy Bath Rendering by author
158	4.11	Employment Potential Diagram by author	177	4.28	Roof Gardens Rendering by author
159	4.12	Wealth from Local Resources Diagram by author	179	4.29	Healthy Local Economy Rendering by author
160	4.13	Advancing the Sense of Belonging Diagram by author	181	4.30	Agriculture Industry Revived Rendering by author
161	4.14	Community Exchange Diagram by author	182	4.31	Research and Development Laboratory Rendering by author
163	4.15	Library Rendering by author	184	4.32	Tourism Industry Rendering by author
164	4.16	Classroom Rendering by author	186	4.33	Typical Office Rendering by author
165	4.17	Auditorium Rendering by author	187	4.34	Meeting Room Rendering by author
166	4.18	Water Therapy Rendering by author	189	4.35	Winter View Rendering by author
168	4.19	Medical Clinic Rendering by author	192	4.36	Night View Rendering by author
169	4.20	Hikers Along the Glacier Trail Rendering by author			

PART V – DESIGN INTERVENTION			
196	5.1	View Over the Town of Manteigas Photograph by author	
198	5.2	Map of the Zêzere Glacier Valley Interpretation Center of the Serra da Estrela (CISE)	
199	5.3	Section of the Zêzere Glacier Valley Diagram by author Topography source: Municipality of Manteigas	
200	5.4	View of the Proposed Site Looking North Photograph by author	
201	5.5	View of the Proposed Site Looking South Photograph by author	
202	5.6	Location of the Proposed Design Site Diagram by author Topography source: Municipality of Manteigas	
203	5.7	Section Site Relationship (North/South) Diagram by author	
204	5.8	Aerial of the Proposed Design Site Interpretation Center of the Serra da Estrela (CISE)	
205	5.9	360 Panorama Photograph of Site Photograph and Diagram by author	
206	5.10	Site Model – Plan View Model by author	
206	5.11	Site Model – Perspective View Model by author	
207	5.12	Site Model – South View Model by author	
207	5.13	Site Model – View from Town Model by author	
207	5.14	Site Model – The Zêzere River Model by author	
208	5.15	Location of the Fault Zone as Illustrated by Professor Chaminé Diagram by author Topography source: Municipality of Manteigas	
			209 5.16 The Zêzere River Photograph by author
			209 5.17 Close up of the Zêzere River at the Site Photograph by author
			210 5.18 Plan of Glacier Trail Diagram by author Topography source: Municipality of Manteigas
			210 5.19 Portion of the Glacier Trail to the South Photograph by author
			211 5.20 The Existing Water Pools from the West Photograph by author
			211 5.21 Close up of the Existing Water Pools Photograph by author
			212 5.22 View from Design Site to Manteigas Diagram by author Topography source: Municipality of Manteigas
			212 5.23 Rua do Pastor Photograph by author
			212 5.24 Rua National 338 Photograph by author
			213 5.25 View of Sky, West from Proposed Site Photograph by author
			213 5.26 View of Sky, South from Proposed Site Photograph by author
			213 5.27 View of Sky, West from Proposed Site Photograph by author
			214 5.28 Author’s Conceptual Diagram of Design Intent Diagram by author Topography source: Municipality of Manteigas
			215 5.29 Transfiguration of the Architectural Form Diagram by author
			216 5.30 Design Parti Diagram by author

217	5.31	Transfiguration 1: Framing Boundary Diagram by author	226	5.47	Transfiguration 10: Tapering of the Building Form Diagram by author
217	5.32	Transfiguration 2: The Split Diagram by author	227	5.48	Transfiguration 11: Carving of the Roof Plane Diagram by author
218	5.33	Transfiguration 3: Underpass Diagram by author	228	5.49	Project Exterior – West View Rendering by author
218	5.34	Transfiguration 3: Underpass – NS Section Diagram by author	229	5.50	Project Exterior – South View Rendering by author
218	5.35	Transfiguration 4: Courtyard Diagram by author	230	5.51	Author’s Design Sketches Sketches by author
218	5.36	Transfiguration 5: Exterior Pool Platform Diagram by author	232	5.52	First Floor Plan Drawing by author
218	5.37	Transfiguration 6: Projection of the Stream Diagram by author	233	5.53	Second Floor Plan Drawing by author
219	5.38	Transfiguration 7: Exterior Platform Diagram by author	234	5.54	Third Floor Plan Drawing by author
219	5.39	Transfiguration 8: The Well Diagram by author	235	5.55	Fourth Floor Plan Drawing by author
220	5.40	Transfiguration 9: Main Entrance Diagram by author	236	5.56	Fifth Floor Plan Drawing by author
221	5.41	Main Entrance Rendering by author	237	5.57	Roof Plan Drawing by author
222	5.42	Water Gardens and Parking Plan Diagram by author	239	5.58	Roof Gardens Rendering by author
223	5.43	Section A: Parking Levels Diagram by author	241	5.59	Circulation Scheme Diagram by author
223	5.44	Section B: The Water Gardens Diagram by author	242	5.60	Section AA Rendering by author
223	5.45	Section C: Water Gardens Diagram by author	243	5.61	Section BB Rendering by author
224	5.46	General Access Plan Diagram by author	244	5.62	Section CC Rendering by author

245	5.63	Section DD Rendering by author
247	5.64	Section EE Rendering by author
248	5.65	Interior Spa Rendering by author
249	5.66	Sun Room Rendering by author
249	5.67	Interior Thermal Pool Rendering by author
251	5.68	Restaurant Rendering by author
254	5.69	Manteigas 2010 Photograph by author
255	5.70	Desired Outcome Rendering by author
259	5.71	Reactivated Fertile Fields Rendering by author





PROLOGUE

When recalling my earliest memories, I am taken back to the late 1980s and to daily life in a rural village of Cipreste, located on the coastal plains of mainland Portugal. One of the earliest recollections I have is of me as a little girl, holding firmly onto my mother's hand, as the two of us walk down an unpaved road that leads from our house to the main village road. We then follow the main road to a nearby vineyard where my mother would spend the day working on the land. In our village, my aunts, uncles and grandparents all had their houses and farmlands nearby. For a little girl, growing up in a small village full of extended family meant that each day you could have at least a couple of your cousins to play with. For the adults, daily life consisted of working on the land or tending to the farm animals. And when the time came to harvest the fields, family and neighbors would unite to help each other. When working for others in the village, compensation came in one of two forms: you either received money for your work, or more commonly, you were given a promise, a sort of assurance that meant you could count on others to return the favor when the time came for your land to be tended to. Such was everyday rural life in Cipreste that people of the village were depended on one another.

Each day in the village started quite early, and to this day I still remember the many fragrant mornings when I grasped my mother's hand and together we made our way to another captivating field where the grownups spent the day working on orchards and vineyards that seemed to cover entire hills and valleys. And while the grownups worked, a blanket was set on the ground for the children; the younger ones would nap, while the older ones played. At regular intervals, adults showed up to tend to the needs of the children. For a curious little girl, each journey to a farm field meant a day spent in the most enchanting of places full of children to run and play with. And while the adults picked grapes, trimmed corn stalks, and toiled with the soil, the children would find new ways to play and explore the wonders around them. Together with cousins and neighborhood friends we ventured into our surroundings to pick wild flowers, or to play hide-and-go-seek, taking full advantage of massive tree trunks as ideal places to hide.



Figure 0.2: Location of the Rural Village of Cipreste.

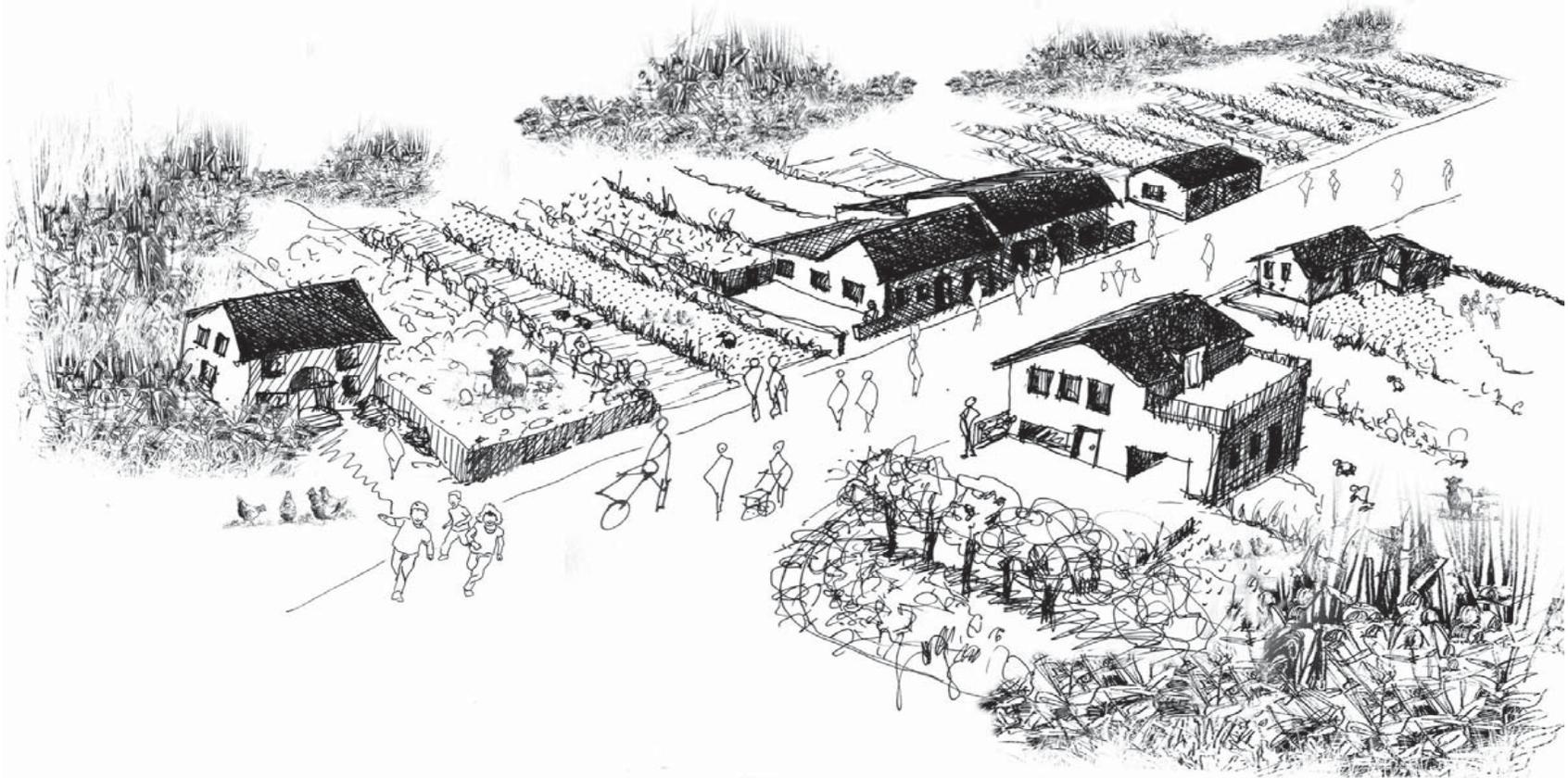


Figure 0.3: Sketch of Life in Rural Cipreste from Author's Memory.

The rural village of Cipreste, where I was born and lived for the first 5 years of my life, is located on the coastal plains of the Região Centro (Central Region) of Portugal, sandwiched between the coastal port city of Figueira da Foz, and the old university city of Coimbra. By the late 1980s, the village itself only had approximately two hundred inhabitants and the houses were widely scattered and surrounded by vast agricultural fields that always seemed to be in full production. I recall those days as being filled with sounds of commerce that seemed to emerge from everywhere. As the region's fisherman's wives passed by the coastal villages, they would shout out "pescada fresca" as they delivered fish from the most recent catch. The smell of freshly baked bread filled the air each day, as the local baker passed by with his cart.



Fields where we played

Forest where we ran

Village Centre

Local Fountain and Laundry House

Mini Market

Tia Licina's House

Avô and Avó's House

Distribution Centre

Our Home

Backyard that we explored

Tia dos Anjos's House

Tio Manuel's House

Cafe

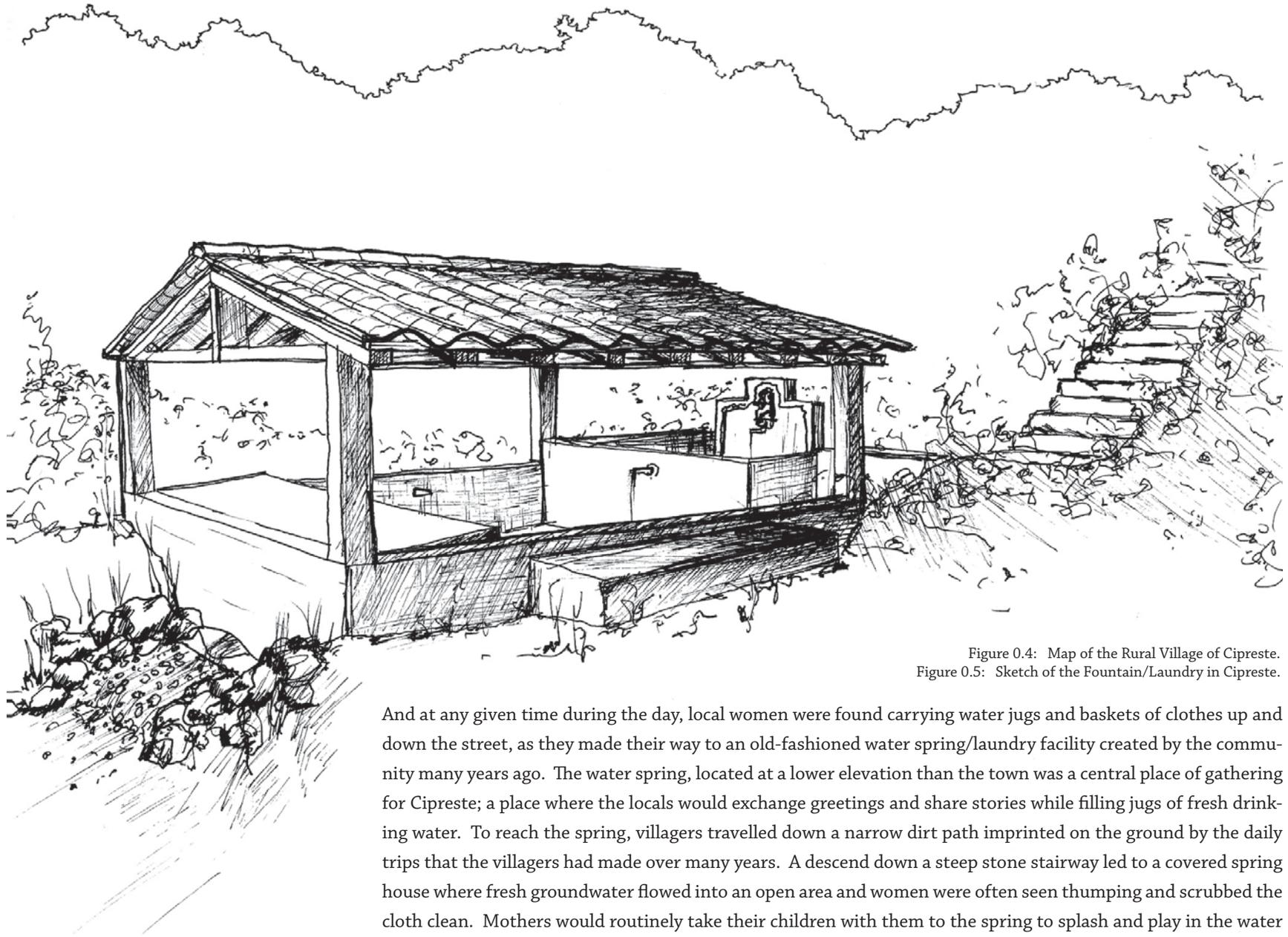


Figure 0.4: Map of the Rural Village of Cipreste.
Figure 0.5: Sketch of the Fountain/Laundry in Cipreste.

And at any given time during the day, local women were found carrying water jugs and baskets of clothes up and down the street, as they made their way to an old-fashioned water spring/laundry facility created by the community many years ago. The water spring, located at a lower elevation than the town was a central place of gathering for Cipreste; a place where the locals would exchange greetings and share stories while filling jugs of fresh drinking water. To reach the spring, villagers travelled down a narrow dirt path imprinted on the ground by the daily trips that the villagers had made over many years. A descend down a steep stone stairway led to a covered spring house where fresh groundwater flowed into an open area and women were often seen thumping and scrubbed the cloth clean. Mothers would routinely take their children with them to the spring to splash and play in the water while they tended to their errands.

To a young girl, the rural village of Cipreste seemed like a very lively community.

Much later in life I would learn that the reality of rural life in Portugal had been one of steep decline throughout the entire country from the 1960s on. *Littoralisation*, defined as the “concentration of economic activity in coastal areas”, had been responsible for many young people abandoning their rural villages in search of better economic opportunities in the coastal clusters of Lisbon and Porto. Others ventured even further, making the transatlantic journey to North America in search of a more prosperous life. In the late 1970s, two of my uncles from my mother’s side had left our village, immigrating to Canada in search of a more promising future. From letters and telephone conversations with her brothers, my mother learned of the opportunities for a better life that were available in Canada.

The process of rural depopulation, of the young working age people abandoning their rural villages, had been ongoing throughout much of Portugal for decades. By the late 1980s the only people remaining in rural areas were the old or the few young people for whom work on the land provided not only a meager existence, but the only alternative available. Under such circumstances, locally grown crops were used to feed the household, and all additional harvest yields were sold to a local merchant for additional funds put towards the upkeep of the home. However, due to government regulations imposed on single farmers, it became more and more difficult for families to rely solely on agriculture. For many families, true survival required that at least one family member leave the village and find permanent employment in a more economically active region of Portugal.

My father was one of the many young men that left in search of employment in other parts of Portugal. Most males from our village traveled west to work in the coastal cities where nearly all of Portugal’s industrial and commercial industries are located. However, my father’s work took him in the opposite direction, away from the developed coastal region and into the remote mountainous areas of central and eastern Portugal. My father worked as an electrical linesman for a national utility company, an occupation that required him to travel to the many isolated rural regions throughout Portugal (where electricity was still not available). It is not surprising then that while other working males in the village could return home each night from the nearby coast, my father’s commitments kept him away for long periods of time. Father usually came home only on the weekends, and then would leave each Sunday night on the long journey back to another remote job site.

Each time my father came home from work, he would find a unique way to make each moment memorable for the whole family. Father roasted chestnuts and seated his little girls by the fireplace to tell stories of a mountainous region called Serra da Estrela (Star Mountain) where he worked. Father would describe Serra da Estrela as the highest mountain in Portugal full of tiny rural villages made of stone houses and chestnut forests, where you can collect fist-sized chestnuts from the forest floor. Father showed us pictures of the snow-covered Serra da Estrela Mountain, promising, “one day we’ll visit this area together”.

I remember gazing at the pictures of my father at work, and of him surrounded by white snowy hills on his time off. He tried his best to describe what all the white stuff around him was, how it felt, and what you could do with it. But for us in the coastal plains snow was very foreign, as we only knew of sun and rain during the different seasons (even hail fell very rarely in our area and never stayed on the ground for too long). He described Serra da Estrela as a region full of valleys and peaks where herds of sheep and goats grazed, and on a few occasions, father brought back some of the renowned cheeses of the region. On subsequent trips, he brought for my younger sister and I, warm sheep's wool slippers and a wool sweater for my mother; and on other occasions, sacks full of chestnuts, hazelnuts or cherries, depending on the season. It seemed that every time my father came home from another Serra da Estrela job site, he brought back some other foreign and unique product from the region, and the entire house was filled with stories of a place that we all yearned to visit one day.

In spite of all the joy that my father's short visits brought, he was away from home too often, and for much too long, leaving my mother alone with two young children to care for (not to mention an entire farm-land to attend to). During those days, my mother spoke of a better life that her brothers enjoyed in a distant country called Canada, where work seemed to be abundant, families could live together and children could grow up with many opportunities. Mother and father both grew up under very poor conditions, and for them education was something that their parents could not afford for them. This was something available only to the very rich. Their only alternative in life was to make a living working on the local fields. That said, their primary goal in life was to ensure that my sister and I would get a good education and they worked hard to achieve that. Through his description of life in Serra da Estrela, my father gave our family the courage to hope for a world outside of our rural village. But it was my uncles, through their stories and pictures that fueled our imaginations of distant worlds, and ultimately my parents would decide that a move to Canada would provide a much brighter future for their children.

With a firm goal in mind, our family traveled by train to Lisbon to obtain passports and to submit our official documents at the Canadian embassy. After many months, news finally came that our application had finally been accepted and that we had only a few months to make a permanent move to Canada. This day brought immense joy as well as sadness all at once.



Figure 0.6: Photo of My Father, Younger Sister and Me, Cipreste, 1988.



Figure 0.7: Photo of My Father at Work in the Serra da Estrela Mountains, 1988.

In knowing that his days of working in the Serra da Estrela region would soon come to an end, my father was very keen to share with his family a place that had given him immense joy. It was already mid-January, and with only a few weeks left before embarking on a plane journey across the ocean, my father arranged a family trip to the mountains. We set out in my father's work van, driven by one of his good friends and co-worker.

As we left the coastal plains we gradually ascended through rugged hills and mountainous areas characterized by a landscape of granite boulders and houses made of the local rocks. On a few occasions our vehicle stopped and pulled over to the side of the road to allow the local shepherds and their herds of sheep to pass the mountain roads. The shepherds greeted us and pointed out the local sites worth visiting. They told us that in warmer weather, they were able to take their herds to the higher pasturelands, but at this time of the year, they could only take them around the valley slopes. Further on we saw random patches of grain crops in the lowlands and river valleys and herds of sheep and goats grazing on the hill slopes. Along our drive we noticed that many of the stone houses in the region were abandoned and overtaken by shrubbery. It was quite clear that rural depopulation in this part of the country was a lot more prevalent than in other parts of Portugal.

The ultimate goal of my father on this trip was for my mother, sister and I to see snow, and for all of us to reach the highest point on the mountain together: a plateau point known as the *Torre* (the Tower). Due to the national reputation of being the highest point in the country, our journey to the *Torre* was one that many other Portuguese have set out to make, almost like



Figure 0.8: Author's Sketch of a Village in the Serra da Estrela. Completed During the March, 2010 Research Trip.

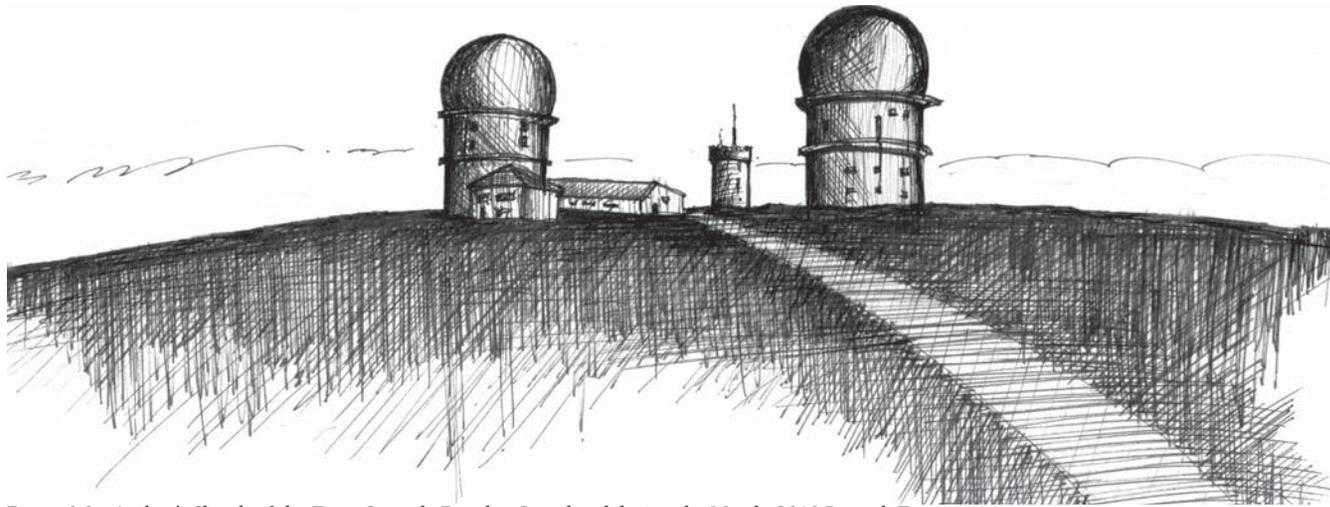


Figure 0.9: Author's Sketch of the *Torre*, Serra da Estrela. Completed during the March, 2010 Reserch Trip.

a pilgrimage. The drive up the mountain was very rough, and in many sections the roads seemed unfinished. My mother would close her eyes and pray at every winding mountain turn.

On our way to the summit we stopped at a local village to have lunch. My father insisted that we try the local cheese. Renowned throughout Portugal for its high quality, the cheese was definitely too strong for a child to appreciate (but the grown-ups seemed to enjoy it a great deal). After a brief rest and a visit to a local shop, we were back on our way; our excitement increasing as we started seeing white sparkles on the ground. It was a matter of time before we could see the snow-covered mountaintops. With the winding roads getting worse the higher we ascended, it was my father's adventurous spirit that urged us to reach the top.

At the apex of our arduous journey, we finally reached the plateau, marked by two (modern) weather stations. In the shadow of the *Torre* (a fortification tower built as a reference point in the early 19th century by king João VI) we marveled at the view of the surrounding landscape. But most important of all, we played in the snow.

This is a memory embedded deep in my psyche. The voice of my father reverberating in my mind: "you are now at the highest point in mainland Portugal".

In a few weeks we would depart on an even longer journey, to Canada.









INTRODUCTION

“Rurality is no longer represented as a synonym of a concrete condition of opposition and marginalization vis-à-vis modernization processes, but rather as a synonym of modernity (or post-modernity) expressed through the discovery and valorization of the differences, of the authentic and genuine.”¹

To journey past the periphery of the contemporary city is to engage in a subtle junction, a spatial and temporal realm where *the rural* begins. Though the specific natural conditions of rural landscapes may vary, it is their presence, their permanence which will qualify our understanding of them. Simply put, only when the natural conditions reveal themselves to be of ideal quality do man-made settlements, structures, and other associated cultural spaces for gatherings emerge. Agriculture was, and continues to be, the primary economic segment in most rural areas, allowing rural villages and towns to sustain themselves while also supporting life in the city by providing raw products and materials.

Before immigrating to Canada in the late 1980s, my earliest memories are of living in a community comprised of widely scattered houses surrounded by expansive fields of crops. Portugal’s cultural identity (as much as my own) is defined by the high percentage of its land mass covered mainly by rural settlements. This distinct identity is also defined through strong traditions linked to folk and harvest festivals, music, gastronomy, religion, and agriculture. The typical rural resident in Portugal has a developed understanding of their land. Knowledge of the local soils, waters in their various forms (whether for watering crops, drinking or even for healing), as well as understanding of local plants with medicinal properties is deeply ingrained in every rural dweller. My own memories of breathing pine-scented air, eating freshly picked fruits, bathing in thermo-mineral waters, and being given medicines concocted by elders from local plants to cure common childhood illnesses, instilled in me an understanding of the benefits of rural living and helped me find an appreciation for rural settings. Although my memories present a highly romanticized vision of the rural, in reality, life in Portugal’s rural communities has been in steep decline from the second-half of the 20th century to the present.

Figure 0.10: Manteigas and the Zêzere River Valley.

Figure 0.11: Rural Town of Belmont, Serra da Estrela.

As with most western countries, in Portugal, the process of industrialization had dramatically changed the relationship between outlying territories and major cities. The most visible outcome of this change was rural depopulation. Over the course of a single century, a large labor force had migrated from the rural areas to fill the labor demands of the industrial city. Ultimately, a process of depopulation that had started during the Industrial Revolution had continued, becoming even more pronounced in the later half of the 20th century when agriculture experienced a revolution of its own.ⁱ In Portugal, a great tide of people from the country's interior moved to urban clusters located on the western Atlantic coast, stretching from the capital of Lisbon to the northern city of Porto. Rural areas located in the deep interior regions of the country were the ones most severely effected by this population shift. In the most interior areas of Portugal, sustenance farming was the norm, with smaller plots of land producing limited agricultural outputs that were not positioned to compete with high yields of larger modernized farms. As a result, these areas were seen as not being economically valuable for government support, or an official rural development strategy that would supplement agriculture.

This was the process by which the economic fabric of many rural areas in Portugal unraveled. And as the economic conditions worsened, it catalyzed the decline of essential services, and in many cases led to outright abandonment by the young population. The increasingly ageing populations that remained in the rural areas were in no position to initiate change on their own. As a result, today, many rural communities in Portugal are significantly neglected, with a once strong cultural identity and traditional heritage quickly disappearing. With frequent trips taken back to Portugal over the last two decades I have been able to witness firsthand the decline of the cultural fabric of Cipreste (the village where I grew up), amongst other rural villages of similar size found throughout the country. With each subsequent visit back to Cipreste and surrounding rural villages, I've encountered fewer younger people, a decline of essential services and traditional events and festivals, as well as a deteriorating architectural fabric.

In an effort to explore solutions to this degradation, this thesis turns to the rural town of Manteigas, (located in the heart of the Serra da Estrela Mountains of Portugal), to analyze rural decline and propose a new vision for revival through architectural design. Benefiting from a rich bio-diversity, clean mountain air and thermo-mineral hot springs, Manteigas is found nestled into an amphitheater-like glacial scar, between two dominant plateaus at the end of the Zêzere River Valley. I first visited the town in March 2010, at which time I met with several inspiring professors, researchers, architects, biologists, geologists, local rural residents, and business owners, with whom I had the opportunity to share my own ambitions on ways to address rural decline. To my surprise I discovered through those conversations and interviews that perhaps rural space in Portugal has not been completely neglected. There were in fact numerous existing groups whose vision for the protec-

i. Dubbed the 'Green Revolution', this was a process that introduced modern seeds, fertilizers and machinery to farmers worldwide.

tion of Portugal's rural heritage and natural environment was quite similar to my own. Many of those whom I approached expressed an interest in exploring the rich natural diversity of Portugal's mountain regions, but pointed out that the region lacked a built environment that makes full use of the unique natural resources that could be harnessed to attract interest to the region.

José Conde, a biologist at the *Interpretation Centre of the Serra da Estrela* (CISE) was part of the original ethno-botanical research team and very active researcher and resident in this mountainous region. Together with José, I went on a guided tour of the CISEⁱⁱ science facility located in the Municipality of Seia, which allowed me to see the Serra da Estrela beyond its statistics of population decline and abandonment, as a place with a very unique and very rich biodiversity. José was the first to inform me of the current research being undertaken into the medicinal use of the plants from this region.

I also had the opportunity to meet with Anabela Marisa Azul, Researcher at the Centre for Functional Ecology, Department of Life Sciences, at the University of Coimbra. Anabela was involved in a research project focused on the grass family diversity within the higher altitudinal areas of the Natural Park of Serra da Estrela in 2006. The project involved several researchers and professors from the University of Coimbra and various professionals from CISE. The objective of the project was:

*"[to] exchange knowledge between a main centre of research and a rather remote part of the country ...encouraged for the desirable outcomes in strengthening the scientific and social structure of the country. Thoughtful education away from the main centres stimulates local innovation and encourages a healthy establishment of the population in the countryside."*³

Anabela's recent initiatives are aimed at educating rural children and adults on the scientific research being undertaken relating to rural conditions, highlighting the importance of regional plants, and to teaching farming methods that ensure that the future of rural space in Portugal is a sustainable one.

Given the ongoing interest in promoting Portugal's rural areas and provided that most rural communities in Portugal were originally founded in places where the harmonious equilibrium between natural conditions proved to be most profound, it is the goal of this thesis study to once again test the capacity of architecture to cultivate a renewed cultural identity from a modern context.

ii. CISE located in the Municipality of Seia was established in 2000 and is primarily dedicated to promoting the knowledge and dissemination of environmental heritage of the Serra da Estrela Region. One of the main objectives of the centre is to "to promote activities in the interpretation of nature, supporting scientific research, develop projects to promote environmental education and nature tourism."²

This study is organized as follows:

Part I, *Understanding the Rural*, provides a detailed definition of rural areas by analyzing the evolution of rural space with specific focus on the rural areas in Serra da Estrela, and the forces which have both attracted and continue to attract people. Rural areas will be presented as an environment wherein an intimate connection with nature can be experienced and where a stronger sense of community is capable of thriving. This chapter relies on two key concepts: Christian Norberg-Schulz notion of *genius loci* (a juncture of nature and society) and Edward Casey's distinction of nature and culture, to establish a framework by which the character of Manteigas might be better understood.

Part II, *Challenges Facing Rural Areas*, consists of an in-depth interrogation of the inherent challenges that have constrained development in the rural realm, looking closely at the contemporary ambivalence towards rural areas. In rural Portugal this manifests as both a generational and spatial divide. Moreover, the reasons behind the decline of rural areas in Europe and Portugal are examined. Part II concludes with an examination of attempts towards rural development initiated in Portugal during the second-half of the 20th century. Those attempts ultimately proved to be ineffective at spurring growth in Portugal's interior, subsequently leading to further decline.

Part III, *Finding a Way Forward* will explore a strategy to offset rural decline and cultivate a new identity through architecture. Integrating tourism into Portugal's Serra da Estrela mountain range at Manteigas offers a vision of growth centered on the healing potential of the local natural conditions. The rich diversity of plants with medicinal properties, therapeutic thermo-mineral waters, and high altitude mountain air in the area are used to support the design of a health research and therapy center. The historic medicinal use of local flora is explored as a precursor to the modern science of ethno-pharmacology.ⁱⁱⁱ It is a practice that has led to the discovery of new treatment drugs for some of the most prevalent diseases of our times. Additionally, thermo-mineral water therapy is traced as a historic practice from antiquity to the current research on the positive effects that immersion in water has on the human body. Lastly, speculation is made on the possible benefits of high altitude air to complete the triad that underpins the siting of the architectural intervention. Taking advantage of the therapeutic potential of nature, Manteigas is presented as a healing place, where architecture can successfully prompt revival in the rural realm.

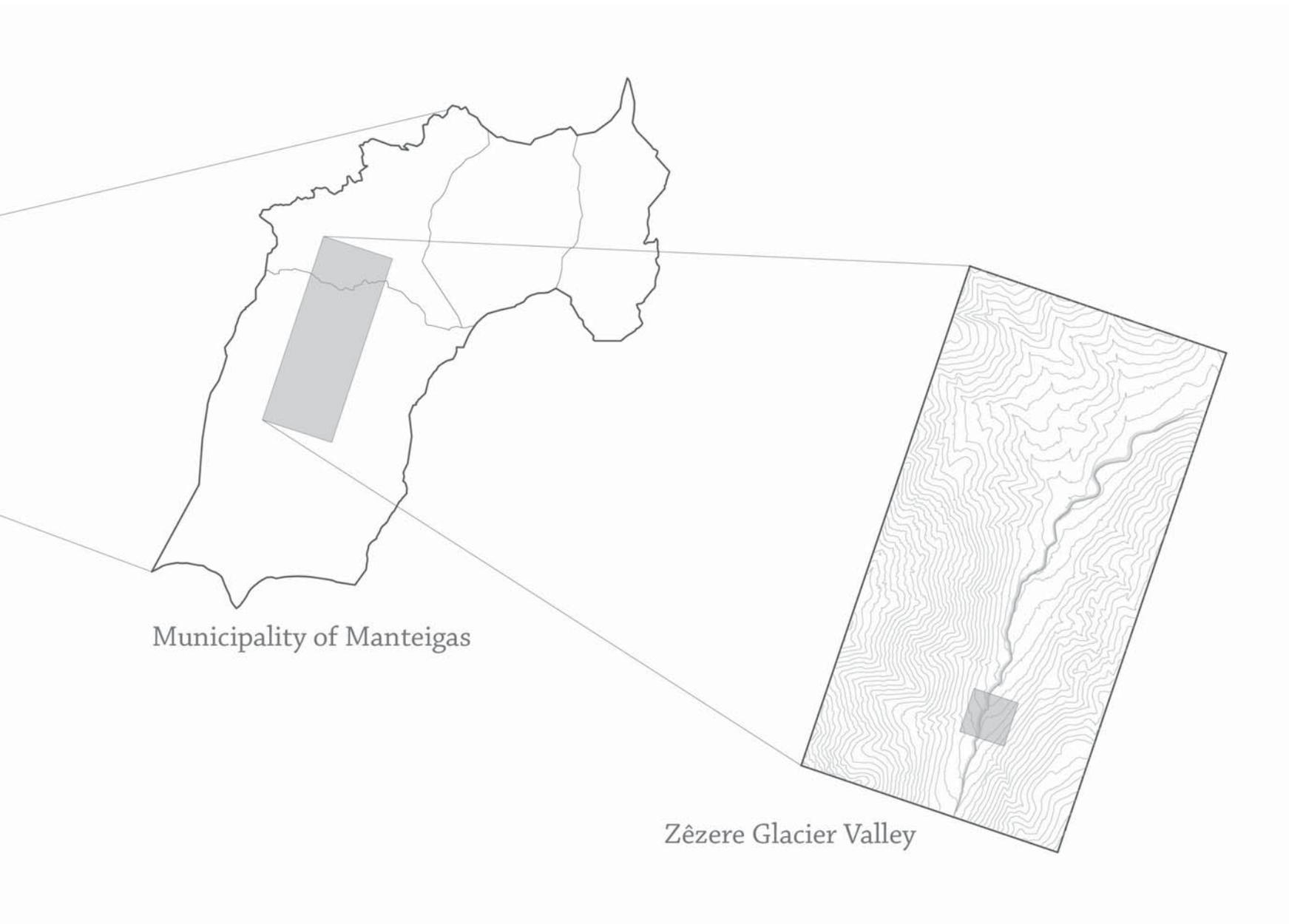
iii. Ethno-pharmacology is the study of the medicinal use of plants with medicinal properties by different cultures around the world.

In Part IV, *Design Principles*, precedents for rural development are presented that situate architecture as the core strategy to reverse rural decline, and reintroduce prolonged interest in a vibrant community. As an initial instrument towards revival, the proposed design intervention in Manteigas will have the primary objective of improving the quality of life by fulfilling not only the standard quantitative indicators of increasing wealth and providing employment, but also by satisfying a set of qualitative indicators such as enhancing the built environment, improving local education and health services, allowing spaces for recreation, and creating a sense of social belonging. What is more, the proposed intervention also follows a strategy to prevent the loss of the local assets while establishing a healthy local economy. It proposes the establishment of a long-term vision that will benefit Manteigas years into the future.

Finally in Part V, *Design Intervention*, the catalytic project emerges from the unique natural conditions found in Manteigas, and is presented as a regional hub for research and treatment through natural therapies. Regional agriculture is reintroduced and promoted as fertile soils become increasingly central to the cultivation of medicinal plants. Fields that were previously abandoned are reactivated as extensions of the research space, and become a primary source of raw material used by the research and treatment facilities. Local farmers in turn benefit from the reinvigorated activity and become active stakeholders and guardians of the rich biodiversity found on the mountain. Furthermore, the inclusion of learning spaces in the design offer opportunities for community involvement in the redevelopment of their town. The project will be an assertive intervention in the Zêzere Glacial Valley, deeply embedded in the context of its surroundings in order to amplify the intrinsic qualities of the region and symbolize a reawakening of a once marginalized rural community. The siting and form allows for the physical and symbolic expression of the unique conditions found on the site and provide the user with a dramatic experience of both the building and the surroundings.



Figure 0.12: Geographical Location of Thesis References.



Municipality of Manteigas

Zêzere Glacier Valley

PART I
Understanding the Rural





1.0 RURAL AREAS

In a world that is rapidly developing both socially and technologically, human interactions become easier to envision as occurring in urban environments. Today, it is increasingly difficult to imagine what everyday life is like in rural areas and what opportunities if any are available for the few people who inhabit them. Nonetheless, in today's contemporary world, the rural area continues to serve as a place that is more fulfilling to the human soul, and a place where a brief stay allows you to experience a more natural way of living reminiscent of a long bygone era. Remarkably, although entirely divergent from modernity, today, rural areas are no longer seen as marginalized peripheral places, but rather as treasured spaces. In *One Rural, Two Visions*, Portuguese researcher Elisabete Figueiredo points out that in today's contemporary world, rurality has come to serve as a "synonym for modernity" expressed through the discovery and valorization, of the authentic and genuine.¹

Given the contemporary recognition of the genuine qualities found in rural areas, the following chapter, will provide a thorough understanding of rural areas by examining: the role of agriculture (the primary industry in the rural); the relationship between rural areas and the city; the continuing allure of the rural; and the distinct *genius loci* characterizing each rural place. The rural town of Manteigas will be introduced as an idealized rural site containing accumulated layers of natural, man-made, and socio-cultural conditions, which make it fertile for cultivating a renewed identity through architectural experimentation. In order to adequately capture the defining spirit of rurality, and in particular the distinct characteristics encountered in rural Manteigas, Christian Norberg-Schulz's concept of unique phenomenological conditions and Edward Casey's concepts of interlacing nature and culture through agriculture will be the central ideas applied in this chapter. It is anticipated that this chapter will provide the essential understanding of rural areas that will be required to adequately examine the challenges faced by Portugal's rural areas in the forthcoming chapter.

Figure 1.1: The Rural Town of Manteigas, Serra da Estrela.

1.1 RURAL AREAS AND AGRICULTURE

In order to gain the most comprehensive understanding of rural areas, one must first examine the role of agriculture as the primary occupation and industry in the rural. Traditionally, societies in rural areas were first organized around primary production activities such as farming and forestry. Today, in the most remote of rural settings, agriculture continues to be the main occupation that obligates a more direct interaction between an individual and the surrounding landscape. In such rural settings, official agricultural training is quite uncommon. Instead, knowledge of working the local lands is passed down within families from generation to generation, and the labour force is drawn from the landholder and members of the immediate family and the local community. From a social perspective, this has allowed rural areas to develop deeply rooted values and strong traditions of kinship and community.

Historically, it was the invention of agriculture that first allowed humans to stay in one place, establishing communities in the most remote areas that with time grew into larger villages and towns. To this day, rural life serves as the most prominent example of human land occupation and adaptation. Unlike life in the city, in the rural, survival is contingent on close cooperation amongst neighbors. In the rural, one must learn to adapt equally to the climate and the terrain and must always be mindful of the natural forces impacting life.¹ In the rural realm, agricultural land manipulation serves as an example of the earliest form of architecture originating from the human spirit and creativity, for the sole purpose of survival. Today, some of the most dramatic landscapes can be found in rural settings, where terraced vineyards or rice fields built on impossible hill slopes can be seen. In *Landscapes of Bacchus; The Vine in Portugal*, Dan Stanislawski highlights the willpower of rural residents who over many years transformed entire natural landscapes. Stanislawski states:

“At first glance, the giant terrace vineyard steps stir admiration for the inspiration and genius of the people who conceived of them, designed their stone walls, and built them to impede the downward creep of the rock and make an otherwise impossible area useful.”³

When imagining a terrain built in the unlikeliest of settings, we are reminded of the power of human ingenuity and are awestruck by the symbiosis required to last in the most unlikely of places. Thus, a true appreciation of rural areas, is one contingent on considering the importance of agriculture and its integral role in providing both a primary vocation to rural residents and a defining character to the surrounding rural landscape.

i. Due to their dependence on nature for the success of their crops, rural people typically have strong religious convictions, and beliefs in the supernatural. In the article *Portugal's Mountain Regions, Challenges for the 21st Century*, the author Lúcio Cunha refers to the rural belief in the supernatural when he refers to natural disasters such as floods and landslides as: “...supernatural manifestations of a divine power that controls their lives with blessings, but also with punishments.”²



Figure 1.2: Digging of Troughs and Planting of Vines.

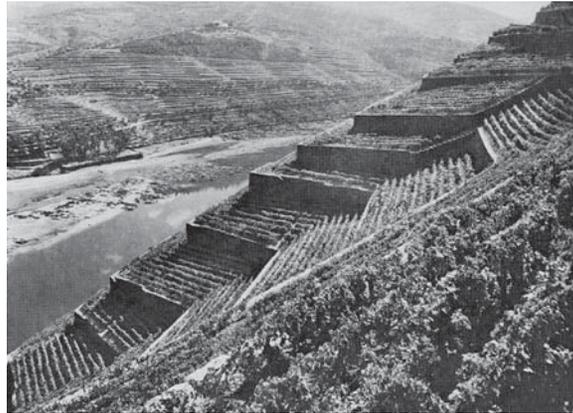


Figure 1.3: Vine Terraces Above the Douro River, Portugal.



Figure 1.4: Creating Vine Terraces Above the Douro River, Portugal.

1.2 RELATIONSHIP BETWEEN RURAL AREAS AND CITIES

With time, rural settlements grow into full functioning villages, towns, and eventually cities.ⁱⁱ In *The Culture of Cities*, Lewis Mumford provides a most accurate portrayal of the connection between cities and their earliest rural form by stating:

“Cities are a product of the earth. They reflect the peasant’s cunning in dominating the earth; technically they but carry further his skill in turning the soil to productive uses... cities are emblems of that settled life which began with permanent agriculture.”⁵

The toils, the skills, and the ingenuity of both rural ancestors and their contemporary counterparts inherently affect the ability for cities to function. Their agricultural products eventually reach the urban market and support commercial expansion and development. As further stated by Mumford:

“Every phase of life in the countryside contributes to the existence of cities. What the shepherd, the woodman, and the miner know, becomes transformed and “etherealized” through the city into durable elements in the human heritage: the textiles and butter of one, the moats and dams and wooden pipes and lathes of another, the metals and jewels of the third, are finally converted into instruments of urban living: underpinning the city’s economic existence, contributing art and wisdom to its daily routine.”⁶

Likewise, advancements that originate in cities eventually make their way back to rural areas, influencing vernacular practices. Consider the level of scientific research into technologies that allow for more efficient agricultural production methods. If we think of rural living as being founded in ideas of human practicality and ingenuity, then the city can be seen as a place where innovation and the advancement of those ideas takes place. Thus, it becomes important that the urban perspective of rural areas is not one that regards them as marginalized peripheral places of few opportunities, but rather as places eternally connected to the city.

ii. Ancient Rome is one of the most prominent examples of this transformation. History illustrates that several hillside rural villages overlooking the Tiber River, eventually joined together to develop into one of the largest cities of the ancient world.⁴



Figure 1.5: Early Industrial Era Town of Staffordshire, England.



Figure 1.6: *The Cornfield* by John Constable, 1826.



Figure 1.7: Rural Rome - The Discovery of Romulus and Remus, Set in the Background of Rural Rome, Giovanni David.



Figure 1.8: Ruins of Hadrian's Villa in the Roman Campagna.

1.3 THE CONTINUING ALLURE OF THE RURAL

Although the majority of the global population now resides in cities, there is still something appealing about the peace and tranquility of the rural countryside. Despite the luxuries that can be found in the city, the human mind continues to find pleasure, inspiration, and satisfaction in the rural environment. For nearly two thousand years of western civilization, the villa and the rural estate have served as places of leisure, artistic reflection, and philosophical contemplation. Professor Denis Cosgrove emphasizes the importance of the rural villa in *Palladian Landscape* by stating:

*"The villa places man close to created nature, both terrestrial and celestial, and allows him to sense his place in the harmony of the cosmos. Such experiences naturally lead to philosophical reflection so that the villa is a place of quiet study and reflection... in a sense its health is not merely physical, it is equally moral and spiritual."*⁷

Perhaps the best example of a rural region wherein some of the grandest villas and rural retreats were conceptualized and brought to life is the Roman Campagna. Hadrian, the most prolific builder of all of the ancient Roman emperors, underlined his authority by constructing one of the most extensive rural retreats of the day, the Villa Adriana near Tivoli. This vast

complex has served as a precedent for countless estate designs and inspired generations of artists and builders.⁸ Today, the rural countryside continues to draw people away from urban centers for leisure, recreation, and recuperation of health. The many rural cottages and health resorts that are found today attest to an ongoing process of returning to the rural countryside. In *One Rural, Two Visions- Environmental Issues and Images on Rural Areas in Portugal*, the author, Elisabete Figueiredo, underlines the perception of rural areas in the modern age by stating:

“...between the ‘wildness’ of unmodified nature, and the artificial built environs of the town and city. Western attitudes to the countryside have been shaped by a response known as the ‘pastoral’. Within this myth, agricultural life is seen as more wholesome, spiritually rewarding and ‘natural’ than urban life. This view is a consequence of the social and economic processes of urbanization. For the past four centuries the countryside of European and American societies has been set up as an ideal, in contrast to the city with polluted air.”⁹

When we visit a rural area, it becomes evident that in the rural there are many inherent advantages that no urban park can ever replicate. Mainly, rural areas offer a more intimate connection with nature, allow for a prioritization of community, and offer settings for tourism and study, while at the same time allowing people to experience unique regional cultures.

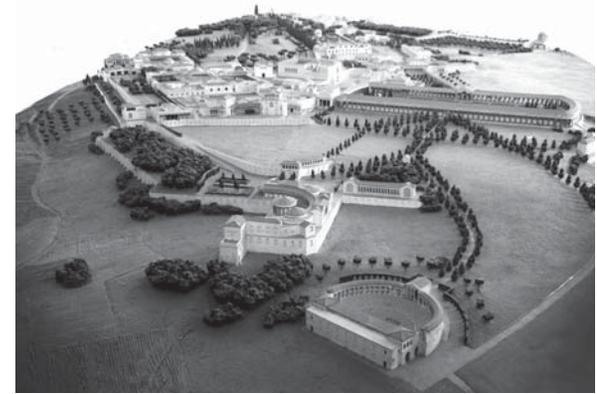


Figure 1.9: Display Model of Villa Adrianna.



Figure 1.10: *Sanatório das Penhas da Saúde*, Serra da Estrela, Portugal.



Figure 1.11: Outdoor Gardens at the Rusk Institute of Rehabilitative Medicine in New York City.

1.3.1 A More Intimate Connection with Nature

Spending time in nature away from the city has been advocated throughout history as a restorative endeavor. John Muir (1838-1914), the Scottish-born American naturalist, author and early advocate of preservation of wilderness in the United States speaks of this concept:

*“Climb the mountains and get their good tidings, nature’s peace will flow into you as the sunshine into the trees. The winds will blow their freshness into you, and the storms their energy, while cares will drop off like autumn leaves.”*¹⁰

For Muir, time spent in nature is essential for human existence, health and development.ⁱⁱⁱ In early 20th century Portugal, *Sanatório das Penhas da Saúde*, located in the Serra da Estrela Mountains became a palace where railway workers who had contracted tuberculosis were sent to undertake treatments comprised of strict regimes of breathing clean, high-altitude mountain air.¹² The *Sanatório das Penhas da Saúde* continued to be a place of treatment for thousands of patients suffering from respiratory illnesses for over 40 years.¹³ Compare that to a contemporary scenario where most hospitals do not have natural courtyards or even balconies, it becomes apparent that the need for patients to have closer contact with nature should take precedent over ancillary considerations like parking and security. Today, there is a renewed realization in the developed world regarding the importance of natural settings in health, healing and human development. Incorporation of gardens in hospital designs has shown to cut costs by quickening the recuperation process. As an example, the success of the exterior programming at the Rusk Institute of Rehabilitative Medicine in New York City, has shown that children with brain injuries recovered mobility quicker by spending time doing activities in the outdoor play and glass gardens.¹⁴

This intimate relationship with natural settings extends into the realm of spiritual health as well. In Matthew 6:25-28, Jesus advises that one contemplate the flower and learn how to live in harmony with nature as an affirmation of non-materialistic beauty and form, to be inspired by the potential reconnection of the mind, body and soul with the beauty of nature.¹⁵

iii. In the early 20th century, the mountainous areas of the western United States were seen as places where the sick went to recover in the dry air and sun. By 1920, it was estimated that sixty percent of Colorado’s population was comprised of families migrating with health stricken individuals.¹¹

1.3.2 Prioritization Of Community

Compared to urban living, rural inhabitants appear to live a more serene life that is far removed from traffic congestion, stress, and the bustle of urban living. Yet today, rural inhabitants face many difficult challenges in the form of isolation, the lack of younger people moving in the farming sector, and the loss of essential services such as education and health care. Notwithstanding, they remain places where the values of honesty, hard work, self-reliance and solidarity still predominate. Compared to life in the city, rural life is strongly dependent on the strong solidarity amongst neighbors in order to overcome the challenges posed by an agrarian lifestyle. The remote and dispersed character of households makes a neighbor a primary point of contact for all occasions. The nourishment and maintenance of good relationships amongst people is not only vital for successful subsistence, but is also responsible for developing a stronger sense of community.

In Portugal, residents in many rural communities regularly unite to host important local festivals as an event-based strategy to build community pride, enhance the image of their community, and preserve local culture. Each year, a small territory located in the Serra da Estrela Mountains of Portugal called Fundão holds a three-day Cherry Festival. In *Measuring Event Success in Rural Portugal*, the Fundão Cherry Festival is presented as an event where the rural inhabitants convert their homes into shops and restaurants and offer fresh cherries, jams, liqueurs and other fruit products for sale as a way to promote the region and its agriculture, raise the status of a locally grown product, and “...bring the financial and social benefits of tourism to a poor town with an aging population.”¹⁶ The Fundão Cherry Festival represents an example of cultivating a stronger social network in an otherwise vastly distributed population.



Figure 1.12: Folklore Dancers - Manteigas, Serra da Estrela.

1.3.3 A Setting for Tourism and Study

Despite infrastructure deficiencies, by allowing for an intimate connection with nature and by providing a place where one experiences authentic cultures, remote areas have the potential to capitalize on their unique landscape for tourism, study and recreation. Today, many rural regions in Europe benefit more from tourism than from traditional industries such as agriculture and forestry.^{iv} Some rural areas have recently reinvented their regions as leisure attractions offering traditional agricultural activities, creating a new market niche for agritourism. Throughout Europe, agritourism is increasing in popularity through ‘wine routes’; packaged-tours that promote “both the region and its produce, at the same time allowing the agricultural development to feed back into attracting tourists.”¹⁸ According to researcher Helena Marques, agritourism in Portugal is most prevalent in the mountainous and agricultural regions of the north, particularly the Douro and Tamega regions.¹⁹ Agritourism is well-liked by the local population because it combines agriculture, a traditional, but declining activity, with tourism, a growing segment with strong job-creating potential.



Figure 1.13: Olive Oil Museum - Manteigas, Serra da Estrela.



Figure 1.14: Bread Museum - Seia, Serra da Estrela.

Moreover, in Portugal (as in other Mediterranean regions in Europe), these same remote landscapes are attractive as places of wellness and healing, by virtue of their unique geology and climate. The popularity of thermal springs as a treatment for specific ailments is but one example. The mountainous town of Manteigas is one such site having a thermal water potential worthy of further exploration by health and wellness tourism.²⁰ Moreover, the geology, hydrology, and rich biodiversity found in mountainous areas offers a potential for incorporating research centers directly in places of high interest for further scientific study, where experimentation and analysis of collected field data can be done in situ. These are but a few types of programs that have the potential to attract people and promote a regional culture to a broader global market.

Thus, the continuing allure of rural areas is comprised initially and primarily by the fact that the rural offers a more intimate connection with nature, allows one to experience a distinct community comprised of strong community values and bonds, and offers a setting for tourism and scientific study.

iv. In *Searching for Complementarities Between Agriculture and Tourism*, Helena Marques points to the complementarity and substitutability of agriculture and rural tourism in France. As per Marques, the complementarity arises from agricultural activities – for example, the harvest is a source of attraction for tourists.¹⁷



Figure 1.15: Agritourism in the Douro Valley, Portugal.

1.4 THE GENIUS LOCI OF THE RURAL

What gives a rural place its distinct quality? In a place like Manteigas, how do you qualify predominant conditions of a place so far removed from urban civilization? How do you establish a set of possible guidelines for consideration of an architectural proposition?

In this section, the thesis will assert that the genuine qualities that elevate rural areas obtain their potential from accumulated layers of existing natural, man-made, and socio-cultural conditions that create a fertile environment for cultivating a renewed identity through architectural experimentation. The defining spirit of rurality, and in particular the essence of a rural place is probably best understood by grasping its unique *genius loci*, as manifested by the prevailing conditions encountered. To achieve a broad understanding of *genius loci* and its application in rural settings, Christian Norberg-Schulz's concept of unique phenomenological conditions and Edward Casey's concepts of interlacing nature and culture through agriculture will be central in the forthcoming discourse.

According to ancient Roman beliefs, the *genius loci* is the protective spirit responsible for giving life to people and places, determining their character or essence, and remaining within them from birth to death.²¹ In ancient times, people recognized that true survival; both physical and spiritual, depended on "coming to terms with the *genius* of the locality."²² A successful settlement could not be randomly situated. Ancient Greeks would associate places with certain protective spirits and would often pay homage to *daemons* of respected heroes and founding figures when visiting certain sacred places.^v Even today, in the Serra da Estrela mountain range, shepherds who take their herds to graze in the lush Zêzere River Valley often pay homage to *Alfatima*, a local legendary Moorish princess who is said to have died on the valley slopes, but whose spirit remains in the valley to serve as a protector of shepherds from inclement weather.²⁴

In almost all cultures, places with unique and pronounced geographies are seen as personifications of a divine being. In ancient Greece, temples built in rural settings were always dedicated to a particular deity that best matched the local geographic conditions.^{vi} Aldo Rossi in the *Architecture of the City* describes the site of the Roman Forum as a place that at one time was a low-lying marsh valley surrounded by hill settlements of the local Latin and Sabine tribes who deemed the marshy Forum area a sacred place where all surrounding tribes would descend to to bury their dead.²⁶ This gave the



Figure 1.16: Delphi, Tholos of Athena.

v. In ancient Greek belief *daemons* represented a divinity or supernatural being (an inner or attendant spirit or inspiring force) of nature that interacted between gods and humans.²³

vi. In *Genius Loci, Towards a Phenomenology of Architecture*, architect Norberg-Schulz states that Ancient Greeks dedicated each place with pronounced properties to an anthropomorphic god. As per Norberg-Schulz: "places where the fertile earth feels close were dedicated to the old chthonic deities Demeter and Hera, and places where man's intellect and discipline complement and oppose the chthonic forces were dedicated to Apollo."²⁵



Figure 1.17: The Roman Forum.

Forum area a *genius*, a divine character. History tells us that with time, the various tribes from the surrounding hills would unite and make the sacred Forum a focal point of their new settlement. Aldo Rossi points to the Roman Forum as a monument of fundamental importance for comprehensive understanding of sacred places and their transformation over time.²⁷ The irregularity of the Forum is evidence that it was not built based on a clear idea of urban design, but rather as a place that was embedded in the characteristics of the terrain, a meeting place at first, that eventually became the very heart of the city.²⁸ The importance of the *genius loci* (the surrounding context) carried on after the fall of the Roman Empire, establishing an architectural precondition, an archetype, manifested in Renaissance works like Palladio's Villa Rotonda, and its very particular relationship to the landscape which it sits on. Even by the 19th century, Viollet-le-Duc, considered the first theorist of modern architecture, recognized the difficulty of transporting architecture from one place to another. His view of the *locus* is one of a unique and physical place.²⁹

In Manteigas, the presence of *genius loci* is not necessarily determined by a single factor of geography, but rather by layers of natural, man-made, and socio-cultural conditions, which will be analyzed in greater detail in the upcoming discourse. The thesis will assert that the most optimal understanding of the rural realm in Manteigas is guided by considering these accumulated layers, which combined together, create a fertile environment for an architectural intervention.



1.4.1 The “Natural Conditions” of Manteigas

In the book *Genius Loci, Towards a Phenomenology of Architecture*, Christian Norberg-Schulz points out that all natural places have unique phenomenological characteristics that are represented by two basic elements, the earth and the sky.³⁰ Furthermore, he argues that in order to dwell meaningfully within an environment, man has to “...understand these two elements as well as their interaction.”³¹ Or as eloquently stated by the Romanian Philosopher Mircea Eliade, the sacredness of a place is never chosen, but rather revealed to its inhabitants through unique qualities.^{vii} Norberg-Schulz’s concept of the earth element is classified based on the prevailing topographical conditions, local vegetation, and existing water features.

vii. “The most primitive of the “sacred places” we know of constituted a microcosm: a landscape of stones, water and trees. Such places are never *chosen* by man, they are merely discovered by him; in other words the sacred place in some way or another reveals itself to him.”³²

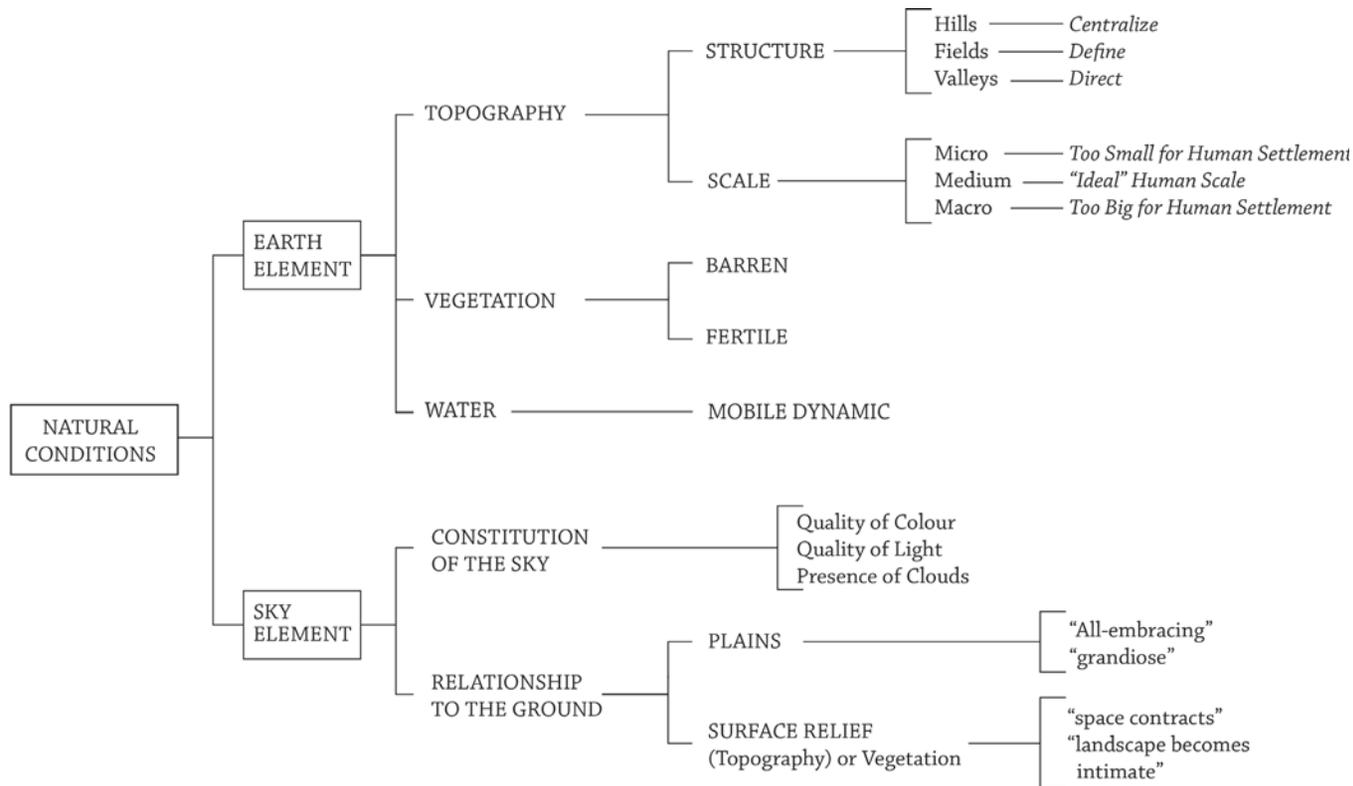


Figure 1.18: Aerial Photograph Showing the Natural Topological Conditions of the Zêzere Glacier Valley and the Rural Town of Manteigas.

Figure 1.19: Author’s Diagram of Norberg-Schulz’s Concept on Defining Natural Conditions.

EARTH ELEMENTS

Topographical Conditions

We should first examine the prevailing topographic conditions. According to Norberg-Schulz, topographical conditions are best understood by considering their structure and scale.

The structure of the topographic conditions as defined by Norberg-Schulz are illustrated by three main features: a) hills and mountains which act to centralize space via their permanence; b) uniform clusters of fields that define an extended pattern of space; and c) valleys and rivers which direct space.³³

The topographical structure of Manteigas comprised of the three main features mentioned above.

a) The hills around Manteigas are part of the Serra da Estrela Mountains, which belong to the greater Iberian Central Cordillera mountain range. Serra Estrela mountain represent a true frontier between Northern and Southern Portugal while the hills near Manteigas are instrumental in centralizing a void where an ideal setting is created for a settlement to emerge. The town of Manteigas itself lies nestled in a semi-circular (amphitheatre glacier scar), at the very end of the Zêzere Glacier Valley. The Zêzere Valley is framed by the *Torre-Penhas Douradas* plateau on the western side, and the *Alto da Pedrice-Curral do Vento* plateau on the eastern side.³⁴

b) Serra da Estrela contains various uniform clusters of fields that define an extended pattern of space in, and around the town of Manteigas. The uniform clusters of fields are present in various forms, such as plateaus, terraced agricultural fields, and lower valley pastures.

c) The Zêzere River Valley, which can be said to be responsible of directing the physical space of Manteigas, while also providing a lasting testament of the effects of glaciations that occurred thousands of years ago in the region. All four established Parish communities in the Municipality of Manteigas follow the direction of the valley. It is estimated that during the last ice age (occurring around twenty thousand years ago), the entire mountain range was covered in permanent snow, with the plateaus having an estimated ice cap formation with a thickness of eighty meters and a surface area of approximately seventy square kilometers.³⁵ With progressive warming, ice tongues slowly migrated down to lower altitudes, molding the valleys through which they passed. The distinct U-shape of the Zêzere Valley, at twelve kilometers in length, is the longest one in Europe.^{viii}

viii. The Zêzere Valley is a remnant of the last glacial period when a thick glacier dome of nearly 300 m covered the entire length of the valley.³⁶

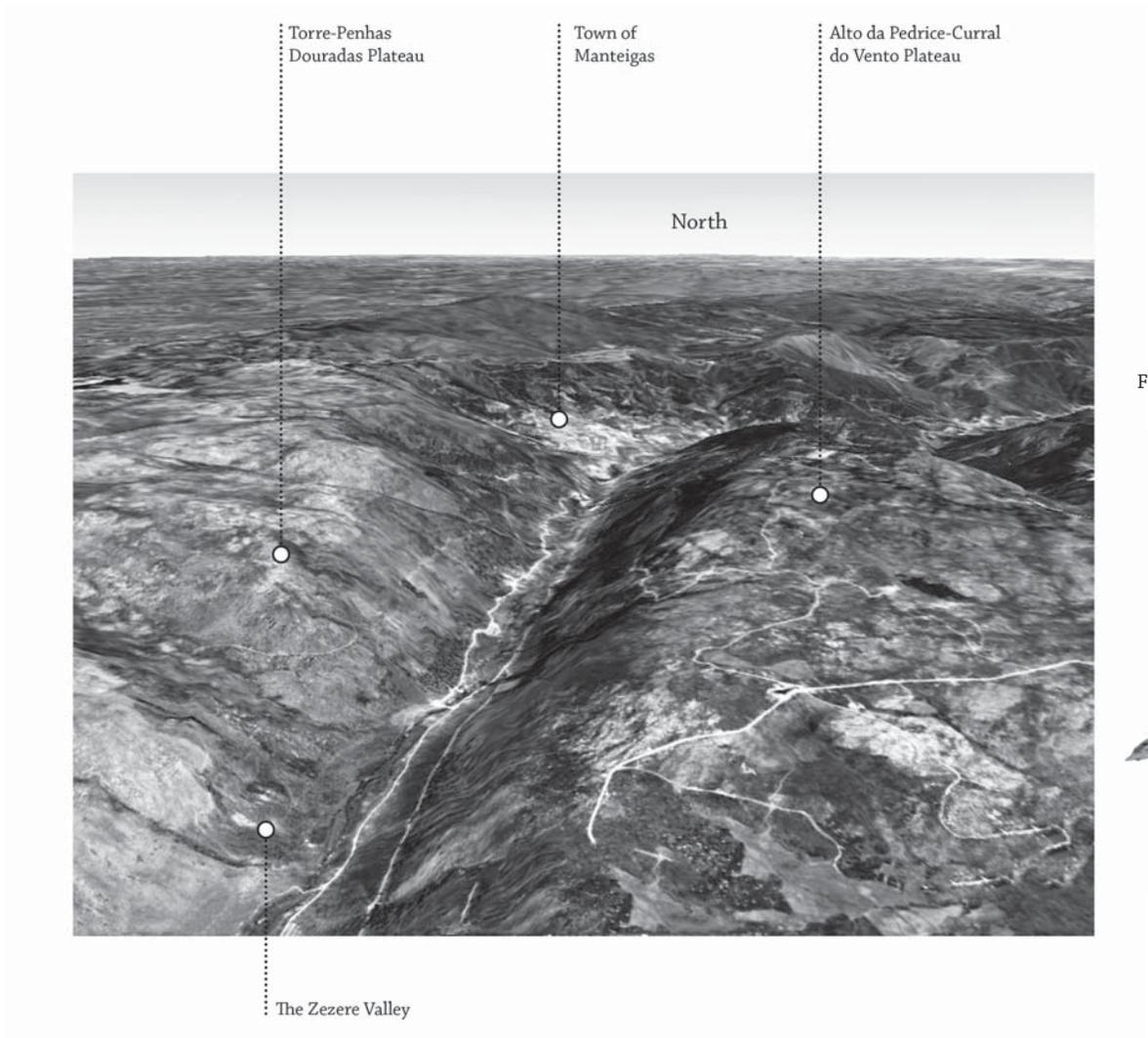


Figure 1.20: The Topographic Conditions in Manteigas.

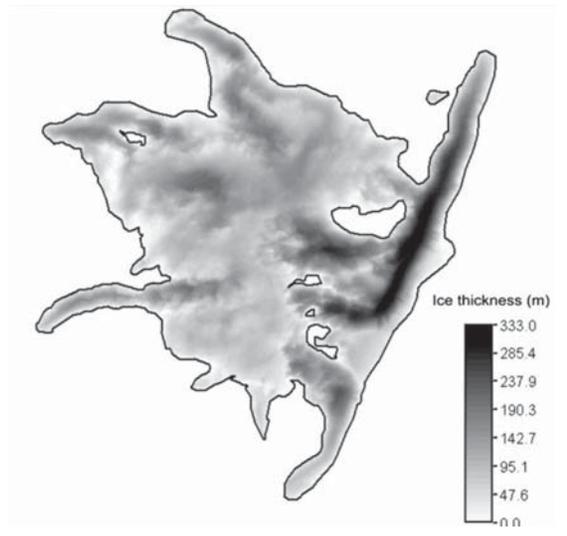


Figure 1.21: Ice Thickness Over Manteigas During the Last Ice Age.

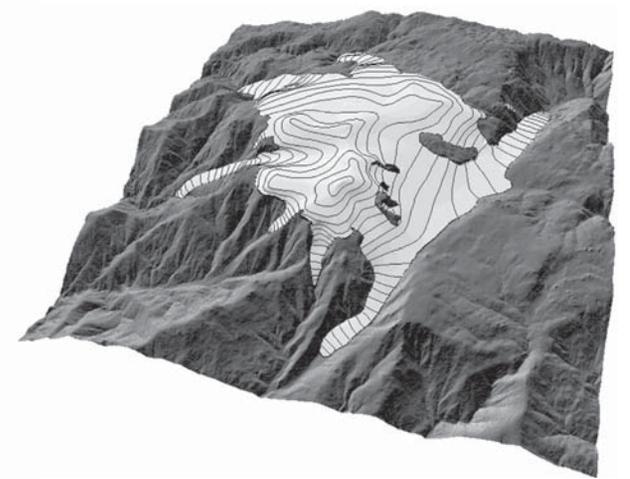


Figure 1.22: Glacier Ice Tongues Over Manteigas.



Figure 1.23: The Many Textures in and Around Manteigas.

Furthermore, Norberg-Schulz also analyses the topographical condition by considering three different scales found in landscapes: micro, medium and macro. Norberg-Schulz states that a relatively small change in topography can transform an inviting and orderly landscape from one that may not be suitable for human occupation. According to Norberg-Schulz, spaces that are most suited for human dwelling have a medium or “human” scale.³⁷

Therefore, it is important to understand the scale of the prevailing topography surrounding Manteigas for its suitability for human habitation. Given that Manteigas is located within a protected Natural Park of approximately one thousand square kilometers, where the horizontal dimension is accentuated by a vertical dimension of the surrounding hills forms what Norberg-Schulz calls an inviting “human hill landscape.”³⁸

The sheer scale of the Serra da Estrela as the highest mountain in Portugal (with a top peak, the *Torre*, measured at nearly two thousand meters) also creates its own unique climatic zones which contribute to vegetation diversity and influences our perception of the scale of the landscape.³⁹ The climate of the Serra da Estrela is generally Mediterranean with dry and warm summers, a wet season lasting from October to May, and precipitation of snow at altitudes above fourteen hundred meters.^{ix}

ix. These specific conditions in turn provide the only the only setting in Portugal where skiing and other winter activities can be undertaken.

Local Vegetation

Following from Norberg-Schulz's definition of earth, an analysis of local vegetation is the next required exercise in qualifying the existing character of rural Manteigas. According to Norberg-Schulz, "...similar reliefs may appear as a "barren" desert or "fertile" plain according to the absence or presence of vegetation".⁴⁰ On the Serra da Estrela, vegetation and forests of wild pine, chestnut, Douglas-fir, and Pyrenean Oak, are the most visible and typical species found along the river valleys and in the surrounding built-up areas.⁴¹ The European Union's Environmental Agency has designated Serra da Estrela as a Special Area of Conservation (SAC) in order to conserve the rich biodiversity of wild fauna and flora found on the mountain.⁴² Within the varying altitudes of the Serra da Estrela, vegetation is distributed among four main landform groups, namely: the central plateaus, the lower plateaus, the slopes, and valleys and rivers.

Different vegetation cover can be used to accurately define the varying altitudes of the mountain, with the central plateaus comprised mainly of grasslands; the lower plateaus largely covered with traditional forms of agriculture growth and distinguishable irrigation channels. The slopes serve as important gradients where crops such as rye and potatoes, olive groves, vineyards and orchards are cultivated on the many terraced plots. The valleys and rivers act primarily as corridors for overall movement of water, and due to their ability to retain water from snow runoff and rain. The valleys of the Serra da Estrela also serve as vital pasture grounds for herds of sheep and goats. The soils adjacent to the lower confines of the mountain valleys are also nutrient-rich and suitable for farming.⁴³⁻⁴⁵



Figure 1.24: The Central Plateaus of the Serra da Estrela.



Figure 1.25: The Lower Plateaus of the Serra da Estrela.



Figure 1.26: The Slopes of the Serra da Estrela.

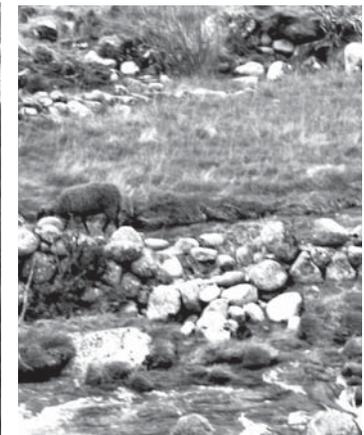


Figure 1.27: The Valleys and Rivers of the Serra da Estrela.

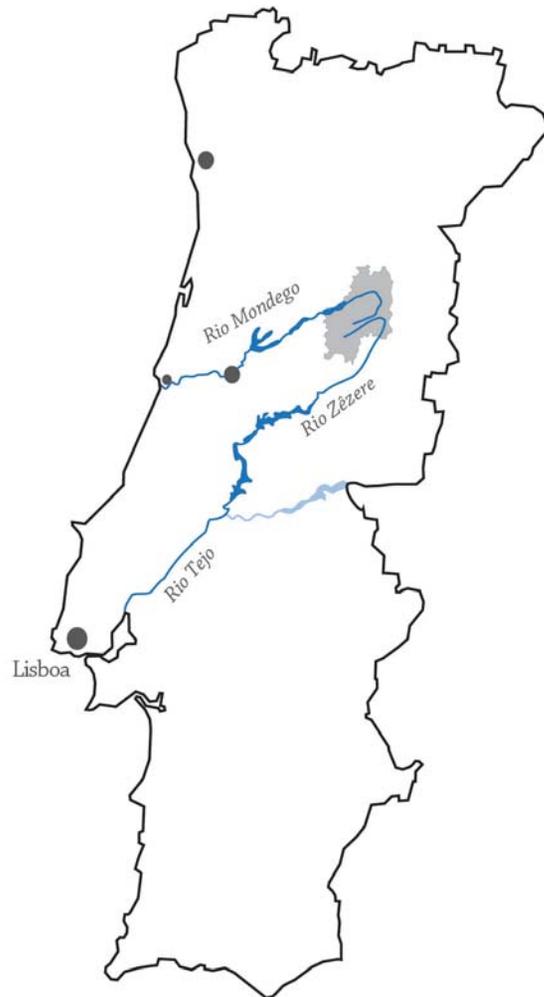


Figure 1.28: Serra da Estrela, the Source of Portugal's Two Main Rivers; the Rio Zêzere and the Rio Mondego.

Existing Water Features

The presence of water (in all its forms) is the last element in Norberg-Schulz's phenomenological definition of earth and is one that allows for a perception of the natural landscape as being more mobile and dynamic.^x Serra da Estrela is the source of two of Portugal's largest rivers, the Mondego, and the Zêzere⁴⁷ The Zêzere River, which originates near Manteigas is considered one of the most important tributaries of the Tejo River (the longest river on the Iberian Peninsula) which flows through central Portugal, emptying into the Atlantic Ocean at Lisbon.⁴⁸ Along the Zêzere River Valley is a unique hydrological mixture of near-freezing glacial waters (at 8°C)⁴⁹ and hot thermo-mineral springs (at 42°C)⁵⁰. The rich hydrological resources found in the area are major contributors to the economic stability and naturopathic well-being of Manteigas.^{xi} The thermo-mineral springs in Manteigas are a result of tectonic forces that have shaped the Serra da Estrela mountain range thousands of years ago. The thermal waters found in Manteigas originate from an underground geothermal reservoir in the NNE-SSW *Bragança-Vilarica-Manteigas* fault zone (BVMFZ) that travels the length of the Zêzere River valley.⁵¹ The fault zone is part of a larger geological system that was reactivated by the alpine compressive tectonics from continental collisions in the late-Variscan period. Seismic events noted between 1964 and 2004 indicate that large segments of the BVMFZ are still active today.⁵²

SKY ELEMENT

By comparison, aside from the earth element, Norberg-Schulz's other fundamental element, the sky, appears more subtle, distant, and less significant when defining the existing natural conditions of a place. Nonetheless, Norberg-Schulz points out that the constitution of the sky is very important in providing critical presence to a natural place. The critical presence of the sky differs from one place to another by the varying degrees of light, the predominant colour, and cloud cover.⁵³ And though a distinct awareness of the sky is not always apparent to the local residents, it is clearly evident to an outside visitor. The relationship between the plateaus of the Zêzere River Valley and the sky is two fold. From the banks of the river, the gentle silhouettes of the *Torre-Penhas Douradas* and the *Alto da Pedrice-*

x. Historically human settlements have usually taken form in places where there is a continuous presence of water. Some of the earliest civilizations were founded next to major rivers. The ancient Mesopotamian civilization for example emerged next to the Tigris and Euphrates Rivers, which provided a steady supply of drinking water, allowed people to use the water for mobility, and allowed for the adjacent lands to become fertile lands for growing crops.⁴⁶

xi. People have historically visited Manteigas to bathe in thermal pools in order to cure a number of ailments, including: rheumatism, respiratory problems, and musculoskeletal disorders.



Figure 1.29: The Zêzere Stream Near Manteigas.



Figure 1.30: The Sky Conditions Over the *Torre-Penhaus Douradas* Pateau Near Manteigas.

Curral do Vento plateaus obscure the horizon, such that the days appear shorter with a more rapidly diminished availability of direct daylight. Of course the inverse condition occurs with subsequent increases in altitude. From the top of the mountain range, the sky appears as a vast blue sea. This relationship between ground and sky around Manteigas is as much literal as it is temporal. Literally translated as ‘Star Mountain’, the Serra da Estrela, is mythologically engrained in the night sky. Across the entire mountainous region, there exist countless legends all similarly depicting the brightest night star as the guardian spirit of the landscape; an entity revealing itself only to those who stare in wonder of the mountain’s splendor. A sample of a regional legend that depicts the creation of the natural conditions surrounding Manteigas can be found in Appendix A.

HARMONIOUS EQUILIBRIUM OF THE EARTH AND SKY ELEMENTS

Exemplifying the unique phenomenological characteristics of both earth and sky, the easily romanticized landscape around Manteigas would be qualified as categorically “classical”, as described by Norberg-Schulz:

“[the classical landscape is an] intelligible composition of distinct elements: clearly defined hills and mountains which are rarely covered by the shaggy woods of the North, clearly delimited, imaginable natural spaces such as valleys and basins which appear as individual “worlds”; a strong and evenly distributed light and a transparent air... the ground is simultaneously continuous and varied, and the sky is high and embracing without however possessing the absolute quality encountered in the desert.”⁵⁴

Most importantly however, the classical landscape is one which facilitates and defines human activities as established microcosms within the boundlessness of the natural world, “[where] clearly defined natural places are emphasized by the loving care of man.”⁵⁵ In the Serra da Estrela, terraced agriculture is but one example of human-scaled interaction with the land; a true *genius loci* made possible by the fertile earth and the sunlit sky that allows for human union with nature.

Thus, in places like Manteigas, a unique natural *genius loci* reveals itself from the harmonious equilibrium of the earth and sky where the earth is made manifest by the mountain topography, rich biodiversity, and an abundance of water in its various forms; and the sky element emphasized by views from the ground that vary as the viewer moves to different altitude zones, but also allows for an optimal view of the night sky full of bright stars which serve both as the guardian spirits and namesakes for the mountain range.



Figure 1.31: The Higher Plateaus Over Manteigas.



Figure 1.32: The Zêzere Valley Looking South Towards Manteigas.

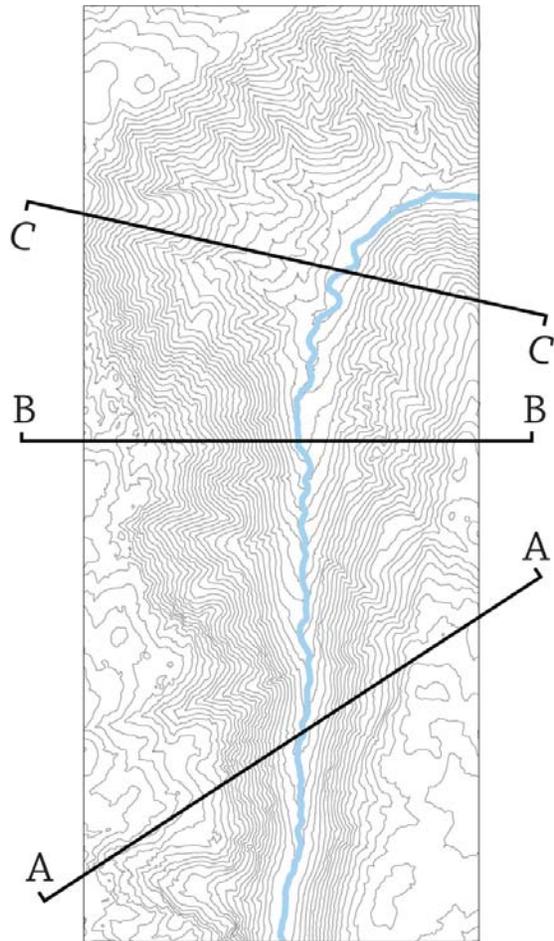


Figure 1.33: Section Key.

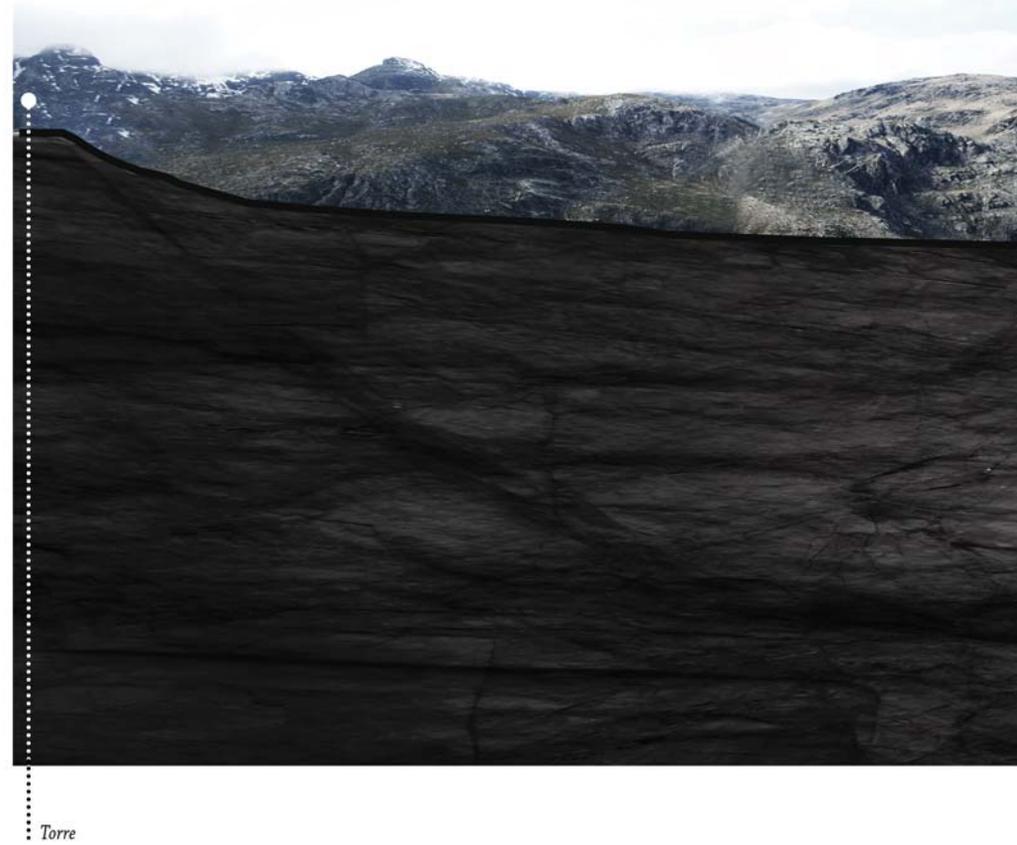
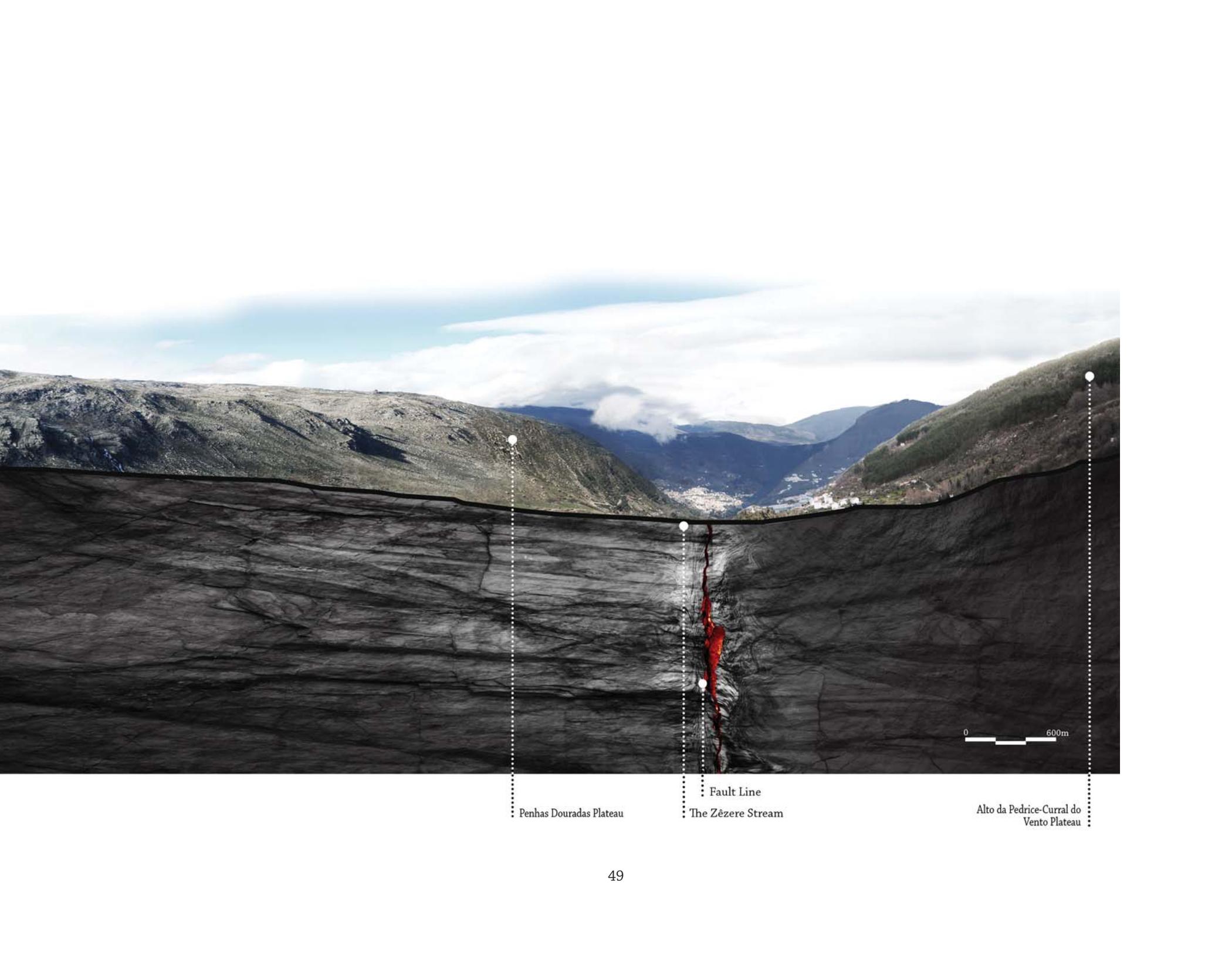


Figure 1.34: Site Section A.



Penhas Douradas Plateau

Fault Line

The Zêzere Stream

0 600m

Alto da Pedrice-Curral do Vento Plateau

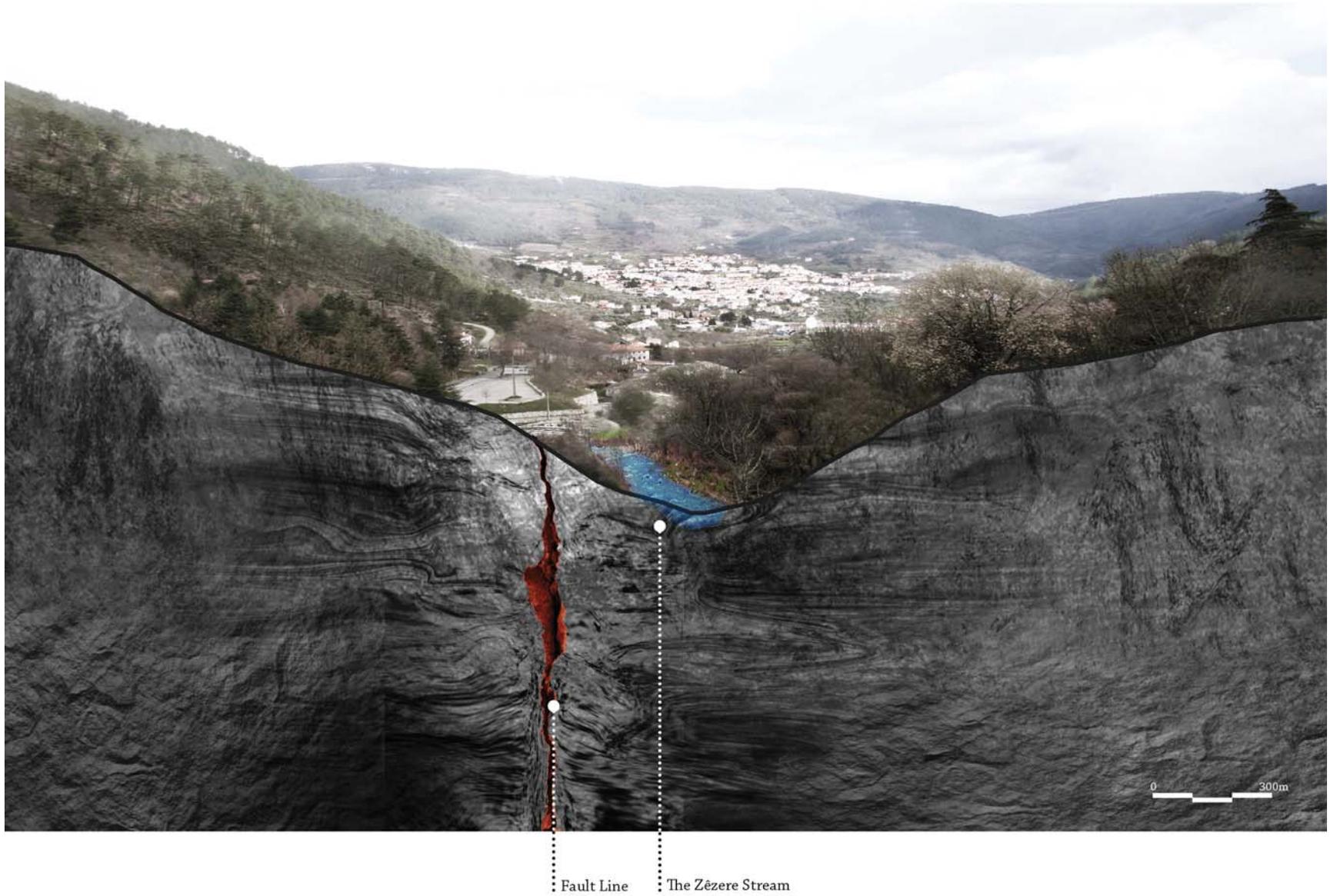


Figure 1.35: Site Section B: Through Proposed Design Site.



Figure 1.36: Site Section C: Through the Town of Manteigas.



Figure 1.37: Aerial Image of Manteigas Showing a Classical Settlement Pattern Common Throughout the Mediterranean.

1.4.2 Man-made Conditions

Manteigas is both a rural mountain town and an administrative municipality situated at an altitude of 770 meters above sea level in the very heart of the Serra da Estrela Natural Park.⁵⁶ In demographic terms, Manteigas is a community currently experiencing a phase of rural depopulation. Data from the 2011 census indicates a current population of 3,471, a 15 percent decline of the resident population over the last ten years.⁵⁷

As mentioned earlier in the chapter, at the core of all rural settlements is agriculture, which represents an exertion of permanence within the abstract scale of the natural world. Manteigas itself was initially founded as an agricultural village which housed the local mountain shepherds. Translated into English, Manteigas literally means “a place of fine butters”, named so for the abundance of cheese and butter producers that have been in various modes of operation for centuries.⁵⁸ To this day, the local shepherds still use the Zêzere Valley slopes as grazing grounds. Modernized agrarian practices have however forced traditional agriculture in Manteigas to play a diminished, secondary role.

Initially, all man-made places begin with the need to cultivate the surroundings. The oldest root of the English word *cultivate* is the Latin verb *colere*, meaning, “to care for.”⁵⁹ And it is a definition that extends beyond a literal sense. When the rural settler tills the soils of his lands, he is showing care by “...ploughing and planting in ways useful to the growing of food... in cultivating friendships we care for the social dimension of our existence.”⁶⁰ The notion of cultivation is also relevant in the architectural

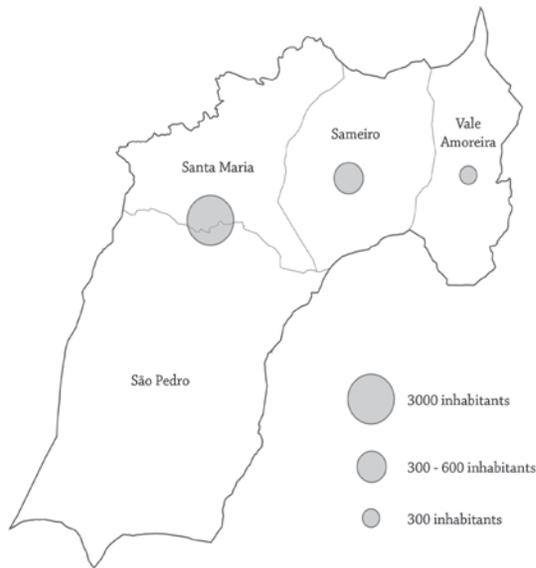


Figure 1.38: Population Distribution in the Four Parishes Comprising the Municipality of Manteigas.

realm. Before a building is constructed, care is given to survey the surrounding natural environment in order to select an ideal site with those conditions that resonate with a formidable sense of *genius loci*.^{xii} According to Edward Casey, an American philosophy professor, cultivation is also demonstrated through design as a dialogue among the people residing in a building and by those impacted by the building.⁶² In *Getting Back Into Place*, he refers to a “...middle zone of existence and experience” as a place located between the regions of earth and sky where settlement takes place and where all material things are found.⁶³ Within the Zêzere Valley, man-made dwellings can be seen in their most primitive early form. As a result of the harsh mountainous climate, the local shepherds who rear their sheep in the valley protect themselves from the harsh weather conditions in small curious houses known as “casais” built in sheltered locations next to water courses where local granite stone serves as building material for the walls, and straw is used for roofing.⁶⁴ In the *Phenomena of Man-made Places*, Norberg-Schulz introduces the concept of “concretizing” as the earliest method of building.⁶⁵ The concept of concretizing is demonstrated in early Mediterranean civilizations as an exclusive use of stone in construction. By using stone, an earth element, early civilizations sought in their building material the “permanence found in mountains and rocks.”^{xiii}

Irrespective of the hostile mountainous environment in parts of the Serra da Estrela, the cobble roads, terraced farms, Roman-era bridges, castles, and modern homes in the landscape indicate a population that has ‘concretized’ their natural conditions and have adapted cultural traditions in all manners to very specific local circumstances. To assert that all ‘man-made’ places reflect aspects of the natural environment promotes a similar sentiment that *genius loci* is an inherent amalgamation of a natural landscape and a landscape that is conceptually and fundamentally architectural. In Manteigas, the *genius loci* manifests as a unique ordinance of buildings that follow the classical settlement order found throughout other Mediterranean countries.

xii. An early form of social cultivation in the vicinity of the Serra da Estrela prehistoric rock art site in the Cõa Valley, which is, designated a UNESCO World Heritage Site. The Paleolithic Art site located shows distinct engraved drawings of horses, deer, humans, and abstract figures dated from between 22,000 to 10,000 years BC, making the Cõa Valley one of the largest open-air site of Paleolithic art in Europe, if not the world.⁶¹

xiii. For the ancient Egyptians, their natural world was “concretized” by buildings such as pyramids which were symbolically located between fertile lands and barren deserts to symbolize the junction between life and death, while the form of the pyramid was deliberately built in the image of sacred “artificial mountains” having a vertical axis that symbolizes the relation of the earth and the sky elements.^{66, 67}



Figure 1.39: An Authentic *Casais* House in Manteigas.



Figure 1.40: The Man-made Conditions in Manteigas, Following the “Classical” Mediterranean Settlement Order.



Figure 1.41: Cobble Road in Manteigas Leading to St. Peter’s Church.

1.4.3 Socio-Cultural Conditions

Cultural conditions make up the third dimension of the governing *genius loci* of a rural place. As all rural places have unique phenomenological characteristics, it can be said that shared cultural conditions emerge from the common shaping and re-shaping of the natural landscape. As pointed out by Edward Casey, “a culture that characterizes and shapes a given place is a shared culture, not merely superimposed upon that place but part of its very facticity.”⁶⁸ Etymologically linked to the word cultivation (to care for, to occupy, to dwell), the Latin roots of the word *cultur*’ can be interpreted to mean a tending of land and soul.^{xiv} Casey argues further that the fates of Nature and Culture have been interchanged from the moment humans first began to roam and settle the earth.⁷⁰ Every action undertaken in nature originates from a cultural practice, even the act of setting aside land for non pragmatic uses like natural parks originates from the cultural ideas of preservation and boundary-setting.

The interlacing of nature and culture can be conveyed through many forms. In rural areas, this acculturation is most visible in spaces of collective gathering; churches, markets, fountains, cobbled paths and other vernacular elements that promote socialization. In Manteigas, the simple detail of whitewashed walls and red clay tile roofs becomes an expression of a collective cultural tradition. And it is these same vernacular spaces that define a larger cultural network.^{xv} For example, in Manteigas the Church of Santa Maria represents not only the oldest church in the municipality, but also the most focal place for collective gathering of the local and regional populations. Today, the Church of Santa Maria, which is first mentioned in official documentation from 1388 AD as a starting point for many regional religious progressions, continues to serve as a destination point for gathering, where tourists and people from the Municipality and the surrounding rural villages assemble for religious processions, festivals and seasonal fairs.⁷² Another popular place for social gathering in Manteigas is the *Centro de Artesanato* (Artisan Centre) which serves the community as a place where both locals and tourists routinely gather to experience the weaving of bedspreads and carpets and to learn the art of making traditional shepherd’s coats, sculptures in wood and tin, and works in sheepskin and granite.⁷³ In addition, Manteigas is an established socio-cultural setting made popular by waters emerging from an underground geothermal reservoir and used for therapeutic properties, and local surface spring waters bottled locally and sold nationwide.

In the peripheral areas of rural towns like Manteigas, plowed agricultural fields are also important for understanding the socio-cultural conditions. Plowed fields represent the interlacing of nature and culture because they deal so literally with the initial act of offering the landscape to the rural residents. According to Cassey, agriculture causes “thickening” to occur,

xiv. The original fifteenth-century English meaning of the word *culture* referred to a piece of tilled land, eventually evolving to imply artistic and intellectual education.⁶⁹

xv. Cassey states that a “...building condenses a culture in one place.”⁷¹

Terrace farming was used to deal with the sloping landscape of the area. Evidence of this method of farming still remains today.

Mountain range surrounding the valley helps protect fertile landscape.

Rural village sits amongst the landscape, for many years these were the dwellings of the people who had ownership over this lands and who were responsible for the manipulation of the surrounding landscape, through architecture. Many of the houses are now vacant.

Design Site



The river connects the entire valley. It was a primary resource that complimented the farming practices in the area.

A variety of fruit trees grow very well in this valley condition.

Lower valley soils are very fertile and suitable for various plant growth.

Traditional agricultural practices had shipped and activated this land from the late 19th century to the early 20th century. Due to globalization, traditional farming has since declined leaving the landscape static for over 20 years.

Figure 1.42: The Fertile Landscape of Rural Manteigas.



Figure 1.43: The Region of Serra da Estrela.

a concept where “...each party gains in concert with the other.”⁷⁴ Crop cultivation can be considered as a rural cultural undertaking which is helped by the natural cycles. Crop cultivation is important because plowed fields become attractive to animal species living in the surrounding natural habitats.⁷⁵ Animal herding can be considered as is another form of agriculture that “thickens”. A herd of sheep and goats for example impact the natural environment, creating trail paths, obtaining nutrients from the grasses, while at the same time fertilizing and aerating the local soil with their hoves as they pass from one pasture to another. Throughout this ongoing process, the rural residents of Manteigas have developed a distinct cultural identity centered on crop cultivation, sheep herding and the traditional production of famed *Serra* dairy products.

Historically, the Serra da Estrela has been a region renowned throughout Portugal not only for sheep herding and dairy production, but also as a place of high quality wool products. Wool products supplied by the rural inhabitants of Serra da Estrela have allowed Covilha, a town on the outskirts of the Serra da Estrela Natural Park to become a celebrated fabrics supplier whose wool textile products continue to be sought after by major fashion designers throughout Europe.⁷⁶ Additionally, *Serra* cheese (made from the milk of ewes) is an equally important low-volume regional export and one of Portugal’s finest gastronomical products. In the poem *Tragicomedia Pastoril da Serra da Estrela*, Gil Vicente, one of Portugal’s most eminent poets and playwrights of the sixteen-century, depicts the entire Serra region as a shepherdess arriving in Coimbra (Portugal’s former capital) from her mountain home to offer gifts to the Queen of Portugal. Loosely translated into English, the poem depicts a personified version of the Serra offering “cheeses, calves and lambs of Cea, two thousand sacks of chestnuts from Gouveia, milk for fourteen years from Manteigas, and fine cloth from Covilha.”⁷⁷



Figure 1.44: Traditional Rural Activities in the Serra da Estrela.

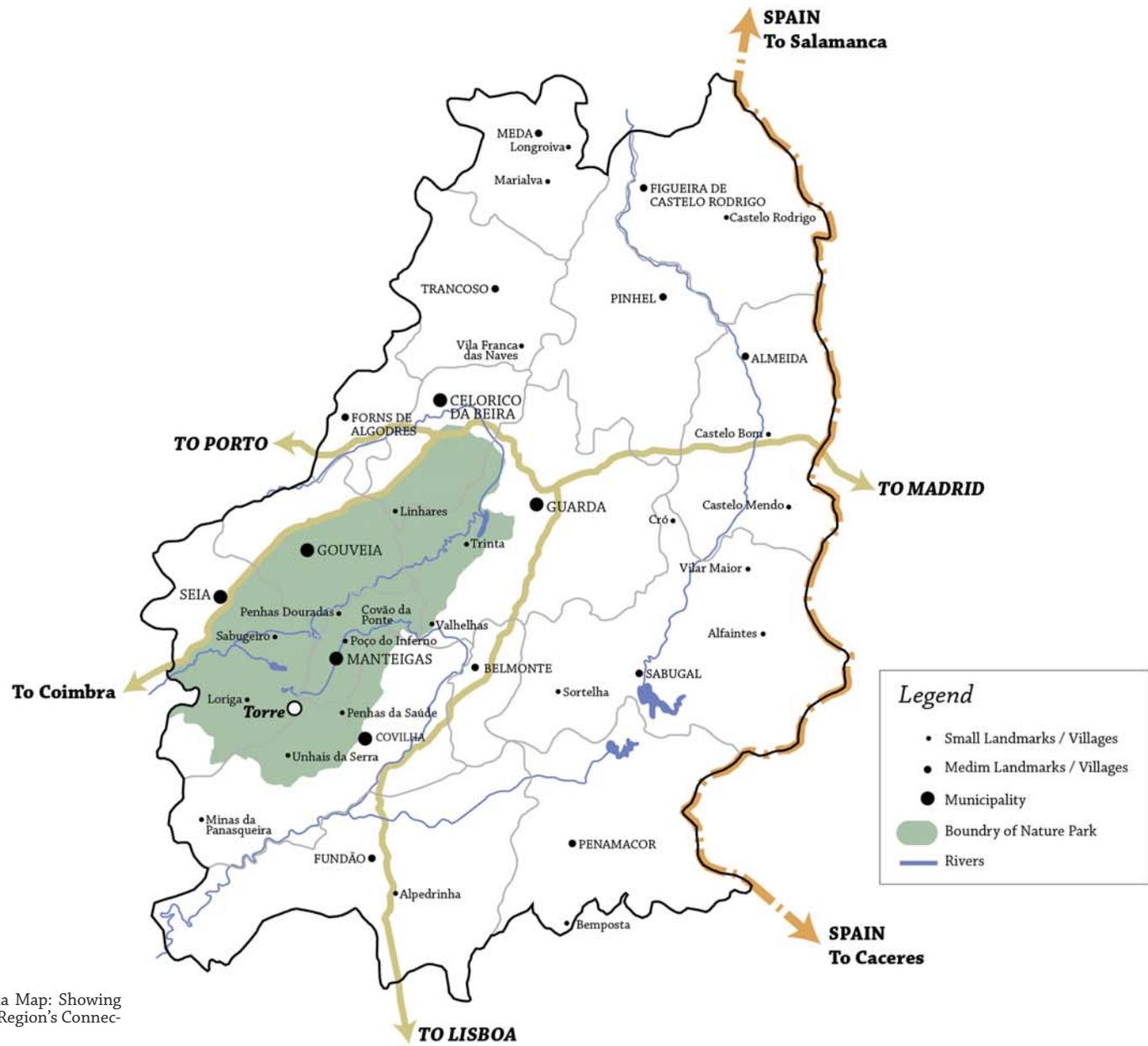


Figure 1.45: Region of Serra da Estrela Map: Showing Landmarks, Important Villages and The Region's Connectivity Beyond it's Borders.

Today, there are six governing municipalities in the Serra da Estrela: Seia, Gouveia, Covilha, Celorico da Beira, Guarda, and Manteigas.⁷⁸ Of the six administrative municipalities, the most populated ones are found along the limits of the mountain range. Manteigas is the only municipality nestled fully in the heart of the Serra da Estrela Natural Park, and though the site is well known to the Portuguese people, the emergence of development and promotion programs has made it increasingly popular to a panoply of educated tourists. For a remote location this represents a fundamental shift in social operation. As this change occurs, the continuance of its distinctly unique *genius loci* here will be reliant on the willingness of that society to adjust, to once more touch base with the *earth from which it arises*, and establish its next act of cultivation. Given the contemporary recognition of the genuine qualities found in rural Manteigas in the form of the distinct natural, man-made, and socio-cultural conditions, a fertile environment is encountered where an architecture intervention can create a renewed prosperity that will help reverse the current course of rural abandonment.

To conclude, Part I presented a fundamental understanding of rural areas centered on an examination of: the important role of agriculture, the enduring relationship between the city and the rural, the continuing allure of the rural, and the distinct *genius loci* comprised of accumulated layers of natural, man-made, and socio-cultural conditions. The genuine and authentic rural conditions encountered in Manteigas were investigated and were seen as offering an ideal rural setting where a fertile environment exists, allowing for cultivation of an atmosphere of revival through architecture. However, aside from the authentic qualities found in Manteigas and other rural areas in Portugal, there are many inherent challenges that are present which warrant further assessment.



Figure 1.46: Historic Goat and Sheep Herding on the Plateaus of the Serra da Estela.

PART 1: ENDNOTES

1. Elisabete Figueiredo, "One Rural, Two Visions—Environmental Issues and Images on Rural Areas in Portugal," *European Countryside* 1, 1 (2009): 9-21. 11.
2. Lúcio Cunha, "Portugal's Mountain Regions, Challenges for the 21st Century." In Jones, Garret. *Leimgruber, Walter e NEL, Etienne – Issues in Geographical Marginality. IGU, Grahymstown* (2007): 7.
3. Dan Stanislawski, *Landscapes of Bacchus; The Vine in Portugal* (Austin: University of Texas Press, 1970), 100.
4. Aldo Rossi, *The Architecture of the City* (Cambridge: Oppositions Books, 1982), 119.
5. Lewis Mumford, *The Culture of Cities* (New York: Harcourt, Brace & World, 1966), 3.
6. *Ibid.*, 4.
7. Denis Cosgrove, *Palladian Landscape* (University Park: Pennsylvania State University Press, 1993), 112.
8. Rick Haldenby, "Lecture Notes at Hadrian's Villa" (Lecture at Hadrian's Villa - University of Waterloo Rome 4B Program, Tivoli, Italy, September 2007).
9. Erika Cudworth, *Environment and Society* (London: Routledge, 2003), 118.
10. Denise Mitten, "The Healing Power of Nature: The Need for Nature for Human Health, Development, and Wellbeing" (paper presented at the 150 Year International Dialogue Conference Jubilee Celebration, North Troendelag University College, Levanger, Norway, September 14-19, 2009).
11. *Ibid.*, 14.
12. Paulo Coelho, "Paulo Coelho Blog," listserv, June 24, 2011, http://www.paulocoelho.net/blog/_archives/2007/10/15/3293057.html.
13. *Idem.*
14. Mitten, 16.
15. Matt. 6.25-28 New Revised Standard Version: Catholic Edition.
16. Helena Maria Baptista, Ana Maria Campon Cerro, and Anna Venessa Ferreira Martins, "Impacts of Small Tourism Events on Rural Places." *Journal of Place Management and Development* 3, 1 (2010): 22-37.
17. Helena Marques, "Research Report: Searching for Complementarities Between Agriculture and Tourism – the Demarcated Wine-producing Regions of Northern Portugal." *Tourism Economics* 12, 1 (2010): 147-160. 148.
18. *Idem.*
19. *Ibid.*, 151.
20. Carreira and others, 118.
21. Christian Norberg-Schulz, *Genius Loci, Towards a Phenomenology of Architecture* (New York: Rizzoli, 1980), 18.
22. *Idem.*
23. Walter Burkert, *Greek Religion* (Maiden: Blackwell Publishing, 1977), 181.
24. Estrela Green Tracks, Cultural Heritage, "Fátima – Saint John Legend in the Beira-Baixa," <http://www.manteigastrilhosverdes.com/en/?cultural-heritage&cod=14.html>.
25. Norberg-Schulz, 31.
26. Rossi, 120.
27. *Ibid.*, 119.
28. *Idem.*
29. Rossi, 103.
30. Norberg-Schulz, 46.
31. *Ibid.*, 23.
32. *Ibid.*, 28.
33. *Ibid.*, 32.
34. Carreira and others, 4.
35. Gonçalo Vieira, "Combined Numerical and Geomorphological Reconstruction of the Serra da Estrela Plateau Icefield, Portugal." *Geomorphology* 97 (2008): 190-207. 200.
36. *Ibid.*, 202.
37. Norberg-Schulz, 34.
38. *Ibid.*, 34.

39. Ibid., 21.
40. Norberg-Schulz, 35.
41. G. Vieira, and others, "Environmental Setting of the Serra da Estrela, Portugal: a short-note." *Landscape Ecology Series* 21, (2009): 8.
42. European Environmental Agency, "Special Area of Conservation (SAC)," <http://eunis.eea.europa.eu/designations/80:IN09?fromWhere=en.html>.
43. Vieira, and others, 8.
44. Idem.
45. Idem.
46. D.T. Potts, *Mesopotamian Civilization, the Material Foundations* (London: Athlone Press, 1997), 1.
47. Região de Turismo da Serra Estrela, "Serra da Estrela, More than a Mountain," www.rt-serradaestrela.pt
48. Idem.
49. P.M. Carreira and others, "Defining the Dynamics of Groundwater in Serra da Estrela Mountain Area, Central Portugal: an Isotopic and Hydro-geochemical Approach." *Hydrogeology Journal* 19 (2011): 117-131, 122.
50. Idem.
51. J.M., Espinha Marques and others, 147.
52. Ibid, 148.
53. Norberg-Schulz, 39.
54. Ibid, 45.
55. Ibid, 46.
56. Barbosa and Correia, 51.
57. Instituto Nacional de Estatística (Statistics Portugal), "Resultados Preliminares 2011," http://www.ine.pt/scripts/flex_v10/Main.html.
58. Município de Manteigas, *Diagnóstico Social* (Manteigas: Câmara Municipal de Manteigas, 2004), 8.
59. Edward Cassey, *Getting Back Into Place* (Indianapolis: Indiana University Press, 1993), 173.
60. Idem.
61. World Heritage Convention, "Prehistoric Rock Art Sites in Cõa Valley and Siega Verde," <http://whc.unesco.org/en/list/866.html>.
62. Cassey, 174.
63. Ibid, 206.
64. Manteigas-Trilhos Verdes, "Glacier Route," http://www.manteigastrilhosverdes.com/en/uploads/pr_6_mtg_ing.pdf.
65. Norberg-Schulz, 51.
66. Idem.
67. Ibid., 52.
68. Cassey, 31.
69. Ibid., 230.
70. Ibid., 240.
71. Ibid., 32.
72. Município de Manteigas, 8.
73. Ibid.
74. Cassey, 253.
75. Idem.
76. R. St. Louis, *Portugal* (Singapore: Lonely Planet Publications Pty. Ltd., 2007), 340.
77. Aubrey Bell, *Four Plays of Gil Vicente* (Cambridge: University Press, 1920), 69.
78. Barbosa and Correia, 19.

PART II
Challenges Facing Rural Areas





2.0 RURAL ABANDONMENT

Although there is something romantic about the image of rural areas that intrigues and fascinates, the reality of these places is that many are in a phase of decline. In demographic terms, rural abandonment (or rural exodus) is used to describe the migratory patterns of people moving from rural areas into urban ones.¹ This process has accelerated as agriculture has become increasingly mechanized, automated, and industrialized, and fewer younger, working-age people are now required to perform basic agricultural tasks. The prioritization of other economic sectors over agriculture exacerbates the problem. Rural depopulation is a phenomenon that each nation experiences in its own developmental process, bringing a certain ambivalence that is fairly unanimous.

Figure 2.1: Ruins in the Town of Linhares, Serra da Estrela.

2.1 THE AMBIVALENCE TOWARDS & STIGMA OF RURAL AREAS

There might be some truth in thinking that ambivalence towards rural areas is ingrained in the human psyche from a young age. Consider the many stories, folktales and legends that often portray remote areas, as places that should be feared. In epic folktales stories, the remote area is often portrayed as a place where the main protagonist goes to in order to overcome a crisis in an environment that is menacing to the safety of the city. Rural areas by their very nature are defined by their remoteness from cities. In the *Epic of Gilgamesh*, the hero Gilgamesh depicted as embarking into the remote countryside to slay *Humbaba*, a monstrous demi-god roaming the Cedar Forests “as a terror to human beings”, offers but one archetype example.² This is one example whose modern connotation has since replaced fear of the rural with a projection of inferiority, as luxuries and amenities have become more urban-centric. Today the ambivalence and stigma of living in rural areas prevails as an image of a backward place where the population lacks the sophistication of urban life. In reality, the prevailing demographic of rural areas is increasingly of aging farmers dispersed over a wide area; a social group that is more likely to have less education, poorer technical skills and be less responsive to new development initiatives.



Figure 2.2: *Within the Darkened Wood*, by Artist Thom Kapheim: Humbaba from the Epic of Gilgamesh Guarding the Cedar Forests.

2.1.1 Fading Places Offering Few Opportunities

For young people, exodus from rural areas means more than simply a move to the city to obtain a higher education or a promising career. In a 2004 article in Macleans Magazine titled *Kids Come Back!*, the author, Lianne George, provides an assessment of rural abandonment in Canada and notes that the media plays a central role in portraying a hip image of the city to a young demographic; that they should all want “...access to the same brands, live music, glamorous careers and subcultures as everyone else.”³ For the percentage of that population living in rural areas, the choice to migrate to the urban centers, to opt into that prevalent image of the city is more likely to result in permanent relocation. According to Statistics Canada:

“...one-third of rural residents aged 15 to 19 will leave their hometowns within five years, and fewer than one in five will return within 10 years. Most alarmingly, those who leave tend to be the communities’ brightest stars -- the ones with the most education and highest earning potential.”⁴

Many rural communities in Northern Ontario for example continue to face decline and abandonment as a result of diminished opportunities in the traditional regional industries like mining and forestry. In an attempt to stem the “talent drain”, associated with contemporary depopulation, the remote town of Kenora has undertaken an initiative to promote local young entrepreneurs who have either decided to stay or who have returned from larger urban areas. The ‘Choose Kenora’ campaign represents a grassroots attempt of reversing a psychologically and economically damaging attitude towards the rural lifestyle.⁵ Inevitably, to remain viable, rural areas will need to once again become places where opportunities for employment are found, where the local inhabitants take pride in seeing their communities prosper, and where young people have a convincing reason to stay.ⁱ

i. The phenomena of rural depopulation can be seen at a much larger scale in emerging nations like China. In the 2009 Canadian documentary film titled *Last Train Home*, the Montreal-based filmmaker Lixin Fan portrays an emotional journey of two Chinese parents, traveling back to their rural villages amongst a sea of millions of other parents who are making the same journey to partake in the lunar celebrations with family in the rural villages, a journey so important that it triggers the “...world’s biggest human migration as 130 million workers return by train from the country’s industrial cities to the countryside.”⁶



Figure 2.3: Fading Places; Town of Folgosinho, Serra da Estrela.



Figure 2.4: The Image of Being Urban; Times Square, New York.

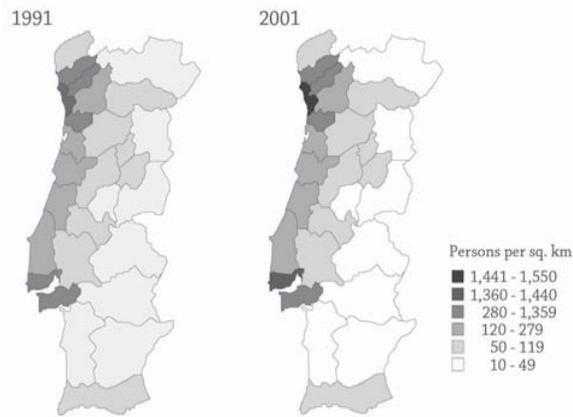


Figure 2.5: Density of Portugal's Population (1991 - 2001).

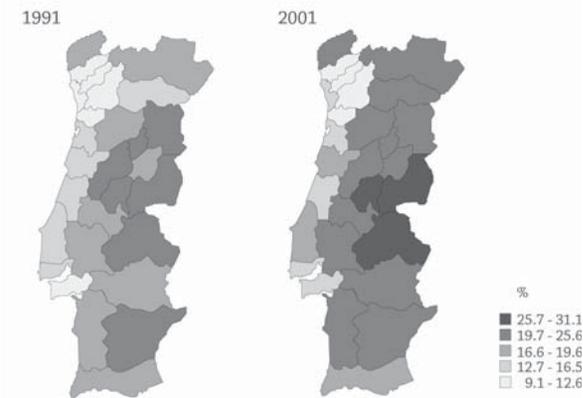


Figure 2.6: Percentage of Portugal's Population Aged 65 and Over (1991 - 2001).

2.1.2 Divided Place / Divided Portugal

In Portugal, the crisis of youth migration is made more strikingly apparent by the added issue of an aging population, leading to a significant generational separation. In the underdeveloped eastern regions, for example, the number of individuals who are able to improve the present state of affairs make up a relatively small percentage of the population. As this trend continues, rural areas become perceived as marginalized places that are disengaged from a modern way of life.ⁱⁱ Something like the limited knowledge of English (as a primary language of commerce) in these areas forms a separation between dispersed communities and an international tourist market. Language barriers can constrain development initiatives. With the language divide too comes problems of accessibility to education. Statistical data indicates that particularly in Portugal, the rural population is proportionally less educated compared to the rural population in other EU countries. As of 2008, the percentage of adults with medium or higher education in Portugal's rural areas was 26.7%, whereas the EU average was 72.3%.⁸ In a 2011 published paper on rural development titled *Portuguese Agriculture and its Role in Multifunctional Rural Development*, the study team posits that development of Portugal's rural areas is hindered by a local labour force that has low foreign language and hostelry skills. In addition, Portugal's rural populations are also impeded by a reduced skill set due their past employment in the agricultural sector which did not require formal education, and thus, the low human potential is understood to be a major constraint to future investment in the rural realm.⁹

ii. The population densities in many European peripheral (mostly-southern) countries show a wide gap between the population densities of rural and urban areas. In Portugal, the average population density in rural areas is 46 inhabitants/km², whereas the average population density for the remaining national territory (urban and peri-urban) is 709 inhabitants/km², as currently reported.⁷

2.2 DECLINE OF RURAL AREAS IN PORTUGAL

Throughout Europe, the process of rural depopulation is directly attributable to modern economic growth of each nation (different in intensity between the northern and southern regions of the continent). In the large northern European states (UK and France) rural depopulation began quite early in the 20th century and was far less intense in the latter half, while in the southern countries (Portugal, Spain, and Italy) depopulation occurred post World War II, with many southern rural areas continuing to experience depopulation to the present day. Currently, the demographic imbalance seen in many southern nations can be directly attributed to major economic transformations that were experienced by each nation independently. It appears that such major economic transformations were almost always exclusively centered on developing urban areas, increasing both the influence and size of cities. This essentially shifted an entire nation's workforce towards cities. In Portugal, the growth and development of the coastal urban clusters can be credited to a large labor force being recruited from outlying inner areas, essentially mandating that the inner rural areas offset the exodus by relying more on mechanized alternatives. In Appendix B, the historic population patterns for the last 100 years are presented in Figure B1 for Lisbon and Guarda (the largest municipality in Serra da Estrela). Figure B1 clearly points to the process of *littoralisation* (defined as the process of concentration of economic activities, population and settlements to a nation's coastal areas).

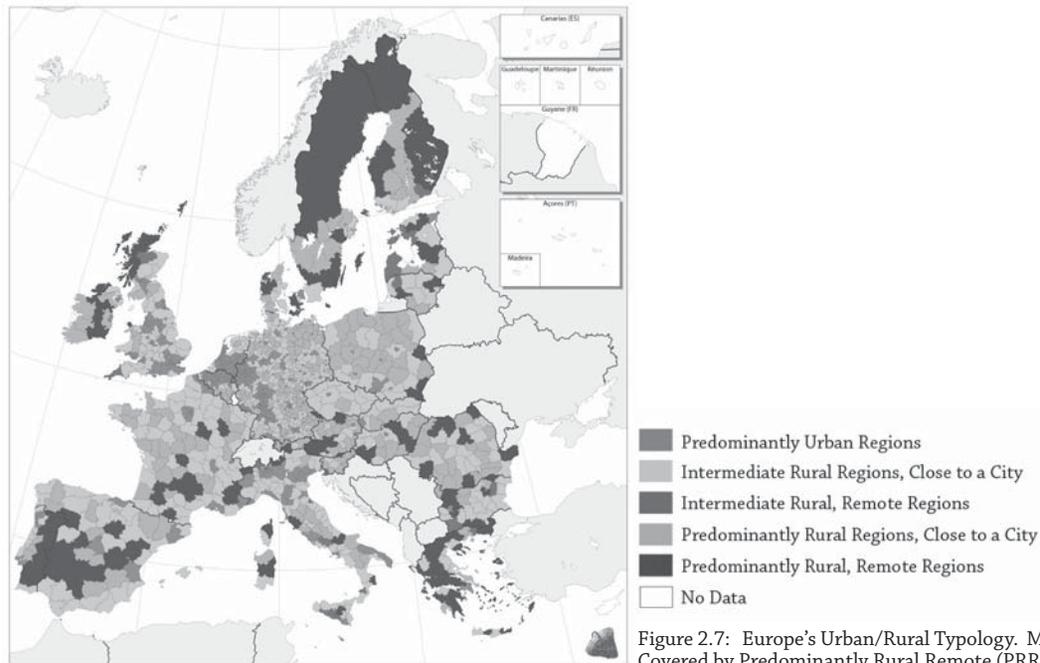


Figure 2.7: Europe's Urban/Rural Typology. Map Showing the Extent of Territory Covered by Predominantly Rural Remote (PRR) Regions.



Figure 2.9: First Migratory Wave: Portuguese Children Waiting to Board a Ship to Brazil, (early 20th century).



Figure 2.10: Second Migratory Wave: Armando Rodrigues from Portugal Welcomed to Cologne, Germany in 1964 as the One Millionth Guest Worker, Receiving a Moped as a Gift.

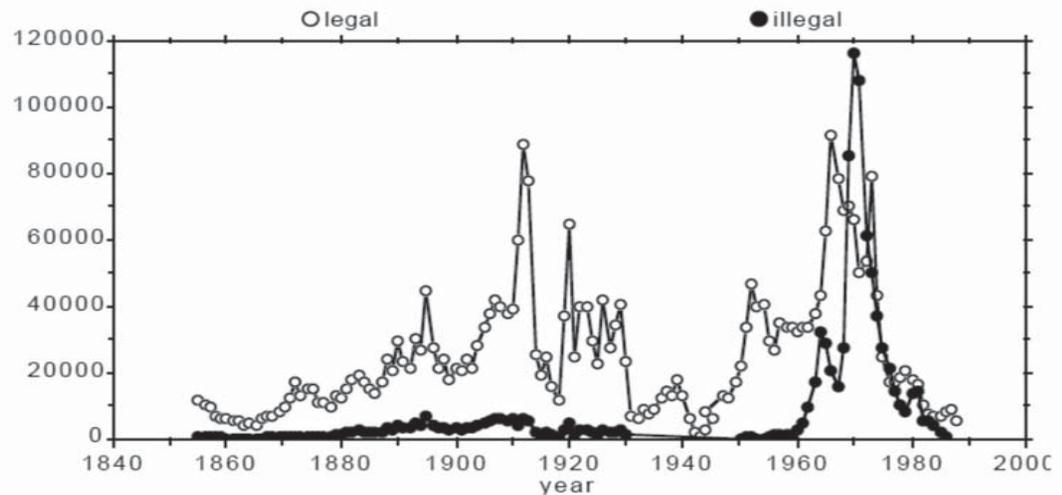


Figure 2.8: Graph Showing Portugal's Two Significant Emigration Waves between 1855 and 1988.

Aside from industrialization, emigration has also had an impact on the demographic trends in Europe. Throughout the 19th century, industrial growth in the Americas created a demand for foreign workers. The first significant wave of emigration from Portugal, occurred from the mid-19th century to the early decades of the 20th century as people from rural regions migrated across the Atlantic to the Americas.¹⁰ The second significant migratory wave occurred following World War II, when the large Western European nations (Germany and France) were undergoing post-WWII reconstruction and economic expansion and were in need of a skilled labor force that could aid with the rebuilding efforts.¹¹ The labor force in the post-war expansion period came from the less developed European nations located primarily on the southern periphery of the continent. Combined, these two waves of emigration had a significant impact on the population of Portugal. In particular, the rural Serra da Estrela region experienced a severe decline in its population during these two main waves of migration. In Figure B2, Appendix B, a detailed correlation between population and emigration is presented for Guarda Region (the largest municipality in the Serra da Estrela). Figure B2 shows that each decade showing an increase in emigration from the Guarda Region is related to a corresponding population decline. The outcome of this emigration shows that by 2007, an estimated population of approximately 5 million people of Portuguese descent now live abroad, with over half living in the Americas (U.S., Canada, and Brazil), and in the more prosperous European nations (France, U.K., Switzerland, Germany, and Luxembourg).¹²



Figure 2.11: Ceramic Tile Mural at Queens Park TTC Subway Station in Toronto. Designed by Ana Viela in Commemoration of Portuguese Immigration to Canada. Mural Inspired by Portuguese Exploration of the New World.

Compared to the rest of the EU, Portugal has maintained a relatively low population of approximately 10.5 million inhabitants that predominately reside in the coastal metropolitan areas of Lisbon and Porto.¹³ On the other hand, the inner regions of Portugal, classified as Predominately Rural Remote (PRR) are comprised of scattered villages with an ageing demographic.¹⁴ The main economic activity in the PRR regions is agriculture and forestry (two sectors of typically low economic performance and strong dependence to federal subsidies).

Given that in more developed nations of the EU the process of industrialization and urbanization started much sooner than it did in Portugal, rural areas in the more developed parts of Europe are today more stable and have better performing local economies. An argument can be made that the decline of rural areas in Portugal can be attributed to specific policies undertaken by successive governments throughout the 20th century, which in retrospect appear to have been poorly conceived.

Portugal began the 20th century by experiencing the effects of the trans-Atlantic migration effect sweeping through most of peripheral Europe. This period of Portuguese history was renowned for government instability, and poor economic performance. This instability led to a coup d'état in 1926 and after a brief military dictatorship, the governance of the country was placed in the hands of a corporatist regime.¹⁵ For a large part of the 20th century, (from 1933 to 1974), all aspects of Portuguese society were essentially controlled by a corporatists and authoritarian ideology. Known simply as the *Estado Novo* (New State), it was conceived and implemented by the conservative dictator Antonio de Oliveira Salazar.¹⁶ For over four decades, the *Estado Novo's* vision of Portugal and its remaining overseas colonies was one of a strictly conservative and reactionary society, obedient to its central leadership, and observant of its strict Catholic faith. During the *Estado Novo* era, the dictatorial government managed to maintain the nation's fiscal balance, provide for annual economic growth, and keep Portugal from the destruction of World War II by maintaining neutrality.¹⁷ Although the *Estado Novo* era provided a level of stability to Portugal, this era was also renowned for restricting civil liberties, obstructing political opposition, and maintaining the last European colonies in Africa. The *Estado Novo* regime practiced a strict policy of corporatism by placing a large part of the country's economy in the hands of a small number of industrialists.¹⁸ According to Elisabete Figueiredo, Assistant Professor at the University of Aveiro in Portugal, modernization and development of the country's agricultural sector was as far as rural development went under the *Estado Novo* regime.¹⁹ For the most part during the *Estado Novo* era, life in rural areas was agrarian in nature, with a large segment of the population living directly from agricultural output.



Figure 2.12: Translation [Por-Eng]: The Lesson of Salzar – God, Country, Family: The Trilogy of National Education.

In 1974, a left-leaning military coup and a civil opposition movement culminated in the ‘25th of April Carnation Revolution’ which changed Portugal from an authoritarian dictatorship to a democratic state.²⁰ Immediately after the revolution, Portugal ended its colonial wars in Africa and gave full independence to all of its remaining Sub-Saharan African colonies. After a period of transition (that lasted an entire decade following the 1974 revolution), Portugal emerged as a democratic state; its new values and direction cemented with other western European nations, with its inclusion into the EU in 1986. Although the social changes enacted in the last quarter of the 20th century gave new freedoms and representative democracy to the Portuguese people, the demographic and economic landscape in many regions continued to decline during the post-revolutionary period, with the most rural areas continuing to experience further abandonment. In Manteigas for example, the overall population of the municipality continued to decline, with a 15% decline during the past ten years alone.²¹ Modernization and investment policies by successive governments, including the post-1974 governments, continued to focus on advancing urbanization of metropolitan coastal areas and industrializing the agricultural sector. Many of the traditional capacities of the state were diminished as the country’s agricultural sector implemented the Common Agricultural Policy (CAP) required under EU membership.²² For the most part, the CAP favored the larger economies of the EU, and in Portugal, the new CAP philosophy clashed with deeply rooted values and rural practices.

Socially, the EU experience turned the traditional Portuguese moral attitudes of hard work into an apathetic way of thinking that was more focused on procuring European assistance, thus creating a new “subsidy culture.”²³ Furthermore, the compulsion to modernize the country’s infrastructure in order to create a modern EU state without a sound financial footing not only deteriorated the economic conditions of the country’s remote rural regions, but also laid the foundations for eventual bankruptcy and, as of 2011, a substantial monetary bailout by the EU and other international financial institutions.²⁴



Figure 2.13: A Poster of the April 25, 1974 Carnation Revolution.
Figure 2.14: Iconic Photo of the April 25th Revolution.

2.3 ATTEMPTS AT RURAL DEVELOPMENT IN PORTUGAL

Given that rural areas constitute roughly 70% of the country²⁵, a great extent of the country's territories were directly impacted by the various rural development policies carried out over the course of the past century. And it is exactly those policies of the past which are responsible for the marginalized state that many of the nation's rural areas are in today. Two rural development policies in particular - pursued from the end of the Second World War to the end of the 20th century by two successive forms of governments (dictatorial and democratic) - are primarily responsible for rural marginalization and abandonment in Portugal.

The first rural development policy was based on the theory that only rural sectors and regions showing the most potential for economic growth and return are worthy of state funding. This policy was primarily aimed at developing the country's rural areas by modernizing Portuguese agriculture and was implemented by the *Estado Novo* dictatorship at the end of the Second World War. This policy more or less remained in place until the bloodless 1974 Carnation Revolution. The second noteworthy rural development policy was followed by the democratic system that governed Portugal in the post-1974 period. The primary goal of the post-1974 government was rapid accession to the EU. Thus, the rural development policy followed during this period was simply a restructuring of the existing agricultural sector to be more in harmony with the Common Agriculture Policy (CAP) practices of the EU.

The rural development policies of both the *Estado Novo*, and the subsequent democratic governments were both exclusively devoted to upgrading large-scale agricultural sectors at the expense of direct investment in the promotion of rural tourism and the valorization of authentic rural products. It appears that the prevailing focus in the second half of the 20th century was exclusive investment in agriculture, with the general belief that over time, entire rural regions would also benefit from the modernization of agriculture. Hence, as various rural development policies were put in practice, it was anticipated that the standard of living would be modernized evenly throughout all rural regions. However, in reality, the only regions that saw true development and lifestyle improvements in the last century were the coastal cities and towns.

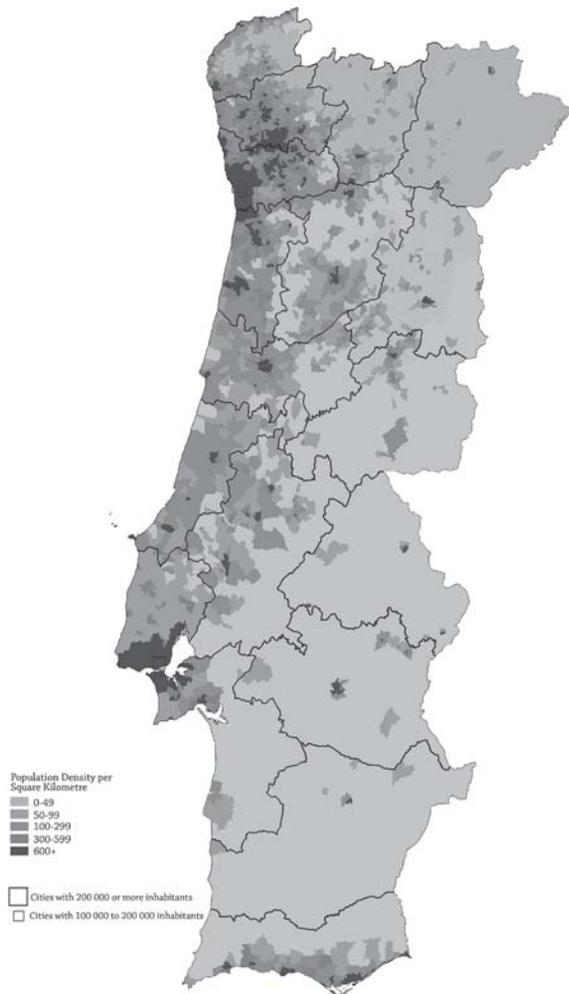


Figure 2.15: Population Density Map of Portugal, 2009.

2.3.1 The Paradigm of Continued Economic Growth: Post WWII-1974 Period

The concept of economic growth is closely associated with the three decades of growth and prosperity following the Second World War when governments in Western Europe favored investing in large businesses which in turn hurt independent farmers and limited the diversification of the economy of many nations.²⁶ In Portugal, development after WWII and right up to the mid-1970s was primarily based on mechanization of the agricultural and industrial sectors (attractive for development because year-to-year growth in both sectors was easy to quantify and improve by introducing machinery). The corporatist *Estado Novo* dictatorship spent the WWII conflict years maintaining strict neutrality, but used this period to plan for a fundamental change of the nation's traditional farming practices by modernizing agriculture using the paradigm of economic growth. In *The Portuguese "Estado Novo": Programmes and Hindrances for Agrarian Modernization (1933-1974)*, the authors Táboas and Casteleiro state that:

"...the foundations for a decisive change in direction of Portugal's post-war economy were laid during the conflict, leading to a process of industrialization to modernize the country, and the subordination of farming and traditional agricultural interest."²⁷

The ruling regime of the time preferred the formation of a small number of business conglomerates that were entrusted and given control of large segments of the Portuguese economy to modernize. Immediately following WWII, control of the agricultural sector was given to the nation's industrialists who attempted to create a farming model characteristic of the *Green Revolution*.²⁸ The Green Revolution in agriculture occurred in the post-WWII period and was based on the use of scientifically improved seeds, fertilizers, and farm machinery to dramatically increase annual yields.²⁹ Based on the movement's success in larger European countries, a precedent was set for Portugal.

"The story of English wheat is typical. It took 1,000 years for wheat yields to increase from 0.5 to 2 metric tons per hectare, but only 40 years to climb from 2 to 6 metric tons per hectare."³⁰

Before implementing the post-war modernization policies, the Portuguese industrialists assessed the agricultural landscape of Portugal in search of regions with the greatest potential for growth. The outcome was the emergence of two predominant zones, symbolically separated by the Tejo River.

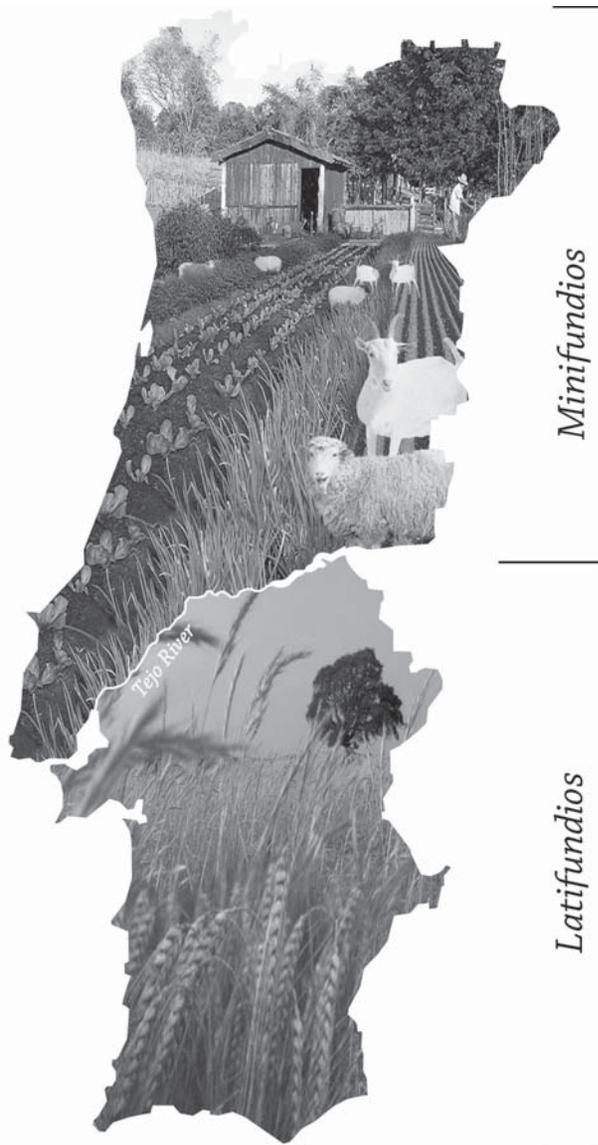


Figure 2.16: Juxtaposition of the *Minifundios* and the *Latifundios* in Portugal.

To the North of the Tejo River, the agricultural area came to be known as the *Zona de Agricultura Familiar* (Area of Family Farming). This area includes a more dispersed rural population and is characterized by small plots of land known as *minifundios* and the prevalence of multi-crop cultivations and breeding of livestock.ⁱⁱⁱ The agricultural area south of the Tejo River is known as the *Campos do Sul* (Southern Fields), and is characterized by large farms known as *latifundios* where wheat is the main cultivated crop.³¹ Due to larger farms and more fertile soil, the *latifundios* became prioritized for development by post war industrialists.

Agricultural modernization in the south showed better results and was based on massive inputs and technologies from outside the sector (mechanization, motorization, agricultural chemistry, and genetics).³² This caused the *latifundios* to experience significant increases in their annual yields. The *Estado Novo* regime in particular favored the southern wheat-growing Alentejo region, which is known throughout the nation as the “bread basket” of Portugal.³³ The *minifundios* farms by comparison were widely dispersed, and in many cases inaccessible due to their mountainous nature. The rugged northern region seemed a much more challenging endeavor. Basically, the “...lack of both physical and human capital, coupled with infrastructural deficiencies aggravated by geography (mountainous and remote) were major obstacles to industrialization.”³⁴ By no means in a position to compete with the larger industrial *latifundios* farms of the south, many family-run farms found it extremely difficult to survive.^{iv}

By its nature, development based on the paradigm of economic growth creates a dichotomous view of space that isolates developed areas from underdeveloped ones. The urban power center is where the dichotomization of the Portuguese territory into *minifundios* and *latifundios* took place.³⁷ There was no opportunity for input from rural stakeholders, and given that the urban industrialist saw no potential in the *minifundios*, the fate of many of the rural communities north of the Tejo River was quite predictable. These regions and especially the ones found on the rugged Serra da Estrela mountain range have distinct natural and cultural features that could have been properly developed, but were instead left

iii. Manteigas is located in the *Zona de Agricultura Familiar*, located to the north of the Tejo River in the very heart of the Serra da Estrela mountain range.

iv. In her analysis of past rural development policies in Portugal, Elisabete Figueiredo, sees rural areas in Portugal that do not display growth potential as being ignored by the global development processes, and states that: “Rural areas that do not have a large-scale production capacity, or put another way do not have conditions that allow the intensification of production, increasing productivity and agricultural modernization, are marginalized by the global development process.”^{35, 36}

to decline. As shown in Figure B3 in Appendix B, the population data of all the municipalities in the Serra da Estrela region collected between 1801 and the turn of the 21st century point to a rise in rural abandonment after 1960 once the *Estado Novo* regime fully applied the economic growth principles. Failing to recognize other potentially profitable economies, the developments of predecessors to the contemporary sectors like leisure and health tourism were rarely, if ever, given consideration for the rural, as they did not follow the almost literal (quasi-metaphorical) paradigm of economic growth through agriculture.

2.3.2 Restructuring of the Agricultural Sector: Post 1974–2000 Period

The second major rural development policy followed in the second half of the 20th century was pursued by the democratic system that governed Portugal following the 1974 Carnation Revolution. The primary goal of Portugal's new government was the creation of a democratically elected system of governance and speedy entrance into the EU. In order to prove its credibility after the 1974 revolution, Portugal gave full independence to its remaining colonies, held its first free elections in over four decades, and restructured its policies to match those of other Western European nations. In essence, the rural development policy followed by the post-1974 governments was simply a reform of the agricultural sector to become more harmonious with the Common Agriculture Policy (CAP) followed in the EU.

The CAP was originally created by the founding EU nations in the late 1950s as a way to stabilize the agricultural markets in Europe, increase productivity, and allow the agricultural sectors in each member nation to stay viable, (ultimately, the CAP served to better navigate the tides of globalization).³⁸ Following Portugal's entrance into the EU, Portugal's agriculture was restructured to follow agreements that were for the most part in favor of the founding EU member states and their established high-yield production farms. This period of rapid restructuring and integration was difficult for many Portuguese rural areas with traditional farming styles. The early years of the integration process for most rural areas were marked with:

“...innumerable signs of unrest including the abandonment of agricultural activity and the decline of traditional village activities, the rural exodus and the ageing of the population, the lack of initiative or failure of individual and collective projects, and the loss of faith in the protective role of the public institutions.”³⁹

During the period between 1989 and 1995, the agricultural population in Portugal declined by 31% and average age of the farmers over the age of 54 increased by 12%, while the number of farms in Portugal dropped by 25%.⁴⁰ Membership in the EU required of Portugal's rural farmers to invest in modernizing their practices to better compete in Europe's enlarged agricultural market. This caused many rural farmers to go into debt, with the “average expenditure in interest per farm increasing to 30% between 1989 and 1992.”⁴¹ With increased levels of debt, many smaller farms were simply abandoned, or their fertile lands converted into forests. Moreover, after joining the EU, many of the traditional protective and regulatory roles

of the state were replaced by private companies.⁴² Many rural communities found it difficult to readjust their agricultural practices without the support of the state and did not benefit from EU integration.

High-quality regional products were discontinued because their production no longer met standardized requirements of the EU. For example, products such as cheeses, sausages and brandy were deemed to be outside of the assigned EU standards and were no longer allowed to compete on the continental market.⁴³ The harmonization with EU laws also increased the state bureaucracy and created many unnecessary institutions. The EU's CAP, stipulates that the "...common interests of farmers must be institutionally organized in order to be recognized."⁴⁴ This stipulation created many artificial and unnecessary bureaucratic organizations, further distancing and alienating the concerns of small rural producers.

The rural development policy followed by the post-1974 governments was in essence a form of "shock therapy"; a rapid reform of the nation's agricultural sector to harmonize with the EU's Common Agriculture Policy (CAP) made possible by the change in the country's direction after the 1974 revolution. According to the principles of "shock therapy" endorsed by Milton Friedman the Nobel winning economist, when a crisis occurs such as a revolution, an economic "blank slate" is created. All subsequent actions taken by the new system of governance are based on ideas that are lingering around waiting for a crisis to occur so they can be enacted.⁴⁵ In the case of late 20th century Portugal, agricultural policies were latent in the bureaucracy of the EU, waiting for a new member state to join so as to implementing them. Data collected during the first 6 years of the transition process indicates a dramatic rise in rural exodus and ageing of the remaining rural population. Given the lateness of Portugal's entry into the EU, relative to the founding European nations, it is clear that a rural development policy based exclusive on restructuring of agriculture to adhere to practices established by other nations is a policy decision that ignores the local rural conditions and unintentionally leads to further rural marginalization.

At the turn of the 21st century, the EU's CAP was amended to include policies specifically aimed at reviving rural areas. It appears that the 21st century's vision of Europe's rural areas is significantly different than the one from the previous century. For the first time, there is an official rural development policy in Europe that goes beyond improving agricultural output and competitiveness to improving the quality of life and diversifying the local economies of the continent's rural areas.⁴⁶

PART 2: ENDNOTES

1. António Campar De Almeida, "Rural Abandonment and Landscape Evolution in the Central Region of Portugal," in *Issues in Geographical Marginality: Papers presented during the Commission Meetings 2001-2004 held at the Rhodes University*, 53-63 (Grahamstown: Rhodes University, 2007).
2. Maureen Gallery Kovacs, *The Epic of Gilgamesh* (Stanford: Stanford University Press, 1989), 19.
3. Lianne George, "Kids, Come Back!," *Maclean's* November 29, 2004, 58.
4. Idem.
5. *Ibid.*, 58.
6. Sandhu Sukhdev, "Last Train Home: Interview with Lixin Fan," *The Telegraph* February 4, 2011.
7. Pereira and others, 6.
8. Venture-Lucas and others, 42.
9. Idem.
10. Carlos Teixeira and Victor M.P. Da Rosa, *The Portuguese in Canada – Diasporic Challenges and Adjustments* (Toronto: University of Toronto Press, 2009), 21.
11. *Ibid.*, 27.
12. *Ibid.*, 23.
13. Instituto Nacional de Estatística (Statistics Portugal), "Resultados Preliminares 2011," http://www.ine.pt/scripts/flex_v10/Main.html.
14. Pereira and others, 6.
15. R. J. Stove, "A Patriot for Portugal" review of *Salzar: Apolitical Biography* by Filipe Ribeiro De Meneses, *The Remnant*, May 31, 2010, 15.
16. Idem.
17. Idem.
18. Daniel Táboas and André Casteleiro, "The Portuguese "Estado Novo": Programmes and Hindrances for Agrarian Modernization (1933 – 1974)," in *Fascism and Agriculture, Santeiago de Compostela: Proceedings of the Conference held at the University of Santiago*, (Santiago: University of Santiago de Compostela, 2011).
19. Elisabete Figueiredo, "O Sol na Eira e a Chuva no Nabal – Que rural propõem as políticas de desenvolvimento." *V Colóquio Hispano-Português de Estudos Rurais* (2003): 5.
20. Stove, 16.
21. Instituto Nacional de Estatística (Statistics Portugal).
22. Pedro Hespanha, "The Dynamics of Globalization: Social Crisis and Conflict in Portuguese Rural Areas." *Centro de Estudos Sociais Oficina do CES 85* (1996): 1-17. 5.
23. *Ibid.*, 11.
24. Raphael Minder, "Portugal Agrees to a \$116 Billion Bailout," *The New York Times* May 3, 2011, B1.
25. Pereira and others, 9.
26. Jean Gadrey, "Is The Concept of Economics Growth Autistic," *Post-Autistic Economics Review* 11 (March 2001): <http://www.paecon.net/PAERReview/wholeissues/issue11.html>.
27. Táboas, 7.
28. *Ibid.*, 9.
29. Peter Hazell, "The Green Revolution." *Oxford Encyclopaedia of Economic History* (2003).
30. Idem.
31. Táboas, 2.
32. *Ibid.*, 9.
33. Quinta do Pomarinho, "Turismo Rural Alto Alentejo," <http://www.pomarinho.com/alentejo-portugal/.html>.
34. Helena Marques, "Research Report: Searching for Complementarities Between Agriculture and Tourism – the Demarcated Wine-producing Regions of Northern Portugal." *Tourism Economics* 12, 1 (2010): 147-160. 147.
35. The survival of many family-run farms can only be explained by a combination of factors: remittances sent by migrants abroad, official credit and the social outreach of rural social security subsidies (pensions) from the late 1960's. Táboas, 9.
36. Figueiredo, 5.
37. Idem.
38. Hespanha, 4.
39. Idem.
40. *Ibid.*, 5.
41. Idem.
42. *Ibid.*, 7.
43. *Ibid.*, 9.
44. *Ibid.*, 10.
45. Naomi Klein, *The Shock Doctrine: the Rise of Disaster Capitalism*, (New York: Metropolitan Books/Henry Holt, 2007), 7.
46. European Commission, "Agriculture and Rural Development," http://ec.europa.eu/agriculture/index_en.html.

PART III

Finding a Way Forward





3.0 EXPLORING STRATEGIES TO OFFSET RURAL ABANDONMENT

With the continued decline of Portugal's rural regions as a consequence of unfavorable developmental conditions, it is imperative that something be done to mitigate the processes involved in rural depopulation and create an environment for revival. From an architectural perspective, is it possible to introduce a design solution that can once again reinvigorate an entire region?

It is with this question in mind that I have decided to focus my research on a development alternative that does not transform or disrupt the local dynamics, but rather becomes rooted in the cultural and historical heritage, among other intrinsic site characteristics. What is proposed is a renewed way of protecting these aspects of Portugal's cultural identity, which until very recently was more defined by activities common to rural life, to agriculture, and to a direct relationship with the land. The role of architecture in this is to be a progressive instrument that supports and celebrates opportunities inherent in rural areas, one that reinstates a rich rural fabric full of culture and community life.

Figure 3.1: The Fertile Slopes of Manteigas.



Figure 3.2: Quaint Town of *Linhares*, Serra da Estrela.

As agriculture is no longer the primary driver for development in rural areas of the EU, there is a strong potential for diversification of the rural economy to satisfy new market demands for leisure, recreation and rediscovery of the authentic rural traditions and natural beauty of the countryside. At the turn of the 21st century, the continent-wide EU Common Agricultural Policy (CAP) was amended to include an official rural development policy.¹ The current version of the EU's CAP goes beyond improving agricultural output and competitiveness both to improving the quality of life as well as diversifying the economies of rural areas. In essence, the new vision is focused on:

*"[providing] a range of public services going beyond the mere production of foodstuffs – and the ability of the rural economy to create new income and employment whilst conserving the culture, environment and heritage of the rural areas."*²

Rural areas in Portugal (and those of other EU states) are increasingly linking tourism to the rest of the local economy through EU-sponsored regional development programs that emphasize endogenous development and partnership building.³ Of all of Portugal's remote natural areas, Serra da Estrela offers the greatest opportunity for the successful introduction of new development strategies which can act as catalysts for further redevelopment of the wider rural region.

i. In expenditure terms, the CAP is the most important policy of the EU amounting to 45.4% of the EU budget in 2006. Since its inception, the CAP has been reformed a number of times to reflect changes within Europe and the global markets. Today, the CAP is very different from its original form, and from the CAP of the late 1980s that Portugal had to integrate into following its accession into the EU in 1986.¹

3.1 INTEGRATING TOURISM IN THE RURAL ECONOMY

Throughout history, leisure journeys have fulfilled an inner desire to revitalize the body, mind and spirit, but the modern concept of vacation (a time away for rest) emerges from the influences of industrialization and urbanization combined with a desire for the romantic.⁴ In the early 1800s the concept of going to the mountains for health and leisure was seen as being in vogue, and by the 1820s mountaineering and adventure pursuits were entrenched in Europe. By the 1930s, adventure travel was mainstream in Australia, Canada, Great Britain, New Zealand and the US.⁵ In a contemporary context, vacationing and leisure activities are pursued not only for physical and mental revival, but now are strongly linked to the definition of one's identity outside of their typical domestic situation.ⁱⁱ

Throughout the world, it is expected that in the 21st century, leisure tourism will increase, as new waves of people from emerging market nations such as China, India, Brazil and Russia will have more disposable means to seek out new tourist destinations.⁷ With this anticipated growth, economists will evaluate the tourism industry using measurable units such as the number of hotel rooms, meals, and airline seats booked. However, these economic units are not the true byproducts of tourism; tourism is instead a marketplace of experiences.⁸ In this marketplace, a new value system considers heritage, culture, and nature as essential resources that must be present in abundance in order to support leisure experiences and allow for a place to truly become a tourist destination.

As people travel more frequently, the expectations of what constitutes a satisfying destination have changed. Aside from sun and sand destinations, people are now increasingly interested in “*genuine experiences rather than staged ones.*”⁹ For many people in the developed world, travel is no longer a luxury but is instead considered a part of living in a modern world. As people travel more, they become more aware and attracted to places that have high heritage, culture and environment value. In a world where traditional medicine is once again regaining its importance, health and wellness tourism is becoming a growing sector of the tourism industry. And as travel experiences become richer, leisure experiences feed the desire to travel even more; people *become career travelers.*¹⁰

ii. As workers in contemporary societies, the individual's relationship to society is often partial and limited. The freedom to travel, and the leisure activities undertaken has become an expression of the modern individual. “*For many people, the leisure self is our proudest expression. We frame and display vacation photographs in our homes and workplaces, so that we might refer to this “true self” even outside of the vacation. This is one of the most liberating activities from isolation and homogeneity of modern life.*”⁶



Figure 3.3: Machu Picchu, Peru; an Example of a Historic and Cultural Tourist Destination.



Figure 3.4: The Douro River Valley in Portugal. A UNESCO World Heritage Site.

In order to protect sites considered to have strong heritage, cultural and natural value, domestic and international agencies and organizations have classified many sites as protected areas. As of 2010, the *United Nations Educational, Scientific, and Cultural Organization* (UNESCO) World Heritage List, includes 931 sites deemed to have high cultural and natural importance for the common heritage of humanity. Of these sites, 720 are cultural, 183 are natural, and 28 are mixed properties.¹¹ Portugal currently has 14 sites listed on the UNESCO World Heritage Sites, which is quite a high number for a country of a relatively small size and is unmatched by any other country of comparable size.

One example of a cultural tourist site found in rural Portugal is the Alto Douro Wine Region (classified as a World Heritage Site), which has managed to transform its struggling agriculture sector from being the sole industry by incorporating tourism as a driver for rural development. As described by UNESCO:

“Wine has been produced by traditional landholders in the Alto Douro region for some 2,000 years. Since the 18th century, its main product, port wine, has been world famous for its quality. This long tradition of viticulture has produced a cultural landscape of outstanding beauty that reflects its technological, social and economic evolution.”¹²

In recent years, with the help of recent EU programs that support this type of rural development, the Douro region has found a market niche for agritourism. Agritourism is a specific type of rural tourism in which the rural hosting house has been integrated into the agricultural estate, allowing visitors to take part in agricultural or complementary activities on the property. Patrons are thus brought into the wine-making process, participate in harvesting of grapes, and taste and purchase the locally bottled wine.¹³ This type of tourism allows the visitors to have a more integrated experience with the destination, and tends to attract a growing number of visitors from more developed regions interested in temporarily integrating themselves in a network of uniquely local cultures. This is a tourism which is sustainable because it valorizes local resources and ensures their protection.

Portugal is today considered among the 20 most visited countries in the world, receiving an average of 13 million foreign tourists each year.¹⁴ For a relatively small country; Portugal is blessed with a variety of landscapes and cultural treasures. Tourists that typically visit Portugal are of British, Spanish, or German origins that come in search of the sun and beaches of Portugal's southern Algarve region, and the historic fabric of both the capital Lisbon and the northern city of Porto. However, in recent years, tourists are increasingly visiting Portugal in search of new cultural, gastronomic, and environmental experiences as well. Of the many touristic centres in Portugal, the mountainous northern and central regions (namely the Serra da Estrela), offer the greatest potential for an expansion of the tourism industry away from the coastal regions and into the interior of the country.

Since the early 20th century, the Serra da Estrela region has served as a top destination for winter tourism in Portugal. Over the years, skiing infrastructure has significantly improved in the Serra da Estrela from its humble beginnings when ropes instead of ski lifts were used to ferry skiers to the higher slopes. In the summer months, hikers are a common sight through the Serra da Estrela region with many established trails remaining in use to the present day. In the past 100 years, the influx of tourism activity in the region has fueled the development of many hotels, ski resorts and more recently spa resort facilities. The next few pictures represent early 20th century tourism on the Serra da Estrela.



Figure 3.5: Sun and Sand Tourism in Algarve, Portugal.



Figure 3.6: Lisbon Harbour, Portugal.



Figure 3.7: Tourism Center in Serra da Estrela, 1960's.



Figure 3.8: Tourists Arriving in Serra da Estrela to Explore the Winter Landscape.



Figure 3.9: Ski Chalet in Serra da Estrela.



Figure 3.10: Skiers Using a Rope to Climb Back up the Ski Slopes.



Figure 3.11: Early 20th Century Tourism in Serra da Estrela.



Figure 3.12: Tobogganning in Serra da Estrela.



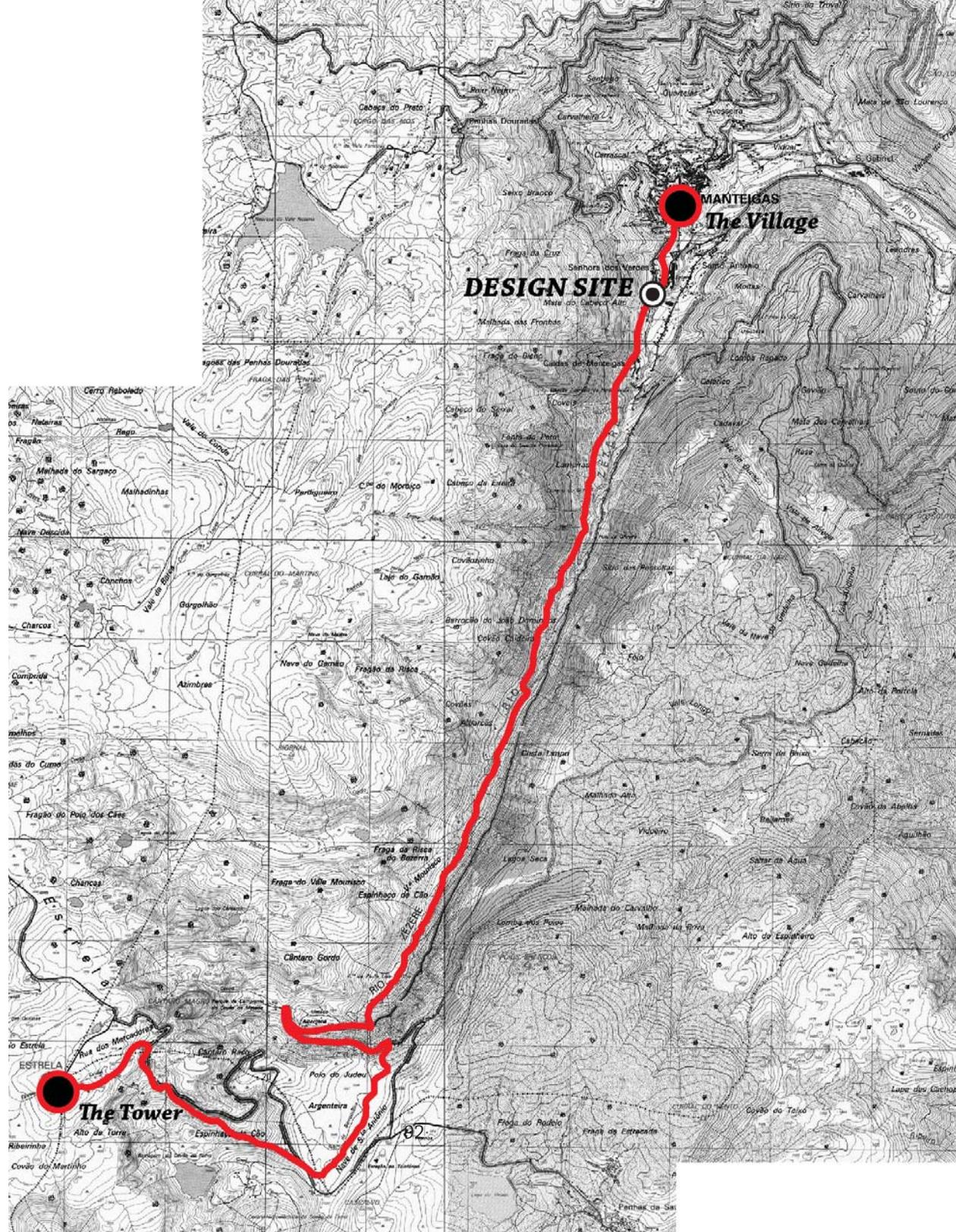
Figure 3.13: Participant of a Skiing Competition, Serra da Estrela.



Figure 3.14: Hikers Visiting the "Good Star" Monument.



Figure 3.15: Tourists in Front of a Hotel in Serra Da Estrela.



DESIGN SITE

MANTEIGAS
The Village

The Tower

In recent years, projects like the *Estrela Green Track* have been introduced in the region to promote further development by making use of the natural resources found in Serra da Estrela to facilitate various outdoor activities. Hiking trail networks have been set up in the region with the aim of showcasing the attractiveness and natural biodiversity found on the mountain. One of the more scenic trails in the region is the Zêzere Glacier Route which runs from the *Torre*, the highest point in Portugal for approximately 18 kilometers through the Zêzere River Valley to the St. Peter's Church in the town of Manteigas.¹⁵ Along the way, travelers encounter waterfalls, streams, and natural hot springs. The *Estrela Green Track* initiative has helped increase the accessibility of the Serra da Estrela mountain range as a popular tourist destination. With an abundance of natural features, many other opportunities for local and regional development in the Serra da Estrela region still remain to be explored. The next few pictures depict the varying scenery encountered along the Glacier Route trail (beginning at the *Torre* and ending at the St. Peter's Church in Manteigas).

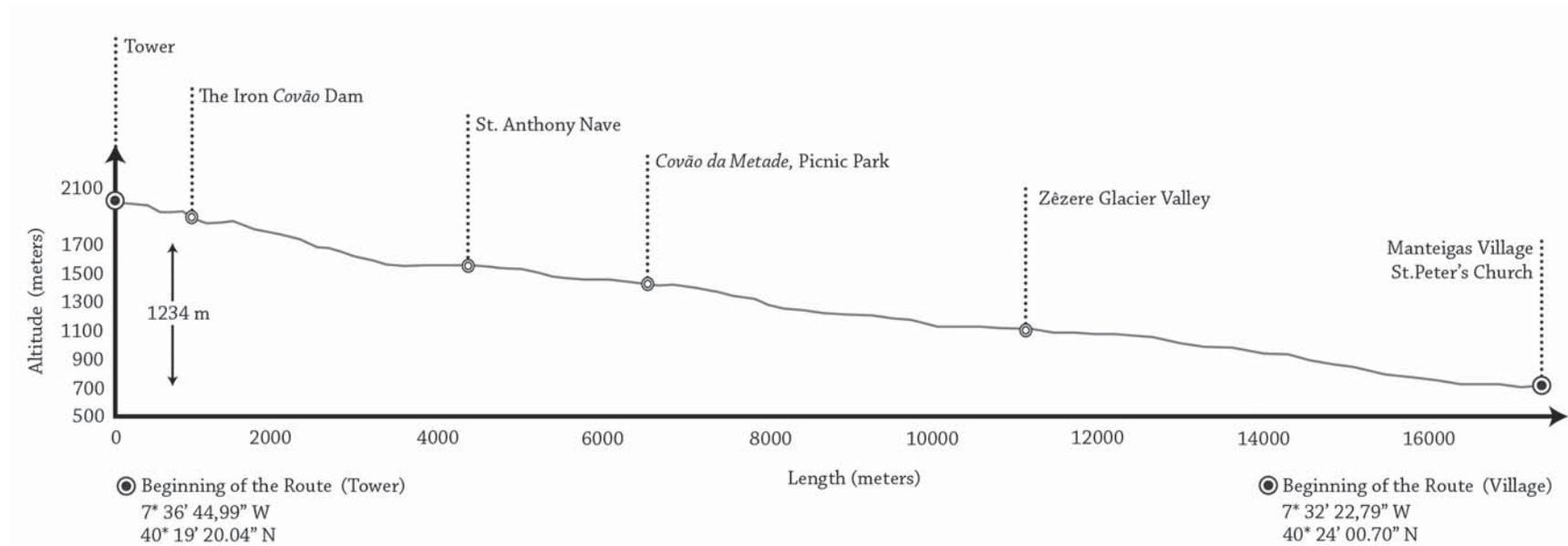


Figure 3.16: The Zêzere Glacier Route Trail.

Figure 3.17: Changing Elevation and Distance Along the Zêzere Glacier Route.



Figure 3.18: The Torre Monument (Beginning/Ending of Glacier Route).



Figure 3.19: The Iron Covão Dam Located on the Higher Plateaus.



Figure 3.20: View of St. Anthony Mountain Meadow Showing a Typical Granite House.



Figure 3.21: Hardwood Forest (*Covão da Metade*), Picnic Park.



Figure 3.22: The Glacier Route Along the Zézere Valley.



Figure 3.23: Pasture Farming Activities Along the Glacier Route.



Figure 3.24: Placards on the Glacier Route Showcasing Stakeholders Involved in the Protection and Promotion of the Serra da Estrela Region.



Figure 3.25: Information Boards Along the Glacier Route, Highlighting Points of Interest in the Serra da Estrela Natural Park.



Figure 3.26: Panoramic View of the Town of Mantiegas and a Typical Stone House in the Foreground.



Figure 3.27: Approach from the North to Manteigas Along the Glacier Route.



Figure 3.28: St. Peter's Church, Manteigas (Starting/Ending Point on the Glacier Route).

3.2 THE INHERENT POTENTIAL OF PORTUGAL'S MOUNTAIN RANGES

Due to their particular geology, the mountain ranges of Portugal's interior countryside are abundant with natural springs (many of which have favorable, therapeutic properties that have been renowned since ancient Roman times). In most countries the mountainous regions are typically regarded as distinct, sacred spaces "...of identification and union for their people... as environmental sanctuaries... and as spaces known for their stability and endurance of values not to be found in today's urban-industrial society."¹⁶

Until the 1960s the pastoral lifestyles of Portugal's *serras* (mountain ranges) complemented an agricultural way of life in the plateau regions, and supported an atmosphere where local products and traditions thrived. And although it is these same areas that in the later half of the 20th century experienced crippling decline and abandonment, it is here too that there is the greatest potential for tourism and increased regional development.

Take for example the Serra da Estrela mountain range which benefits by being easily accessible with recently improved road networks that connect it to the rest of the country, (and internationally to Spain and France). In addition, the region's cultural and natural conditions are the source of a variety of unique and region specific products and activities. Some of the best-known products include the local mountain cheeses, wool textile products, and natural spring waters. Adventure sports are also very common in this area, from skiing to paragliding to mountain biking. And while the resident population of Serra da Estrela has been declining and the challenges to retain the population are very evident today, this scenic location is full of rich natural resources, a unique culture, and a marketable setting that opens doors to readily imaginable prospects.

There is a rare combination of plants with medicinal properties, therapeutic thermo-mineral waters, and clean high-altitude air that all suggest an ideal location for the inclusion of health treatment and recuperation centres. The availability of these very desirable natural elements makes this an ideal area where one can truly experience rejuvenation and wellbeing through ones direct interaction with the elements.

3.3 HEALING MYTH OF THE SERRAS

The Serra da Estrela is recognized throughout Portugal as a place where people have historically gone to restore their health and wellbeing. In *Three Realities in a Literary Fantasy*, the Portuguese author Jose Baptista Duarte Lucas narrates a popular regional legend that depicts a bright star flickering more pronounced in the night sky as being both the namesake of Serra da Estrela as well as its guardian angel.¹⁷ The guardian star of the mountain appears to those who are struck by the “majestic natural beauty” of the mountain and wonder in amazement to a higher power who is “responsible for the mysterious hot springs that flow at the foot of the mountain, and who made so pure and healthy the air to breathe, that so much strength and vigor is restored.”¹⁸ Speaking directly of a divine act, the legend suggests that on the seventh day of creation, before departing from a rest on the plateaus of the Serra da Estrela, God himself left behind a trinity of natural treasures in permanent homage to the *Eternal Creator*. The trinity is represented by natural richness, water and altitude. A full version of the legend depicted by Duarte Lucas detailing the creation of the natural healing elements surrounding Manteigas is included in Appendix A.



Figure 3.29: Manteigas Valley.

3.3.1 Plants with Medicinal Properties

The natural richness depicted by Lucas in *Three Realities in a Literary Fantasy* is most evident on the Serra da Estrela in the biodiversity of plants with medicinal properties. For millennia, there has been a strong relationship between mythology, iconography and the chemistry of local flora for therapeutic use. As an example, discoveries of clay tablets dated as far back to 3,000 BC portray ancient Sumerian tribes experimenting with rudimentary pharmaceuticals.ⁱⁱⁱ Ancient botany has now developed into the study of ethno-pharmacology, the scientific study of the use of natural products by different ethnic or cultural groups in the treatment of various diseases.²¹ Given the vast number of natural habitats found throughout the planet, it becomes quite difficult to effectively assess each plant species found in nature for its potential medicinal use, hence the importance of such a specific field of study. Today, it is estimated that only a very small percentage of all known species of plants (around 5-15%) have been investigated for their potential to treat diseases.²²



Figure 3.30: Illustration of an Ancient Sumerian Clay Tablet.

As a starting point, ethno-pharmacological studies are undertaken by first conducting a survey of the healing plants documented by various cultural groups. Survey results are important starting points for discoveries because they direct additional pharmacological research and testing in the most promising direction. Many of the drugs used in modern medicine can be traced back to ethno-pharmacological studies conducted by multidisciplinary teams consisting of pharmacologists, doctors, biologists and anthropologists. It is estimated that approximately 75 percent of drugs derived directly from plants have been discovered through ethno-pharmacological investigations.²³ And though a fairly modern and multidisciplinary practice, there are traces of similar medical advancements 400 years in the past. For example, the world's first anti-malarial drugs, discovered in the 17th century by the Italian Jesuit priest Augustino Salumbrino, were derived from indigenous traditions of regions in Bolivia and Peru. Seeing that the tree bark of the cinchona tree could effectively treat malarial fever, Salumbrino returned to Rome able to treat the sickened in the marshy outskirts of the city (including several cardinals and popes).²⁴ By 1820, French researchers Pierre Pelletier and Joseph Bienaimé Caventou had isolated the compound *Quinine*, an anti-malarial



Figure 3.31: Ancient Chinese Emperor Shennong, Depicted as a 'Divine Farmer' for His Discoveries of Medicinal Plants and Herbs.

iii. The ancient Sumerian clay tablets displayed in the British Museum, which are dated to around 3,000 BC, describe the medicinal use of the plants found in the local environment. Moreover, the extensive knowledge of the ancient Chinese and Hindu civilizations regarding the medicinal and toxic properties of various plants has been preserved through countless stories, legends, and ancient records that remain popular to this day. The ancient Chinese Emperor Shennong for example who is said to have lived 5,000 years ago is described in Chinese legends as a "Divine Farmer" with a transparent body who discovered over 400 drugs with medicinal properties by personally testing different local plants and herbs to determine their medicinal and toxic effects.¹⁹ Today, many of the drugs found in pharmacies throughout the world can trace their origin to herbs and plants identified by ancient civilizations as being beneficial to human health. The lingzhi mushroom for example, which according to a Chinese legend was first discovered by Emperor Shennong and is still used as part of traditional Chinese medicine has been recently confirmed in a published study to have strong anti-tumor and immune-therapeutic properties. According to P. R. Paterson the author of the 2006 research study of the lingzhi mushroom, the recent findings represents "...a prime example of an ancient remedy being of great relevance to the modern era."²⁰

alkaloid isolated from cinchona tree bark samples and named after the Inca word for cinchona tree bark, “Quina” which roughly translates to “holy bark.”²⁵ The isolation of the *Quinine* compound allowed a breakthrough for the development of important anti-malarial drugs that are credited for saving millions of lives worldwide.^{iv}

In Portugal, the Serra da Estrela mountain range encompasses many different climatic and topographic zones, each providing distinct habitats where over 900 known plants and many more rare and endemic plants can be found.²⁷ Serra da Estrela is uniquely located in a transitional zone where the Atlantic, Mediterranean and Temperate climates all influence vegetation growth, and where the different topographical gradient zones, (ranging in altitude between 285 and 1,993 meters) create a range of climatic environments.²⁸ From a research perspective, this particular geographic location is considered a prime location in terms of flora. As a result, in recent years, the Municipality of Seia, the Interpretation Centre of the Serra da Estrela (CISE), and the Faculties of Science and Technology and Pharmacology from the University of Coimbra in Portugal have carried out a multidisciplinary ethno-botanical survey of the entire Serra da Estrela Natural Park. Their findings were recently published in a book titled *Plantas Aromaticas e Medicinaias do Parque Natrual da Serra da Estrela*, which lists the plants found on the Serra da Estrela that are deemed to have strong aromatic and medicinal properties.²⁹ Of notable interest is the finding that the particular flora and vegetation observed on the Serra da Estrela at altitudes above 1,650 meters is quite rare in Portugal. The endemic plants of the upper plateaus are the most valuable for further research due to their strong healing potential (the upper plateaus constitute a very tiny territory of only 11.5 square kilometers where about 40 plants are exclusively found).³⁰ The habitats of these rare plants, which are adapted to the presence of snow and the cold climates of Northern Europe were dramatically depleted at the end of the last glacial period. With increasingly warmer temperatures, these rare plants found refuge only on the very top plateaus of the Serra da Estrela where their survival was made possible by the presence of snow during parts of the year.^v

iv. The effectiveness of ethno-pharmacology for the discovery of new medicines is also illustrated by the discovery of *Tubocurarine*, a skeletal muscle relaxant compound isolated from the bark of the South American plant *Chondrodendron Tomentosum*. An ethno-pharmacological research team had followed the hunting practices of South American natives who were observed applying tree bark extracts on their arrows when hunting animals. Further research found that the tree bark extracts would temporary immobilizes an animal because the core compound, *Tubocurarine* found in the bark extracts acts as a neuromuscular-blocking drug, that can also be safely administrated to humans to act as an anesthetic drug ahead of surgery.²⁶

v. Examples of rare plants found on the higher altitudes of Serra da Estrela for which there is very little scientific research include *Lycopodium clavatum* and *Vaccinium uliginosum*. *Lycopodium clavatum* for example has been used by Traditional Chinese Medicine for centuries to treat a variety of ailments from fevers to inflammations, and in recent time, the compound Huperzine A, extracted from this plant and is being investigated as a potential memory boosting drug to help treat Alzheimer’s disease.³¹



Figure 3.32: *Cinchona* Bark Layers.



Figure 3.33: *Lycopodium Clavatum*, a Distinct Plant Only Found on the Serra da Estrela Mountain.



Figure 3.34: *Vaccinium Uliginosum*, a Plant Recently Discovered on the Serra da Estrela Growing on Altitudes Above 1,600 m.



Figure 3.35: *Silene Foetida*, a Plant Found Exclusively on the Upper Plateaus (above 1,500 m) on the Serra da Estrela.

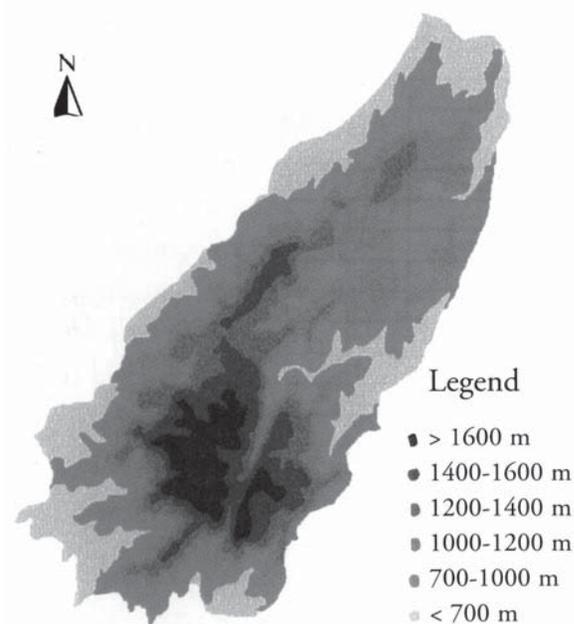


Figure 3.36: The Different Elevations Found in the Serra da Estrela Natural Park.

Further to the recent study, nearly 100 plants of interest were revealed, the seeds of which were extracted and preserved in germ plasma banks to await additional validations of: basic chemical compound, most effective state of use (fresh vs. dry), particulars of any necessary drying process, possible diseases to focus towards, correct dry preparation mode, mode of administration and the appropriate dosage.³² Despite the obvious hurdles still required to understand the value of each specimen, the study draws attention to the importance of the unique ecosystems found on the Serra da Estrela and the need to protect the variety of plant species. In their concluding remarks, the multidisciplinary team points out that the Serra da Estrela has very important “natural resources that can occupy a prominent place in local economic and social development, and contribute to reversing the desertification process that is common in the countryside.”³³ They go on to recommend that regional farmers contribute towards “a more balanced management of rural areas by facilitating the conservation of natural phenomena.”³⁴

Based on the data obtained from the ethno-botanical survey, and from my own discussion with the Researchers, it is even more apparent that there is a need for research and educational spaces for further studies on the region's plants. Evidentially, architecture can assist this region by facilitating spaces for progressive local initiatives centered on cultivation, preservation and sampling of rare plants and herbs. This is a vision that foresees the reactivation of the fertile soils around Manteigas that have over the last few decades become static, and converting them into planting laboratories. It becomes possible to envision a place formulated and designed to foster the transfer of knowledge possessed by local farmers and rural residents on the medicinal use of local plants to members of the scientific community. This transfer of indigenous knowledge is important not only for rural development, but also for the potential discovery of new medicines that could potentially treat some of the main diseases affecting humans in today's modern age.

It is important to note that the World Health Organization (WHO) defines traditional medicine as the “sum total of knowledge, skills and practices based on theories, beliefs and experiences indigenous to different cultures that are used to maintain health, as well as to prevent, diagnose, improve or treat physical and mental illnesses.”³⁵ According to the WHO, even in today's modern age, 70 to 80 percent of the population in many developed countries continues to use some form of alternative medicine (such as herbal supplementation), and in some Asian and African countries up to 80 percent of the population relies solely on traditional medicine for primary health care.³⁶ In the developed world, herbal treatments constitute the most popular form of traditional medicine today, with annual revenues in Europe alone estimated to be around \$5 billion USD in 2004. And in China, annual sales of herbal products totaled around \$14 billion USD in 2005.³⁷ Thus, given the potential for financial profit, and the impact that new drugs developed from medicinal plants can have in treating many diseases plaguing modern societies, it is important that settings such as Serra da Estrela be considered as sites where research centres can be successfully incorporated. As part of a promising rural development plan, the humble tea, potion, and balm remedies of my own grandparents, having a deeply engrained awareness of simple, naturopathic alternatives for example, can be made accessible to and valorized by a larger global population.



Figure 3.37: Oriental Herbal Market, Dundas Street, Toronto (2011).



Figure 3.38: Athletes Bathing in the Palaestra (Ancient Greek Gymnasium).



Figure 3.39: Ancient Greek Vase Painting Showing a Physician (latros) Bleeding a Patient According to the Humoural Medical Doctrine. Bleeding was Thought to Purge the Body of Bad Bodily Humours.

3.3.2 Therapeutic Waters

The second of the trinity of natural treasures in the creation myth of the Serra da Estrela is *water*. Due to their rarity in the natural world, many ancient civilizations viewed thermo-mineral waters, and the process of bathing in them, as a divine activity that allowed for healing to take place. The ancients viewed hot mineral waters emerging from the depths of the ground with distinct mineral smells and unique feeling on the skin as a “divine donation from the gods.”^{vi} During the Homeric period (around 8th century BC), bathing in ancient Greece was regarded more as a cleansing and refreshing measure, however, by the time of Hippocrates (460-370 BC), it was widely believed that bathing had specific healing properties that could bring the bodily humours into harmony through strict regimens of hot and cool baths.³⁹ Before the advent of what is generally recognized as “modern medicine” in the nineteenth century, the “humoral medical” doctrine first applied to medicine by Hippocrates was the central medical theory that described the main human bodily functions. Under this doctrine, each major human organ was related to four elements found in the natural environment, and the body seen as being filled with four basic structures, called humors (blood-air, yellow bile-fire, black bile-earth, and phlegm-water). The “humors” were considered to be out of balance whenever a person was in poor health.⁴⁰ The humoral doctrine was applied for a long period spanning more than 2,000 years by Roman, Islamic, and even Western European physicians.

In ancient Rome, water treatments were widely adopted from the Greeks, and major public bath complexes known as *aquae* were freely available to the masses.⁴¹ Although by Roman times, public baths had become more as places for socializing and relaxing, they were nonetheless important for the maintenance of good hygiene and health. Throughout the Roman Empire, water was regarded as an essential element for sustaining life and healing, prompting the building of major infrastructure projects such as major aqueducts and bath complexes.^{vii} In *Book XXXI of Natural History*, the Roman author Pliny the Elder (23–79 AD) depicts water as a central element considered to be “lord over all the others” and he further depicts its importance to healing throughout the lands ruled by the Roman Empire by stating:

vi. In *Waters and Spas in the Classical World*, Ralph Jackson portrays the admiration that ancient people must have felt towards healing water by stating: “the phenomenon of hot or healing waters emerging from the depths of the earth must always have inspired a sense of wonder at the awesome powers of the gods.”³⁸

vii. Typical Roman-era public baths consisted of a series of rooms, including: change rooms, hot and cool baths, sweat rooms, rooms for scraping of dead skin using metal strigils, basin rooms for washing, and final stage rooms where oils and creams were applied. The Roman public baths were also places where athletic trainers and health practitioners would provide advice on exercises centered around immersion in hot and cool waters, along with advice on diet.⁴²

“Everywhere in many lands gush forth beneficent waters, here cold, there hot, there both... in some places tepid and lukewarm, promising relief to the sick...”⁴³

Before Pliny’s days, Greek and Roman physicians prescribed treatments comprised of strict regimes of immersion in hot and cool waters exclusively. However, in the writings of Pliny the Elder, as well as in the Roman writer and architect Vitruvius, water treatments are described beyond their two thermal forms. Instead, water treatments are depicted as prescribed based on a spring’s precise thermo-mineral signature. In *De Architectura*, Vitruvius provides a record on the knowledge of the exact geological processes involved in producing specific thermo-mineral water:

“When fire is generated under ground, and the soil is heated all round, either from abundance of alum, bitumen, or sulphur, the hot vapor ascends to the upper parts, and, if there are therein springs of sweet water affected by its spreading through the pores, they grow hot, without injury to the flavor... all hot springs are, therefore, medicinal; because boiling in the soils through which they pass, they acquire many virtues...”⁴⁴

[...]

“For example, sulphur springs cure pains in the sinews, by warming up and burning out the corrupt humours of the body by their heat. Aluminous springs, used in the treatment of the limbs when enfeebled by paralysis or the stroke of any such malady, introduce warmth through the open pores, counteracting the chill by the opposite effect of their heat, and thus equably restoring the limbs to their former condition. Asphaltic springs, taken as purges, cure internal maladies.”⁴⁵

Within the vast territory of the Roman Empire, places (where the hydrogeology produced waters of distinct thermo-mineral properties) became transformed into major spa resorts that both Emperors and the masses alike frequented. For example, by the late first century BC, the hot sulphurous waters of Baiae, located on the north side of the Bay of Naples became renowned for their healing. According to the Greek historian and geographer Strabo, the hot sulphur waters were suited “both to the taste of the fastidious and to the cure of disease”, whereas Pliny the Elder believed that “nowhere is water more bountiful than in the Bay of Baiae or with more variety of relief.”⁴⁶ At the height of the Roman Empire, it appears that all major towns and cities in all Roman provinces had central baths as part of the built environment. In the western Roman Province of Lusitania (present day Portugal), baths of different style-types could be found. Excavations in the cities of Miróbriga and Conímbriga point to two well-developed Roman bath types found in Portugal.



Figure 3.40: Ruins at Baiae in the Bay of Naples, 2007.

EXAMPLES OF GREEK AND ROMAN BATH TYPES...

Greek Baths

"[A] significant characteristic of some of the early Greek baths is their tendency to adapt their design to the natural forms of caves and rock. The chambers were partially carved into the soft rock and roofed over by a relatively small amount of upper construction and conical domes. These baths might have owed their inspiration to ancient establishments built over grottoes and springs believed to have been sacred to certain chthonic powers and nymphs. By enclosing and enveloping a hot spring – a dramatic and wondrous manifestation of nature – they also introduced a new and positive dimension to the use of the rotunda, a shape whose symbolic associations in architecture reach back to the earliest times."⁴⁷

- Fikret Yegul - *Baths and Bathing in Classical Antiquity*

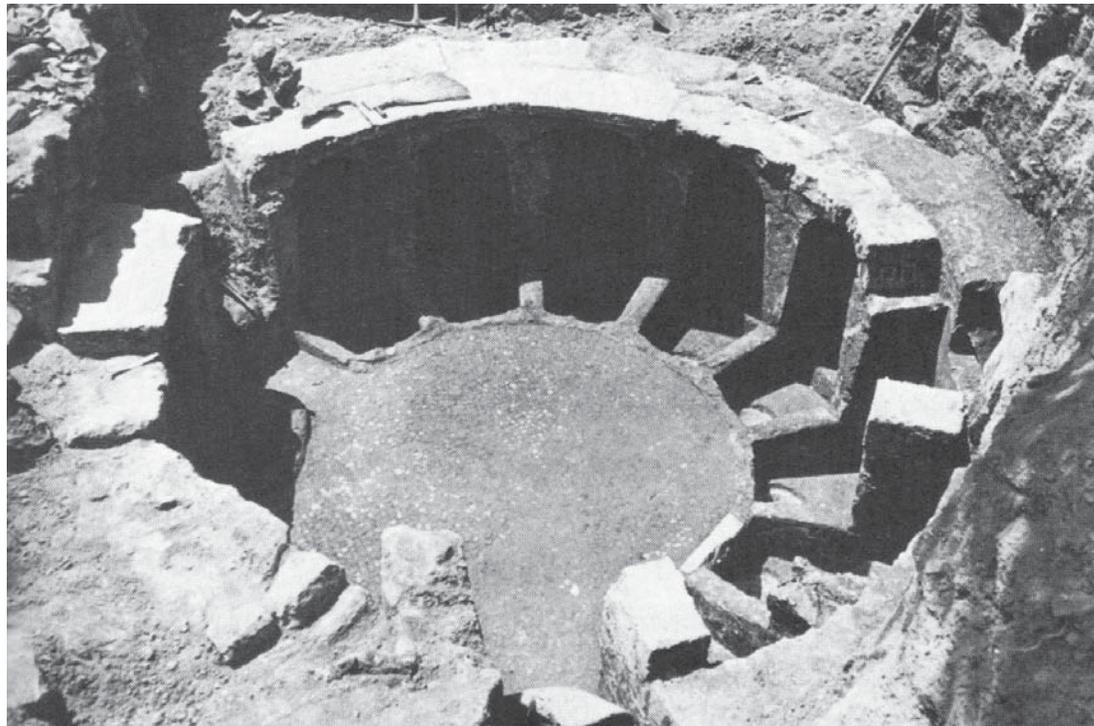


Figure 3.41: Greek Baths in Gortys Showing Individual Niche Baths.

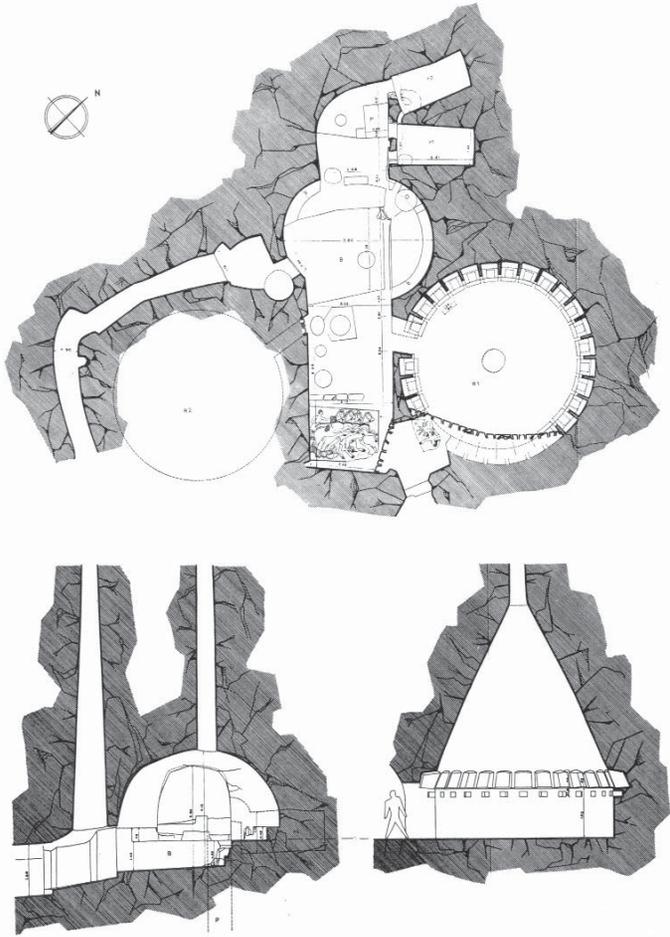


Figure 3.42: Greek Baths in Piraeus (plan and section).

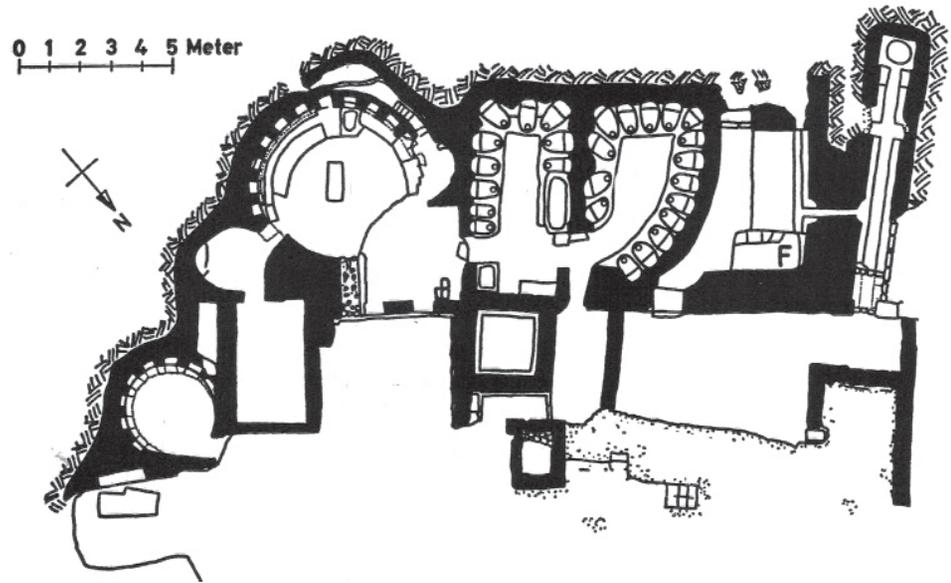


Figure 3.43: Greek Baths in the Sanctuary of Apollo in Cyrene.

Baths of the Volcanic Campania

In *Bathing in the Roman World*, Fikret Yegül portrays the importance of thermo-mineral waters of the volcanic Campania by stating:

"[In Baiae] extensive spas and cure centers took full advantage of the copious natural hot water and steam sources of the region (known in antiquity as the Phlegraen Fields, or "fields devoured by fire"), [becoming] immensely popular from the earliest days of the Republic. They influenced public taste, promoting the use and enjoyment of hot bathing as a socially acceptable habit. ...The lush surroundings, the warm waters and congenial company made them popular destinations for "health tourism.""⁴⁸

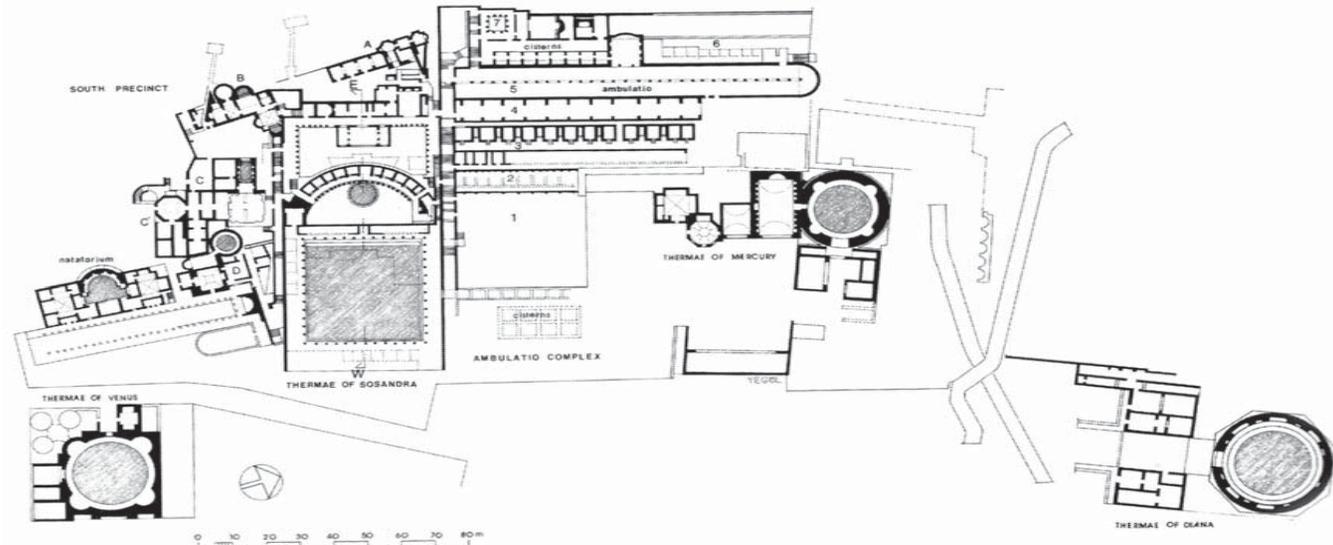


Figure 3.44: Plan of the Thermo-mineral Bath Complex in Baiae.

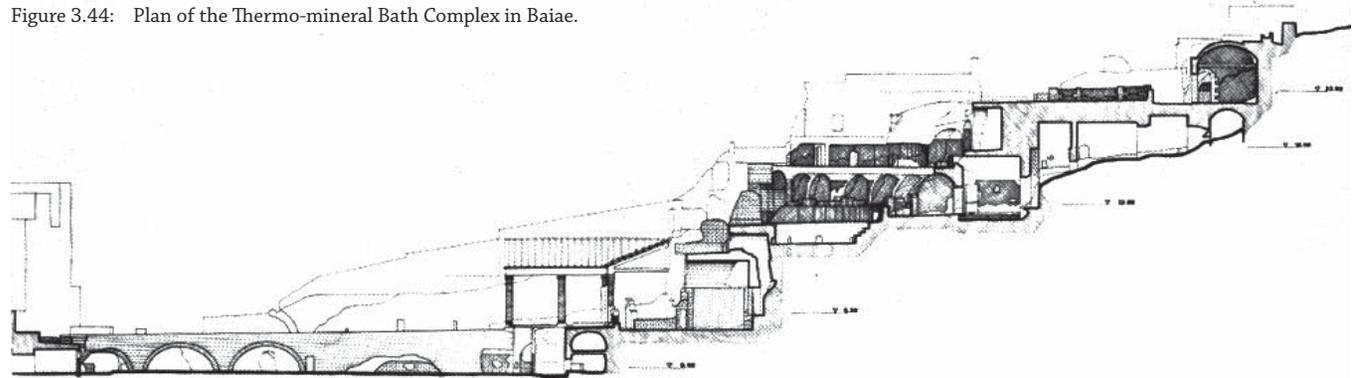


Figure 3.45: Section of the Thermo-mineral Bath Complex in Baiae.

Roman-era Baths in Portugal

The Miróbriga baths are an example of an east/west oriented Roman-era bath complex located in a small valley with two establishments (men's and women's) independent of each other, sharing a colonnade and a public latrine space.

The Conímbriga baths located near the historic Portuguese city of Coimbra illustrate a single-axis succession of large Roman-era bathing halls, providing an example of the Trajanic building type that had altered the east-west orientation of its late Augustan predecessor seen in Miróbriga. The Conímbriga baths had transformed the essentially Pompeian typology (a group of three barrel-vaulted rooms next to a pool court) into a much enlarged north-south succession of multiple units.⁴⁹

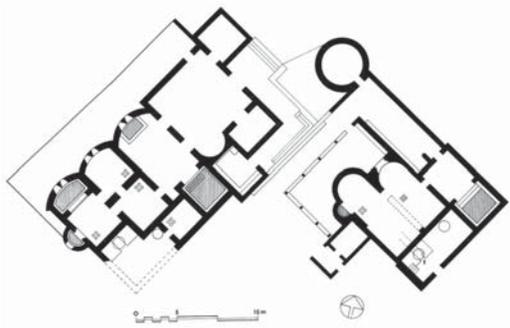


Figure 3.46: Plan of the Miróbriga Roman-era Bath.



Figure 3.47: North/South Plan of the Conímbriga Baths.

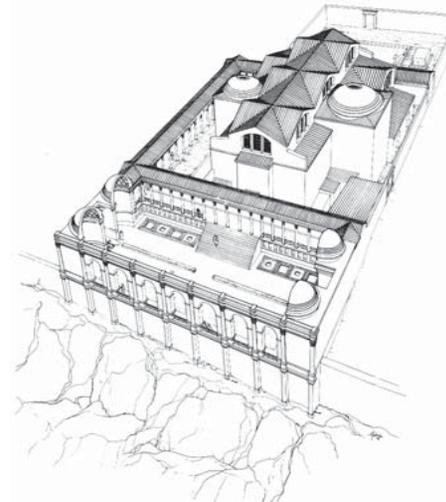


Figure 3.48: Illustration of the Roman-era Baths in Conímbriga.



Figure 3.49: Location of the Miróbriga and Conímbriga Roman-era Baths.

As Roman-era water treatments evolved over time, the importance of water had become visible in many cities, with bath structures becoming prominent features of many cities.^{viii} With the fall of the Roman Empire (after 476 AD) and the subsequent spread of Christianity, many Roman-era bath complexes throughout Europe became converted into churches.

The culture of bathing in public places was seen as a pagan ritual and subsequently was discouraged by the church. The new Christian doctrine regarded “...faith in cure through worship and praying as more important than a medicinal bath.”⁵¹ Saint Jerome, a prominent Christian ascetic of the early Christian era, illustrates the forceful injunction of the period by stating: “He who has bathed in Christ has no need for a second bath!”⁵²

During the Dark and Middle Ages in most European countries the culture of bathing significantly declined. During this same period, in the Iberian Peninsula, (occupied and governed by the Moors), public bathing became a popular pastime and public baths an essential part of the built environment. During the 10th century, the city of Cordoba in Spain was said to have over 300 public baths that were used by the populace as popular places for cleansing, leisure and social gatherings.⁵³ Similarly, by the 15th century, Turkish public baths, (*hammams*), were a dominant feature found in towns and cities in lands occupied by the Ottoman Empire. In contrast, in Western Europe by the time of the Renaissance, public bathing had declined further and was seen as an environment where contagious diseases such as syphilis, plague and leprosy were spread.⁵⁴

viii. In *Waters and Spas in the Classical World*, Ralph Jackson describes that over time, Baiae became a “...fully-developed resort, patronized by the very wealthy, who demanded luxury and amusement in addition to spa therapy.”⁵⁰



Figure 3.50: *Los Baños del Alcázar Califal* (Moorish-style Baths), Cordoba, Spain (the facility is presently a museum).

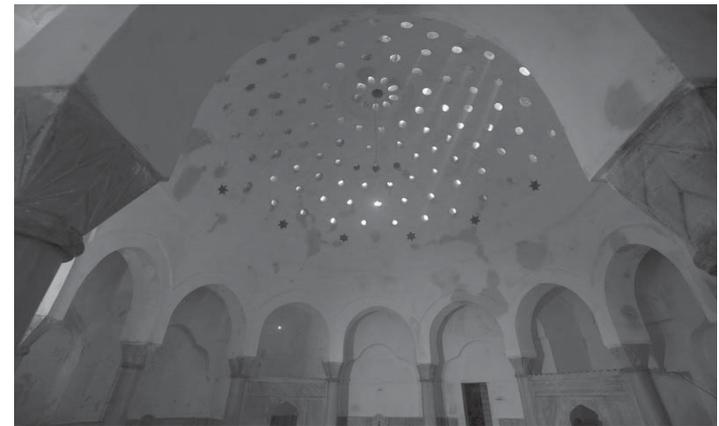


Figure 3.51: *Cemberlitas Hammam* (Turkish Bath) in Istanbul, Turkey. Designed by Mimar Sinan, a Famous Ottoman-era Architect in 1584.

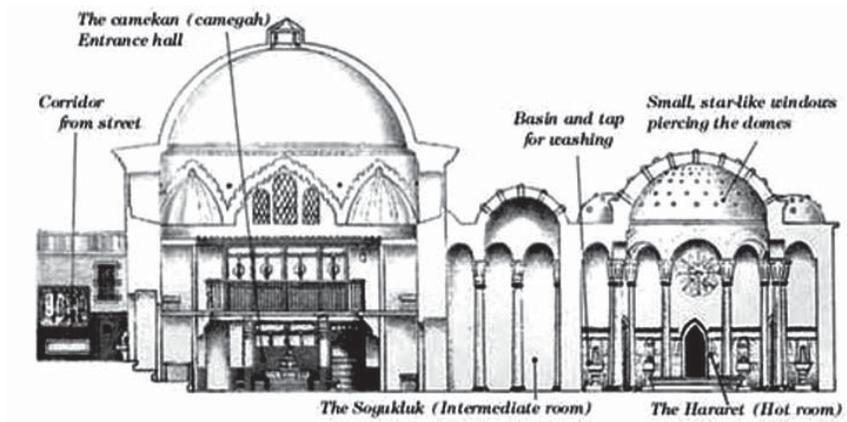


Figure 3.52: Section of the *Cemberlitas Hammam*, Istanbul Turkey.

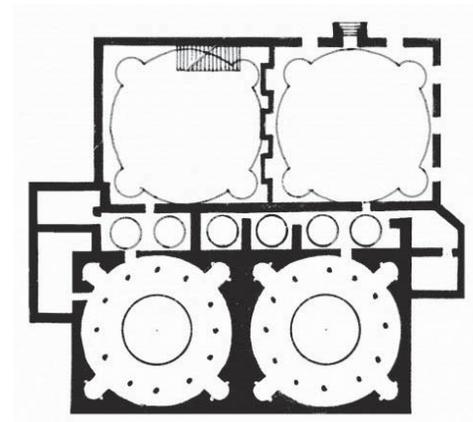


Figure 3.53: Floor Plan of *Cemberlitas Hammam*, Istanbul, Turkey.

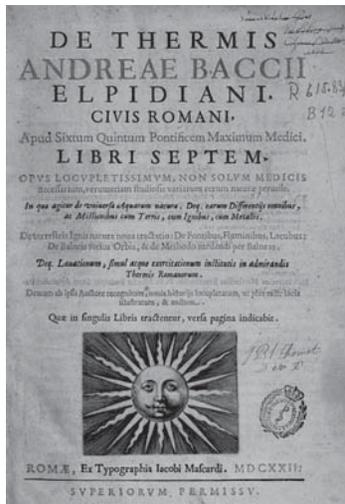


Figure 3.54: *De Thermis* published in 1571 by Andrea Bacci, the First Medical Literature on Therapeutic Uses of Water in the Renaissance-era.



Figure 3.55: Vincenz Priessnitz, Founder of Hydrotherapy.



Figure 3.56: Sebastain Kneipp, Founder of Naturopathic Medicine.

The publication of *De Thermis* in 1571 by Andrea Bacci provided one of the first medical treatises since antiquity on the therapeutic use of water and the disciplined bathing regimes employed by the ancient Greeks and Romans.^{ix} Bacci argued that it was important to once again acquire an understanding on the specific impact that thermo-mineral water had on certain parts of the body. For Bacci, “taking the waters” was not only a leisurely activity, “but a sound discipline with its own rationale, institutes, and doctrine, which the learned physician alone was qualified to understand.”⁵⁶ From Italy, spa bathing was once more starting to migrate north of the Alps to Europe. As spas culture reached France, “taking the waters” became a serious therapeutic activity prescribed by doctors who created many bath centers strictly devoted to treatment and recuperation.⁵⁷

By the 19th century, hydrotherapy and balneotherapy emerged as separate practices founded, and endorsed respectively by Vincenz Priessnitz (considered the founder of modern hydrotherapy), and later by Sebastain Kneipp (considered the father of universal Naturopathic medicine).^x Hydrotherapy refers to “the external application of water in any form or temperature (steam, liquid, ice, hot, cold) for healing purposes”, and all related aquatic exercises conducted in water as part of a treatment regiment.⁶⁰ Balneotherapy involves the immersion of patients in naturally occurring thermo-mineral waters which surface from underground reservoirs.⁶¹

With the revival of the medicinal use of water by the late 19th century, water therapy once again served as a catalyst for architectural development as it had in Roman times. Hotels, guesthouses, and casinos had started to emerge around spa resorts throughout Europe but also in North America. The hot spring spa resorts in Baden-Baden, Germany, renewed since Roman times and frequented by Emperor Caracalla himself, emerged as a focal point for gathering in the 19th century, becoming one of the most glamorous resort places in continental Europe.⁶² The thermal waters of Baden-Baden attracted the development of not only luxury spa resorts, but also hotels, casinos, theatres, and even horse race tracks. Aside from attracting various European monarchs, emperors and tsars, the spas at Baden-Baden, also attracted influential thinkers, composers, and writers, including: Fridrich Nietzsche, Victor Hugo, Johannes Brahms, Richard Wagner, and Dostoevsky.⁶³ In many ways, the architectural development and social atmosphere of 19th century Baden-Baden mirrored the depiction of Roman-time Baiae where the very affluent of the day demanded luxury and amusement in addition to spa therapy.

ix. During the Renaissance, a number of Italian doctors had managed to recover medical texts from antiquity that described the healing properties found in various spring waters and had began to once again revisit the healing potential found in water.⁵⁵

x. Vincenz Priessnitz, showed remarkable success in applying hydrotherapy during the early 19th century to treat the ailments suffered by various aristocratic patients of the time including many monarchs, dukes and duchesses, and various princess and counts.⁵⁸ Likewise, Sebastian Kneipp, a Bavarian priest, advocated healing by applying various water-based therapies. Kneipp advocated a holistic approach to treating diseases and developed a combination of treatments that included, hot and cold baths, herbal baths, mineral mud packs, active physical exercises, massages, and diets.⁵⁹



Figure 3.57: The Salon de Conversation, Baden-Baden 1870.



Figure 3.58: Mohawk Natives at the High Rock Spring, New York.

In North America, the early European settlers became aware of thermal springs from the local natives who considered them as sacred places and were “great believers in the miraculous healing powers of the heat and mineral waters.”⁶⁴ Over time, the new settlers realized that the thermal springs could be developed into commercially profitable spas similar to ones found in Europe.⁶⁵ However, by the mid-20th century, interest in the further development of spa resorts in the United States had declined and many existing spas began to close. In *Spas and Balneology in the United States*, John Lund, Research Associate points out that the United States did not have the proper support channels at the local, state and federal level to sustain these projects.^{xi} With the development of pain-killers and the free availability of warm water at home, the use of thermo-mineral water for medical treatment diminished in North America, and in other English speaking countries in the second-half of the 20th century.⁶⁷ Quite interestingly, however, the thermal spa industry continued to fuel development in much of continental Europe. In places like Baden-Baden, the infrastructure of the rural town continued to improve with a conference center being added in 1968, the Caracalla Spa Complex added in 1985, and a new festival hall added in 1998.⁶⁸ As an outcome, the population of the rural town continued to grow over the entire course of the 20th century (as seen in the graph below).

xi. According to John Lund, United States did not have the “...government, trade unions, social security and a national health insurance programs to support these developments”⁶⁶

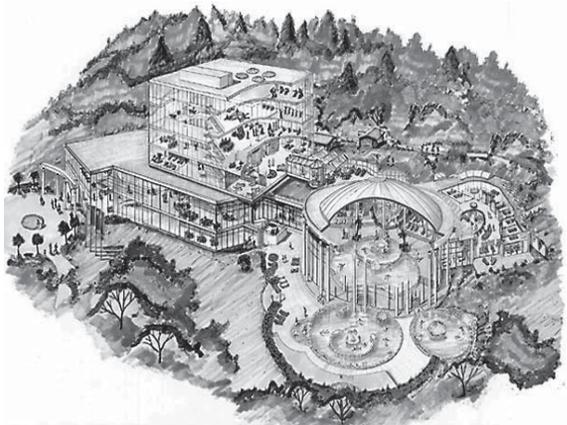


Figure 3.59: The Caracalla Spa Complex in Baden-Baden, 1985.

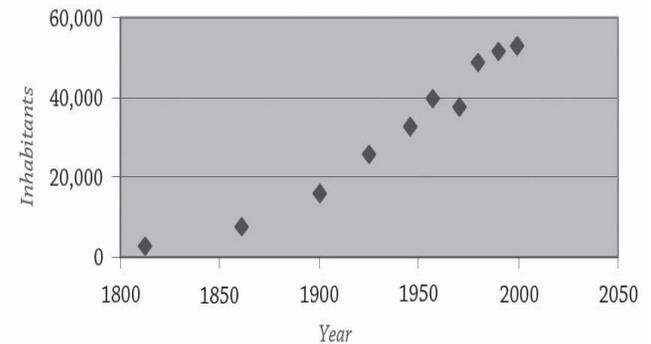


Figure 3.60: Thermal Spa Industry Fueling Population Growth in Baden-Baden (19th-21st Century).

In recent decades, the movement towards healthy living has once again caused Western society to rethink many traditional treatment methods. This new social awareness has led to a renewed interest in water-based therapy. Water spas are once again becoming popular in many English-speaking countries that were in the past skeptical of thermal water spas. Although in the United States spas are not yet seen in the same European mind frame, as places that provide medical cures for specific ailments, they are nonetheless seen as revitalizing places for exercise, reducing stress, lifting depression and losing weight.⁶⁹ Today, some of the same thermal spa treatment techniques that have been used for millennia are still being applied. The main techniques employed in contemporary spa resorts are centered on the application of mineral mud, water immersion exercises, swimming, and static immersion in water baths of varying temperature and mineral content. With the increasing popularity of thermal spas, the scientific community has responded through applied research in hopes of gathering empirical evidence to show the effectiveness of using water for treating specific illnesses.



Figure 3.61: Blue Lagoon Geothermal Spa in Iceland Designed by Sigríður Sigþórsdóttir of Basalt Architects.

3.3.2.1 Benefits of Thermo-mineral Water Therapy

Just as two millennia ago when Pliny the Elder and Vitruvius classified water springs based on their mineral signatures, today they are also categorized by their chemical contents as being either: sulphurous, bicarbonated, sulphated, carbonic, salty or arsenic.⁷⁰ In addition, spring water is also categorized by its temperature signature.^{xii} The thermo-mineral waters in Manteigas considered in the thesis have a distinct sulfurous signature and are classified as being hyper-thermal given their output water temperature of 45°C.⁷² Today, current knowledge on the beneficial health effects of thermo-mineral water have concluded that sulfur-rich waters, are of value for various dermatological disorders.⁷³ As scientific research continues to add new knowledge regarding the precise methods and inner workings by which balneotherapy and hydrotherapy treatment modalities function to treat various conditions, the current belief is that when these two treatment modalities are combined together, they provide a positive chemical, thermal, and mechanical effect on the human body.⁷⁴

Mineral rich waters are known to produce a chemical effect as specific chemical elements make direct contact with the human body during water immersion. The chemical element sulfur, for example, enters the body through skin pores and catalyzes strong anti-bacterial and anti-fungal reactions.⁷⁵ Mineral waters rich in other chemical elements have also been shown to provide therapeutic effects.^{xiii} The thermal properties of mineral water are also very important for treatment. Thermal stimulation of body parts has been shown to enhance blood circulation, alleviate pain, prevent inflammation, and improve the range of motion of joints by having a beneficial effect on collagen-rich tissues such as tendons.⁷⁷ The mechanical benefits of water immersion can be explained by the fundamental law presented by Archimedes – that “...some exercises in water are made easier, while others such as walking are more difficult”. Archimedes showed that when a body is fully immersed and floating in water, there is an increased buoyancy and hydrostatic pressure which causes resistance towards the flotation force.⁷⁸ This in turn causes the heart rhythm to increase and deeper breathing to occur, effectively promoting weight loss which is beneficial for muscle tone and joint mobility.⁷⁹

xii. Springs are classified as “cold” if the temperature of the water is below 20°C; “hypothermal” between 20 and 30°C; “thermal” between 30 and 40°C; and “hyper-thermal” when the water temperature is greater than 40°C.⁷¹

xiii. Magnesium, for example, has been shown to have a strong anti-carcinogenic effect, and the element selenium has been shown to have strong antitoxic and anti-inflammatory properties. In recent studies, it has been shown that tissues with high concentration of magnesium have been shown to have a lower incidence of cancer compared to tissues with low concentrations.⁷⁶

In recent years, a number of studies have shown the benefits of combining both balneotherapy and hydrotherapy. Therapy routines that involve physical exercises performed while immersed in thermo-mineral water have shown to be important for managing long-term pain. A 2006 research study compared two groups of patients, suffering from osteoarthritis in their knees, who performed physical exercises while immersed in pools of thermo-mineral water and in pools of tap water, both heated to 37°C. The study concluded that the patient group that performed the prescribed exercises in thermo-mineral water had shown better results in managing both immediate and long-term pain and tenderness associated with their condition.⁸⁰ Other water-based treatments show similar beneficial results. In a separate study, it was shown that sun exposure, combined with application of mineral mud, and daily bathing in the mineral-rich waters of the Dead Sea for a period of four weeks proved effective in treating skin psoriasis and other dermatological disorders.⁸¹

Modern understanding on the effectiveness of using water for medical therapy shows that treatment regimes comprised of movement exercises performed inside thermo-mineral waters provide a combination of positive chemical, thermal, and mechanical effects on the human body. In addition, sun exposure, and mineral mud application are treatment modalities that offer additional health benefits. Today, increasing awareness of the benefits of thermo-mineral water has fostered an atmosphere for investment and development of many areas where healing water is found. And just as the healing waters in ancient Baiae and in Baden-Baden served as catalysts for development in the past, the thermo-mineral waters of Manteigas hold equal potential for the development of a recreational facility filled with a variety of hydro and balneo-therapeutic treatment spaces.

3.3.2.2 The Thermo-mineral Waters of Manteigas

Considering the benefits offered by thermo-mineral water, a number of geological and hydrological studies have been undertaken in and around Manteigas in recent years. A 2005 hydrogeological study points out that the thermo-mineral waters originate from a granite thermal reservoir located approximately 3.2 kilometers below the base of the Zêzere glacial valley.⁸² According to the hydrological study, this reservoir is fed from shallow aquifers which circulate groundwater downward through the tectonic structure of an active fault zone that runs the entire length of the Zêzere valley. As groundwater makes contact with the hot granite rock structure inside the thermal reservoir, the study has calculated that the temperature of the water inside the reservoir becomes elevated near 100°C.⁸³ The strong water-rock interaction within the reservoir then causes the mineral composition of the groundwater to change, thus giving the Manteigas mineral waters a strong sulfurous signature.^{84, xiv}

The earliest historical records that mention the presence of thermal springs in Manteigas have been traced back to 1726. Today, there is a modest resort in Manteigas that continues to operate, however, the resort is not well established within the leisure and wellness tourism map of the country. During the research phase that I undertook in 2010, the feedback that I received from the local residents and from municipal officials indicated that the existing spa was “dated” and that it did not offer spa consumers anything distinctive from other better recognized spas in the country. Moreover, the facility was described as being frequented by an aging demographic, and that its operation is limited by being open only during the warmer months of the year. As a result, in recent years, the regional tourism operators have been in consultation with the Municipality of Manteigas to develop a more modern facility.

xiv. From antiquity, sulfur-enriched water and medical mixtures containing sulfur have been used as balms for treatment of various skin ailments. The Roman author Pliny the Elder in Book 35 of the *Natural History* encyclopedia, mentions sulfur as an element with strong curative properties. In modern medicine, sulfur acts as an antibacterial agent and is a primary compound in topical creams for various dermatological conditions.⁸⁵

The accessibility of this therapeutic spring is crucial to the longevity and improved economy of Manteigas, as health and wellness tourism becomes an increasingly popular global trend. In accordance with the recent *Strategic Plan for Tourism in Portugal*, new legislation concerning the operation of hot springs has been enacted to further promote water-based therapy.⁸⁶ It should thus come as no surprise the imagination to envision the healing potential of thermo-mineral waters in driving further development, and reversing the course of rural abandonment.

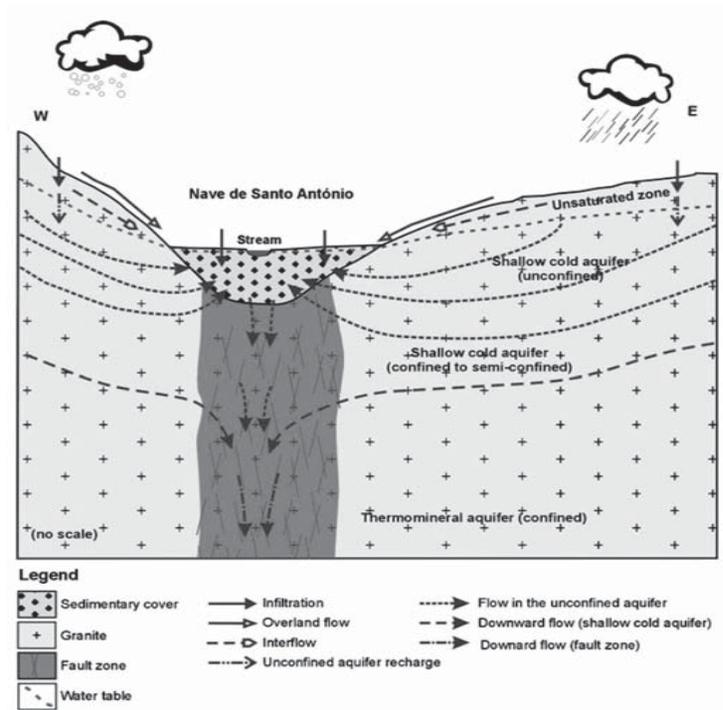
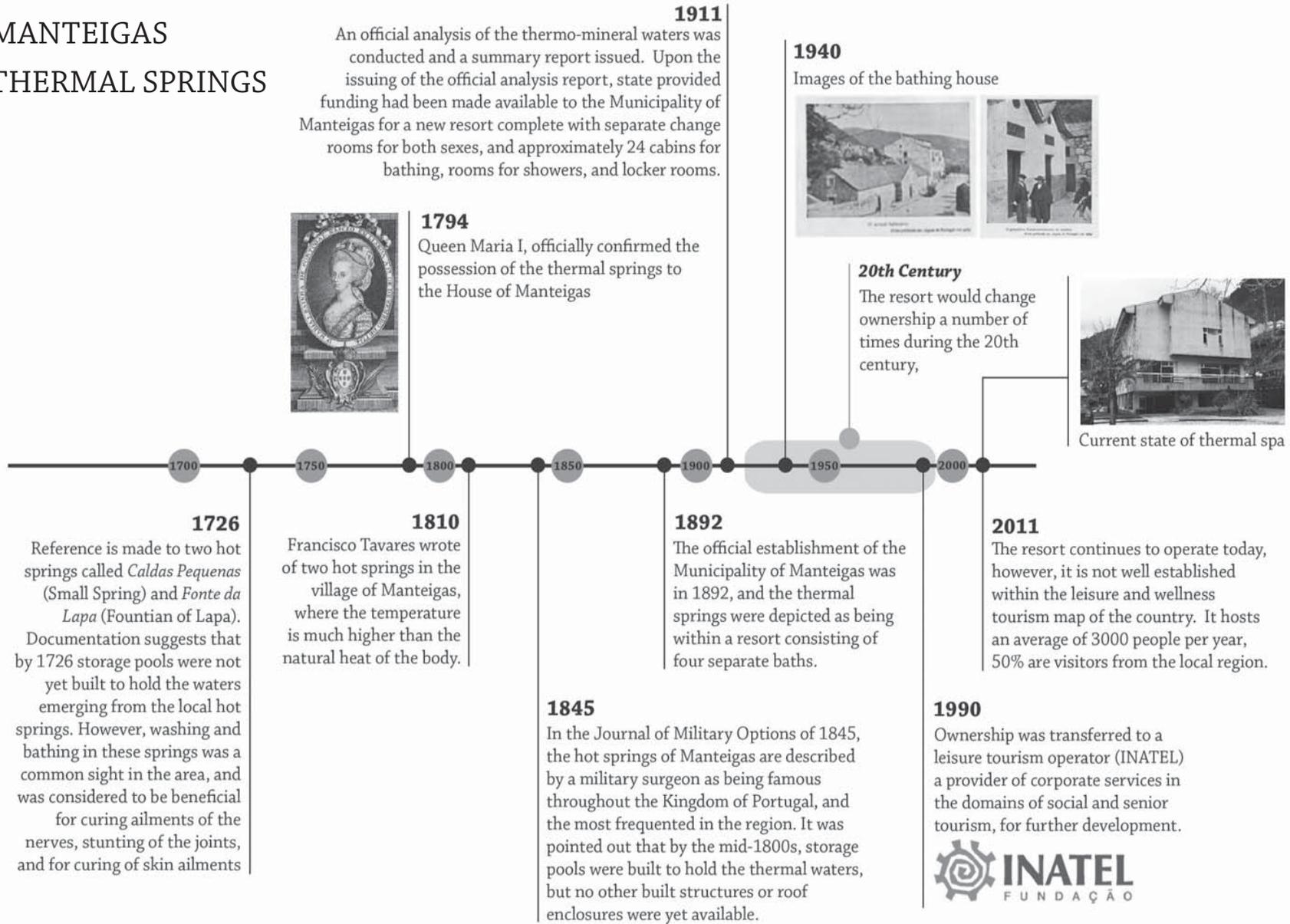


Figure 3.62: Conceptual Drawing of the Recharging of the Thermo-mineral Aquifer in Manteigas.

TIMELINE OF THE MANTEIGAS THERMAL SPRINGS





- 1 Termas de Melgaço
- 2 Caldas do Gerês
- 3 Caldas Santas de Carvalhelhos
- 4 Termas de Caldeas
- 5 Termas de Vidago
- 6 Caldas da Saúde
- 7 Termas de Pedras Salgadas
- 8 Termas de S.Jorge
- 9 Termas de S.Pedro do Sul
- 10 Termas Sulfurosas de Alcafache
- 11 Termas da Curia
- 12 Termas do Luso
- 13 Caldas de Sangemil
- 14 Caldas da Felgueira
- 15 Termas de Manteigas
- 16 Termas de Unhais da Serra (H2otel)
- 17 Termas de Monfortinho
- 18 Termas de Monte Real
- 19 Termas de Nisa
- 20 Hospital Termal Rainha D.Leonor
- 21 Termas do Vimeiro
- 22 Estância Termal das Caldas de Monchique

Figure 3.63: Map Depicting All Operating Spa Resorts in Portugal.



Figure 3.64: Existing Thermal Spa in Manteigas.



Figure 3.65: *Wanderer Above the Sea of Fog*, by Casper David Friedrich, 1818.

3.3.3 High-Altitude Mountain Air

The final variable in *the trinity of natural treasures* is altitude, translated here as exposure to clean mountain air. Unlike the contemporary view that sees mountains as places for recreation, inspiration, and recuperation of health; in early human history, mountains were considered as physical obstacles that restricted human movement.^{xv}

Perhaps more accurately, large land features in many cultures were revered as significant sacred spaces (take for example the intimate relationships the ancient Greeks saw existing between the horizon and terrain). But by the beginning of the 16th century that reverence began its shift towards a stronger sense of romantic intrigue. After the Age of Discovery, the amount of physical space left on the planet that was not yet explored started to become significantly less. As a result, adventurers and scientific scholars of the time started to embark on journeys to previously unreachable mountaintops. Over time, the attitude towards mountains changed significantly. In *Mountains and Man*, Larry Price states that by the 19th century:

“...the beauty of mountains was a common theme for poets and philosophers; scientists began to take a serious interest in the origins of mountains and alpine phenomena and popular accounts of scientific findings were published in newspapers and periodicals; and mountains became a favorite of landscape painters.”⁸⁸

The existential/romantic view of mountainous regions migrated once again in the 20th century, to include a much more rational perspective of an environment with inherent potential to heal people suffering from a variety of illnesses that were prevalent in society at that time. The dry and clean mountainous air was deemed to be particularly beneficial for people suffering from tuberculosis.⁸⁹

Contemporary science has added a more in-depth understanding of the changes that the human body undergoes when exposed to high altitude mountain air. As people ascend beyond the sea level plains, the density and pressure of air decreases making it difficult to inhale enough oxygen, and as a result the human body is forced to adapt to the high altitude by undergoing a number of physiological changes.

xv. Although the Romans dreaded the mountains, in their quest to conquer the lands found west of the Alps, they were required to transverse through many difficult Alpine passages. In the Roman period, the only recorded mountain ascent undertaken as a purely leisurely endeavor is attributed to the Roman Emperor Hadrian who is said to have ascended Mount Etna in Sicily in 121 AD in order to fulfill an internal wish to “see the sunrise from the summit.”⁸⁷

Breathing, heart function, and blood flow all undergo changes as the human body adjusts to perform all activities as if it were at sea level. Although extreme altitude can be deadly, life at moderate altitudes (below 1,500 meters) is understood to be beneficial to human health.⁹⁰ Many environmental pollutants that cause respiratory ailments at sea level are not present at higher altitudes, and as a result, people who live in mountainous areas tend to have fewer heart related diseases and generally live longer compared to people who live in sea level areas.^{xvi} Finally, scientific research of high altitude mountainous air in recent decades has revealed that periodic stays in high altitude areas causes the human body to increase the number of red blood cells and the number of active capillaries, which in turn increases the amount of oxygen and blood supplied to muscles.⁹² Thus, returning to sea level after a periodic stay at high altitude results in better muscle performance as well as increased endurance.

During the 19th and early 20th centuries, tuberculosis was an epidemic responsible for the deaths of many people in Europe and throughout the world. By 1918, one in six deaths in France were caused by the disease, and during the 20th century alone, it is estimated that that tuberculosis had killed an estimated 100 million people.⁹³ Given the unavailability of effective antibacterial drugs for tuberculosis in the 19th and early 20th century, doctors considered a number of treatment options including exposing patients to mountainous air. One of the earliest advocates of this particular treatment was the 19th century German physician Hermann Brehmer, who established the first German sanatorium for the sole purpose of treating patients in this manner. While still a student, Brehmer had been diagnosed with tuberculosis and told to find a healthier climate travelling all the way to the Himalaya Mountains to continue his studies (and after an extended stay), he was cured of the disease.⁹⁴ Upon his return to Germany, Brehmer opened a hospital at Görbersdorf in Silesia (present day village of Sokolowsko, Poland) in 1854 where patients could go to recover by following a strict regime that included exposure to great quantities of high altitude fresh air, abundant diet, and exercise in open air under medical supervision.⁹⁵ The results of the “open-air treatment” as it became known and advocated by Brehmer were regarded as being highly successful because the results had surpassed any previous treatment method applied to deal with tuberculosis.^{xvii}

xvi. Recent studies conducted in the United States show that a significant percentage of the counties with some of the highest life expectancies in the United States are located in the mountainous areas of Colorado and Utah.⁹¹

xvii. Before the advent of effective treatment using antibiotics in the mid-20th century, the “open-air treatment” provided the most effective results for curing tuberculosis. Thus, the popularity of sanatoriums as places of rest and recuperation in mountainous terrains spread throughout Europe in the first half of the 20th century.



Figure 3.66: Hermann Brehmer's Hospital in the Mountainous Region of Görbersdorf, Silesia (Present-day Poland).



Figure 3.67: Hermann Brehmer's Hospital in Görbersdorf, Silesia (Present-day Poland).

In Portugal's Serra da Estrela Mountains at the turn of the 20th century, the country's main railway company commissioned the renowned Portuguese architect of the day Cottinelli Telmo to design a sanatorium as a place where railway workers who had contracted tuberculosis could be treated. The *Sanatório das Penhas da Saúde* (Sanatorium of the Rocks of Health) remained active for more than 40 years and became a place of treatment for thousands of patients from all social classes who were said to have recovered from tuberculosis by making use of the air at an altitude of 1,200 meters (above sea level) found on the Serra da Estrela.⁹⁶ The following pictorial journal depicts the Sanatório das Penhas da Saúde in its prime during the early 20th century.



Figure 3.68: *Sanatório das Penhas da Saúde* (Sanatorium of the Rocks of Health) Covilha, Serra da Estrela.



Figure 3.69: *Sanatório das Penhas da Saúde* – Private Patient's Rooms.



Figure 3.70: *Sanatório das Penhas da Saúde* – Entrance Hall.



Figure 3.71: *Sanatório das Penhas da Saúde* – Dining Hall.



Figure 3.72: *Sanatório das Penhas da Saúde* – Patient Balconies.



Figure 3.73: *Sanatório das Penhas da Saúde* – Patient's Rooms.



Figure 3.74: *Sanatório das Penhas da Saúde* – Original Medical Treatment Rooms.



Figure 3.75: *Sanatório das Penhas da Saúde* – Original Medical Treatment Rooms.

However, with the advent of effective antibacterial drugs in the 1950s, mountain sanatoriums were no longer the primary treatment centres for tuberculosis, and many of these (or similar) facilities throughout the world were abandoned or converted for other uses. Over the years, the *Sanatório das Penhas da Saúde* has been used as temporary residence for refugees returning from Portugal's former colonies in the 1970s, however, by the 1980s the facility was completely abandoned and left to degrade. The following pictorial journal depicts the state of the Sanatório das Penhas da Saúde, as seen in 2007. The current state of the facility serves as an example of how rural abandonment in the Serra Estrela region has left behind artifacts of strong cultural and historical value. Recently, ownership of the treatment center was transferred to a tourist operator in order to redevelop the facility into a high quality regional hotel. At the present, the redevelopment project is awarded to the contemporary Portuguese architect and 2011 Pritzker prize recipient Eduardo Souto da Moura for further development.⁹⁷



Figure 3.76: The Current State of the *Sanatório das Penhas da Saúde* (2007) – Room in Ruins.



Figure 3.77: Hallway: *Sanatório das Penhas da Saúde* (2007).



Figure 3.78: Hallway: *Sanatório das Penhas da Saúde* (2007).



Figure 3.79: Hallway: *Sanatório das Penhas da Saúde* (2007).



Figure 3.80: Hallway: *Sanatório das Penhas da Saúde* (2007).



Figure 3.81: Door Frames: *Sanatório das Penhas da Saúde* (2007).



Figure 3.82: Exterior: *Sanatório das Penhas da Saúde* (2007).



Figure 3.83: Entrance: *Sanatório das Penhas da Saúde* (2007).

3.3.3.1 Benefits of Exposure to Mountain Air

Though altitude as a treatment for tuberculosis has now become an obsolete treatment, doctors in many parts of the world (Europe in particular) continue to recommend regular exercise regimes in the form of hiking to high altitude mountainous areas as beneficial endeavors for people suffering from a variety of respiratory difficulties. Scientific research has pointed out that mountainous air is free of house dust mites, and has lower concentrations of bacteria and mould than air at sea level.⁹⁸ Moreover, scientific research also hypothesizes that lower oxygen and pressure levels along with solar radiation and temperature can alleviate symptoms in patients suffering from asthma.⁹⁹ A 2001 study conducted by the University of Thessaly in Greece observed a lower prevalence of bronchial asthma in children who live at high altitudes. According to the study findings, childhood bronchial asthma in mountain settlements (located at altitudes between 800–1,200 meters) is twice as low as in children living at sea level.¹⁰⁰ This same general scope of research has also concluded that higher altitude air is better for people who suffer from allergies because pollen concentrations in mountains are approximately one third of those in areas at sea level.¹⁰¹

Periodic stays in high altitude areas are also deemed to be beneficial for improving blood flow and for the operation of the heart muscle. A 2011 study published in the *Journal of Epidemiology and Community Health*, found that at higher altitudes there is a decrease risk of heart disease. Benjamin Honigman, the study's leader and Professor of Emergency Medicine at the University of Colorado's School of Medicine points out that as a result of lower oxygen levels at higher altitudes, the body compensates by causing certain genes to change the way the heart muscle functions.¹⁰² Professor Honigman hypothesizes that new blood vessels are produced at higher altitudes to act as alternate highways for blood to flow to reach the heart. The study also indicates that "...increased levels of radiation at altitude also help the body better synthesize Vitamin D which has also been shown to have beneficial effects on the heart and some kinds of cancer."¹⁰³ On that conclusion, it is asserted that people who live in mountainous areas tend to live longer lives, explained by the increased performance of the heart muscle due to the thinner air and the strain of movement, in a mountainous terrain.^{xviii}

xviii. In the interior mountain villages on the Island of Sardinia in Italy, there is an especially high concentration of people over the age of 100. In particular men who are over the age of 100. Scientists believe that among other things, the high rate of longevity amongst men in Sardinia can be explained by the fact that most had worked for the majority of their lives as shepherds on the Sardinian mountains, a profession that allows for regular movement, increased heart muscle function, and exposure to clean mountain air.¹⁰⁴

Finally, regular exposure to high altitude areas is also highly beneficial for athletic performance. Mountain regions are preferred by athletes because, the body adapts to increased altitude by creating more red blood cells and the number of capillaries through which blood reaches muscle tissue.¹⁰⁵ With additional blood cells and increased capillaries, muscles are provided with more blood and oxygen, which allows them to produce a higher work output. In Portugal, Serra da Estrela is a popular training ground for national athletes who train and prepare their bodies ahead of major competition. Recently, Portugal's national soccer team sought refuge in the Serra da Estrela town of Covilha to partake in high altitude training ahead of the 2010 World Cup competition in South Africa.¹⁰⁶ It is believed that altitude training is important for increasing speed, strength, endurance, and recovering when athletes return to perform in competitions held at sea level.¹⁰⁷ It is important to note that the positive effects offered by high altitude training that allow competitive athletes to perform better can also be experienced by ordinary people. Routine stays in high altitude mountain areas will produce the same physiological changes in ordinary people and will allow for better muscle performance once a person returns back to their everyday lives at sea level areas.

Overall, there is historical precedent to suggest that the three 'natural treasures' (rich biodiversity, thermal waters, and quality air) revealed in the myth of the Serra da Estrela have very real, and very beneficial effects on human health. And though modern medicine now lessens the necessity for traditional methods of treatment, there is still a desire to seek those alternative therapies, perhaps because they are drawn directly from or are attributed directly to the natural environment.

3.3.4 Nature, Health & Architecture

In *Healing Spaces, The Science of Place and Well-Being*, Dr. Esther M. Sternberg poses an interesting question: if the spaces around us can help us heal, are we inadvertently slowing the healing process by negating physical context and relying solely on the science of medicine?¹⁰⁸ Sternberg points out that in recent scientific studies patients recuperating in hospital beds that are near windows heal much quicker, and in doing so makes a connection between the process of healing and nature.¹⁰⁹ She points to that the Modernist architects of the 1920s and 1930s who designed homes and hospitals established connection between architecture, health and nature. Alvar Aalto and Richard Neutra “...were explicit about the health benefits of well-planned architecture and about the importance of nature and natural views in health and healing.”¹¹⁰

The concept of connecting architecture with nature gained popularity at the turn of the 20th century, in the days before effective antibiotics were available and the only effective alternative for treating tuberculosis was to send patients high in the mountains with the hope that the high altitude air would cure their infections. The unexpected benefit of the epidemic diseases that impacted society in the early 20th century was that many hospitals and treatment centers of the era were all located in beautiful and isolated natural settings. The treatment sanatorium designed and built by Alvar Aalto in the early 1930s in the Finish town of Paimio is ideally positioned so that it overlooks a pine forest, and includes a patient’s wings with south facing rooms immersed with natural light, and a resting lounge where even the furniture such as the “Paimio” chairs were designed in a reclined position, allowing patients to slant back and breath easier.¹¹¹ With the advent of effective antibiotics, the Paimio treatment center was eventually converted into a hospital, yet the original design by Aalto did however, serve as a standard for future holistic hospital designs. It is significant to note that the Paimio facility is today nominated to become a UNESCO World Heritage Site.^{112, xix}

xix. Other architects of the era such as Frank Lloyd Wright and Richard Neutra also made strong connections with the indoors and the natural environment. According to Sternberg, in the Lovell “Health House” in Los Angeles, Richard Neutra’s design provides views to nature on all sides in order to portray the convictions that his client, the physician Phillip Lovell and his wife had regarding health and nature.¹¹³

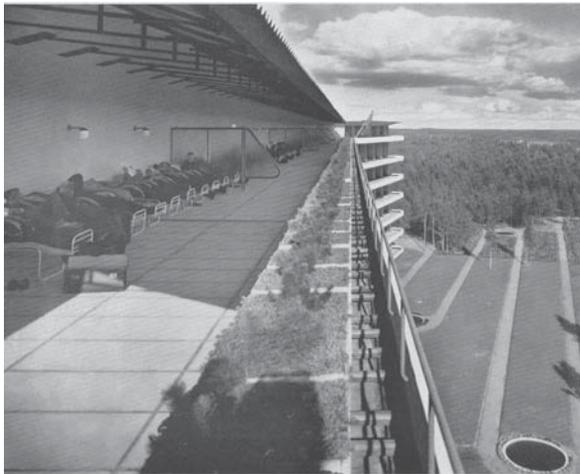


Figure 3.84: Sanatorium at Paimio, Alvar Aalto, 1932.



Figure 3.85: The Paimio Chair, Alvar Aalto.



Figure 3.86: The Lovell Health House, Richard Neutra, 1929.



Figure 3.87: Falling Water, Frank Lloyd Wright, 1939.



Figure 3.88: The Salk Institute, by Louis Kahn, 1959.

Today, architects continue in the tradition of connecting architecture to a healing natural environment conducive to healing. In his commissioning to redesign the *Sanatório das Penhas da Saúde* (located in the Serra da Estrela mountains) from a tuberculosis sanitarium into a modern high-quality hotel, contemporary Portuguese architect Eduardo Souto da Moura stated that he would like to maintain the original vision of the original architect Cottinelli Telmo who designed the facility as a “hotel for patients”. According to da Moura’s vision for the redesign, the new hotel design will once again serve to establish a connection between the surrounding natural environment and health.¹¹⁴

The natural conditions found adjacent to the rural mountainous town of Manteigas are the main ingredients by which this thesis proposes to reverse the course of abandonment of rural places in Portugal. The diversity of medical plants, therapeutic thermo-mineral waters, and high altitude mountain airs found in the natural environment around Manteigas creates an ideal environment to support both treatment and research in a successful hybrid facility. The case for Manteigas is a plausible scenario that bears a similarity to the story of Jonas Salk, the American researcher credited with the first discovery of a safe and effective vaccination against polio. As recounted by Sternberg in *Healing Spaces, The Science of Place and Well-Being*, Salk reached a point in his early research where he became demoralized and frustrated. It was in this state that he took a sabbatical for some time in the rural Italian town of Assisi, where he became “...so inspired by the light and beauty and spiritual aura of the place, that he hit upon the solution to his problem.”¹¹⁵ Upon his return from his stay in Assisi, Salk created the polio vaccine that has since saved millions of lives, and as a reward, Salk was given land and money to build a new research institute to continue his research. Sternberg points out that together with architect Louis Kahn, Salk created a place in the spirit of the rural Italian town of Assisi that would be “... suffused with light and surrounded by beautiful views—a place that would inspire the imagination of other scientists just as Assisi had inspired him.”¹¹⁶

Just as Salk’s visit to Assisi and his observation of the light, beauty and spiritual aura of the rural place had inspired him to a great discovery, it was my own visits to the Serra da Estrela region and the rural town of Manteigas in 2010 that inspired me to envision an architectural solution to rural abandonment that emerges from the rare combination of rich biodiversity of plants, an abundance of thermo-mineral waters, and clean mountain air. Manteigas, like Assisi, stirs the creativity in the designer’s mind to envision a place that not only provides a physical space for healing and research, but also a place that will ultimately fuel further development and revitalizes an entire rural area.



Figure 3.89: Assisi, Italy.



Figure 3.90: Manteigas, Portugal.

PART 3: ENDNOTES

1. BBC News, "Common Agricultural Policy," <http://news.bbc.co.uk/2/hi/4407792.stm>.
2. European Parliament, "Second Pillar of the CAP: Rural Development Policy," http://www.europarl.europa.eu/parliament/expert/displayFtu.do?id=74&ftuid=FTU_4.2.5.html&language=en.
3. European Commission: Directorate-General for Agriculture and Rural Development, "The Common Agricultural Policy Explained," http://ec.europa.eu/agriculture/publi/capexplained/cap_en.pdf.
4. Denise Mitten, "The Healing Power of Nature: The Need for Nature for Human Health, Development, and Wellbeing" (paper presented at the 150 Year International Dialogue Conference Jubilee Celebration, North Troendelag University College, Levanger, Norway, September 14-19, 2009), 13.
5. Idem.
6. Matthew, Johnston, "Industry of Leisure: Tourism Culture and Design" (Master diss., University of Waterloo. 2002), 55.
7. European Travel Commission, "Tourism Trends for Europe," <http://www.etc-corporate.org/market-intelligence/reports-and-studies.html>.
8. Johnston, 92.
9. European Travel Commission, 5.
10. Idem.
11. United Nations Educational, Scientific and Cultural Organization, "World Heritage List," <http://whc.unesco.org/en/list>.
12. United Nations Educational, Scientific and Cultural Organization, "Alto Douro Wine Region," <http://whc.unesco.org/en/list/1046>.
13. Helena Marques, "Research Report: Searching for Complementarities Between Agriculture and Tourism – the Demarcated Wine-producing Regions of Northern Portugal." *Tourism Economics* 12, 1 (2010): 147-160. 151.
14. World Tourism Organization (UNWTO), "World's Top Tourism Destinations," http://www.unwto.org/facts/eng/pdf/indicators/ITA_top25.pdf.
15. Manteigas-Trilhos Verdes, "Glacier Route," http://www.manteigastrilhosverdes.com/en/uploads/pr_6_mtg_ing.pdf.
16. Lúcio Cunha, "Portugal's Mountain Regions, Challenges for the 21st Century." In Jones, Garret. Leimgruber, Walter e NEL, Etienne – Issues in Geographical Marginality. IGU, Grahymstown (2007): 7.
17. Lucas Duarte and José Baptista, *Três Realidades Numa Fantasia Literária!* (Manteigas: Biblioteca Municipal de Manteigas, 1979).
18. Idem.
19. Interpretation Centre of the Serra da Estrela (CISE), *Plantas Aromáticas e Medicinais do Parque Natural da Serra da Estrela: Guia Etnobotânico* (Seia, Portugal: CISE, 2011). 32.
20. R. Russell and M. Paterson, "Ganoderma- A Therapeutic Fungal Biofactory." *Phytochemistry* 67, 18 (2006): 1985-2001. 1997.
21. Interpretation Centre of the Serra da Estrela (CISE), 33.
22. Idem.
23. *Ibid.*, 34
24. Rocco Fiammetta, *The Miraculous Fever-Tree. The Cure that Changed the World* (San Francisco: Harper Collins, 2004), 54.
25. Interpretation Centre of the Serra da Estrela (CISE), 35.
26. Idem.
27. *Ibid.*, 36.
28. *Ibid.*, 25.
29. Idem.
30. *Ibid.*, 27.
31. A. Zangara, "The Psychopharmacology of Huperzine A; An Alkaloid with Cognitive Enhancing and Neuroprotective Properties of Interest in the Treatment of Alzheimer's Disease." *Pharmacology Biochemistry and Behavior* 75, 3 (2003): 675-686. 677.
32. Interpretation Centre of the Serra da Estrela (CISE), 36.
33. *Ibid.*, 9.
34. Idem.
35. World Health Organization, "Traditional Medicine," <http://www.who.int/mediacentre/factsheets/fs134/en/index/html>.
36. Idem.
37. Idem.
38. Ralph Jackson, "Waters and Spas in the Classical World," *Medical History Supplement* 10 (1990): 1-7, 7.
39. *Ibid.*, 1.

40. Wikipedia, "Humorism," <http://en.wikipedia.org/wiki/Humorism/html>.
41. Jackson, 1.
42. Ibid., 4.
43. Ibid., 1.
44. Morris Hicky Morgan, *Vitruvius: Ten Books on Architecture*, (London: Harvard University Press, 1914), 232.
45. Ibid., 234.
46. Jackson, 5.
47. Fikret, Yegül. *Bathing in the Roman World*, (New York: Cambridge University Press, 2010), 41.
48. Ibid., 27.
49. Ibid., 64.
50. Jackson, 7.
51. A. Van Tubergen and S. Van der Linden, "A Brief History of Spa Therapy." *Annals of the Rheumatic Diseases: The EULAR Journal* 61, 3 (2002): 273-275, 273.
52. Yegül, 201.
53. Museus de Cordoba, "Arab Baths of Caliphate Alcazar," <http://www.artencordoba.co.uk/MUSEUMS/Museums-Cordoba-Arab-Baths-Caliphal-Alcazar.html>.
54. Van Tubergen, A. and Van der Linden, 274.
55. Idem.
56. Idem.
57. R. Palmer, "In this our Lightye and Learned Tyme: Italian Baths in the Era of the Renaissance." *Medical History Supplement* 10 (1990): 14-22, 15.
58. Richard Metcalfe, *Life of Vincent Priessnitz* (London: Simpkin, Marshall, Hamilton, Kent & Co. Ltd., 1898), 52.
59. Sebastian Kneipp, *A Legacy to The Health and the Sick* (London: H. Grevel & Co., 1896), 20.
60. H. Matz, E. Orion, and R. Wolf, "Balneotherapy in Dermatology." *Dermatology Unit, Kaplan Medical Center* 16 (2003): 132.
61. Z. Karagulle, "Medical Hydrology, Balneotherapy, Thalassotherapy and Therapy: Understanding How Research which Validates Spa Therapies can Greatly Increase your Bottom Line" (lecture presented at the Global Spa Summit, Interlaken, Switzerland, May 2009).
62. Burkhard Sanner, "Baden-Baden: A Famous Thermal Spa with a Long History." *Geo-Heat Center: Quaterly Bulletin* 21, 3 (2000): 16-22, 17.
63. Idem.
64. Idem.
65. John W. Lund, "Spas and Balneology in the United States," *Geo-Heat Centre: Quarterly Bulletin* 16 (2003): 1-3, 1.
66. Idem.
67. Karagulle, 2.
68. Sanner, 17.
69. Lund, 2.
70. Matz, Orion, and Wolf, 133.
71. Idem.
72. Marques and others, 147.
73. Matz, Orion, and Wolf, 133.
74. Idem.
75. Idem.
76. Ibid., 134.
77. Idem.
78. Karagulle, 3.
79. Matz, Orion, and Wolf, 134.
80. Yurtkuran and others, 19
81. Matz, Orion, and Wolf, 134.
82. Marques and others, 162.
83. Idem.
84. Ibid., 158.

85. John F. Healy, *Pliny the Elder on Science and Technology* (Oxford: Oxford University Press, 1999), 247-249.
86. J. A. Quintela, A. G. Corriea, and J. G. Antunes. "Service Quality in Health and Wellness Tourism – Trends in Portugal." *International Journal of Business, Management and Social Sciences* 2, 3 (2011).
87. F. Gribble, *The Story of Alpine Climbing* (London: George Newnes, Ltd. Southampton Street, Strand, 1904), 11.
88. L. W., Price, *Mountains and Man: a Study of Process and Environment* (London: University of California Press, 1981), 12.
89. Idem.
90. Zubieta-Calleja and others, 815.
91. Ezzati and others.
92. Live Strong, "High Altitude Athletic Training," <http://www.livestrong.com/article/90441-high-altitude-athletic-training/html>.
93. E. T., Fuller, R. H., Yolken, "Their Bugs are Worse Than Their Bite," *The Washington Post*, April 3, 2005, B-01.
94. Christopher W. Koehler, "Consumption, The Great Killer." *Modern Drug Discovery* 5, 2 (2002): 47-49.
95. Idem.
96. SOL, "Serra da Estrela: Souto de Moura Promete Recriar 'Serenidade Monumental' Na Futura Pousada," http://sol.sapo.pt/inicio/Cultura/Interior.aspx?content_id=16233.
97. Idem.
98. F., Spiekma, P., Zuidema, and M., Leupen, "High Altitude and House-dust Mites," *British Medical Journal*, (1971): 82-84, 82.
99. Idem.
100. Gourgoulianis and others, 429.
101. Michel and others, 383.
102. Ezzati and others.
103. Idem
104. Time Magazine World, "Letter From Sardinia: Something in the Air," <http://www.time.com/time/magazine/article/0,9171,338592,00.html>.
105. Live Strong.
106. International Soccer Network, "Hysteria in Covilha for the Portugal National Team," <http://www.internationalsoccernetwork.com/Gaspar5.html>.
107. Brugniaux and others, 204.
108. Esther Sternberg, *Healing Spaces: The Science of Place and Well Being* (Cambridge: First Harvard University Press, 2010), 1.
109. Ibid., 5.
110. Idem.
111. Idem.
112. Idem.
113. Sternberg, 7.
114. SOL.
115. Sternberg, 21.
116. Ibid., 22.

PART IV

Precedents and Design Principles





4.0 RURALITY AS A SYNONYM OF MODERNITY

A contemporary approach to rural development sees remote areas as offering unique contextual and environmental conditions that are not found anywhere in the modern urban city; represented by a complex natural, man-made, and socio-cultural *genius loci*. This unique combination creates a distinct environment in today's global world where an increased social awareness has aligned rurality with nature and "...elevated the countryside as a purer, nobler and more treasured space than the city."¹ Today, remote rural areas represent a growing paradigm in the developed world that seeks to reconnect urban society with nature. In *One Rural, Two Visions*, Elisabete Figueiredo points out the contemporary view of rurality by stating:

*"Rurality is no longer represented as a synonym of a concrete condition of opposition and marginalization vis-à-vis modernization processes, but rather as a synonym of modernity (or post-modernity) expressed through the discovery and valorization of the differences, of the authentic and genuine."*²

This contemporary view of the rural is evident in the 21st century in many modern states where the importance of maintaining vibrancy in rural communities is seen as key to opposing and reversing rural abandonment. At the core of the European Union's most recent rural development policy is the importance of improving the quality of life in rural areas by encouraging the diversification of the rural economy away from agriculture and towards more contemporary sectors.³ Today there are a number of precedents found throughout Europe that show successful rural development initiatives that have resulted in the broadening of the rural economy and the resurgence of once declining areas. The following chapter will examine two past precedents and will provide an outline for the amelioration of a declining rural town through an architectural design intervention. The goal is not only to provide a plan for stimulating interest and initiating prosperity in the rural town of Manteigas, but also to provide a template by which future architectural interventions can be undertaken in rural communities with comparable characteristics.

Figure 4.1: Village of *Lingares*, Serra da Estrela.



Figure 4.2: Panorama of the Village of Vals, Switzerland.

4.1 PRECEDENTS OF SUCCESSFUL DEVELOPMENT IN RURAL AREAS

Though there is still a lingering ambivalence towards rural areas, and though many past policies have failed to provide a sustainable rural existence, the inherent natural, cultural and healing qualities found therein provide an optimism to envision a successful future. In the following section, two successful examples are presented of regions quite similar to Manteigas that have themselves overcome decline and have emerged as models of successful development strategies.

4.1.1 Thermal Baths: Vals, Switzerland

Set into a valley in Southern Switzerland, the small village of Vals is an example of a rural area that has avoided depopulation by turning to its local natural elements to create a catalyst project, which immediately upon completion in 1996, has turned a declining settlement into a top destination point for tourism.⁴

In the early 1980s, a consortium of local villagers decided to improve the conditions in their rural community by purchasing a hotel complex (originally built in the 1960s) that had gone bankrupt and proceeded to commission a hydrotherapy centre that would make use of the local thermal spring water and the local *Vals*er quartzite stone used for centuries as roofing and building material in the local vil-



Figure 4.3: Vals Thermae Baths.

lages. Peter Zumthor, the Swiss architect commissioned to design the *Vals Thermae*, made a conscious decision to use locally quarried *Vals*er quartzite stone which is an ideal thermal mass as the main building material for the structure.⁵ By utilizing the quartzite stone, Zumthor promoted a local building material as something special and of high quality that would have otherwise been disregarded and lost in a globalized economy where cheaper foreign building materials are a low-cost alternative. The internal drive of the local villagers to take action and see their rural community as a special place is what ultimately led to a successful project intervention that promotes the region's national elements through a praiseworthy structure.

Although the *Thermae Vals* was never envisioned as a landmark project that would bring architectural tourism, the ability for the architecture to inspire the visitor has promulgated "word of mouth" advertising. For all extensive purposes, Vals is readily considered a remote rural gem worth exploring. Ten years after opening of the baths, the number of overnight visitors to the surrounding hotels and local accommodations has increased by 45 percent, and each year over 140,000 visitors make use of the baths.⁶ For Vals, a mountainous community of 1,000 inhabitants, the growing leisure and therapeutic tourism industry has been a valuable supplement to agriculture, which is no longer the primary industry.

As a precedent for future development, the thermal baths in Vals offer an excellent example of how local stakeholders can successfully join together to create an ingenious vision for the revival of their rural area through a bold yet contextually sensitive act of design.⁷



Figure 4.4: *Vals Thermae* Baths Interior.



Figure 4.5: *Cinque Terre* Coastline, Italy.



Figure 4.6: *Cinque Terre* Connection Trail.

4.1.2 The *Cinque Terre*: Liguria Region, Italy

Located on a rugged coastline in the hilly Liguria region of Northern Italy, the *Cinque Terre* are five villages surrounded by hillsides and steep landscapes overlooking the sea, which (together with the surrounding hillsides) is a UNESCO World Heritage Site that has maintained its rural character over many centuries. The five villages are only accessible by ferryboats and train lines (there is no vehicular access whatsoever) and no visible modern development. What draws attention for tourists, however, is the connecting trail network running between them. These trails are connected to both the greater Pan-European trail network and are also integrated to the *Via Francigena* pilgrimage route; relevant in an international and religious context.

Following the end of the Second World War, the region experienced general decline as the government attempted to modernize the regional agriculture based on the paradigm of industrial growth. It was only within the past twenty years that the region has experienced reversal in the marginalization process by following a more sustainable development.⁸ This region has become an example of the internal strength of a remote local community to ensure the vitality of their rural villages in a modern age. The rugged beauty of the five unique villages has attracted an influx of both foreign and domestic tourists, which has in turn benefited local agriculture by valorizing local produce. The local farmers apply organic techniques to grow premium grapes, olives and fruits on the surrounding sloped terraced plots and process them using traditional methods. Proceeds from the sale of *Cinque Terre Treno* (Train) and *Battello* (Ferry) cards to visiting tourists are used by the locals for the maintenance of the terraced farms, the connecting networks of trails, and help in the development of regional food products (olive oil, pesto sauce, the famous *Sciacchetrà* wine, regional sauces and marmalades).⁹ The region has also set up local farming laboratories which investigate natural biological techniques for farming, as fertilizers are not utilized in the region.

Although the *Cinque Terre* villages are quite remote and isolated, they've managed to maintain their relevance in a modern age with the maintenance of a network of trails that have allowed tourists to enjoy recreation, five distinct villages undisturbed by modernization, and experience the local organic cuisine. This has created a kind of regional pride amongst the people of Liguria. In the case of the *Cinque Terre* precedent, the addition of tourism has acted as a catalyst that has allowed rural agriculture to retain prominence. This precedent points to another successful example of agritourism stimulating revival of the rural economy.

Ultimately, the enthusiasm of the locals to maintain the uniqueness of their rural villages by investing back into the upkeep of the fertile terraced farms is a great example of a sustainable rural development and integration. Rural integration is a shift from traditional economic development viewpoint to the construction of territorial capital, and a shift from individual to collective action and cooperation that has been successful in revitalizing remote rural areas.



Figure 4.7: Hiking Trail Map of Cinque Terre.

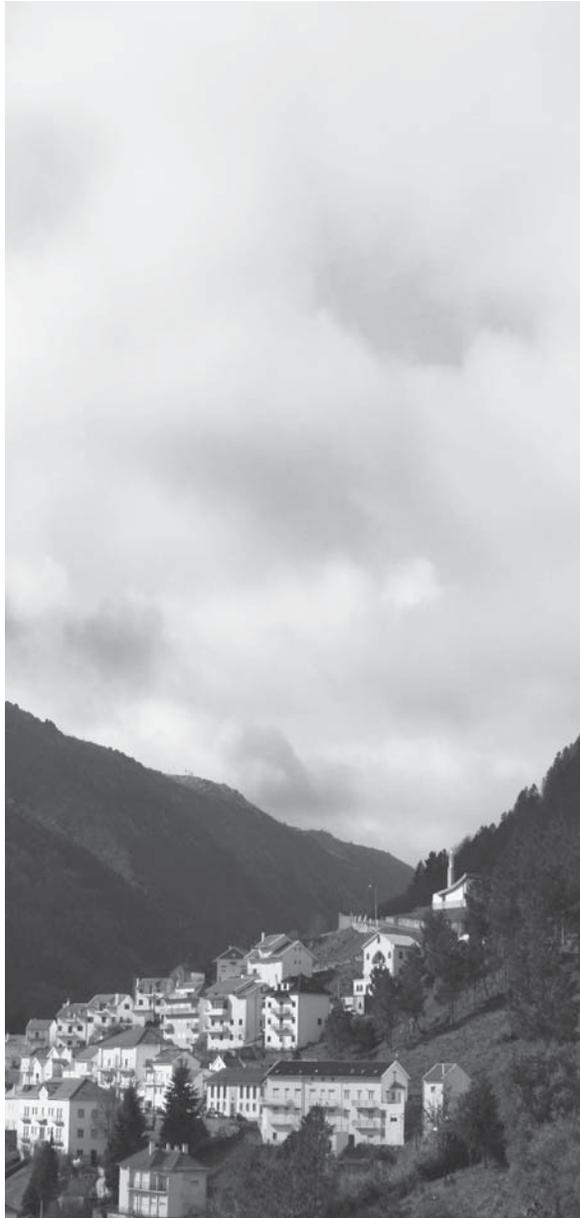


Figure 4.8: The Rural Mountainous Town of Manteigas.

4.2 A TEMPLATE FOR ARCHITECTURAL INTERVENTIONS IN THE RURAL

The rural town of Manteigas, ideally located in the Serra da Estrela mountainous region of Portugal is chosen because of its rare natural conditions to provide a viable example of a rural place where it can once again become possible to not only work, but also live throughout the year in a vibrant environment. Before a set of design principles can be applied to form the framework of an architectural intervention in the rural, the thesis contends that it is necessary for a given rural site to embody three preconditions that dictate strong *genius loci*. Namely, the thesis underpins a successful architectural intervention to a rural site that has:

1. An Abundance of Natural Resources

In Manteigas, the abundance of natural resources is represented by a rare combination of plants with medicinal properties, the presence of therapeutic geothermal and fresh surface waters, and clean high-altitude air.

2. Man-made Artifacts & Established Infrastructure Allowing for Accessibility

The many cobble roads, terraced farms, modest local shepherd huts, modern homes, and historic churches in the typical Manueline architectural style are all representative of the typical man-made artifacts found in Manteigas. Manteigas also has an established infrastructure consisting of regional roads that connect it to the country's main road network and allow for greater economic opportunities beyond the local level.

3. Existing Socio-cultural Conditions

The existing socio-cultural conditions in Manteigas emerge from the common shaping and reshaping of the local landscape through crop cultivation, sheep rearing, wool weaving, and the production and export of the famed Serra cheese. In addition, the established common spaces for collective gathering in Manteigas such as churches, markets, and fountains have allowed for human bonds to form and strengthen through many generations. Specific to Manteigas is also an established socio-cultural setting that draws visitors to the area by the virtue of its famed spring and thermal water resources.

Based on the existing preconditions presented and a vision of reactivating a latent vibrancy are four

design principles that have been extracted to form a catalytic framework for future architectural interventions in Manteigas and other similar rural regions.

They are as follows:

1. *Improve the quality of life*
2. *Prevent the loss of local assets*
3. *Establish a healthy rural economy*
4. *Establish a long-term vision for the rural*

What follows is a detailed catalogue of guiding strategies for implementing the four-abovementioned design principles. In Appendix C, a detailed table summary is presented to show how the intervention project fulfills the selected guiding strategies. The intention is not only to underpin the intervention in Manteigas with a comprehensive rationalization, but also to provide a template by which other rural communities with similar conditions can be revitalized through design.

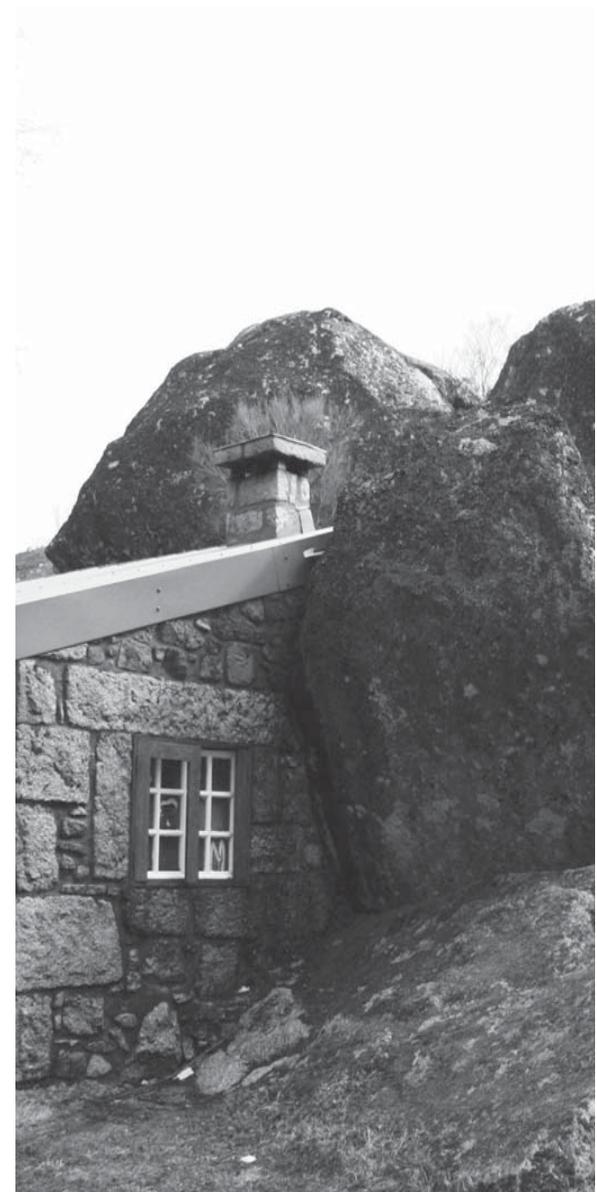


Figure 4.9: House Built Against an Adjacent Granite Boulder, Serra da Estrela.

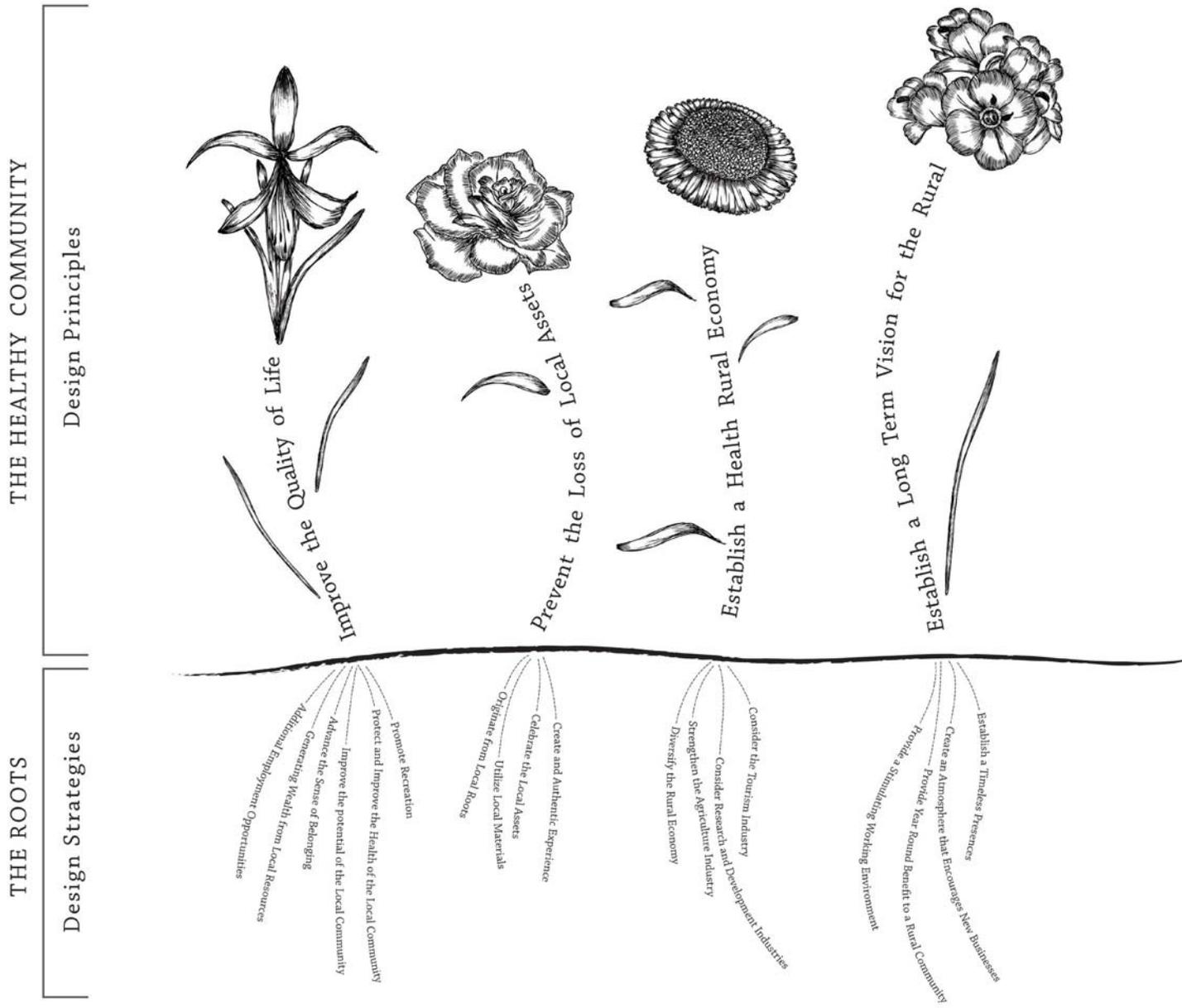


Figure 4.10: Guiding Design Principles.

4.3 IMPROVE THE QUALITY OF LIFE

To achieve the first objective of *improving the quality of life* in rural areas, there must be an evolution from the current state of decline towards an advancement that is far-reaching and felt by all rural inhabitants. Although advancement in the quality of life can be defined in many ways, the most appropriate means for rural areas is by a measured improvement in both the standard quantitative indicators like employment and increased wealth, as well as the qualitative indicators such as the sense of belonging, the state of education, health services, and recreation.¹⁰

To achieve the objective of improving the quality of life in rural communities, the project will pursue to fulfill the following design strategies:

- **Additional Employment Opportunities**

The proposed design intervention should create permanent and temporary jobs in the local community at all stages of the project from conception, to construction, and operation.

Although Manteigas is a small municipality of just over 3,000 inhabitants, there is nonetheless a strong local pool of professionals with skills in surveying, architecture, planning and other municipal disciplines that could complement foreign stakeholders during the conception phase of the design intervention. A collaborative process is expected to not only employ qualified local people, but also strengthen the entire conception phase and produce a project that is more authentic and is considerate of the local culture and the precise needs of the community. Moreover, any catalytic project introduced in an established rural community should acknowledge the local builders and use their skills and labor force during the construction phase. The construction phase may also provide a great opportunity to teach different construction techniques to the local rural builders which they can then apply to the upkeep of the project, and other local infrastructure.

Once in operation, the local community will need to respond to the demands of the project. In the Vals precedent, once the Zumthor thermal baths were in full operation, the village quickly experienced an influx of foreign tourism; this in turn placed a demand on the local community to respond by providing hotels and local accommodations. Given that the rural conditions in Vals are very similar to those encountered in Manteigas, it is anticipated that a comparable project will spur the development of supporting local businesses, such as guesthouses, restaurants, supply stores, childcare facilities for workers, and entertainment venues.

With increased job options in the community, the outcome will equate in an increase in flexible/disposable income, thus fulfilling the objective of improving the quality of life through the creation of new employment opportunities.

PROJECT PHASE	ANTICIPATED EMPLOYMENT OPPORTUNITIES FOR LOCAL COMMUNITY
Phase One	CONCEPTION [<ul style="list-style-type: none"> - Planners and Surveyors - Various Municipality Workers - Architects and Engineers - Local and Regional Investors
Phase Two	CONSTRUCTION [<ul style="list-style-type: none"> All Mentioned in Phase One, <i>plus</i>: - Builders - Project Manager and Supervisors - Material Suppliers
Phase Three	OPERATION [<ul style="list-style-type: none"> - Academics and Professional Researchers - Medical Professionals - Professional Agriculturists and Farmers - Lodging and Hospitality Operators - Service Personnel - Leisure and Tourism Professionals - Building Operators

Figure 4.11: Employment Potential.

▪ **Generate Wealth from Local Resources**

Heritage, culture and natural resources are the wealth of all rural areas; therefore, any intervention will need to celebrate these assets and integrate them into the design. In the Liguria region of Italy, the five distinct rural villages (the Cinque Terre) serves as the local resources which attract tourism. Although quite isolated on a steep coastal strip, and only accessible by ferryboats and train lines, the *Cinque Terre* and the intervention of a connecting pedestrian trail are used to generate wealth from tourism. The generated wealth is then reinvested locally towards the maintenance of the region’s renowned terraced farms, the connecting trail, and the organic production methods that produces foods sought out for their quality.

Similarly, in the rural village of Vals it is the local mineral-rich thermal waters, which are used to generate wealth for the community. In Manteigas, it is the trinity of natural treasures (rich biodiversity, thermal water, and clean high-altitude air), which can be used by an architectural intervention and marketed to a wider tourist audience to bring wealth to Manteigas and cultivate an atmosphere of revival.

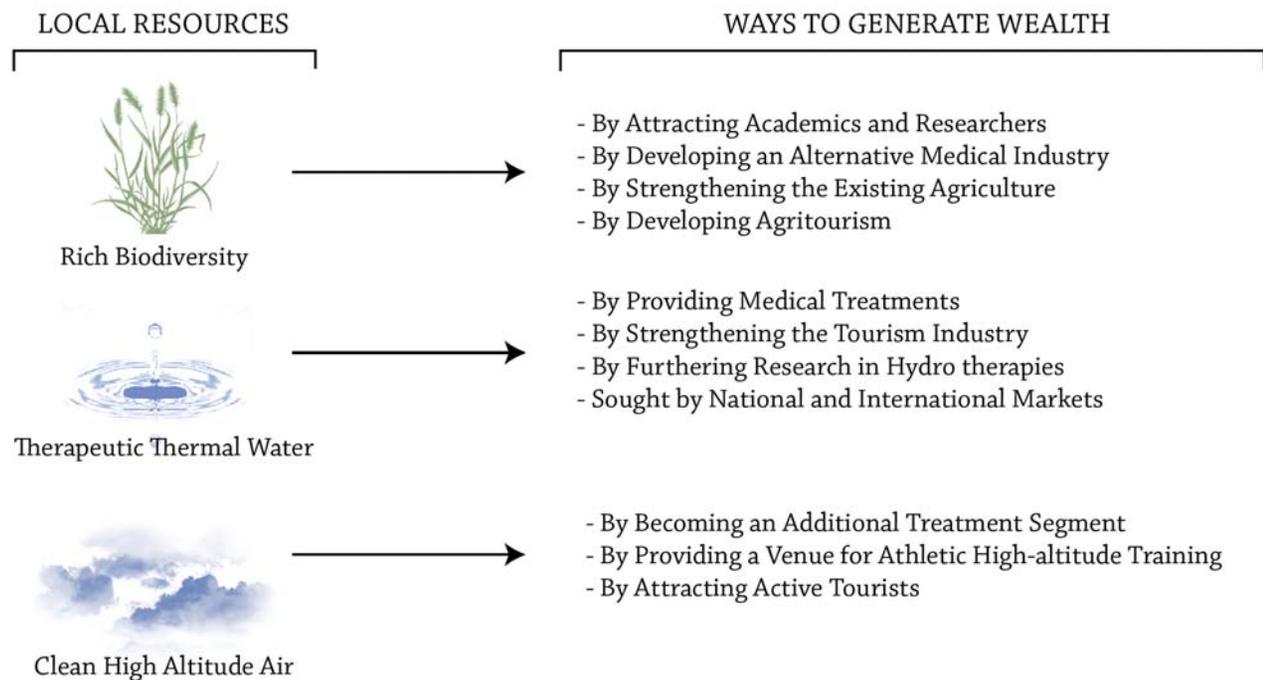


Figure 4.12: Wealth Generated from Local Resources.

- **Advance the Sense of Belonging**

A more qualitative improvement in the quality of rural life comes from helping establish a sense of belonging and regional pride. In the Vals precedent, it was the vision of a consortium of local villagers to foresee a supplementary industry to a declining agricultural sector that led to the commissioning of a bold yet contextually sensitive design. The success of the thermal bath project in turn created pride and a sense of belonging among the local actors who contributed to the realization of this project. In Liguria, the sense of regional belonging comes from the successful union of five distinct villages being able to prosper from collective collaboration. Given the isolation of each village, prosperity is highly dependent on the five villages working together and reinvesting in the maintenance of the authentic and genuine rural experiences that Figueiredo asserts are sought after in a post-modern world.¹¹

In Manteigas, the vision for the project is to fully integrate the community into the overall success of the project. This will be done by demanding that the community reactivate abandoned agricultural fields as extensions of research and treatment activities undertaken by the intervention. To strengthen the sense of belonging, the intervention incorporates a 'Community Exchange' program where local participating farmers receive compensation and training within a modern facility in return for the medicinal plants that they've grown in the reactivated fields. The researchers working in the intervention project would offer training on the specific cultivating methods needed to grow specific herbal plants.



Figure 4.13: Advancing the Sense of Belonging in Manteigas Through Design. Exhibition Gallery, Library and Restaurant Spaces Included in the Design in Order to Improve the Rural Built and Social Environments. (Refer to Page 266 for Full Section)

Furthermore, the architecture can also improve the sense of belonging in Manteigas by providing spaces that can be used to hold various gatherings and social events. Like many other rural areas, Manteigas is also renowned for having local festivals that bring together people from the entire region. Therefore, by accommodating and making available large indoor and outdoor spaces, the architectural intervention can improve the quality of rural life by providing Manteigas with places where different social events can take place.¹²

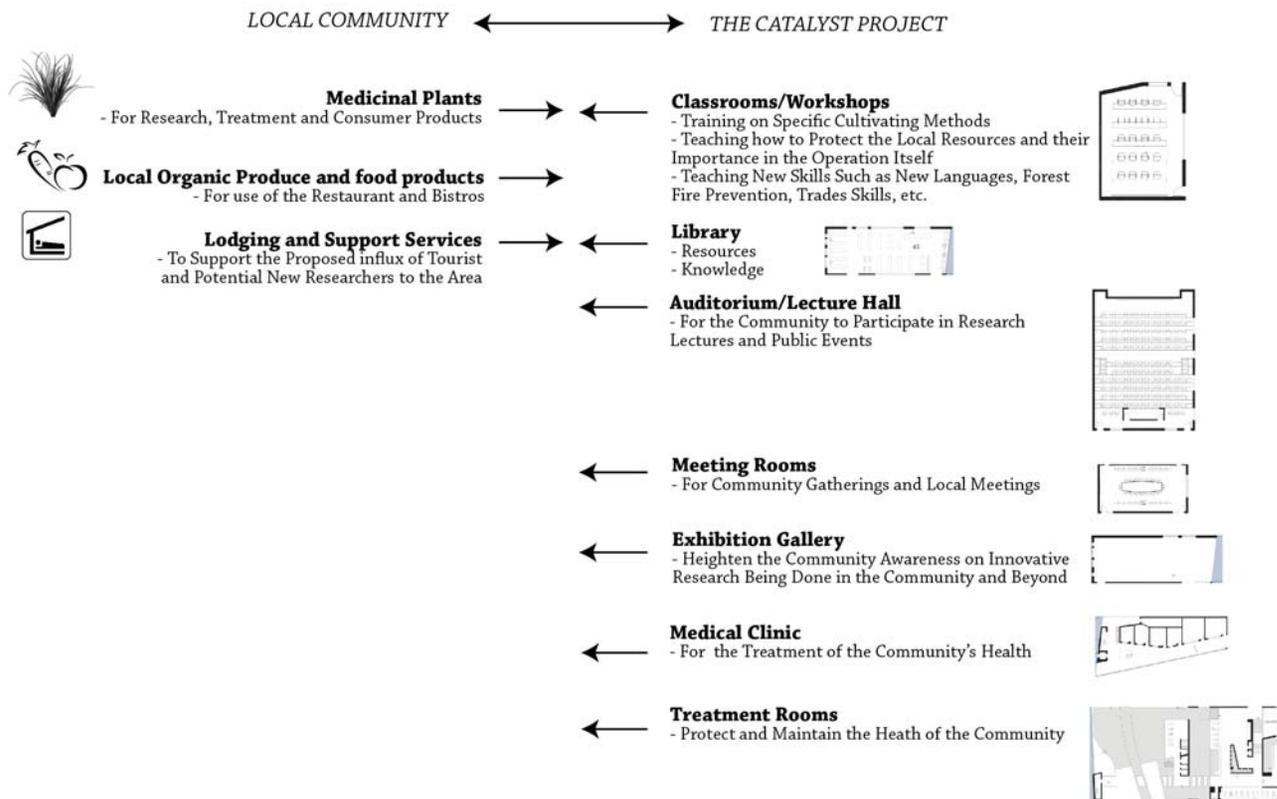


Figure 4.14: Diagram Depecting the 'Community Exchange' Scheme.

- **Improve the Potential of the Local Community**

A qualitative improvement in the quality of life is also accomplished by helping improve the potential of the local rural community. The architectural intervention in the rural should include classrooms, workshops, and lecture halls that can be used by the local community as learning and training facilities. Given the importance of education in a modern knowledge-based society, and the fact that education levels in remote rural areas are typically lower than the urban city average, the inclusion of learning spaces in the proposed project will be of great benefit to the local community. The intervention can include spaces for life-long training programs that teach applicable skills to adults or host supplementary education programs for the local youth. The proposed intervention can include hosting workshops that promote the importance of protecting the local resources (perhaps in terms of rarity, the inherent qualities, or importance in the operation of the intervention itself). Training programs in rural settings can be structured to include the teaching of: trade skills, production of local arts and crafts, the documentation of the local heritage, foreign-language training, local environment protection, and forest fire prevention, by allocating space for learning, and by creating programs that entice the local population to participate, the project will tap into an existent and perhaps under utilized pool of talent.

By realizing the local human potential, the quality of life will certainly improve as people feel more satisfied in knowing that they are acquiring skills that they can readily apply within their local rural areas. As more and more people from the local community acquire new skills, they are more likely to encourage others in the rural community to also undertake further training to unleash their own potentials.¹³



Figure 4.15: Rendering of Proposed Library in Manteigas. Library Focused on Providing Resources Based on Natural Healing Therapies to Support Both the Researchers and the Local Community to Develop a Niche Market in the Community. (Refer to Page 257 Room 41 for Floor Plan)



Figure 4.16: Classroom Spaces Provided for Adult Learning and Training. (Refer to Page 257 Room 46 for Floor Plan)



Figure 4.17: Auditorium Space Welcomes the Local Community to Participate in Research Conferences and Events. (Refer to Page 257 Room 27 for Floor Plan)



Figure 4.18: Promoting Health and Wellbeing by Providing Spaces for Various Water Therapy Spas. (Refer to Page 259 Room 75 for Floor Plan)

- **Protect and Improve the Health of the Local Community**

The quality of life is also dependent on the protection and improvement of a community's health and wellbeing. The *Cinque Terre* precedent points to a region that provides food products free of any chemical fertilizers. This has elevated the status of the region's organic cuisine as a healthy alternative both within and beyond the region. Moreover the network of hiking trails and the absence of any vehicular transportation has prompted the emergence of an active lifestyle among the local population. Similarly, the Vals thermal baths serve as an example of a local population that has acquired an appreciation of traditional thermal water healing and therapy methods.

The objective of the proposed research and therapy center in Manteigas is to be themed around the idea of using nature for alternative health and healing - a concept which is aligned with a rural way of life. Central to this is the establishment of a connection between architecture, health and nature. Thus, the facility's existence is contingent on a supply of three natural health elements (plants, waters, and air), which are all plentiful in Manteigas. The facility and alternative therapy programs within are intended to be free of charge to the local community as a way of improving the health of the local community. A medical clinic within the treatment side of the project is also intended to serve the residents of Manteigas. Furthermore, the intervention demands that all foods served within the proposed in-house café or restaurant come from locally grown organic sources to support the theme of natural healing and wellbeing.

The project will also maintain the existing Glacier Trail, allowing it to pass through the design. This gesture will promote and encourage a more active lifestyle amongst the local population. The Glacier Trail will provide access from the nearby center of Manteigas to the core of the project by foot, and allow for leisure walks along the entire length of the Zêzere valley. The design intervention will also protect the health of the local population by ensuring that there are no harmful pollutants being emitted into the environment. Programs incorporated in the design will not generate any harmful emissions. This level of sensitivity will need to be carried through all phases of the project's development.

Architectural interventions that protect and by its conception and form act to promote the health of the local community will ultimately help in creating an atmosphere where quality of life is valorized. An intervention can also become effective at luring a populace to a rural area that places great value on wellbeing and a healthy balanced lifestyle.¹⁴

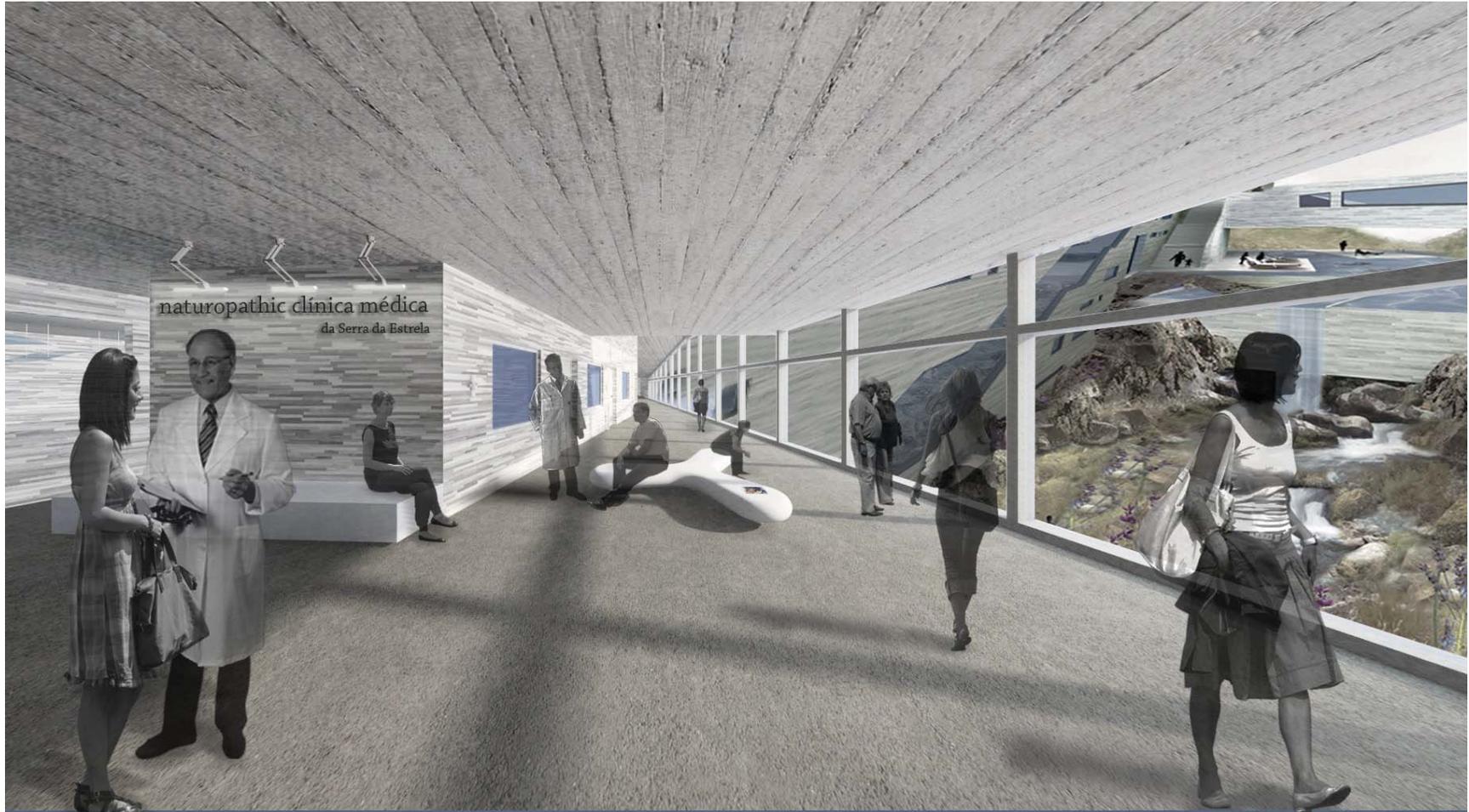


Figure 4.19: Medical Clinic will Provide Additional Health Services to Rural Manteigas. The Medical Clinic will be Focused on Providing Traditional Health Remedies. (Refer to Page 257 Room 30 for Floor Plan)



Figure 4.20: Opportunities for Hiking and Recreation. Existing Glacier Trail Maintained and Allowed to Pass Through the Design Building.

- **Promote Recreation**

By its definition, recreation is any activity done for pure enjoyment with the aim of restoring and renewing ones physical and spiritual state. Routine recreation is known to improve quality of life. In today's society, rural areas offer an open and diverse landscape where people can indulge in various outdoor activities. In Vals, the mountainous landscape and the underground tectonic forces provide a rural setting where people can restore and renew their physical state through bathing in rejuvenating thermal pools. The *Thermae Vals* baths also allow for the spiritual state to be restored by providing numerous rest areas that allow for absorption of the sun's rays and enjoyment of the tranquil mountain sounds and scenery. In the *Cinque Terre* precedent it is the trail network that allows for leisure walks between five hidden villages that contributes towards the restoration of physical and mental wellbeing through movement and pleasant meandering in an inspiring rural area.

In Manteigas, the mountainous landscape offers an ideal setting for recreation where the architectural intervention itself encourage promotes recreation by being situated in a location reachable by an existing leisure trail. As in Vals, the project also incorporates leisure pools and areas for relaxation while undergoing a process so that both the physical and the spiritual wellbeing are equally restored. The services within the intervention are foreseen as not being exclusive to tourists but rather made available and welcoming for the enjoyment by the local community. Thus, creating an atmosphere where value is given to the improvement of the quality of life through recreation (equally enjoyed by both locals and visitors), which is so integral to the objectives of the intervention.



Figure 4.21: Section Showing Thermal Water Pools Frequented by Both Locals and Tourists. (Refer to Page 267 for Full Section)



Figure 4.22: Outdoor Leisure Pools Designed in Harmony with the Surrounding Natural Landscape.

4.4 PREVENT THE LOSS OF LOCAL ASSETS

To achieve the second objective of *preventing the loss of local assets*, the catalytic project should find ways to ensure that they are maintained and celebrated. Local assets are defined by the cultural, historic and natural resources found in the rural. The most serious threats that lead to the loss of local assets are external policies that negatively impact local practices, insensitive demolitions of existing infrastructure, and the emergence of conflicting visions for development between visitors and local dwellers.¹⁵

As an example, many traditional products and practices that were once characteristic of rural life in Serra da Estrela are now lost as a result of modernization policies introduced during the EU integration period of the late 1980s when small-scale farmers and food producers were required to adopt broad and expensive production methods. During this period, traditional rural goods such as wool clothing and food products such as *Serra* cheeses made of ewes' milk from smaller farms disappeared as these farms could not compete with the demands of modern large-scale production. Moreover, local assets in the rural are also threatened by insensitive demolition of historic infrastructure that is often seen for its ruined state rather than for its cultural and historical importance. In many cases, it becomes far easier and much more cost effective to simply demolish abandoned historic buildings in the rural rather than invest in their repair and restoration, even when there is a strong heritage value. Lastly, conflicts can arise between visitors who see the rural environment as a place for recreation, tourism and leisure, and the local rural inhabitants who use the same environment for productive functions and daily living.¹⁶ There is a divided perception of rural areas between outsiders who see the rural environment as a place to play, and the local inhabitants who view the same rural environment as a place to live, work and produce. In *One Rural, two Visions*, Figueiredo points out that rural areas are particularly prone to exploitation by outside members having the capital needed to implement their visions of how the local natural environment should be shaped. Figueiredo states that:

“The exceptionality attributed to rural space and its environmental features by external actors and agents reveal different legitimacies as well as important social inequalities, since the external legitimacies tend to overlay those of local populations in the uses of space and natural elements.”¹⁷

All of the threats mentioned result from a lack of understanding of the values that local assets have for the prosperity of a community. Although it is not possible to expect that an architectural intervention in the rural can fully resolve these threats, the intervention should find ways to celebrate and preserve what local assets are encountered as a way to promote their value.

To contribute to the objective of preventing the loss of local rural assets, the project pursues the following design strategies:

- **Originate from Local Roots**

The project will need to build a theme and identity around the historic, cultural, and natural features found in the area.¹⁸ The Vals precedent is an example of a project that originates from the local natural resources (thermal waters). The thermal baths are integrated with the existing hotel infrastructure originally built in the 1960s, but which had gone bankrupt over the years, eventually being purchased by a consortium of local villagers who had a vision to build a modern hydrotherapy center in the middle of the hotel complex. In Manteigas, the proposed intervention emerges from the existing local assets represented by natural resources made up of a rich biodiversity of plants with medicinal properties, thermal and fresh spring waters, and clean mountain air. These natural assets are very much ingrained in the cultural identity of the people of Manteigas. The intervention is symbolically split by two programs: a treatment side that promotes healing through immersion in local thermal water and breathing quality high-altitude mountain air; and a research side where medicinal plants from the region are further studied.

- **Utilize Local Materials**

One of the most effective ways to prevent the loss of local assets is to valorize local and regional materials in order to promote them and increase the likelihood that they will be demanded for use by other projects. Furthermore, construction with local materials allows projects to be in a more harmonious balance with their surroundings.¹⁹

In Vals, Peter Zumthor used locally quarried *Vals* quartzite stone, used for centuries as roofing and building material in the region. By utilizing the quartzite stone, Zumthor managed to promote a local building material as something special and of high quality that is now being sought by other projects.

In Manteigas, using local materials is one of the primary objectives of the intervention. The material palette in Manteigas is reflective of the local natural resources: granite stone, slate and lumber from the local pine and Pyrenean oak forests.



Figure 4.23: Project Dependent on Local Material Palette.



Figure 4.24: Nature Courtyard at the Centre of the Catalyst. A Special Moment Created in the Project Where the Three Main Local Assets; Water, Plants, Air Can be Celebrated.

- **Celebrate the Local Assets**

Incorporating local assets into the creation of any intervention draws awareness to the values and assets important to the community and thus help contribute towards their preservation.

The pedestrian trail in the *Cinque Terre* precedent is successful because it celebrates five distinct villages that are the main assets of the Liguria Region. Local assets of the Liguria Region are also its premium grapes, olives and fruits grown on the surrounding slopped terraces. A journey on the network trail also allows visitors to come into direct contact with agricultural lands where food is grown bringing added appreciation of the origins of Liguria's quality foods.

In any rural context, a project should aim to either incorporate local assets in the very form of the design, or provide internal spaces where historic, cultural, and natural artifacts from the area can be displayed in an appealing manner.

In Manteigas, the architectural intervention incorporates gestures that celebrate selected assets by having the building become an icon where unique moments of the site (the fault line, the Zêzere River, the Glacier Trail, the thermo-mineral underground reservoir, and the trout nursery) are included in the justification of the building form.

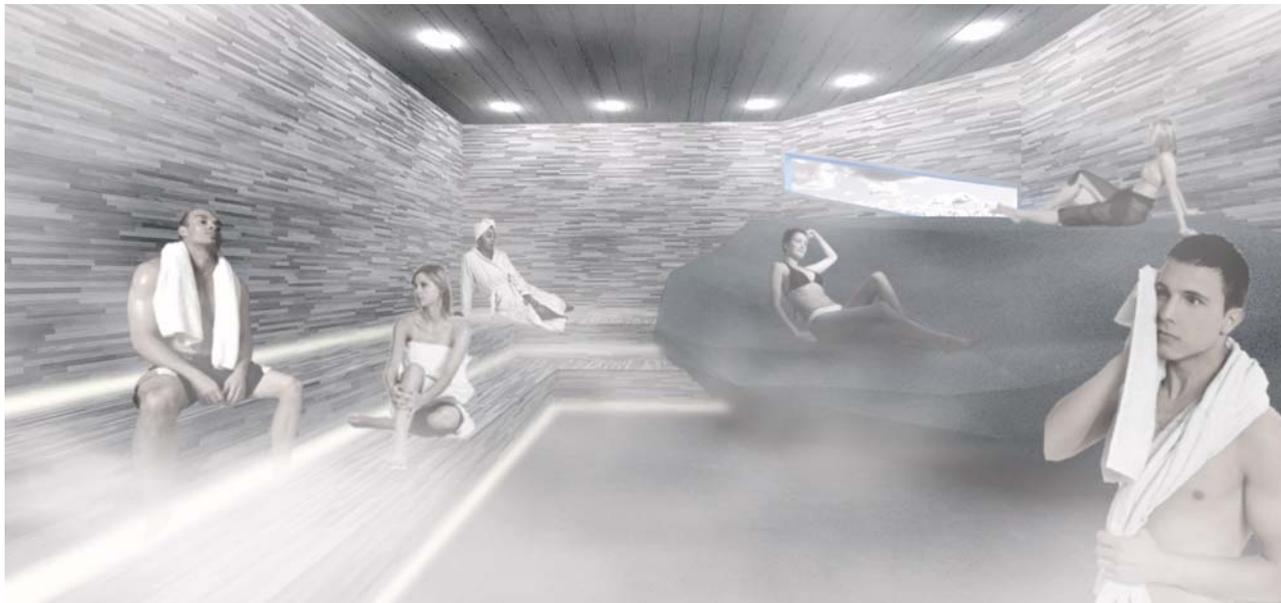


Figure 4.25: Existing Boulder Found n the Site is Incorporated in the Stone Sauna Room. (Refer to Page 256 Room 36 for Floor Plan)

- **Create an Authentic Experience**

In order to offer a truly authentic experience, projects should not try to replicate experiences, crafts, and materiality. Instead a project needs to be original, sensitive and responsive to genuine site qualities. Today's experienced travelers are increasingly searching for authentic places offering a variety of unique encounters. The proposed architecture intervention will therefore, aim to achieve originality by embodying the qualities of the region in which it is situated.

The *Cinque Terre* precedent serves as one example of a rural area that has guaranteed its vitality and genuine quality through the reinvestment of proceeds made from the sale of train and ferryboat tickets back into the upkeep of the authenticity of each village, the refurbishment of the connecting trails and the terraced farms. This allows the *Cinque Terre* to serve as a destination point for tourists seeking authentic experience.

In Manteigas, the intervention design embodies the local natural resource (medicinal plants, thermal water, and pure mountain air) in its program and provides tourists with a distinct treatment/research complex that serves as an additional incentive to visit the Serra da Estrela region. Through valorization of the local natural resources and their incorporation in the design programming, the intervention makes a contribution towards the ultimate goal of preventing the loss of local rural assets.

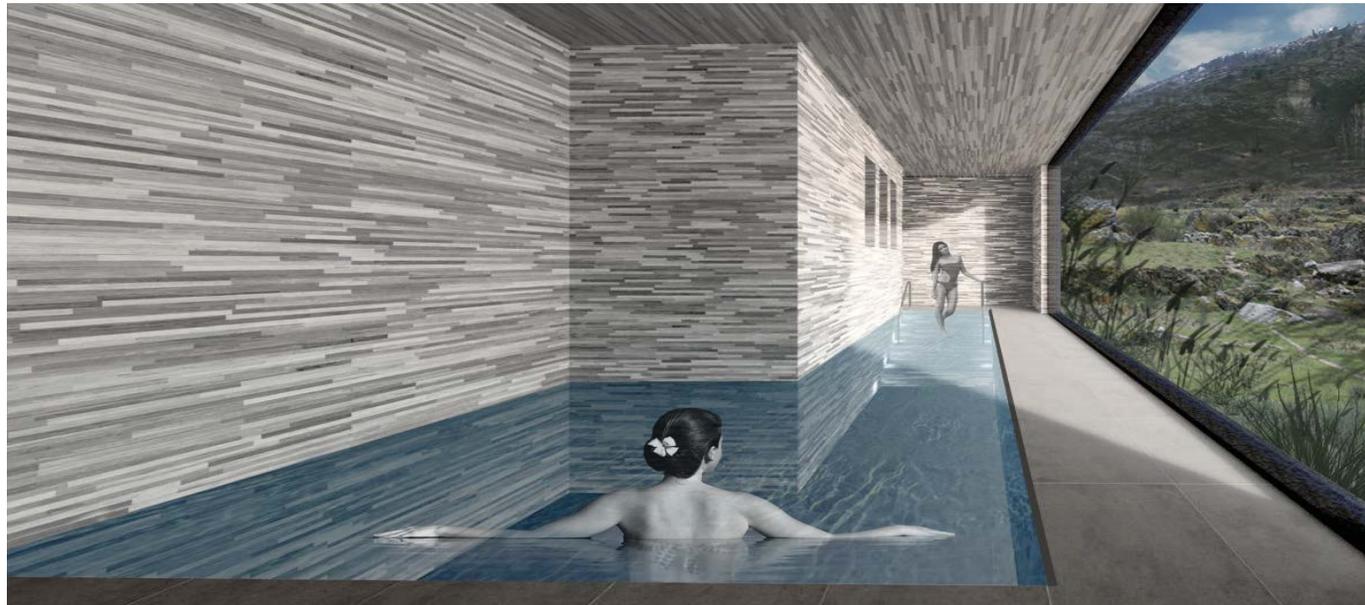


Figure 4.26: Thermal Water Bath: An Authentic Experience Offered by the Thermal Water Pools with Views to the Surrounding Landscape. (Refer to Page 258 Room 36 for Floor Plan)



Figure 4.27: Aroma Therapy Treatment Room: Healing Potential of Plants Used as a Form of Therapy.
(Refer to Page 258 Room 13 for Floor Plan)



Figure 4.28: Roof Garden: Unique Way to Experience the Clean High-altitude Air of Manteigas.
(Refer to Page 261 Room 97 for Floor Plan)

4.5 ESTABLISH A HEALTHY RURAL ECONOMY

To achieve the third objective of *establishing a healthy rural economy*, an intervention in the rural should consider new opportunities that expand the size of the local economy. Historically, development in rural areas has been based primarily on improving agriculture. However, today rural areas are also increasingly seen as places offering opportunities for research and recreational tourism. Thus, there is a strong potential for new sectors to emerge.²⁰ To achieve the objective of establishing a healthy rural economy a design project should apply the following strategies:

- **Diversify the Rural Economy**

Diversification is necessary for growth, employment and sustainable development. The introduction of new industries adds a healthier economic and social balance to the entire economy, and allows society to maintain order when certain economic sectors fluctuate. In *Searching for Complementarities Between Agriculture and Tourism*, Helena Marques asserts that rural depopulation can be mitigated through diversification of the rural economy. Marques makes a case for including tourism in rural areas, stating that:

“...depopulation of the countryside is prevented with the creation of challenging jobs locally, and the income of farmers is supplemented and improved, while at the same time the architectural heritage is preserved through the renovation of buildings and the regional cultural heritage is promoted as traditional products, local cuisine, crafts and festivals are disseminated and kept alive.”²⁰

The Vals precedent provides an example of a village that has complemented the existing agricultural industry with recreational tourism. For many centuries, Vals was famed for its alpine pasture farming, with skiing coming to the region in the early 20th century. The inclusion of a hotel complex in the 1960s allowed the ski industry to further develop in Vals making it possible for visitors to stay in the area for an extended period. Zumthor’s spa resort intervention added further strength to the tourism industry by allowing tourists to visit the thermal baths year-round. In the meantime, the agricultural industry was stabilized as a result of the additional revenue that tourism brought to the area.

In Manteigas, there are currently two industries that support the local economy; agriculture and wool textiles. These two industries were the primary activities in Manteigas for many centuries, and recreation tourism only became a recent addition to the economy in the early 20th century. The proposed intervention for Manteigas aims to strengthen the agricultural industry, building on the recreational tourism, and make Manteigas into a region for scientific research and alternative medical treatment.

By broadening the economy in rural areas, the make-up of the local population is also expected to widen to include professionals that can contribute to the local talent pool. In contemporary societies, diversification of the rural economy is seen as a viable alternative to agriculture, because it secures the outlooks off many rural areas.



Figure 4.29: A Healthy Local Economy: Researchers, Tourists, and Agriculturists Benefiting from the Fertile Landscape Around Manteigas.

- **Strengthen the Agricultural Industry**

Since agriculture continues to be the primary industry in the rural, a project intervention should acknowledge its historic importance and find ways to strengthen it by making it an integral part of the programming.

In the Vals valley one finds intact traces of traditional alpine farming consisting of spring and fall pastures where cattle and sheep graze. The setting also consists of large livestock barns, and rural village enterprises where fresh alpine milk, cream, butter, yogurt and cheese are produced. Given the recent emergence of a vibrant tourist sector in Vals in recent years, people of the region no longer exclusively depend on farming. Today, Zumthor's intervention has managed to increase the volume of visitors to the area who upon spending time in the wellness spas, routinely supplement their experiences in Vals by taking leisure walks on the valley's hiking trails. A hike through the Val's trails allows tourists to engage with alpine farming traditions, increasing the likelihood that they will venture into the village in search of the dairy products. This is the process by which a modern architectural intervention has managed to increase tourism in a rural region, and indirectly contributed to the strengthening of agriculture in Vals.

In Manteigas the proposed intervention supports the agricultural industry in a more direct manner than it does in Vals. In Manteigas, the design intervention mandates the reactivation of previously abandoned fields into extensions of the treatment and research programs. The reactivated fields are envisioned as growing laboratories for further research and as sources of medicinal plants and foods. The intervention depends on locally grown crops for food served in the café and the lunch bistro restaurant included in the project.



Figure 4.30: Rendering of Agricultural Industry Revived: Agriculturists and Farmers Using the Upper Plateaus of the Zézere Glacier Valley to Cultivate Rare Medicinal Plants Only Found at Higher Altitudes.

- **Consider Research and Development (R&D) Industries**

The rural environment is undisturbed and rich with natural and historic elements that are attractive to researchers who routinely venture to the rural in order to conduct field studies. This current academic process makes it challenging and lengthy to confirm scientific theories because the central institutions that sponsor field teams are typically far away from the sampling site.

In rural areas of rich biodiversity like Manteigas, the benefit of having a research and development facility strategically located at the very heart of a Natural Park allows for direct access to a variety of medicinal plants, provides spaces for processing and further investigation.



Figure 4.31: Research and Development Labs: Research Spaces Provided by the Project to Foster the Development of New Industries in the Rural. (Refer to Page 259 Room 79 for Floor Plan)

In the *Cinque Terre* precedent, the local actors have set up farming research laboratories at the local level to investigate natural biological techniques that optimize the organic growing methods employed in the region. Following this example, the intervention proposed for Manteigas relies on farming laboratories where medicinal plants are grown and further studied by research teams whose goal will be to establish breakthroughs in natural healing therapies and new drugs extracted from rare local plant species. Thus, if a rural location is deemed to have natural features of high scientific research, then the architectural intervention should examine ways to include spaces for research and development at the local level.²²

▪ **Consider the Tourism Industry**

By no means negligible, tourism is a growing industry in rural areas and should be incorporated into architectural interventions, of the very least as an ancillary function. Understanding the tourist as a guest, the architecture should find ways to enhance the experience of the visitor. The architecture can achieve this by having welcoming lobbies, open public spaces for gatherings, and supporting amenities.

Both the Vals spa and the *Cinque Terre* trail are primarily dedicated to servicing people who in today's contemporary age travel much more frequently and are attracted to places that offer authentic heritage, culture, and environmental value. These two precedents also represent a tourism that is sustainable because it ascribes value to local assets.

Manteigas already benefits from an established tourism industry as a result of its location within the Serra da Estrela Natural Park. Projects like the *Estrela Green Tracks* have created hiking trails showcasing the attractive landscape and rich biodiversity of the Serra da Estrela and serve to attract new visitors to the area. The proposal for Manteigas contributes to an already established tourism industry in the village by renewing the cultural identity of the community as a place that offers a unique health and wellness tourism experience.

It is the role of the intervention to offer guests memorable and worthwhile experiences so that the prospect of repeated visits is increased. Quite simple, if the local architecture can sustain the needs of the tourists, then there will be a continuous stream of visitors who will continue to support the local economy.



Figure 4.32: Manteigas Experiencing Revival from an Influx of Tourists and Professionals Working and Living in the Town..

4.6 ESTABLISH A LONG-TERM VISION FOR THE RURAL

To achieve the fourth objective of *establishing a long-term vision for the rural*, projects undertaken in rural areas must be based on their potential to benefit these areas for many years in the future. Therefore, a design intervention must not only reflect a sustainable thought process, but also establish an atmosphere that will attract talented people to the rural not merely for tourism, but also for long-term employment in a place where it also becomes feasible to live, raise children, and establish roots. Although recreation and leisure tourism is a great supplement to the traditional agricultural industry in rural areas, tourism is very much a seasonal industry that benefits a community for only a portion of the year. Tourism is also incredibly sensitive to economic and climatic fluctuations. Thus, projects undertaken in rural areas must show a long-term vision in order to sustain seasonal peaks in tourist activity and provide benefits to the local community throughout the year. When there is a long-term vision for the rural, then people are more likely to invest and stay. From that, the following strategy should be applied to the intervention project:

- **Provide a Stimulating Working Environment**

Central to the establishment of a long-term vision for the rural is the importance of providing a stimulating working environment for a knowledge-based society. In essence, for an intervention to be successful in the long-term, it must accommodate technological features that are essential in today's age while also providing a satisfying and engaging working environment that attracts and retains talented people to a rural region.

The *Cinque Terre* precedent provides an example of a stimulating working environment where the local farmers are able to interact with tourists passing on the connecting leisure trails. The farmers engage with visitors and convey their knowledge of the region and the organic growing methods that are employed.

In Manteigas, the Zêzere valley slopes and the surrounding higher plateaus serve as zones of rich biodiversity deserving of a locally situated research facility where further scientific investigation can be conducted on the medicinal use of local plants. Within an area of such strong research interest, a design intervention can help by providing well-programmed spaces that enable professionals to work in an engaging environment. An engaging working environment is one that typically consists of spaces with an abundance of natural light, views to nature, and made of quality/durable building materials. Aside from being attractive and stimulating, an effective working environment within a rural setting must also be easily accessible by regional roads, and must incorporate technological means for reliable communication with the outside world.

A properly envisioned intervention with stimulating workspaces and a strong relationship to the landscape is more likely to attract professionals to rural communities where they can establish long-term roots.



Figure 4.33: Typical Office on the Research Side with View of the Mountainous Landscape.
(Refer to Page 259 Room 25 for Floor Plan)



Figure 4.34: Meeting Room on the Research Side. (Refer to Page 259 Room 78 for Floor Plan)

- **Provide Year-Round Benefit to a Rural Community**

It is important that the project stakeholders work together and develop innovative ways for the intervention to sustain its operation throughout the year. Consideration should be made for activities that are related to tourism, production of goods, and research and training. It thus becomes the responsibility of the architect to respond to the ambient seasonal conditions by providing a comfortable working environment for occupants and by facilitating a variety of year-round programs.

The Zumthor's spa precedent serves as an example of an intervention that is operational year-round. The spa's thermal pools are used by skiers visiting the region in the winter months and also by summer visitors who use the outdoor pools and sunbathe on the patio.

In Manteigas, the natural resources available make it possible to introduce an intervention that combines a number of programs together. For example, the thermal waters in the area can cater to recreational tourism in a similar manner as the Vals precedent does, but with more emphasis placed on health and healing. Moreover, recent ethno-pharmacological studies in the area suggest that the Serra da Estrela region would greatly benefit by investing in the protection, promotion and further study of its rich biodiversity of plants with medicinal properties. Thus, there is a strong case for the inclusion of a research facility that operates throughout the year where local plants are further studied in laboratories. An intervention for Manteigas can also consider the reactivation of abandoned fields, converting them into outdoor laboratories where local farmers cultivate medicinal plants, at different slopes during the growing season. The farmers would then pass their harvested products to the research facility for further research that is conducted in the remainder of the year.

Ultimately, if the intervention creates an environment of continuous year-round operation, then it is anticipated that Manteigas will experience a population increase as more people come not only for employment, but to settle. A population increase will also give an incentive for smaller service businesses to remain in the rural, and for new ones to emerge.



Figure 4.35: Building Operating During the Winter Months.

- **Create an Atmosphere that Encourages New Businesses**

New businesses are more likely to emerge if the intervention deliberately excludes essential program components. This will prompt local entrepreneurs to envision an emerging potential and respond in kind to the flurry of activity sparked by the catalyst intervention. Hypothetically, if an intervention is designed to accommodate tourist pursuits, consideration might be given to the exclusion of lodging in order to catalyze the local response for accommodation.

The spa in Vals is dependent on services from the local village to support the needs of the visiting tourists. For example, by eliminating food services and accommodation in the design, Zumthor 's intervention established opportunities for businesses to emerge in the village of Vals. The *Cinque Terre* precedent provides an example of a rural region where supporting service businesses have emerged to allow tourists an experience of tasting the quality *Sciacchetta* wine, pesto sauces, and olive oils of the region. Likewise, in Manteigas, the intervention deliberately excludes a hotel component in order to encourage the local entrepreneurs to respond by providing rooms for lodging.

What is more, the scale of certain programs should be limited. It may be necessary for a project to include some convenient services such as small-scale cafes or lunch bistros, gift shops, and bookstores, however, their scale should be limited to what is necessary for a comfortable experience to occur, and allow the local entrepreneurial endeavors to develop into new businesses that fill the voids.

- **Establish a Timeless Presence**

To fulfill a long-term vision, the intervention should establish a timeless presence that allows it to be in harmony with the environment in which it was created. If architecture is able to achieve timelessness, then it will become a meaningful contribution to a rural community.²³

In Vals, the spa is of timeless quality, subtle elegance, and in harmony with the landscape – allowing for a mystical, sensual and human experience that continues to inspire those who visit the area. Similarly, the project in Manteigas aspires to establish a timeless presence by finding harmony with the surrounding landscape and by acting as a register of the geological forces that have shaped the region for thousands of years. The permanence of the intervention in Manteigas is also established by the dedication to only use high-quality local granite that gives the design a monolithic presence. The monolithic appearance is meant to mimic the exposed rock surfaces found along the surrounding valley slopes and the higher plateaus. Finally, the importance of the design intervention arises from a conceptual foundation that originates from a long history of regional geology and millennia of human recognition of natural healing modalities.

By establishing a timeless presence, an architectural intervention provides a lasting contribution to the built fabric of a rural community and contributes to a vision for long-term revival.

Eventually, the catalytic framework presented in the following chapter is not only for an architectural intervention in Manteigas, but also meant for other rural regions with similar conditions. The thesis asserts that a successful architectural intervention is founded on the fulfillment of four design principles, namely: improving the quality of life, preventing the loss of local assets, establishing a healthy rural economy, and creating a long-term vision for the rural. By meeting each of these requirements, the thesis provides a development path for achieving a reactivated state of vibrancy in the rural. The successes of the two precedents examined in this part (*Thermae Vals* and *Cinque Terre*) are then replicated by the architectural intervention in Manteigas. In Appendix C, a detailed summary is presented to show how each guiding strategy was used to structure the final design proposal for Manteigas. The ultimate intention of the proposed design is not only to underpin the intervention in Manteigas with a comprehensive rationalization, but also to provide an organized template that rural communities with similar conditions could apply to tackle rural decline and cultivate a renewed identity through design.

The aforementioned design principles offer a development path that does not disrupt the local dynamics, but rather becomes rooted in the intrinsic characteristics of each rural site. The proposed development path is aimed directly at fostering an atmosphere that creates incentives that will retain young people in their rural communities. Accordingly, prosperity of a rural area is directly associated to the abundance of innovation, energy, and drive found in a community's younger generation. Thus, a vibrant rural atmosphere not only retains, but also attracts talented people – drawing them to a community that is dynamic, offering not only employment, but also a pure natural setting where it becomes possible to establish a home and raise a family.



Figure 4.36: Project Creating a Timeless Presence by Eternalizing the Natural Richness, Water and Pure Air and Becoming a Reflection of a Beautiful Vision Set Forth by the Mountain's Guiding Star. Refer to Appendix A for Local Legend Details.

PART 4: ENDNOTES

1. Elisabete Figueiredo, "One Rural, two Visions—Environmental Issues and Images on Rural Areas in Portugal," *European Countryside* 1, 1 (2009): 9-21. 11. <http://versita.metapress.com/index/gmh5hg5423072g78.pdf>.
2. *Idem*.
3. European Commission, "Agriculture and Rural Development: Rural Development Policy 2007-2013," http://ec.europa.eu/agriculture/rurdev/index_en.html.
4. Peter Zumthor and Sigrid Hauser, *Peter Zumthor, Therme Vals* (Zürich: Scheidegger & Spiess, 2007), 178.
5. *Ibid.*, 28.
6. *Ibid.*, 178.
7. *Ibid.*, 181.
8. Wageningen University, "Enlarging Theoretical Understanding of Rural Development," http://www.rso.wur.nl/NR/rdonlyres/713DAFEA-B959-4165-8BDF-9E6F67756999/108004/D_44_D_43_IT_Lunigiana_CSA.pdf.
9. Maristella Storti, "Il Paesaggio Storico delle Cinque Terre" (PhD diss., Firenze University, 2004).
10. D. Gregory, *The Dictionary of Human Geography: Edition 5* (Chichester: Wiley-Blackwell, 2009). 606.
11. Figueiredo, 11.
12. Helena Maria Baptista, Ana Maria Campon Cerro, and Anna Venessa Ferreira Martins, "Impacts of Small Tourism Events on Rural Places." *Journal of Place Management and Development* 3, 1 (2010): 22-37. 36.
13. Ventura-Lucas and others, 42.
14. Helena Marques, "Research Report: Searching for Complementarities Between Agriculture and Tourism – the Demarcated Wine-producing Regions of Northern Portugal." *Tourism Economics* 12, 1 (2010): 147-160. 159.
15. Figueiredo, 10.
16. *Idem*.
17. *Ibid.*, 12.
18. Ventura-Lucas and others, 44.
19. Zumthor and Hauser, 144.
20. Marques, 148.
21. *Idem*.
22. James Steele, *Salk Institute* (London: Phaidon Press Limited, 1993), 1.
23. *Ibid.*, 13.

PART V

Design Intervention

Those who advocate a return to styles of the past or favor a modern architecture and urbanism for Portugal are on a bad path . . . “style” is not of importance; what counts is the relation between the work and life, style is only the consequence of it.

—Fernando Tavora (1962)

My architecture does not have a pre-established language nor does it establish a language. It is a response to a concrete problem, a situation in transformation in which I participate.... In architecture, we have already passed the phase during which we thought that the unity of language would resolve everything. A pre-established language, pure, beautiful, does not interest me.

—Alvaro Siza (1978)

Proposed Design Site





5.0 A PLACE FOR LEISURE, WELLBEING, RESEARCH & REFLECTION

In response to the contemporary state of decline befalling Manteigas, a catalytic intervention is proposed that builds on the existing genius loci. The theme of the design builds on and celebrates the potential for healing in this town (a precondition deserving exploration). The project is sited on the base of the Zêzere Glacier Valley overlooking the Portuguese terrain and drawing life from the mountain's natural elements. The mythological, natural, man-made and socio-cultural aspects of the town of Manteigas are used to mold a structure that reflects the distinct local spirit. The design provides the town with a social place for leisure, wellbeing, research and reflection that the local community and visitors can experience together.

Proposed is a treatment centre and an adjacent centre for scientific research and innovation. The vision includes agricultural fields that currently lay abandoned as reactivated extensions of a proposed research space that also serves as the primary source of products used by both the research and treatment programs. The proposed design requires that the local community become a primary stakeholder accountable for the rich biodiversity found on the mountain slopes. The proposal of developing a sustainable community requires an imaginative vision. The challenges of achieving this may be complex – but without a new long-term strategy, it may not be possible to envision rural areas surviving into the future.

Figure 5.1: View Over the Town of Manteigas.



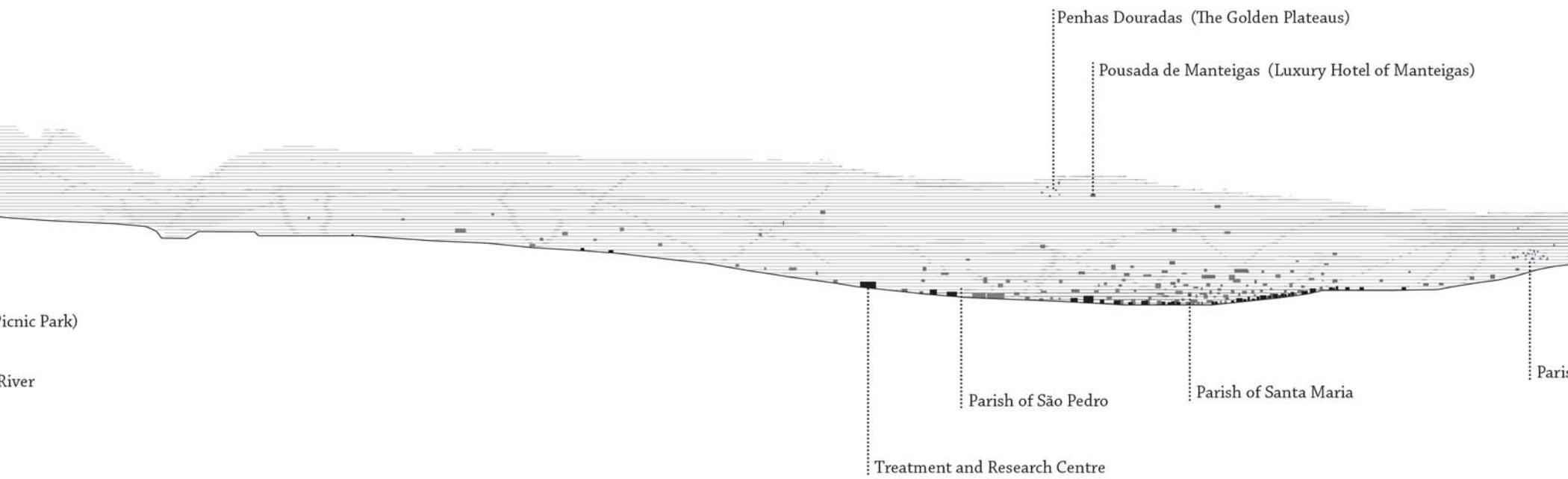
Serra da Estrela

MANTEIGAS

SABUGUEIRO

SAMERO

VERDELHOS



and the Manteigas Municipality.



Figure 5.4: View of the Proposed Site Looking North.



Figure 5.5: View of the Proposed Site Looking South.

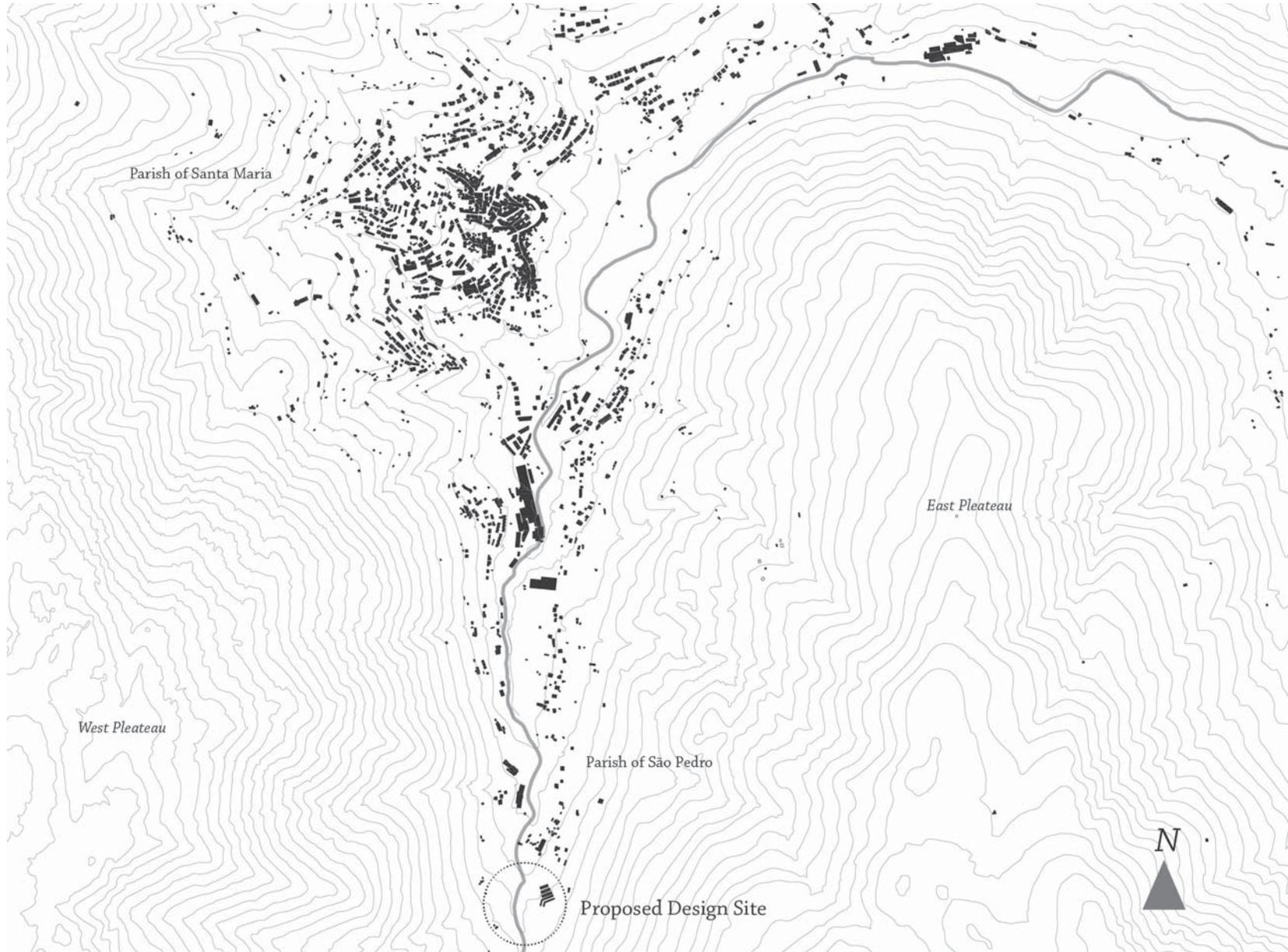


Figure 5.6: Location of the Proposed Design Site.

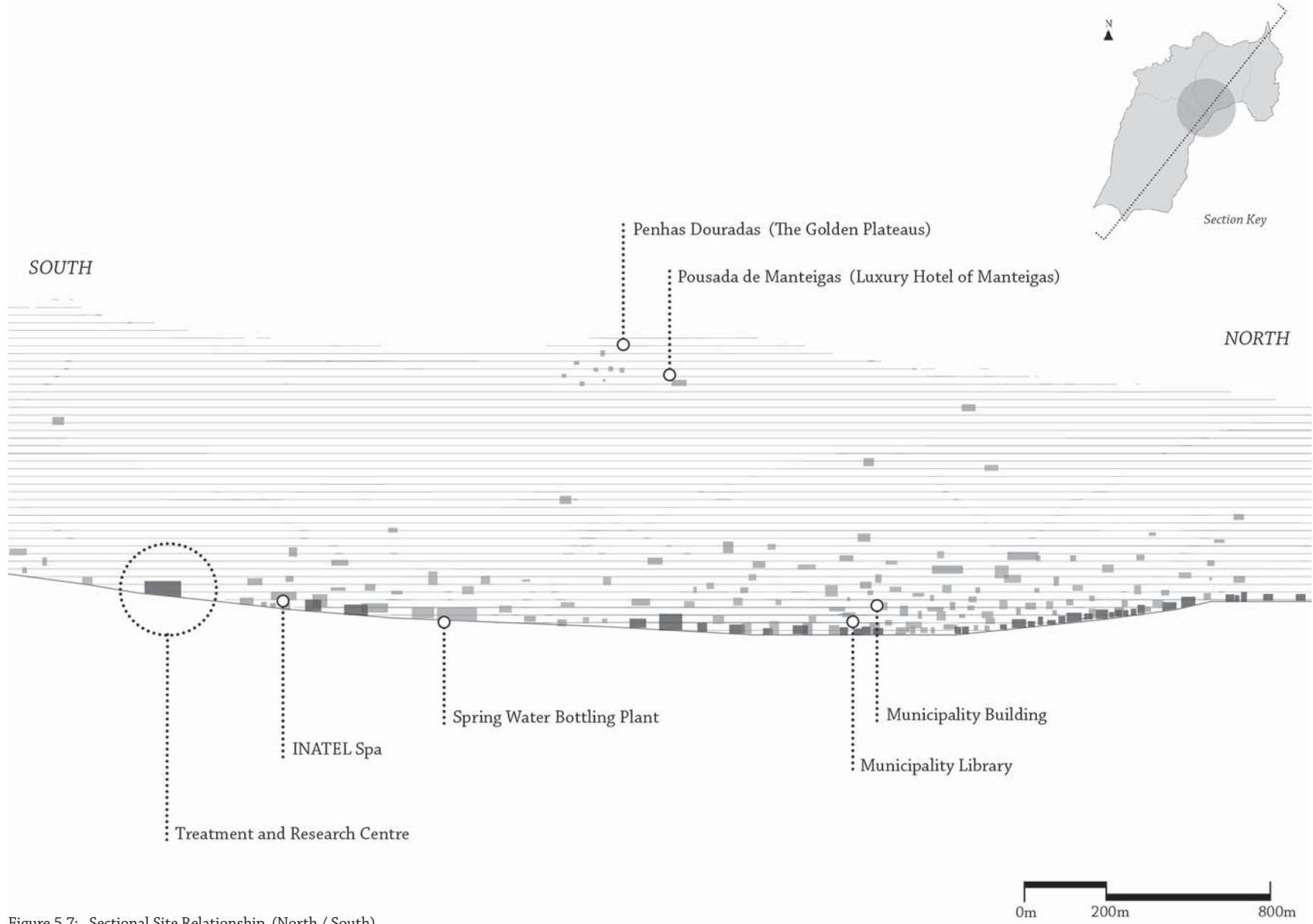


Figure 5.7: Sectional Site Relationship (North / South).

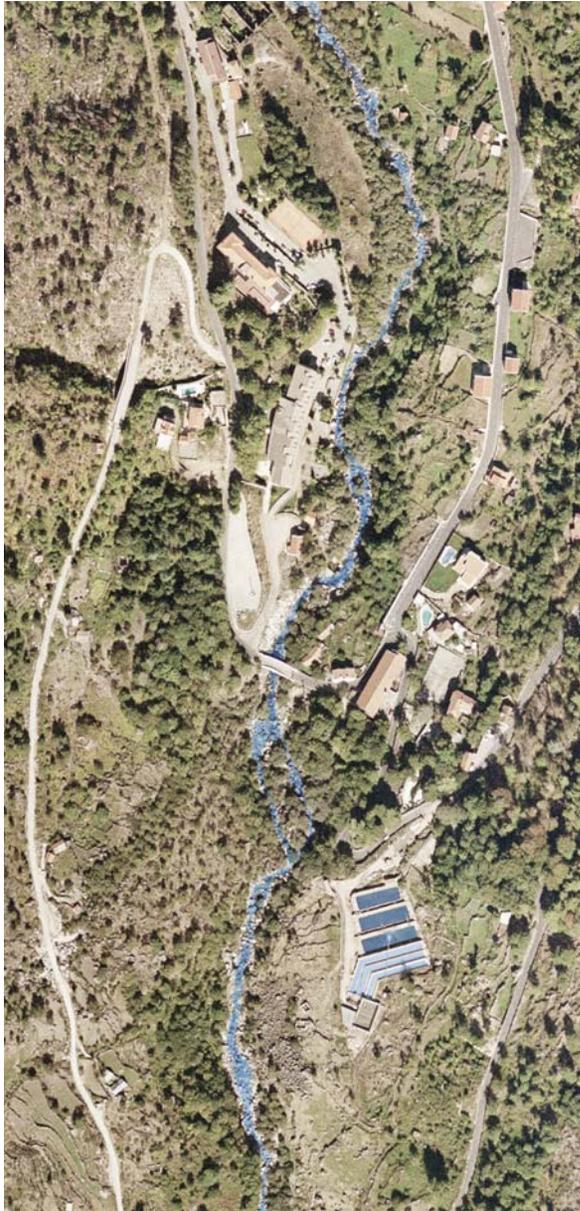


Figure 5.8: Aerial Photograph of the Proposed Design Site.

5.1 SITE ANALYSIS

“We start with the ground... The ground already has form. Why not begin to give at once by accepting that? Why not give by accepting the gifts of nature? Is the ground sunny or the shaded slope of some hill, high or low, bare or wooded, triangular or square? Has the site features, trees, rocks, stream, or a visible trend of some kind? Has it some fault or special virtue, or several? In any and every case the character of the site is the beginning of the guiding that aspires to architecture.”¹ – Frank Lloyd Wright

The intervention building for Manteigas is proposed within the Parish of São Pedro at a site historically known for thermal water occurrences. The exact position of the building is nestled within the Zêzere valley, surrounded by two dominant plateaus on the western and eastern sides, and on the edge of the rural built fabric. The relationship between the rural built environment and the natural features of the Zêzere valley serve as inspirations that guide the development of the distinctive contemporary intervention for the site. Considerations for an affective site strategy are influenced by several site conditions, including: the Bragança-Vilariça-Manteigas Fault Zone (BVMFZ), the Zêzere River, The Serra da Estrela Glacier Trail, the thermo-mineral underground reservoir, the trout nursery, general access to the building, and the building’s relationship to the sky element.

Mantiegas

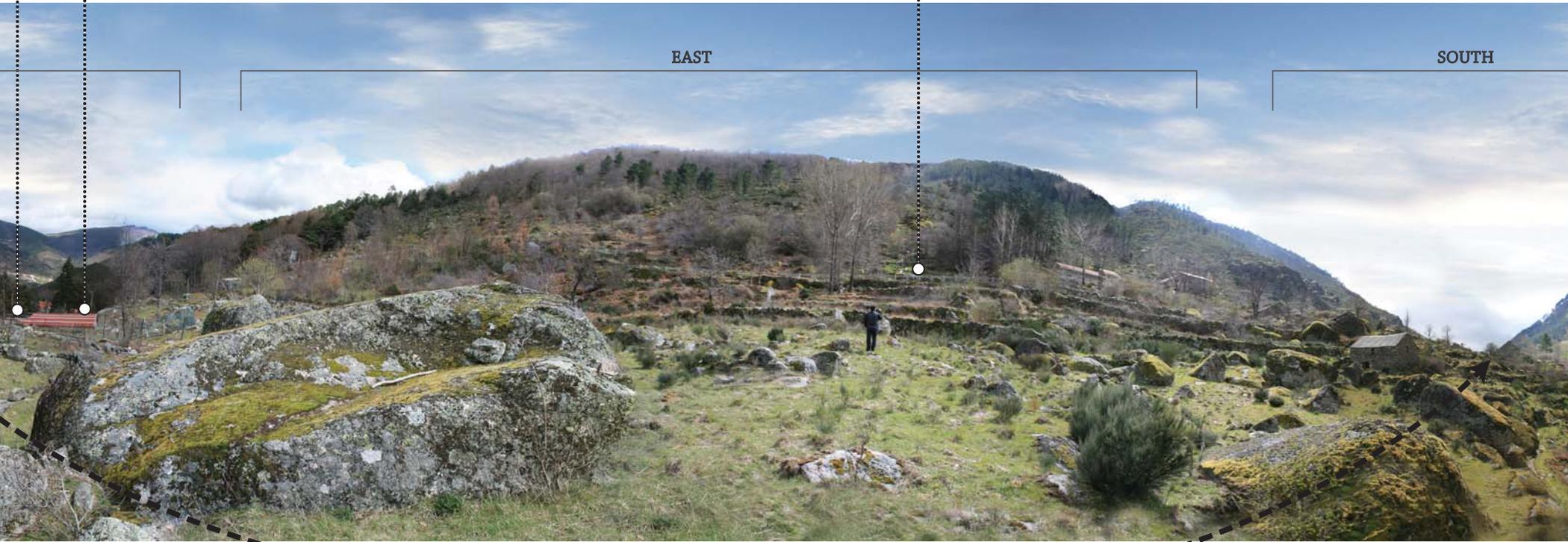
Primary Access to Site

Existing Water Pools

Rua National 338
(National Road)

EAST

SOUTH



Eastern boundary of the BVMFZ Fault Zone

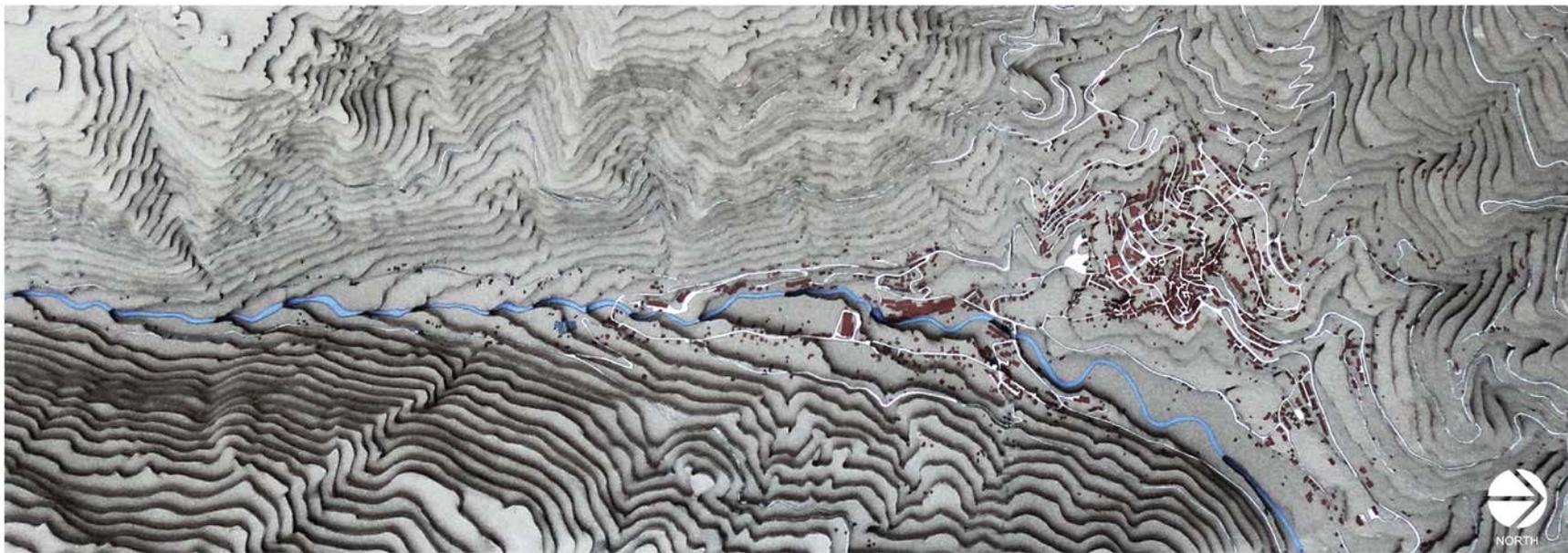


Figure 5.10 Site Model of the Zézere Valley Near Mantiegas - Plan View.



Figure 5.11: Site Model of the Zézere Valley Near Mantiegas - Perspective View.

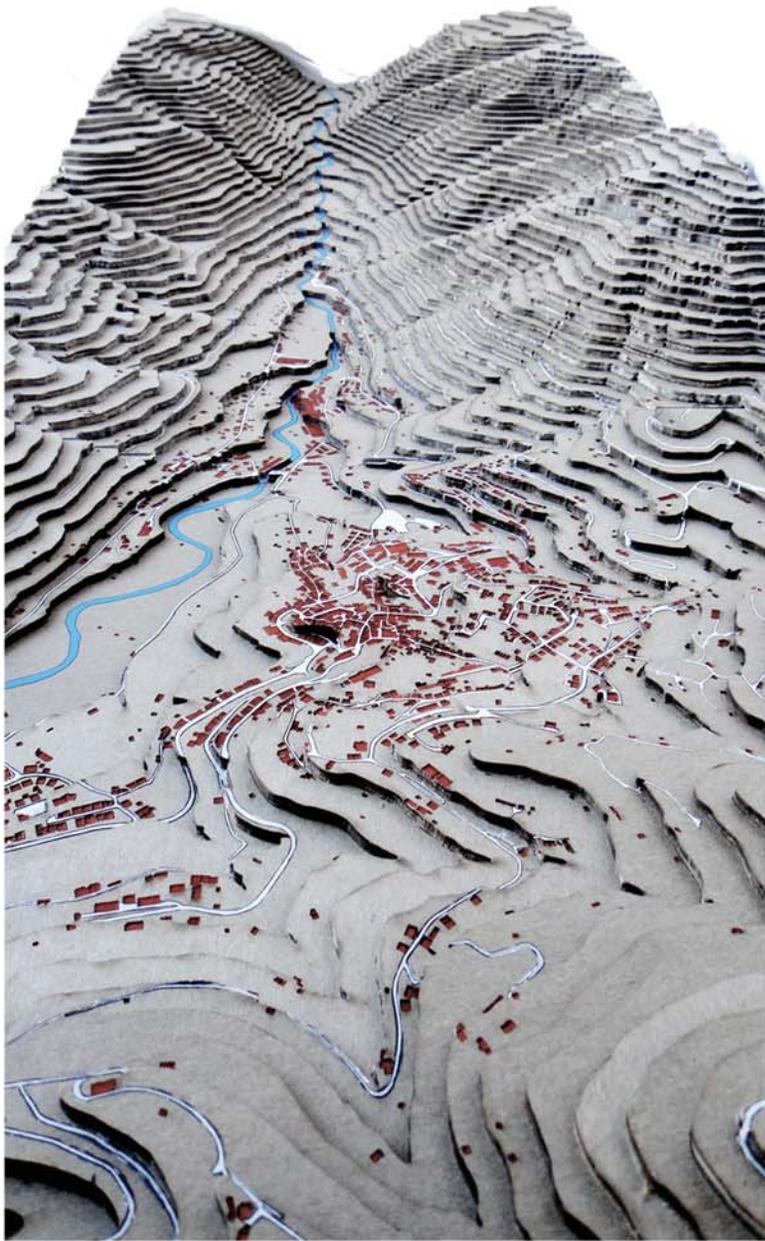


Figure 5.12: Site Model Looking South, Highlighting Existing Infrastructure.



Figure 5.13: Site Model Showing Approach to Immediate Design Site from Town.



Figure 5.14: Site Model Showing the Zézere River Passing Through the Town.

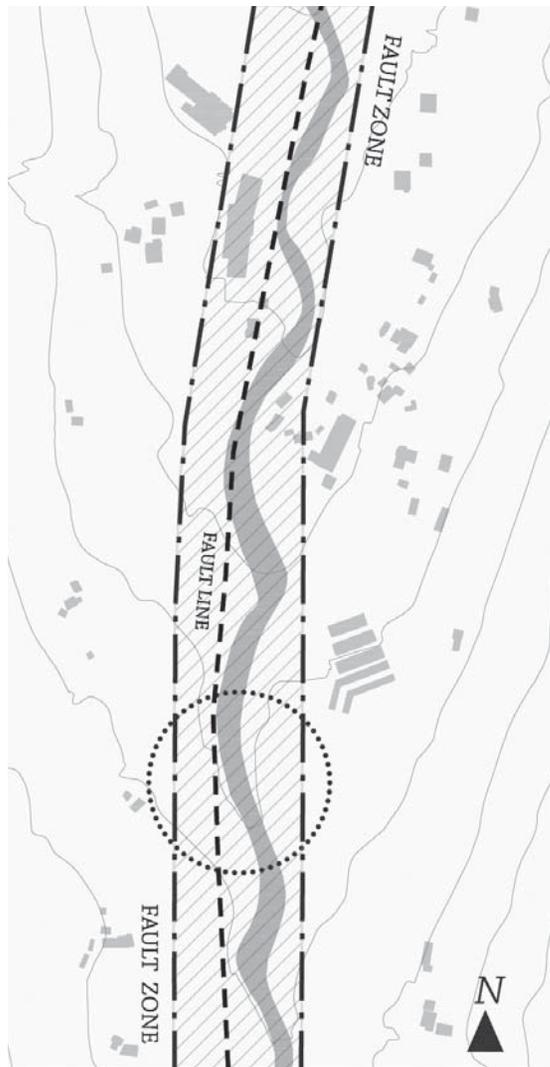


Figure 5.15: Approximate Location of the Fault Zone as Illustrated by Professor Chaminé, Porto.

The Fault Zone

The geological conditions that characterize this site are influenced by the BVMFZ fault zone that runs through the lower basin of the valley, precisely where the proposed building is to be located. The assumed location of the fault zone was illustrated by Professor Heilder I. Chaminé, and Professor J. Martins Carvalho, Laboratory of Cartography and Applied Geology, Department of Geotechnical Engineering at the School of Engineering (ISEP), Polytechnic of Porto, (See Figure 5.10). According to experts, despite the existing geological activity in the area (which incidentally cause thermal emergences) this area does not present a high risk of seismic activity. A research study conducted by Professor J. Espinha Marques and his colleagues states that if earthquakes were to occur in the Manteigas, their magnitudes would at a maximum range between 2 to 3 on the Richter Scale. At this range, earthquakes are classified as “not felt” and/or “rarely cause damage.”² Upon consultation with Professor Chaminé, it is apparent that it is possible to construct safely within the perimeters of the fault zone. In its essence, the intervention building is situated as a visual symbol of the subterranean activities that are not evident from the surface, such as the location of the fault itself, but which are responsible for the geothermal waters which are a distinct resource that make Manteigas renowned throughout the region (in Figure 5.10, the assumed fault line trace is indicated).ⁱ

i. A fault line is used to define the line of intersection between the fault plane and the earth's surface.³

Zêzere River

At Manteigas, the Zêzere River is in fact a very narrow cascading mountain stream that originates only a few kilometers up the valley. This location is characterized by granite rock boulders, deposited on the valley floor by past glacier activities. Fresh, clear mountain water makes its way between the rocky rubble, and the sound of moving mountain waters hitting against the rocks intensifies the awareness of water around the site. At the selected location of the intervention building, even with seasonal runoffs and snow melts, the waters of the Zêzere stream does not widen its banks to a point which poses a risk to the project.



Figure 5.16: The Zêzere River.



Figure 5.17: Close up of the Zêzere River at the Site.

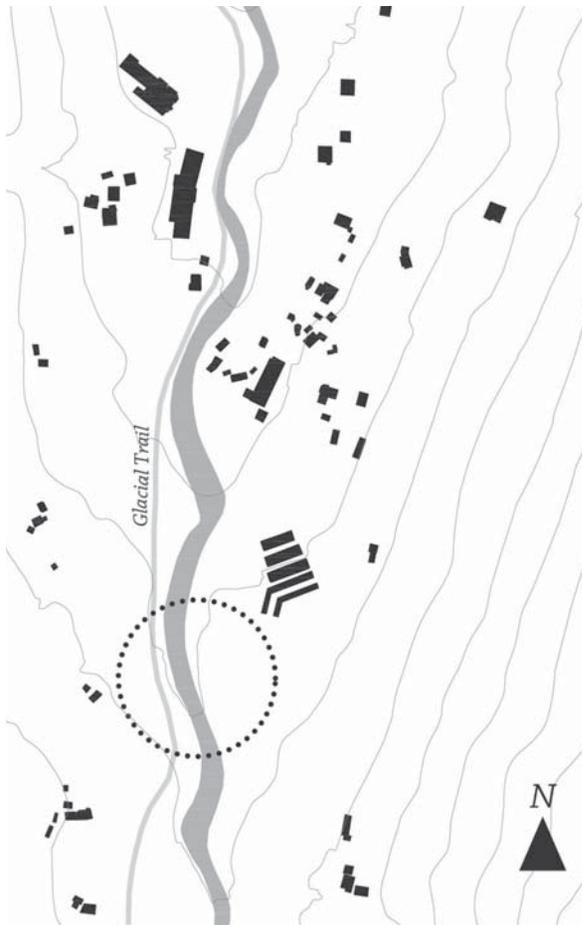


Figure 5.18: Plan of The Glacier Trail.

The Serra da Estrela Glacier Trail

The Glacier Trail (which runs approximately 18 kilometers from the Serra da Estrela summit called the Torre to the St. Peter's Church in the center of Manteigas) crosses through the design site and is respected in the intervention. It is an unceremonious trail that has become carved in the ground by the many voyagers that have journeyed along this route. The trail runs alongside the Zêzere stream at the location of the proposed design site.



Figure 5.19: Portion of the Serra da Estrela Glacier Trail to the South.

The Thermo-Mineral Underground Reservoir

The thermo-mineral waters found in Manteigas originate from an underground geothermal reservoir located beneath the Bragança-Vilarica-Manteigas fault zone which travels the length of the Zêzere River valley. To access the water in the underground reservoir, boreholes are drilled beneath the facility. Moreover, the subsurface thermal occurrences provide opportunities for geo-thermal heating and cooling; adding a measure of sustainability to the design scheme.

The Trout Nursery

Adjacent to the site on the eastern side are six large terraced trout pools, (previously used as trout nurseries) each on a separate level that follows the sloping terrain. Though the intent of the Municipality of Manteigas is to eventually decommission the buildings of support (to the trout farm), and build them in another place. During my meetings with Municipality representatives in 2010, local authorities indicated some willingness to re-envision the entire site without necessarily needing to maintain the operation of the trout farm. By avoiding the demolishment of an existing infrastructure asset, the design will keep the existing pool structures and incorporate them as medicinal water gardens.



Figure 5.20: The Existing Water Pools, View from the West.

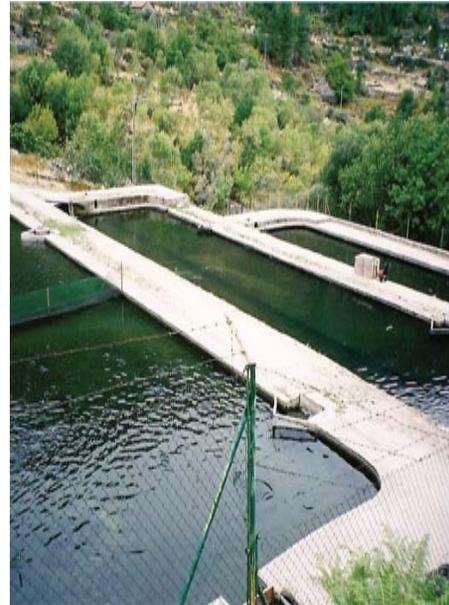


Figure 5.21: Close up of the Existing Water Pools.

General Access

Two regional roads running along the western and eastern sides of the Zêzere valley facilitate access to the site. Rua do Pastor terminates several kilometers up the valley slopes to the west. This road continues to be used by the local shepherds to reach their shelters in the valley as they transhumant their flocks to the upper grazing slopes each season. Rua National 338 (National Road) runs to the east of the site and is primarily used as a regional road connecting the Municipality of Manteigas to the Torre. Both roads offer not only access to the site but also incredible views of the entire Zêzere valley.

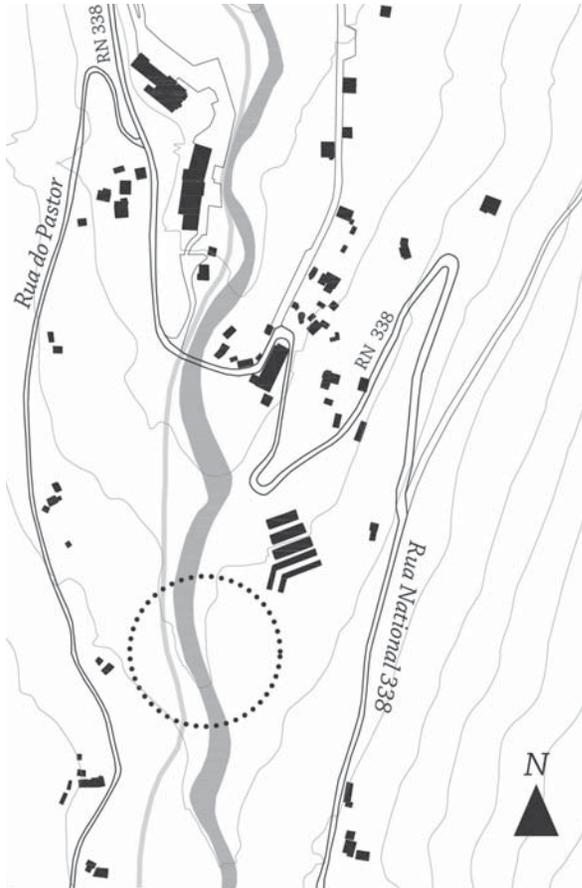


Figure 5.22: View from Design Site to Manteigas.



Figure 5.23: *Rua do Pastor* (The Shepherds Road).



Figure 5.24: *Rua National 338* (National Road).

The Sky Element

The last site condition which influences the progression of the site strategy is the sky element which forms a relationship to the two main plateaus that enclose the Zêzere valley, affecting the very placement of the proposed project at the very base. From the banks of the Zêzere River, the gentle silhouettes of the eastern Alto da Pedrice-Curral do Vento plateau and the western Torre-Penhaus Douradas plateau obscure the horizon, such that the days appear shorter.

At the design site, the silhouettes of the plateaus serve not only as demarcations, but also as representations of the unique natural genius loci revealed from the harmonious equilibrium of the earth and sky elements present in Manteigas; the earth represented by the mountain topography, rich biodiversity, and abundance of water, and then the sky element represented by the exclusive view of the sky as it appears from the ground. At the very center of the Zêzere valley, the surrounding plateaus are equally distant, flooding the core of the valley with the most amount of sunlight.



Figure 5.25: View of Sky, West from Proposed Design Site, April 2010 (09:00).



Figure 5.26: View of Sky South from Proposed Design Site, April 2010 (17:00).



Figure 5.27: View of Sky, West from Proposed Design Site, April 2010 (09:00).

5.2 THE DESIGN INTENT

The inspiration for the project is rooted in the Zêzere mountainous landscape. The project appears simple like the rocks, meticulous like the flora and fauna, and eternal like the site. As such the building takes the form of a large shaped monolith set into the topography of the Zêzere valley. It is a solitary building that establishes a particular relationship with the mountain landscape defined by its granite boulders, geological substance and impressive topography. Both programmatically and symbolically, however, the project becomes more complex, rooted in establishing meaningful relationships with site meant to ignite revival in Manteigas. The new monolithic building communicates permanence and the feeling of having always been in the landscape. It is an extension of the landscape rather than an external addition. All necessary services to the building is concealed to allow for journeys by foot along nature trails that arrive at the building.

The solidity of the building is conceived as a symbolic response to the unique conditions of the site and provides exclusive and dramatic experiences that manifest into views, and one's relationship with both the local 'earth' and 'sky' elements.

5.2.1 Architectural Expression

The architectural expression of the Treatment and Research Centre results from a modular geometric abstraction of a comprehensive site analysis. It is important to consider the site conditions carefully as a strategy to make the project native and interconnected to its surroundings. Each of the aforementioned site conditions is responsible for sculpting the final form. The architecture is characterized by clear and precise transitions between planned zones and the natural landscape. Through the notion of water as a dynamic element and rock as a static element, the project creates a series of prepositional relations that describe and magnify the unique spatiality of the site.

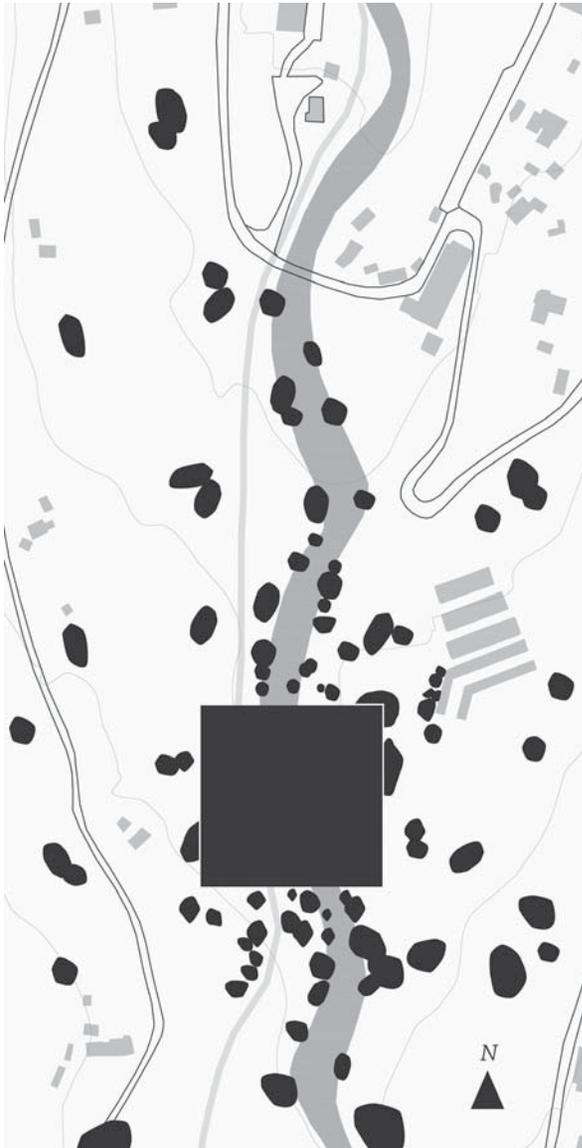


Figure 5.28: Author's Conceptual Diagram of Design Intent.

The Transfiguration of the *Monolith*

trans•fig•u•ra•tion |trans,figy'e'rá SH en|
 noun: a complete change of form or appearance into a more beautiful or spiritual state.

<i>The nature condition</i>	<i>The transfiguration</i>
The BVMFZ Fault Zone	1. Framing of Boundary
	2. The “split” of Program
	3. Underpass
	4. Courtyard
The Zêzere River	5. Exterior Pool
The Glacier River Trail	6. Projection of the Stream
	7. Exterior Platform
Thermo-mineral	8. The Well
Underground Reservoir	9. Main Entrance
The Trout Nursery	11. Tapering of the Building Form
General Access	12. Carving of the Roof Plane
The Sky Element	

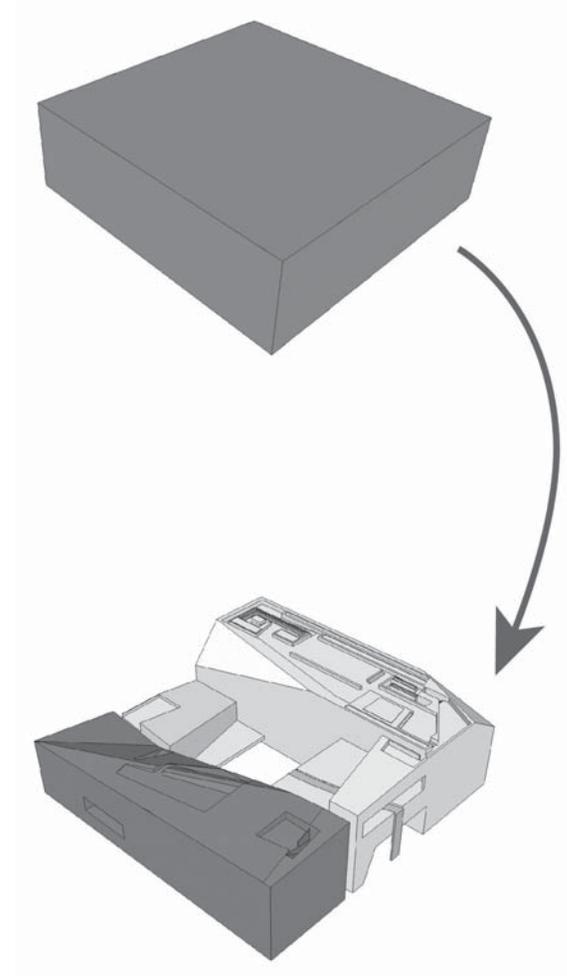


Figure 5.29: Transfiguration of The Architectural Form.

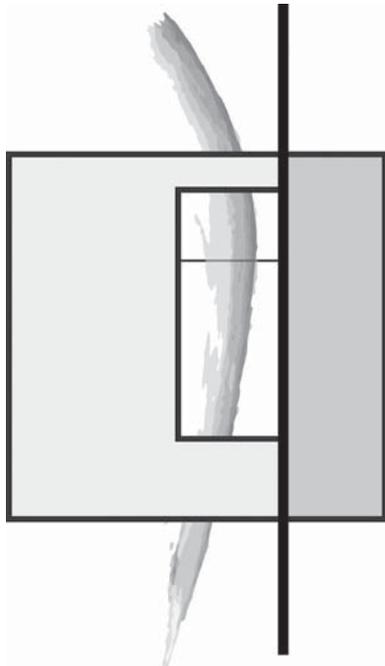


Figure 5.30: Design Parti.

The building parti illustrates a simple monolithic form intersected by a line that separates the projects main programs, and by a dynamic mobile element that becomes a feature at the core of the building.

The Fault Zone

In the words of Frank Lloyd Wright it becomes most appropriate that the form of the intervention “[start] with the ground... [as] the ground already has form.” It then becomes important to explore the composition of the ground and allow its virtues to guide the development of the architecture. In the site analysis, Wright advises that we consider the possibility of the ground having some fault or special virtue and in each case allow for that virtue to serve as the beginning “that aspires to architecture.”⁴

The most influential virtue in Manteigas is the Bragança-Vilariça-Manteigas Fault Zone (BVMFZ) which runs along the entire length of the Zêzere valley. Although hidden from view, the underground forces caused by the BVMFZ fault zone are responsible for creating a subterranean geothermal reservoir that provides Manteigas with thermo-mineral waters that are its most enduring natural resource, and are of prime importance for fueling future development. According to geological research data, the fault zone running under the Zêzere valley is approximately ninety meters wide. To accentuate the importance of the fault zone, the confines of the fault zone serve as the beginning of both the placement and the framing boundary of the architectural project. In a sense, the project is placed in the most intense portion of the valley so that it becomes a register of the site conditions. Thus, a pure square monolithic form of granite texture matching the surrounding boulders seen at the core of the Zêzere valley becomes a 90 by 90 meter impression within the boundaries of the fault zone. The shape of the building is chosen because at each equal length wall, it becomes possible to register the varying complexities of the underground geological forces.

Within the BVMFZ fault zone is a geological fault line which is revealed within the building intervention as a visual “split” in the otherwise monolithic building form. The “split” becomes a significant architectural gesture in the project that programmatically separates the treatment and research programs. Through the design of these powerful architectural gestures geological conditions that are not evident at first become embodied in the very foundation of the architectural form.

The split further separates the treatment and research by generating an offset in the floors slabs between the two programs to visually and symbolically illustrate the local geological forces present immediately beneath. The split is rendered as a 3 meter-glassed atrium that accommodates circulation. The open atrium is a full 5 stories of building height that rallies a sense of depth, providing exclusive views of the town of Manteigas, the surrounding parishes, and of the natural features in the Zêzere valley.

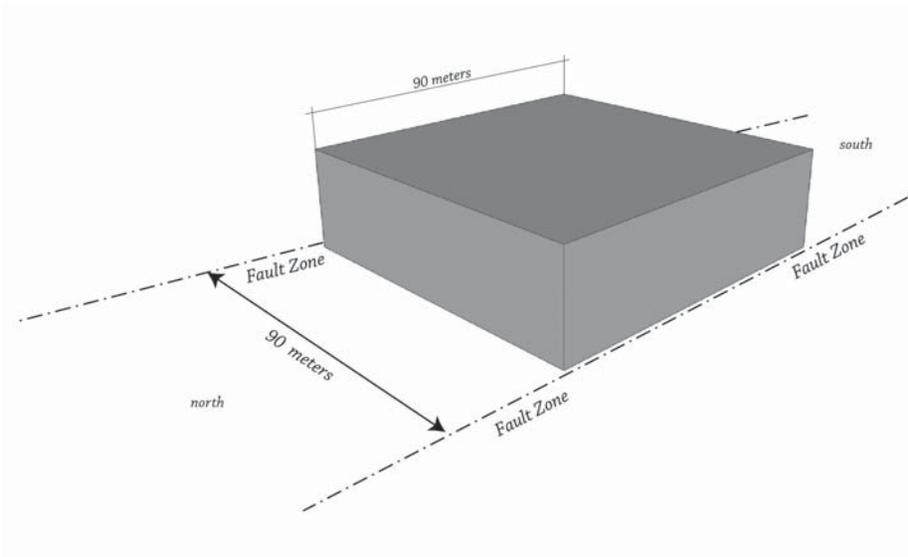


Figure 5.31: Transfiguration 1: *Framing Boundary*.

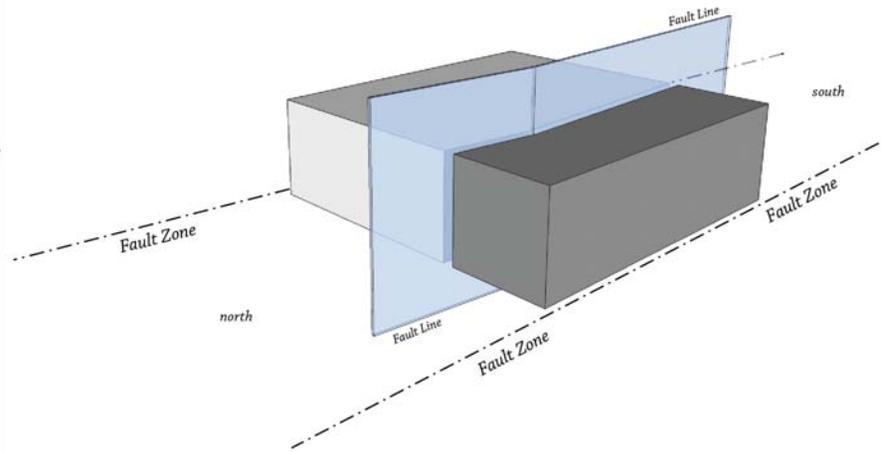


Figure 5.32: Transfiguration 2: *The Split*.

The Zêzere River

At the base of the building an underpass is carved to allow the Zêzere stream and The Serra da Estrela Glacier Trail to continue to flow beneath, transforming the square volume into an indistinct bridge that becomes anchored against the valley slopes.

The Zêzere stream is a fluid and dynamic natural element that enhances the overall experience within the project. Furthermore, a square courtyard is carved into the heart of the project to encapsulate and capture a moment of the Zêzere stream and its immediate surrounding landscape. On the south side a space is sculpted out of the volume to create an exterior pool that provides an elevated view of the courtyard to the north, and the higher valley slopes to the south. The alignment of the stream is then projected on the level of the exterior pools where fresh mountain water flows to provide a cool water zone amongst the thermal waters. The cool water zone will have an edgeless boundary north/south so that excess water can cascade over the edge and back into the stream as a waterfall. The stream becomes an inherent part of the building experience.

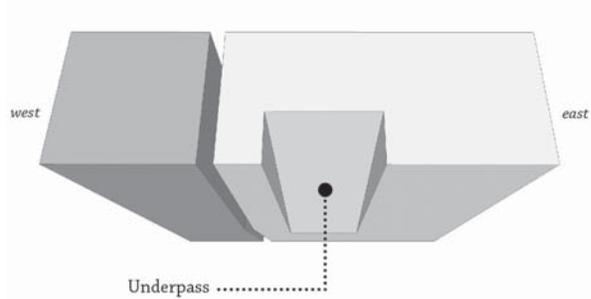


Figure 5.33: Transfiguration 3: *Underpass*.



Figure 5.34: Transfiguration 3: *Underpass - NS Section*.

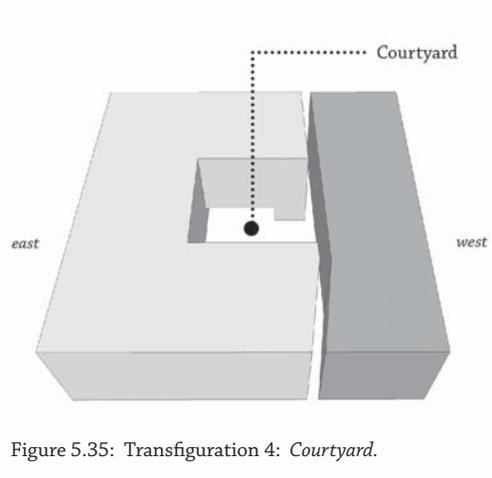


Figure 5.35: Transfiguration 4: *Courtyard*.

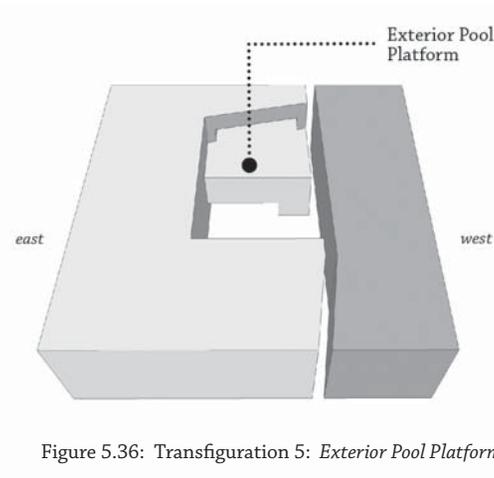


Figure 5.36: Transfiguration 5: *Exterior Pool Platform*.

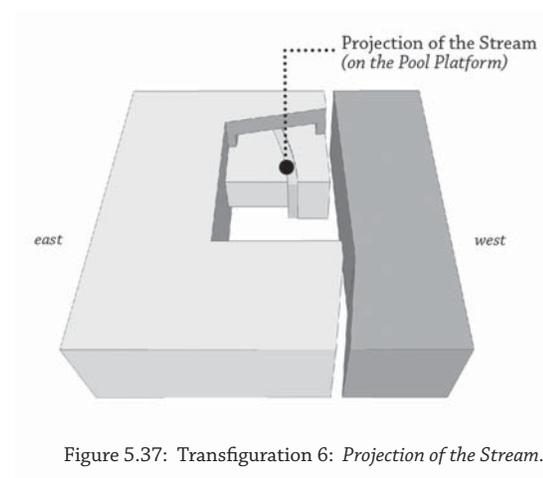


Figure 5.37: Transfiguration 6: *Projection of the Stream*.

The Serra da Estrela Glacier Trail

The Serra da Estrela Glacier Trail runs between the west-building wing and the stream and is an additional means by which access to the site is granted. The building will help contribute to the journey by providing an additional rest stop along the route where information is displayed regarding the theme of healing, the activities within the catalyst project, regional initiatives and views of the activities within. Inside the courtyard, an exterior platform is shaped on the north side for use by both hikers traveling on the Glacier Trail, and by people visiting the building. It is important for the path to remain continuous so that all passer bys are welcomed into the core of the project, where they can make use of the courtyard and exterior platform to appreciate the monumental environment framed by the architecture.

The Thermo-Mineral Underground Reservoir

The thermal water source rising from the underground reservoir also contributes to the building form. A zone above the proposed boreholes creates an angled gesture up to the thermal water storage pool on the south end of the building. This gesture aligns with the Glacier Trail and provides a surface where information about the project, the site, and the sustainable initiatives are engraved into the granite stone surface.

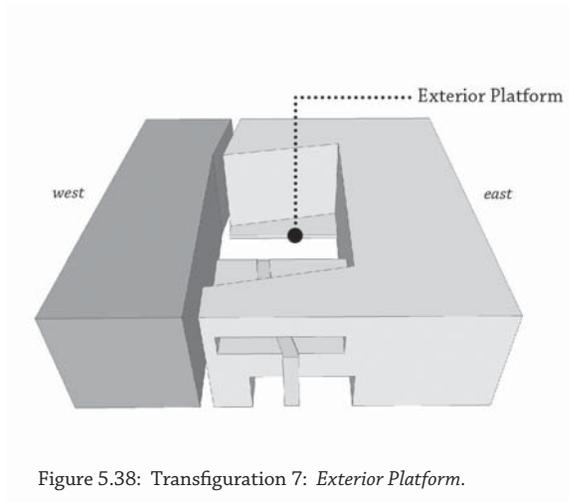


Figure 5.38: Transfiguration 7: *Exterior Platform*.

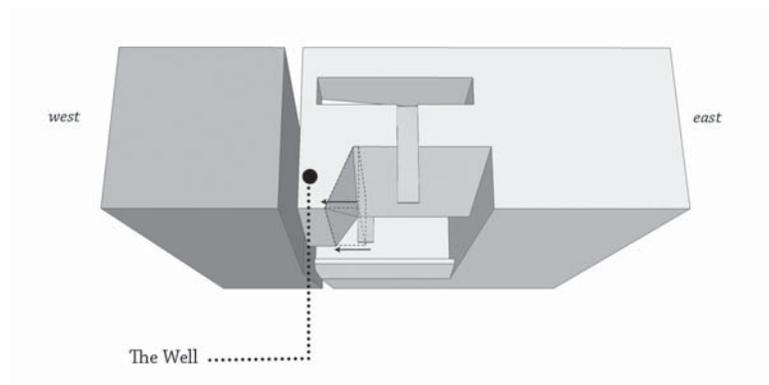


Figure 5.39: Transfiguration 8: *The Well*.

The Existing Trout Nursery

This project suggests that the existing trout pools be decommissioned as trout farms, and proposes that they instead become converted into water gardens with medicinal plants. The concept is to extend the alignment of the existing water pools further to the east to create a leveled parking zone. The levels will work with the site topography, stepping upwards and maintaining flush to the top level of the pools. This will allow visitors to park cars at a distance of the building and journey along the pools (finished in local grey slate stone), turning left and upward to the main entrance in a journey that provides a sense of the rural natural environment and the themed activities undertaken within the building. Along the way from each parking elevation, visitors pass through water gardens with a specific theme, each offering a different plantation that adds texture and color to the site. The water gardens will also serve as distinguishable markers that provide an easier way to locate the parking levels after spending a rejuvenated day within the building.

The monolithic form of the building is further shaped on the northeast corner by the existing pools, revealing a dramatic opening and a more pronounced entrance into the building. Visitors descend down into a carved forecourt that directs pedestrian flow into the core of the building. This gesture results from utilizing the existing infrastructure of the trout nursery to develop supporting services for the building.

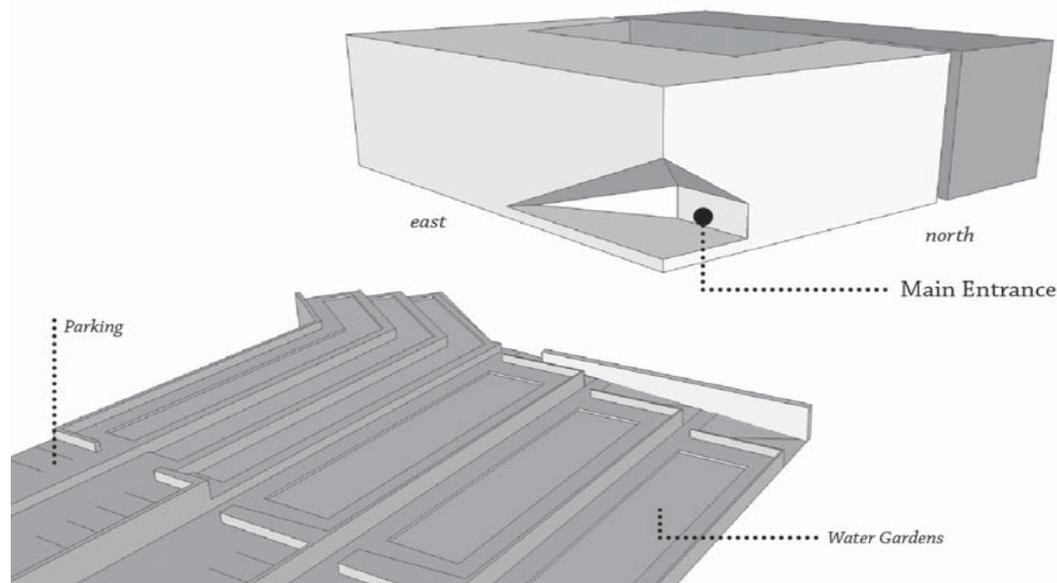


Figure 5.40: Transfiguration 9: Main Entrance.



Figure 5.41: Main Entrance to Project. (Refer to Page 256 Room 1 for Floor Plan)

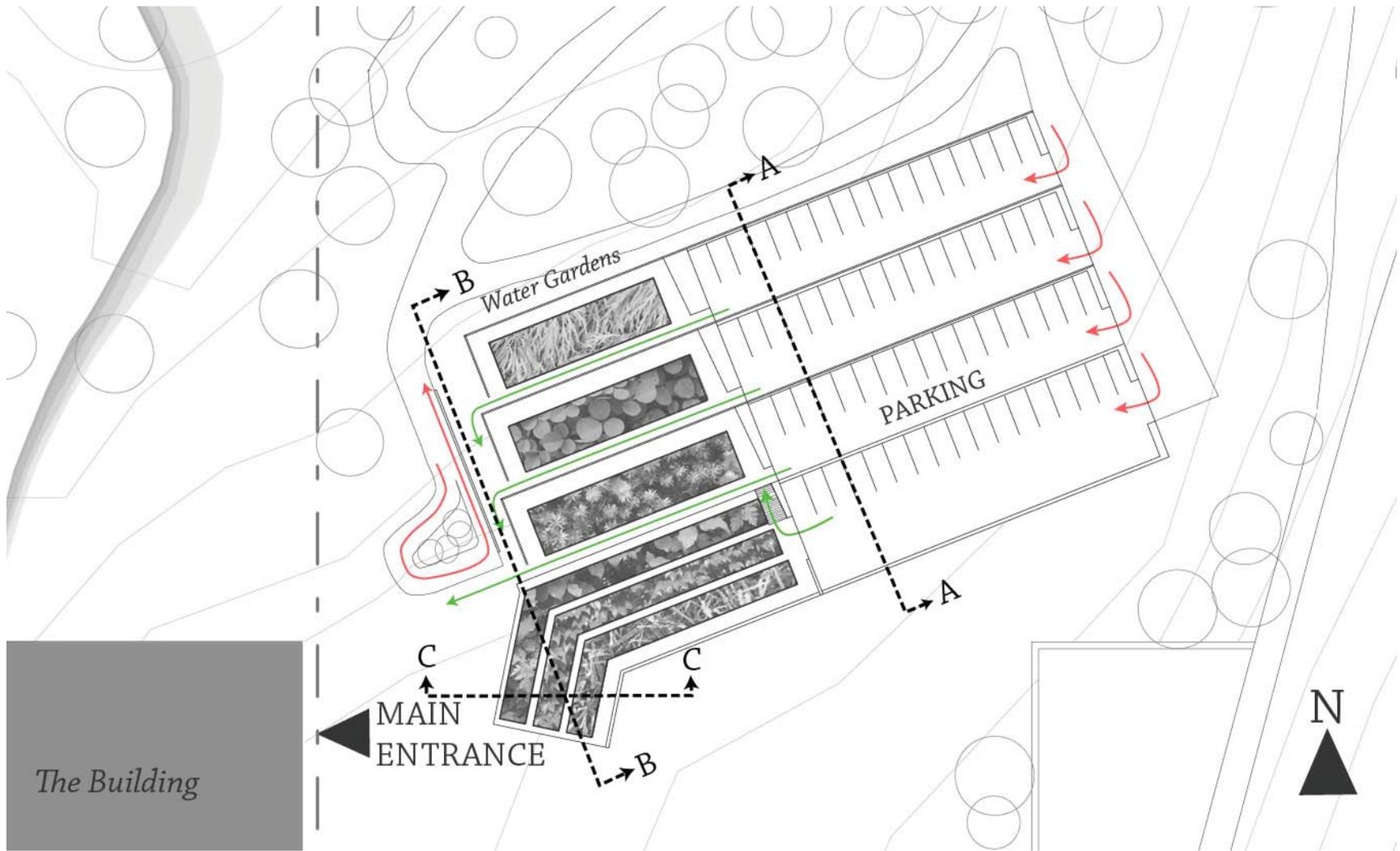


Figure 5.42: Water Gardens and Parking Plan.



Figure 5.43: Section A: Parking Levels.



Figure 5.44: Section B: The Water Gardens.



Figure 5.45: Section C: Water Gardens.

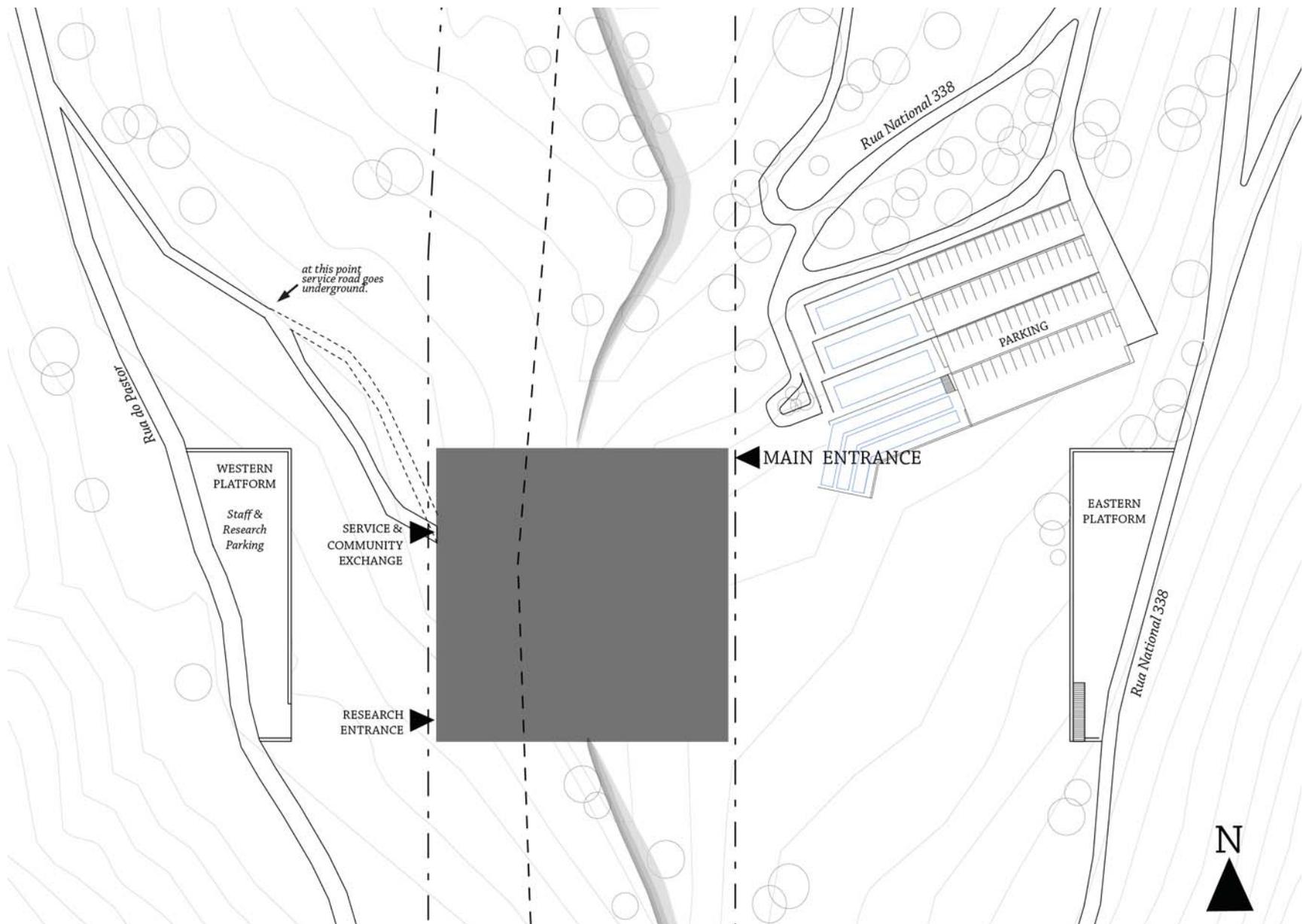


Figure 5.46: General Access Plan.

General Access

Near the proposed site, the eastern Rua National 338 descends down the slopes and approaches the site from the north and continues its journey into the center of Manteigas. The project proposes access to the site from Rua National 338 that aligns with the existing water pools and ends close to the entrance of the building to allow for direct visitor drop off at the main entrance.

On the eastern and western slopes of the valley, two viewing platforms are incorporated adjacent to Rua National 338 on the east side, and Rua do Pastor on the west side. The platforms provide additional parking to the site and serve as viewing spots from where visitors can grasp dramatic views of the valley.

Rua do Pastor on the western side is proposed as a road that will provide service, community and research access to the building. When traveling to the building along the Rua do Pastor from Manteigas a soft-edge road branch is proposed that splits midway, one road descending to provide service access below grade on the first floor, while a second road continues towards the Community Exchange found on the second floor. The entrance to the Community Exchange becomes a carving on the western façade, further transfiguring the form of the building. Due to the steep terrain on the west elevation, a retaining wall made of local stone frames a prominent entrance to the Community Exchange.

In addition, the form of the building is further transfigured in a gradual taper that begins at the southeast corner and descends gesturing towards the main entrance on the northeast corner. As the tapering action takes place, general access to the research side is made possible at the southwest corner and a blurring of the boundary between building and landscape occurs. This allows for a relatively seamless transition from the landscape to an entrance on the research side. Researchers who are permanent employees of the research building can make full use of the Rua do Pastor platform, parking their vehicles and from there descending down a nature path to meet the southwest entrance of the building, at which point a gentle staircase that provides access to the building on the 5th floor.

Moreover, the gradual tapering and transfiguration of the form also allows for unobstructed views from the pool platform to the town of Manteigas.

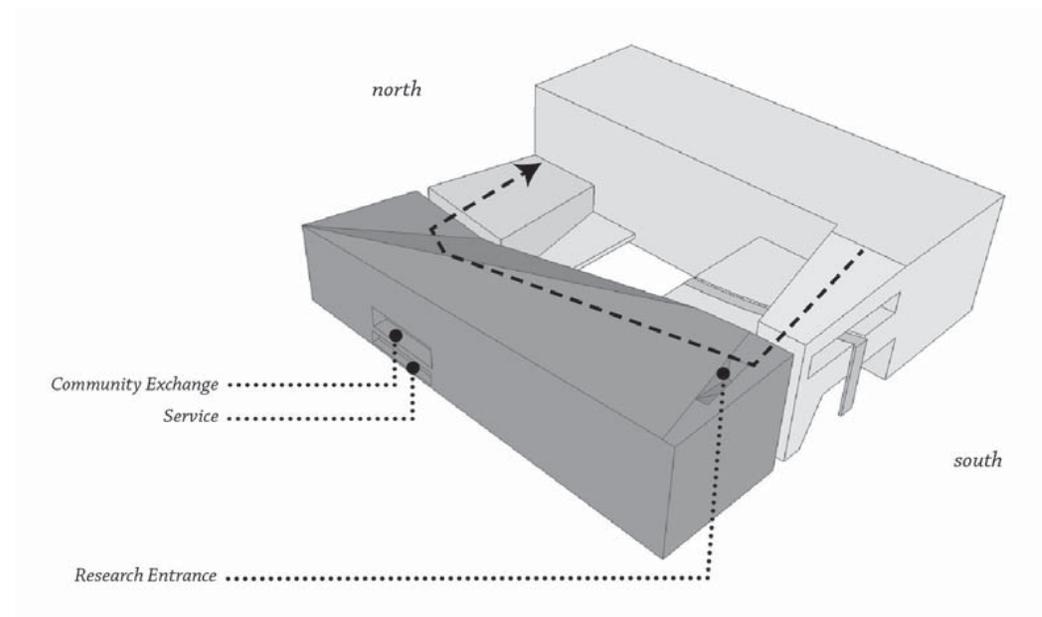


Figure 5.47: Transfiguration 10: *Tapering of the Building Form.*

The Sky Element

The last transfiguration of the building form is undertaken by careful carving of the roof plane. The purpose of carving the roof is to establish a relationship to the sky element both from interior and exterior spaces. From the exterior the carvings allow for, roof gardens, over the treatment side, exterior open-air research laboratories over the research side, an employee open-air courtyard at the research entrance and a restaurant roof terrace on the northern side of the building. The research laboratories, courtyard, roof gardens and restaurant roof terrace allow for direct connection with the sky element. The outdoor laboratories make full use of the available sunlight to allow for specialized plants and herbs with medicinal properties that need particular professional moderating during the growing process to be grown on site. On the other hand, the roof gardens, courtyard and restaurant roof terrace allows for a more leisurely enjoyment of the sky and the accompanying silhouettes of the surrounding plateaus as they are seen imprinted against the sky from the centre of the Zêzere valley.

Furthermore, sculpting the corners of the eastern treatment volume on a particular angle allows the sight line out of the windows to focus specifically on the silhouette of the mountains and the sky exclusively, allowing the experience of the sky element to be brought into the interior experience of project.

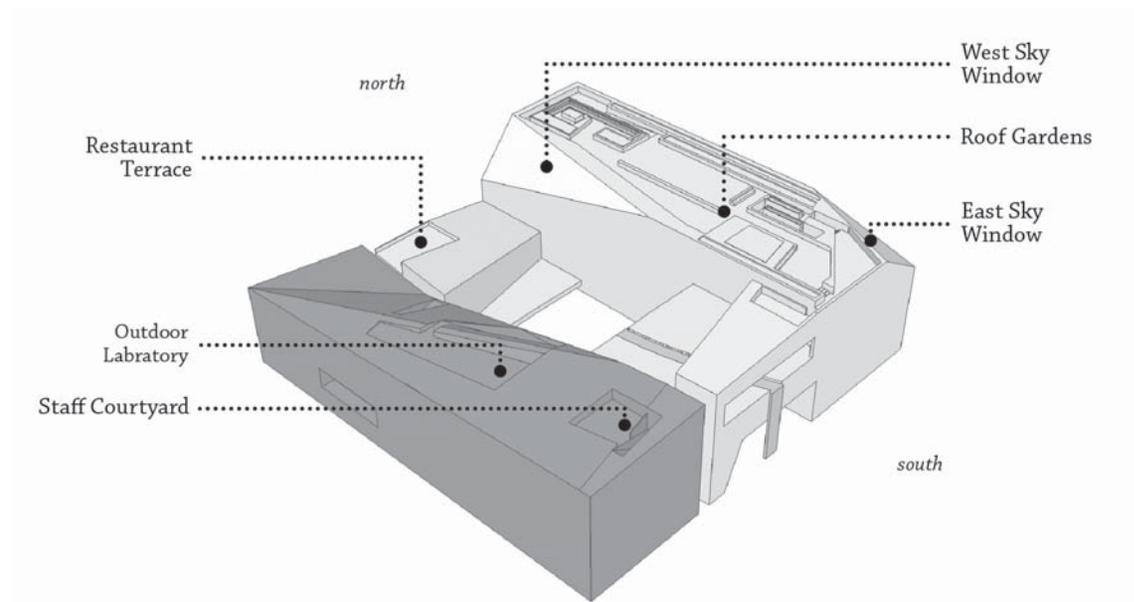


Figure 5.48: Transfiguration 11: *Carving of the Roof Plan.*

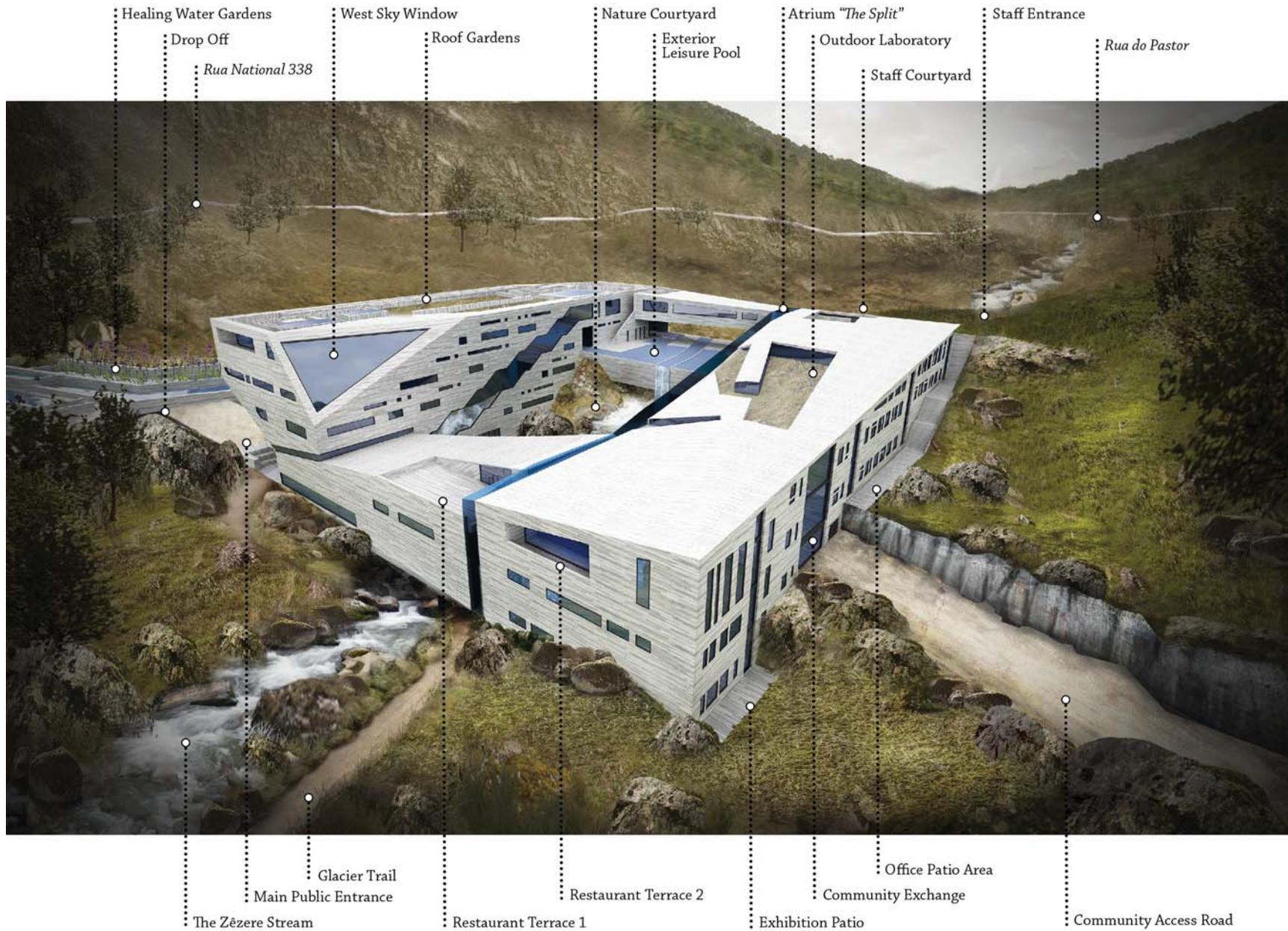


Figure 5.49: Exterior Rendering of Project - West View.

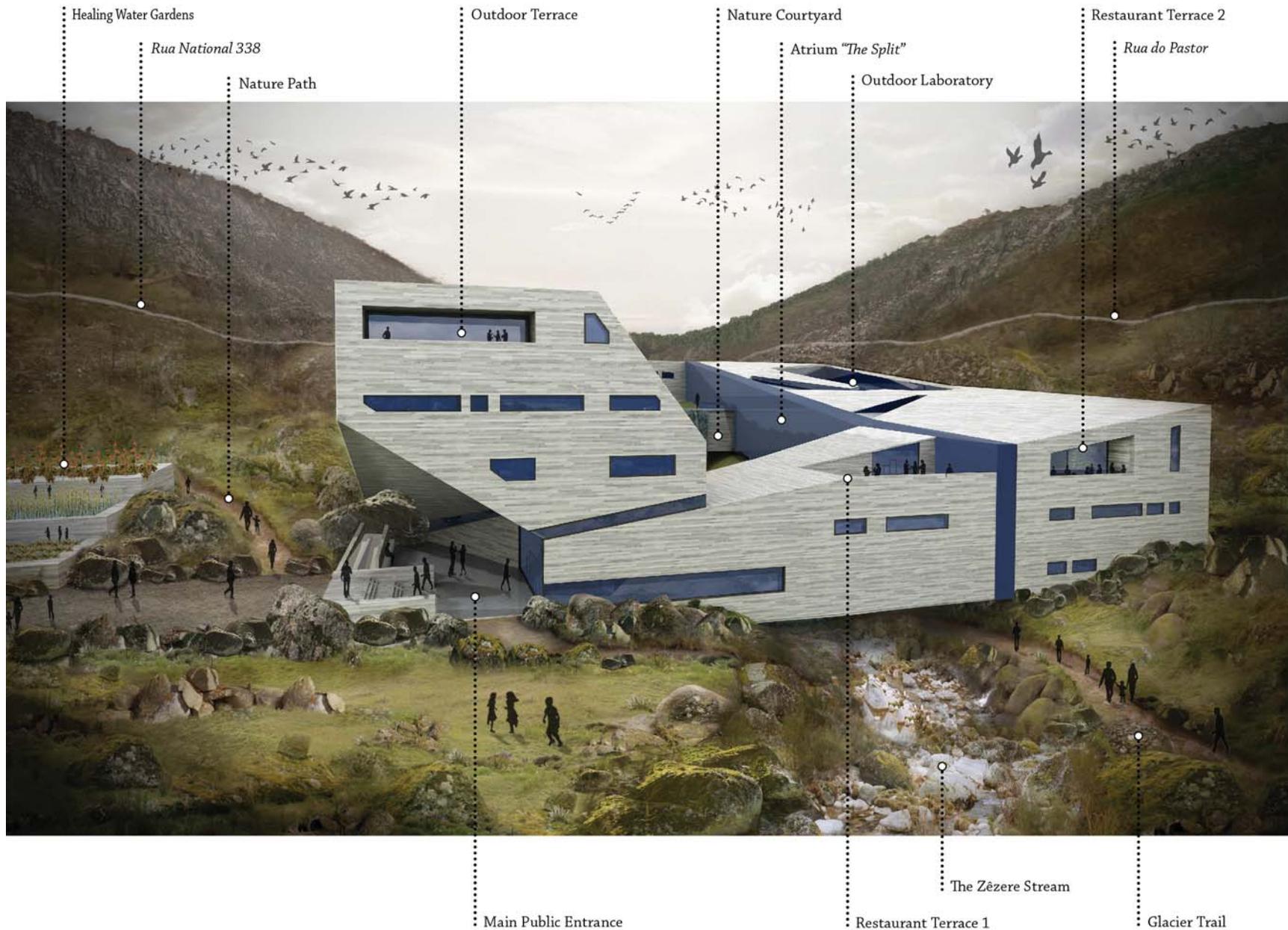


Figure 5.50: Exterior Rendering of Project - South View.

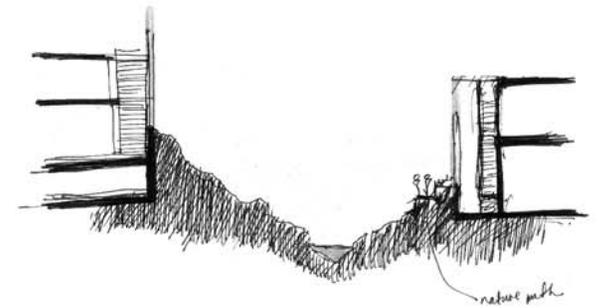
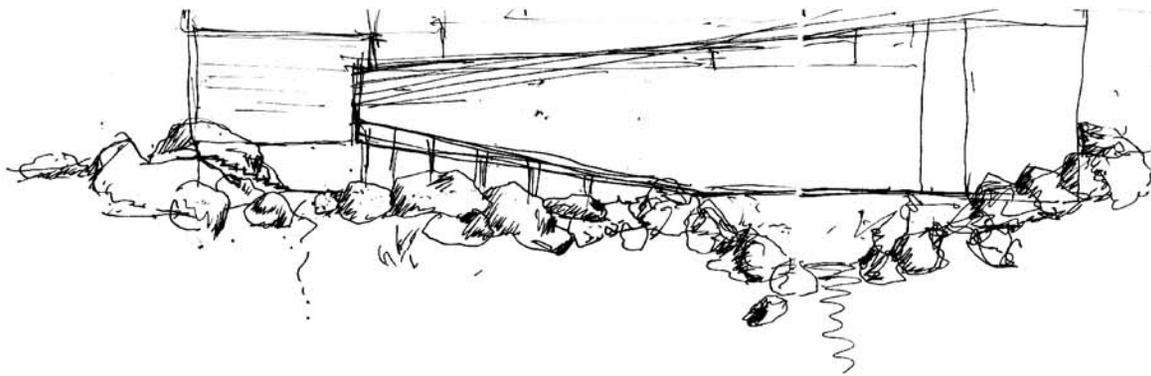
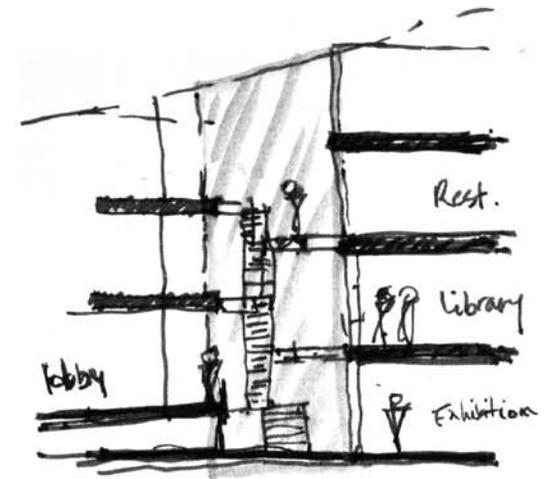
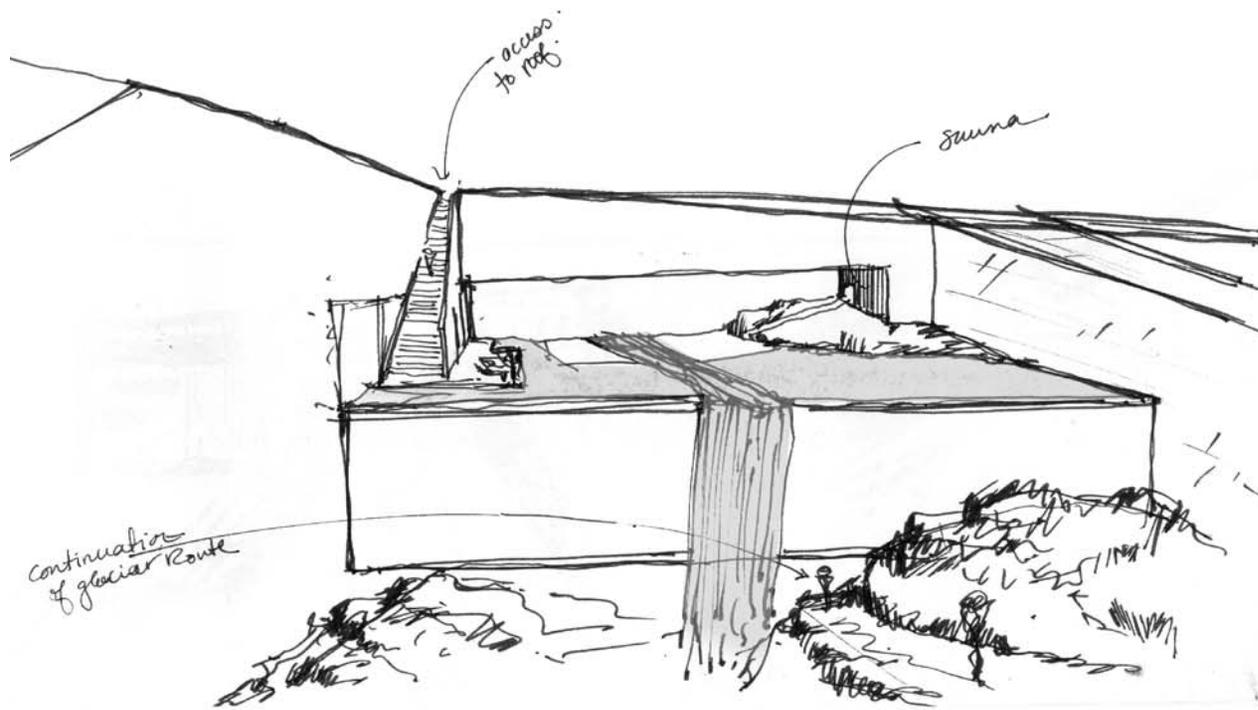
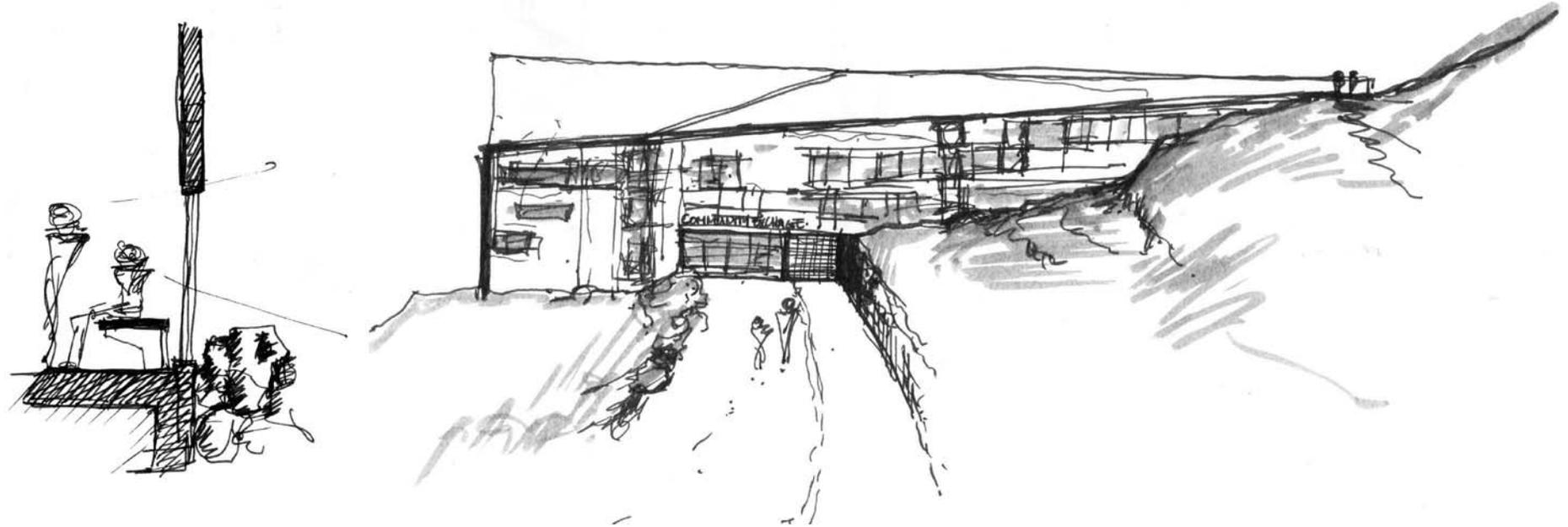
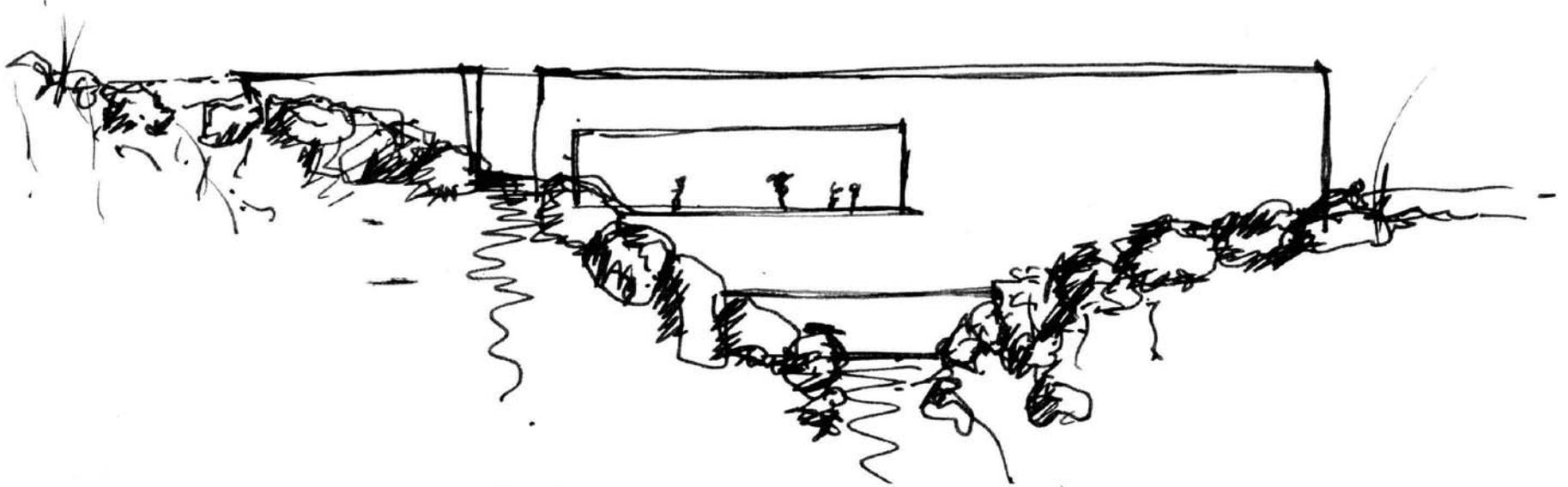
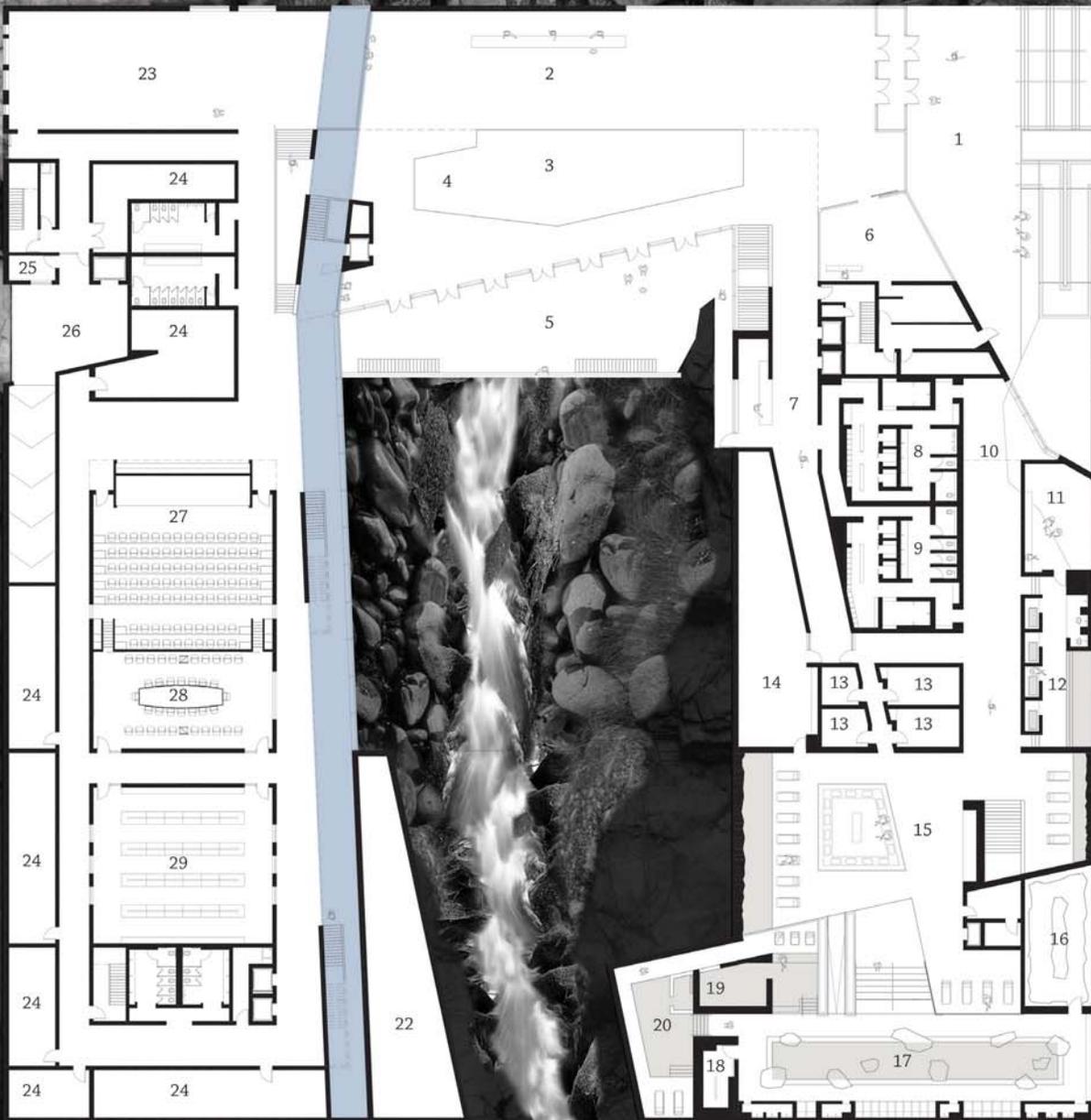


Figure 5.51 Author's Design Sketches



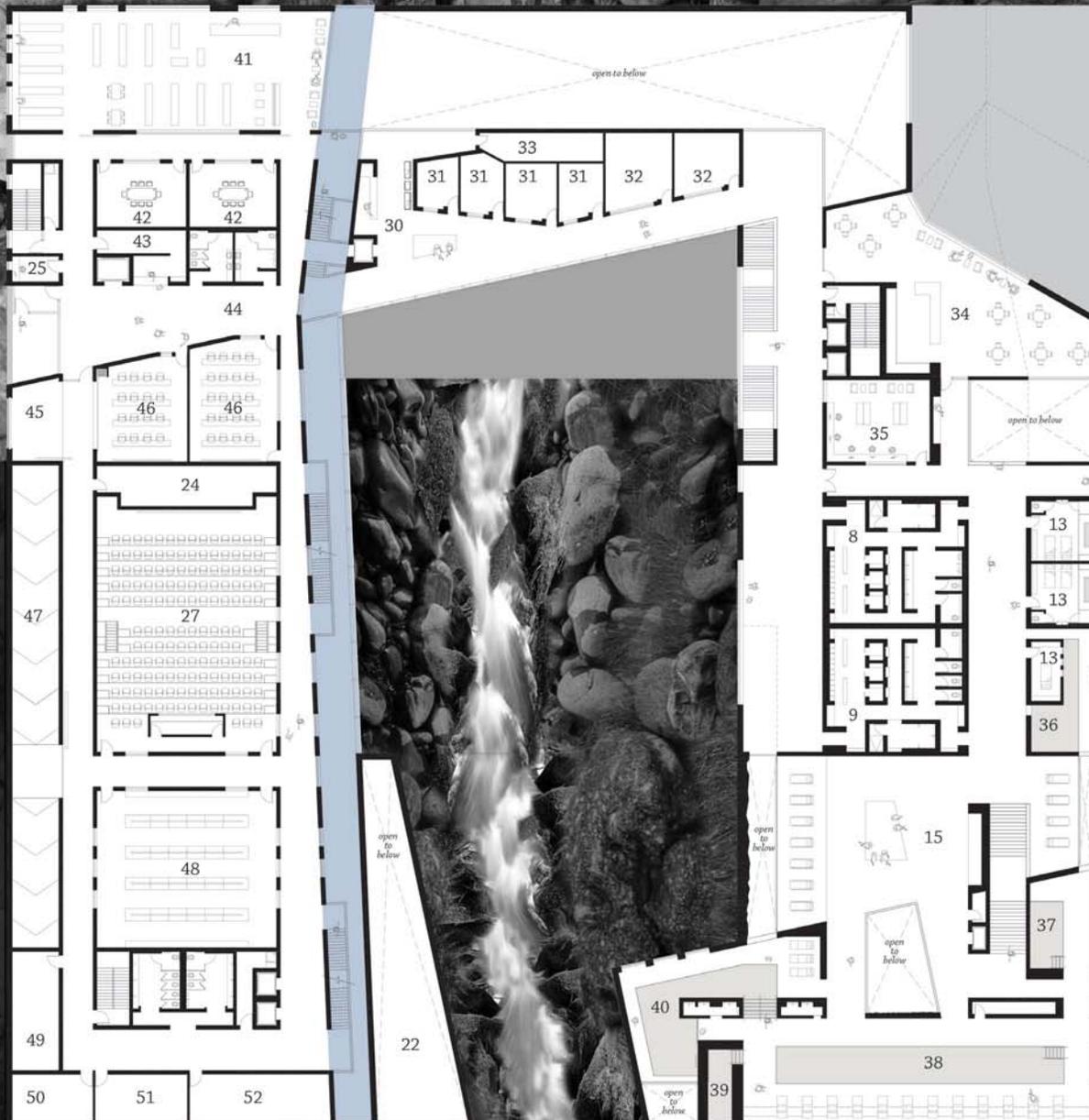


Treatment

- 1 - Entrance Frontcourt
- 2 - Reception Lobby
- 3 - Lounge
- 4 - Cafe
- 5 - Outdoor Patio
- 6 - Gift Shop
- 7 - Underground Treatment Reception
- 8 - Men's Change Room
- 9 - Women's Change Room
- 10 - Stone Resting Area
- 11 - Stone Steam Room
- 12 - Mud Soak Baths
- 13 - Treatment Room
- 14 - Laundry
- 15 - Common Relaxation Zone
- 16 - Salt Cave
- 17 - Stone Mud Bath
- 18 - Dry Sauna
- 19 - Soil Steam Bath
- 20 - Warm Clay Bath
- 21 - Nature Courtyard
- 22 - Water Well

Research

- 23 - Exhibition Hall
- 24 - Storage
- 25 - Office
- 26 - Service Entrance
- 27 - Lecture Hall
- 28 - Conference Room
- 29 - Subterranean Medicinal Research Lab



Treatment

- 8 - Men's Change Room
- 9 - Women's Change Room
- 13 - Treatment Room
- 15 - Common Relaxation Zone
- 21 - Nature Courtyard
- 22 - Water Well
- 30 - Medical Clinic
- 31 - Doctor's Office
- 32 - Medical Testing Room
- 33 - Records Office
- 34 - Spa Bistro
- 35 - Therapist and Nurses Station
- 36 - Relaxation Bath
- 37 - Medicinal Bath
- 38 - Salt Bath
- 39 - Jacuzzi Mineral Bath
- 40 - Carbonic Mineral Bath

Research

- 24 - Storage
- 25 - Office
- 27 - Lecture Hall
- 41 - Library
- 42 - Meeting Room
- 43 - Community Exchange Office
- 44 - Community Exchange Atrium
- 45 - Plant and Herb Drop-off & Sorting
- 46 - Community Training Classroom
- 47 - Service Ramp
- 48 - Germination Laboratory
- 49 - Humidity Controlled Seed Bank
- 50 - Dry Plant Storage
- 51 - Germination Plasma Bank
- 52 - Refrigerated Storage Room



- Treatment**
- 8 - Men's Change Room
 - 9 - Women's Change Room
 - 13 - Treatment Room
 - 15 - Common Relaxation Zone
 - 21 - Nature Courtyard
 - 35 - Therapist and Nurses Station
 - 36 - Relaxation Bath
 - 37 - Medicinal Bath
 - 53 - Children's Treatment Zone
 - 54 - Toy Storage
 - 55 - Children's Change Room
 - 56 - Warm Hydrotherapy Pool
 - 57 - Temperature Mix Pool
 - 58 - Sound Therapy Bath
 - 59 - Flower Bath
 - 60 - Warm Thermal Bath
 - 61 - Cold Hydrotherapy Pool
 - 62 - Mechanical and Service Zone
- Research**
- 24 - Storage
 - 25 - Office
 - 47 - Service Ramp
 - 63 - Restaurant
 - 64 - Restaurant Upper Level
 - 65 - Restaurant Terrace
 - 66 - Organic Kitchen Laboratory
 - 67 - Multipurpose Room
 - 68 - Group Workroom
 - 69 - Plant Biochemistry Laboratory
 - 70 - Photochemical Study Laboratory
 - 71 - Office Service Room



Treatment

- 8 - Men's Change Room
- 9 - Women's Change Room
- 13 - Treatment Room
- 15 - Common Relaxation Zone
- 21 - Nature Courtyard
- 35 - Therapist and Nurses Station
- 36 - Relaxation Bath
- 37 - Medicinal Bath
- 39 - Stone Sauna
- 58 - Sound Bath
- 60 - Warm Thermal Bath
- 61 - Cold Bath
- 72 - Balneotherapy Bath
- 73 - Aroma Therapy Bath
- 74 - Outdoor Sun Room
- 75 - Outdoor Thermal Leisure Pool
- 76 - Mountain Spring Resting Pool

Research

- 24 - Storage
- 25 - Office
- 68 - Group Workroom
- 77 - Study Terrace
- 78 - Study Room
- 79 - Geology Laboratory
- 80 - General Laboratory
- 81 - Broadcasting Studio



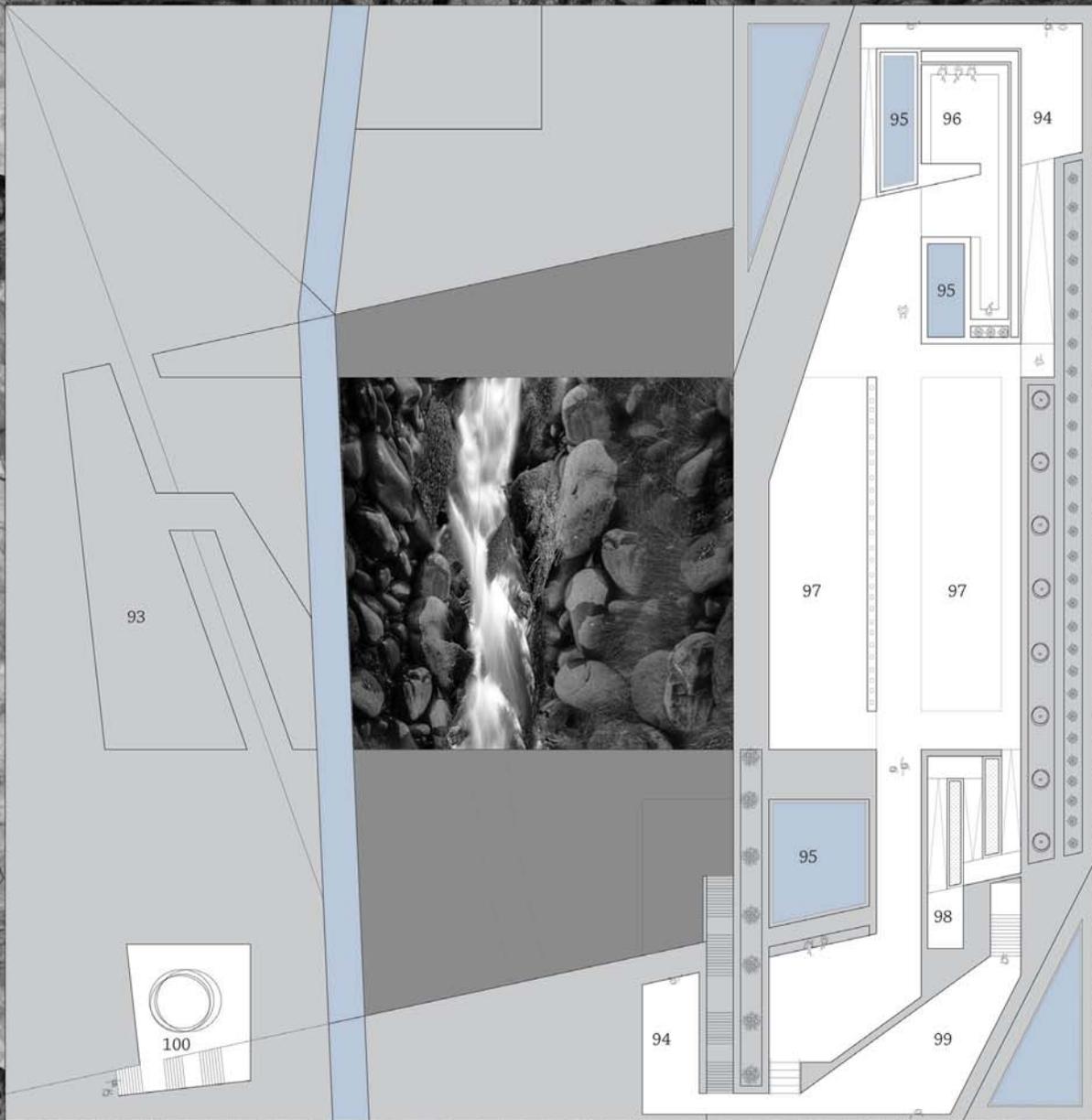


Treatment

- 8 - Men's Change Room
- 9 - Women's Change Room
- 13 - Treatment Room
- 15 - Common Relaxation Zone
- 21 - Nature Courtyard
- 35 - Therapist and Nurses Station
- 82 - Dance Studio
- 83 - Waiting/Rest Area
- 84 - Cardio and Weights Studio
- 85 - General Studio
- 86 - Common Yoga and Pilates Studio
- 87 - Hot Yoga Studio

Research

- 25 - Office
- 88 - Research Staff Entrance
- 89 - Research Administration Office
- 90 - Staff Room
- 91 - Administration Office
- 92 - Green House
- 93 - Open Air Controlled Plant Laboratory



Treatment

- 94 - Viewing Platform
- 95 - Skylight
- 96 - Relaxation Outdoor Lounge
- 97 - Open Activity Space
- 98 - Elevator Access to Treatment
- 99 - Stair Access to Treatment

Research

- 93 - Open Air Controlled Plant Laboratory
- 100 - Research Roof Top Entrance

MATERIALITY

In the essay *An Architecture of the Seven Senses*, Pallasmaa points to the importance for architecture to move beyond the privileging of the visual over the other senses and highlights the significance of interpreting inhabitable spaces in a more tactile manner.

“Every touching experience of architecture is multi-sensory; qualities of space, matter and scale are measured equally by the eye, ear, nose, skin, tongue, skeleton and muscle. Architecture strengthens the existential experience, one’s sense of being in the world, and is essentially a strengthened experience of self.” – Juhani Pallasmaa

As a space that is centered on human experiences, the project attempts to awaken the senses by means of a more haptic architecture; an architecture that, in interfering with the users perception through the sense of touch, is able to desensitize the body from its daily experiences and connect it more intimately with the surroundings. Whether approaching the building from the elevated regional road, or viewing it from the town, its pure geometry and tapered relationship with the surrounding topography combined with its monolithic material palette of local stone, gives a sense of eternal presence, a sense of always having been part of the valley slopes. There is an immediate awareness of a continuous internal space of stone inside the mountain, where light reflects and sound refracts from the variable concentrations of water. It is through the stimulation of all the senses that the various spaces within the treatment and research programs are revealed. The material palette emphasizes a temper and character, particular to the site. It augments the visitor’s experience.

Throughout the project the use of the two primary local building materials, local granite, and Pyrenean oaks are fundamental in the expression of the spaces. The granite stone is quarried from the regional slopes, transported to site, and built back into the slope of the Zêzere valley. At the central entrance to the treatment side, visitors make initial visual contact with two massive chiseled granite boulders, one cut at the core to reveal its inner structure, and a second that becomes part of the building itself. Within the building, granite is used to render the more solid spaces. In contrast local Pyrenean oak is used as a secondary material to render the more temporarily inhabited spaces of the project. By exposing the many textural effects of light and water on these two elements, the sensory experience becomes more substantial within the various spaces.

Figure 5.52: First Floor Plan.

Figure 5.53: Second Floor Plan.

Figure 5.54: Third Floor Plan.

Figure 5.55: Fourth Floor Plan.

Figure 5.56: Fifth Floor Plan.

Figure 5.57: Roof Plan.

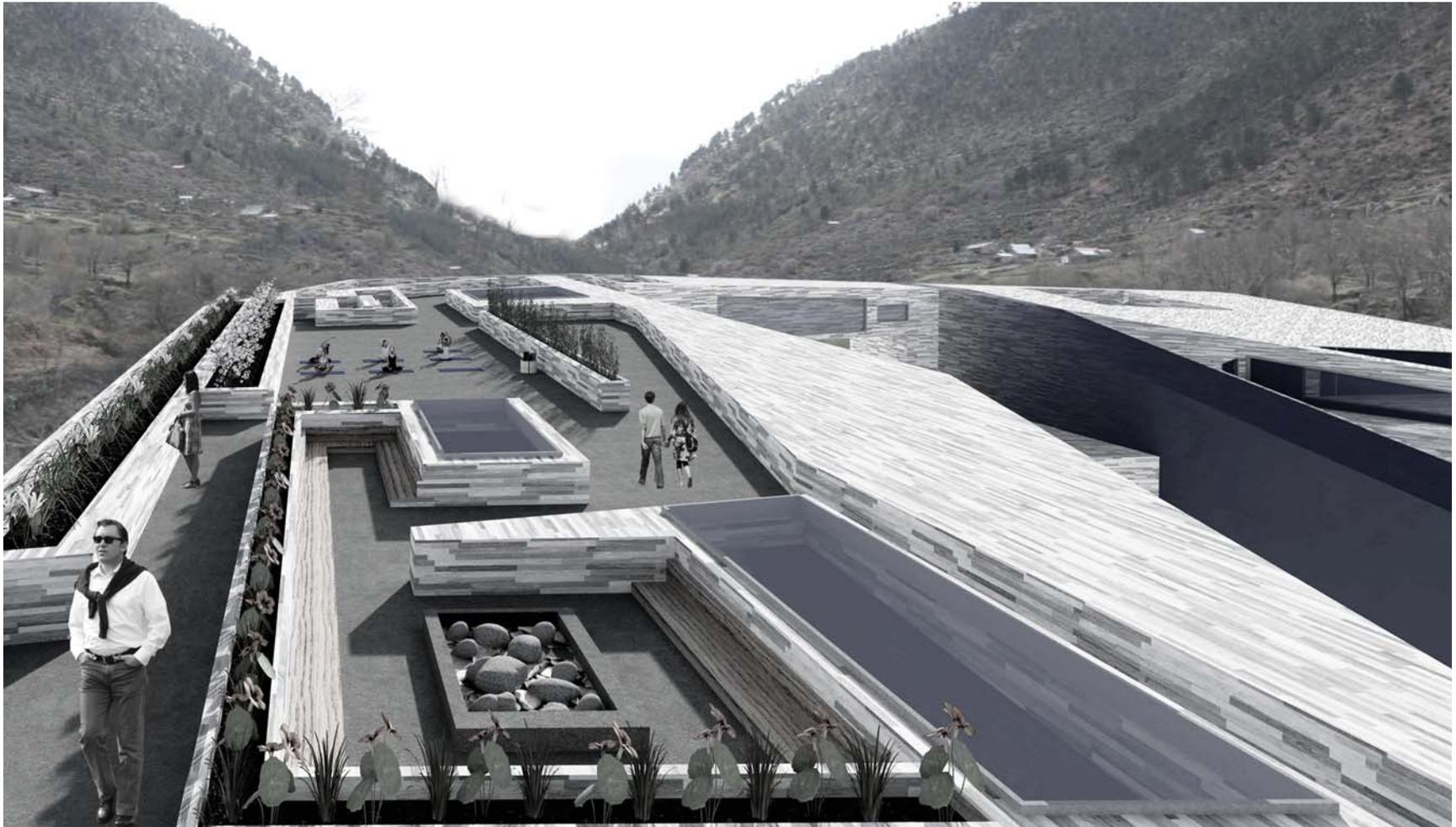


Figure 5.58: Rendering of Roof Gardens. (Refer to Page 261 Room 2 for Floor Plan)

THE MAIN FLOOR

At the approach to the main entrance two large granite boulders (cut from the local landscape) become features that animate the experience of a formal entry into the building, embodying the natural features found in the surrounding landscape. To reach the main entrance to the building, one must descend down a feature stair and through a sunken covered forecourt. The forecourt is spacious and welcoming, providing protection from inclement weather and an area for socializing before entering the main building. Once inside the building, there is a sense of a space hollowed out from a great monolithic mass of a similar texture as the ones found throughout the mountain. At first, one might feel a sense of refuge, a feeling that the shepherds of the region might have felt when taking refuge in the granite houses found at the core of the shade-less Zézere valley. Spaces inside the building appear solid and distinguished. A generous double height lobby carefully positions a single framed view to the town near the entrance lobby. To the left of the lobby (passing the reception area), a straight stone feature stairway ascends upwards the entire five levels of the treatment side, following a continuous framed glass window offering attractive views to the courtyard. Within the lobby itself, exterior views are minimized. Instead, visitors are drawn to the fully lit atrium corridor found at the western end of the lobby. The atrium functions to emphasize the vertical split of the two programs, but also reveal a symbolic misalignment between the floor slabs to symbolize the tectonic forces present beneath. The atrium breakage between the programs is flooded with natural light, representing not only the location of the subsurface fault line, but also providing a space for circulation to the research program. Although not immediately apparent from the lobby, a feature staircase becomes revealed within the volume of the atrium to give access to the different levels and offer additional views that are fully focused on the town.

A journey beyond the lobby leads to an exploration of the two main programs inherent in this project.

CIRCULATION

Aside from influencing the form of the building, the site conditions are central in the design and conceptualization of the interior spaces within the building. Circulation inside the building responds to the topography of the surrounding landscape, which ascends in the southward direction towards the upper slopes of the Zêzere valley. The most evident example of interior circulation following the topographic conditions can be seen by observing the movement of the feature stairs both on the treatment, and on the research sides. The feature stairs ascend to the upper floors in a motion that mimics an uphill climb in the southern direction towards the higher elevations of the valley. The movement between different floors on the treatment side represents a journey of discovery, as each floor represents a unique treatment modality that guests can independently experience. Along this journey of discovery, where guests explore different floors by using the feature stair, they are continually reminded of the eternal presence and beauty of the surrounding landscape as the feature stair is pressed along the western face of the treatment building, providing views to the outdoor pool, valley slopes, and the rural town.

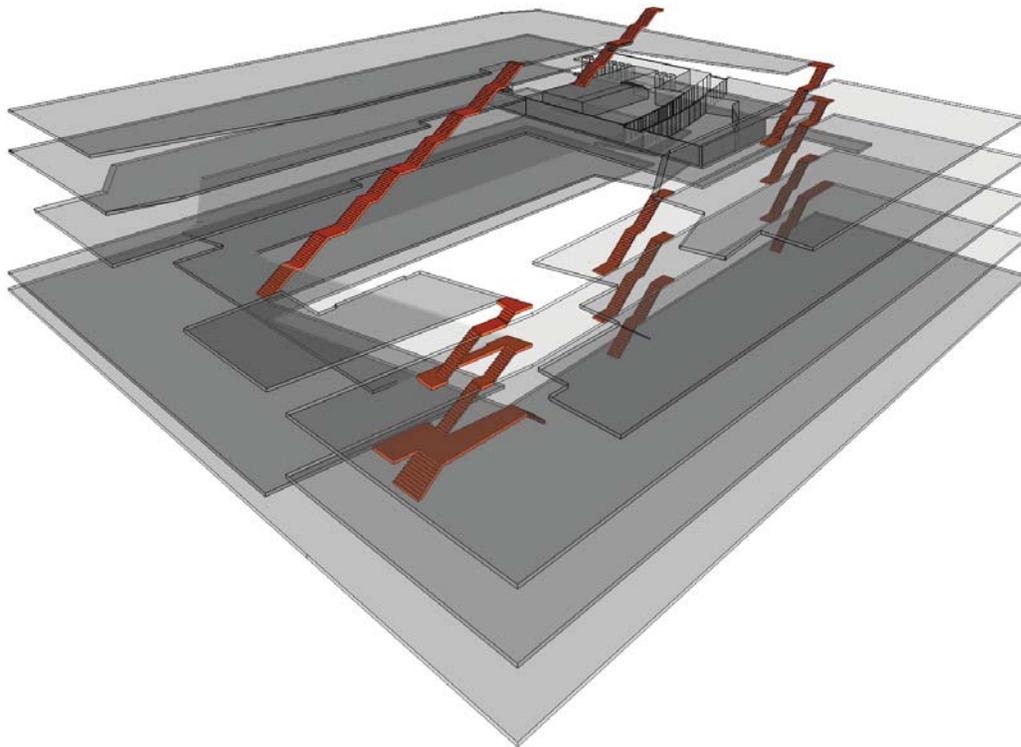


Figure 5.59: Circulation Scheme

TREATMENT

Atrium

RESEARCH

Stretching Studio

Hydrotherapy Pool

Children's Therapy Zone

Balneotherapy Outdoor Pool

Cascading Spring Water

Restaurant

Exhibition Hall

Roof Garden

Reception Lobby

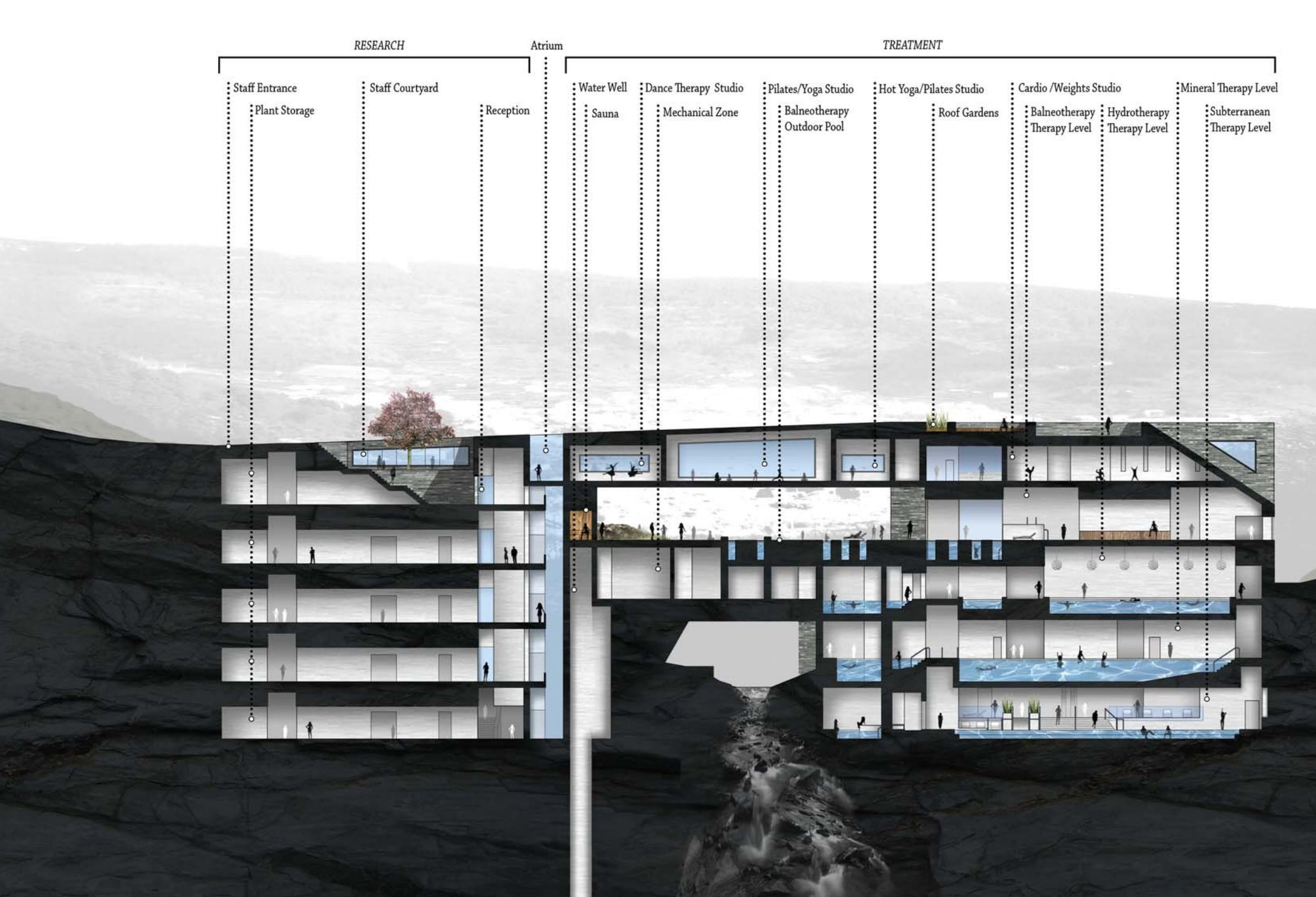
Terrace

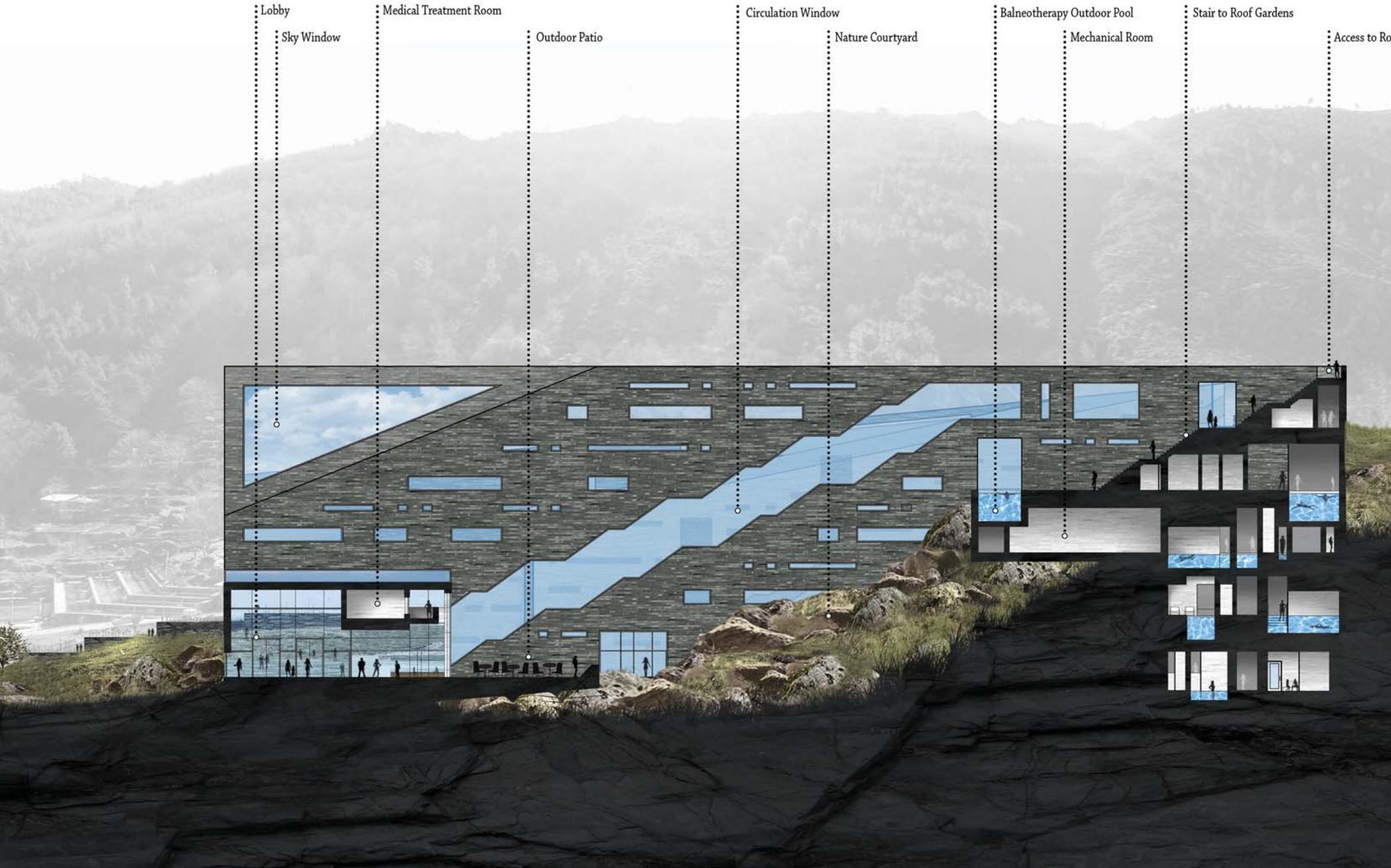
Outdoor Laboratory

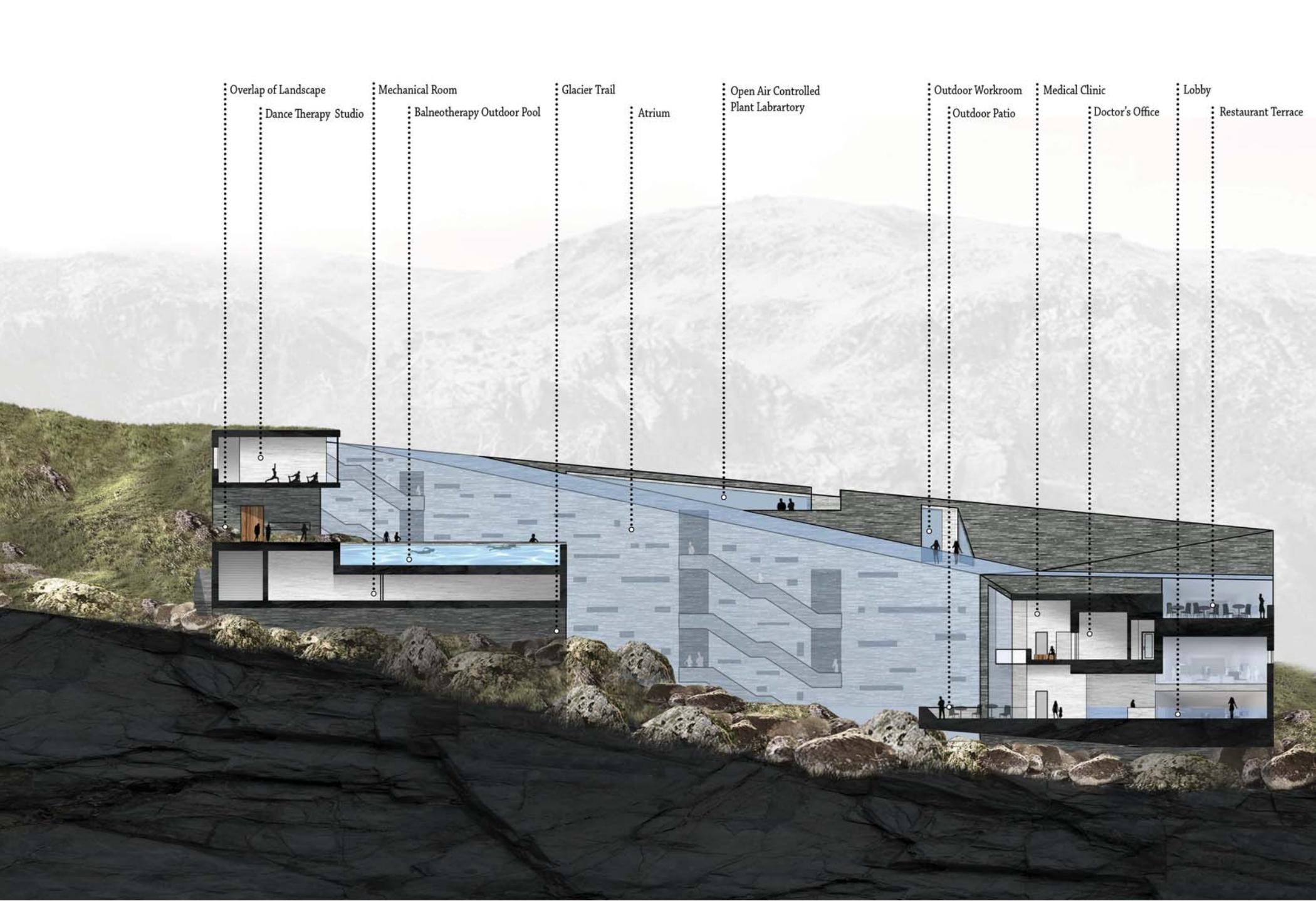
Library

Research Entrance









Overlap of Landscape

Mechanical Room

Glacier Trail

Open Air Controlled
Plant Laboratory

Outdoor Workroom

Medical Clinic

Lobby

Dance Therapy Studio

Balneotherapy Outdoor Pool

Atrium

Outdoor Patio

Doctor's Office

Restaurant Terrace

5.2.2 Treatment

The organization of the treatment centre is predicated on the phenomenological characteristics of two basic elements; the earth and the sky. The lower levels in this wing of the building is focused on subterranean healing treatments (clay, sand and mud) that represent the more stable earth elements. These experiences are focused on dark underground spaces that are slightly lit by natural light from above and funneled through a narrow cavity that eliminates the perimeter surface walls at the two subterranean levels. This zone allows for quiet meditation during healing. The middle zone includes various water treatments (thermo-mineral, carbonic and cold water pools) that are meant to represent water, the more fluid earth element. Bathing water experiences are focused on different temperatures and different spatial situations. Variations in light, colour, atmosphere, materials, sound, and texture condition an intimate connection with the stone and water surfaces. The upper floors allow for treatments that are influenced by the sky elements such as air, sun, and plant vegetation. Outdoor gardens are meant to stimulate the more spiritual self and are located on the roof of the building. In-between these three zones, treatments combine the superior and subordinate elements.

By offering various baths, saunas, studios, solaria, exercise rooms, and public and private treatment rooms within the different zones, guests experience healing by absorbing, receiving, performing, and reflecting. For example, the heat inside the stone steam room located on the first floor is used to open up the skin pores and allow the body to better absorb the rich minerals found within the clay, mud and thermo-mineral baths. Throughout the various themed zones, there are private rooms where licensed practitioners can perform various massage therapies. Healing can also be achieved by performing various balneotherapy exercises and other non-aquatic exercises to stimulate recuperation through movement. Spiritual healing is achieved through reflection, and is supported with private rooms and open space that have views to the peaceful and silent natural environment.

The experience of the treatment facility does not have a prescribed journey. The organization of these spaces in plan is designed to encourage meandering. Visitors can choose their own desired sequence of treatment by taking the feature stair to the zones of their choice. Once in a selected treatment zone, a private circulation core facilitates movement within. For patients seeking a prescribed treatment regiment for their specific ailments, a section of the treatment building has been allocated as a medical centre where patients can consult doctors specializing in natural healing. Current knowledge of the positive effects brought upon by the chemical, thermal, and mechanical effects obtained by a combination of balneo-therapeutic and hydro-therapeutic regiments are prescribed to patients.

The spas included in the program are based on existing knowledge, promoting harmony between body, mind and spirit, and enabling people to soak away the stresses of a fast-paced contemporary lifestyle. The spa's guests are allowed to rekindle their relationship with nature and re-engage with the scenic beauty of the surrounding landscape.





Figure 5.65: Interior Spa. (Refer to Page 259 Room 15 for Floor Plan)



Figure 5.66: Sun Room. (Refer to Page 259 Room 79 for Floor Plan)



Figure 5.67: Interior Thermal Pools. (Refer to Page 259 Room 36 for Floor Plan)

5.2.3 Research

The western side of the project is a research institution dedicated to the study of the medicinal plants found in the region. The research side is also devoted to the investigation of alternative healing therapies that, bearing a detailed clinical trial period, are then recommended for use as therapy modalities in the treatment side. One of the intents of the project is to become a “landmark building” in the formation of knowledge, and in catalyzing synergy and investment in the municipality and further abroad. The research facility is designed to be a space of open exchange and of sharing new ideas.

The research program is separated from the treatment side by the fault zone atrium. Three scissor stairs allow occupants to circulate between five levels of program. A large solid rock surface differentiates the extents of the atrium from the research and helps to focus clear views up the valley, to the town, and to the courtyard. Once inside the “volume of research”, movement is provided by an interior loop that circulates around the central laboratories. The laboratories are clear-span spaces, and give an air of flexibility for the dynamic and evolving research taking place within. Windows into the laboratories not only bring light into the room but also welcome curious visitors to observe ongoing research. The sectional organization of the research wing is identical to that of the treatment side, with ascension from more earthly-based laboratories on the lower levels, through water-based healing research in the middle floors, to plant research on the upper roof levels where open-air laboratories take full advantage of the sun.

Several informal workspaces are created on various floors to encourage innovative and collaborative work. The offices are all located along the west perimeter wall to allow for quiet study and contemplation of research data within a desirable environment. Here operable windows allow for clean mountain air, natural light, and views to the side of the valley.

The ground floor includes a research exhibition hall next to the visitor’s lounge and a café that promotes interaction between the building’s occupants. The exhibition hall offers spaces where researchers can showcase new discoveries in the field of natural healing therapies. In addition, a large conference room and auditorium make it possible to host international workshops and conferences, thus bringing additional visitors to a scenic rural area and contributing to the local economy. In an effort to make the research facility inline with others of its kind, a modest-size broadcasting studio is available on the ground floor to allow ideas that come out of lectures, conferences and meetings to be broadcasted and shared with the wider global scientific community.

Both visitors and occupants of the treatment and research buildings can make use of a spacious restaurant that includes an outdoor terrace located on the third floor that overlooking the town. The kitchen that services the restaurant is in many ways like an additional laboratory where the gastronomy is primarily based on experimentation with local and regional recipes. The restaurant also follows the general theme of healing by providing nutritious foods that compliment good health through nutrition.

The front portion of the second floor is devoted to the exchange of products between the community and the facility. Here learning and training spaces are provided. The “Community Exchange” is a program created with the intent of igniting greater community involvement by demanding a steady supply of locally grown goods and raw research plants in exchange for money and use of the common spaces found in the research side. This revitalizing synergy between the practices of science and research and the increased public involvement creates a momentum that fulfills the vision of place making. Thus, the facility serves as a strong gesture towards the cultivation of a new identity.



Figure 5.68: Proposed Restaurant Located on the Third Floor of the Research Side. (Refer to Page 258 Room 63 for Floor Plan)

5.3 DESIGN OUTCOME

The success of the architectural design as a catalyst project is ultimately predicated on adequacy of Manteigas' existing genius loci to offer a solution to the challenges of decline faced by the community. The architecture has responded to the need to fabricate an identity for the town, to instantaneously create a community where previously there was a declining one. In the end, this identity is perhaps the most effective as an iconic architectural presence that reflects the aspirations of the people of Manteigas to imagine their community as a place that can be shared with outside visitors who seek a retreat in nature and a viable place to work and live. The design restores the sense of place and reestablishes civic pride that was once a lot more prominent in Manteigas.

But even beyond pride, the project will indirectly prompt the rural community to respond to change by encouraging the development of new economic opportunities that will make it feasible for the local inhabitants to remain in a remote environment; opportunities created around the reactivation of agriculture, and the emergence of a service and lodging industry. Both medicinal plants for research, as well as food products will need to be grown in the reactivated fertile soils. This will contribute towards the strengthening of the agricultural sector and to creation of new jobs within the rural community. The local farmers will be required to become active stakeholders and guardians of the mountains biodiversity.

The ultimate vision and the most favorable outcome of this intervention is that this very inspiring region can become re-cultivated to produce a renewed identity. Not only to improve the condition of the local community, but also to become a prominent destination in the field of science. The work conducted in the centre for innovative research can provide advancements in natural healing therapies.

Perhaps I envision the outcome of this project to reproduce my childhood memories which depict rural communities as romantic places full of rolling fields with enchanting spaces for children to run through and be in pure harmony with nature. It is my hope that rural areas in Portugal can become thriving places where it is possible for children to not only grow in a quality environment, but also to remain in that environment as adults who can continuously contribute to the betterment of their rural communities. Although the 'city' or 'the urban' lifestyle is still generally perceived as a progression of human life, the design of the Treatment and Research Centre at Manteigas, posits that there is perhaps something more genuine, something hidden in rural experiences.

PART 5: ENDNOTES

1. Simon Unwin, *Twenty Buildings Every Architect Should Understand*, (New York: Routledge, 2010), 128.
2. U.S. Geological Survey, "The Richter Magnitude Scale," <http://earthquake.usgs.gov/learn/topics/richter.php>.
3. U.S. Geological Survey, "Earthquake Hazards Program," http://earthquake.usgs.gov/learn/topics/faults_east.php.
4. Unwin, 211.



Figure 5.69: Manteigas River Valley, 2010



Figure 5.70: Desired Outcome: Reactivated Rural Community.

CONCLUSION

This document commenced by questioning the potential for contemporary architectural interventions to counteract the decline and disappearance of rural communities. Is it possible to cultivate a renewed cultural identity through architecture? Such contemplation first required a definition of rural areas and their distinctive natural, man-made, and socio-cultural characteristics. It required an understanding of an inherent *genius loci* found in the rural realm, which might attract people to the splendor of a non-urban environment. But it also required an understanding of the challenges faced by rural areas. Two past rural development policies undertaken in Portugal, proved not only ineffective, but also responsible for unraveling the economic fabric of Portugal's remote rural areas. By shedding light on the attempted rural interventions of the past, it was possible to move beyond the specific failures of the past, towards a novel endogenous strategy for rural revival.

As a strategy to offset rural decline, the inherent healing potential of Portugal's Serra da Estrela Mountain served as a foundation for future design intervention in rural Portugal, and eventually abroad. Through the process of design, it became apparent that architecture can indeed help cultivate a new identity based on the natural conditions found in the rural realm. In the Serra da Estrela Mountains a new distinct rural identity emerged at the intersection of architecture with the healing potential of the natural landscape. As a template for future similar architectural interventions, the proposed scenario in Manteigas extracts a set of design principles. Given that attempts at rural revival in the last century were ineffective, four of such principles are offered to give a net benefit to the rural town by: improving the quality of life, preventing the loss of local cultural, historic, and environmental assets, diversifying the local economic environment, and developing long-term potentials for rural areas.

Regardless of the number of effective strategies for regional change, there is still something to be said about the expressive capacity of the designer in providing an effective architectural intervention. Thus, a proposed space must therefore motivate the local rural community, to be involved. In the proposed design, a new constructive relationship between the rural realm as a destination, its local inhabitants, and the outside visitors is put in place. The design offers space for both research and treatment while also serving as a social space for the rural town of Manteigas. It allows both the visitor and rural resident to participate in a new constructive relationship, interwoven together to create a core identity.

The proposal of developing a long-term self-sustainable project requires an imaginative vision. The challenges of achieving this may be complex, but without a new-shared long-term vision the outdated mindset towards rural development responsible for decline cannot be abolished. The design proposal sets out to improve the social conditions by establishing central connections that will lead to greater inter-communal interaction. The bold built form proposed by the design demands a reciprocally bold response from the local rural actors. The effectiveness of the proposed design rests on its ability to prompt the rural community to not only support the research and treatment with raw products and vital services, but also to generate additional ideas on their own for future projects that resonate with a strong rural identity.

As architects, we are not only faced with the challenges of designing functional and aesthetically inspiring environments, but our work is most valuable when it is able to revive an entire region affected by decline. As a designer, I feel that I possess the capacity to create a successful, well-thought out architecture that can motivate future change in the most marginalized and remote places. By gaining an understanding of the challenges faced by declining rural areas in Portugal, and by considering their inherent potential, the design proposal introduces a renewed approach towards addressing rural abandonment. It introduces the likelihood that architecture might once more successfully cultivate a positive and progressive relationship between rural communities and their cultural situation.



Figure 5.71: Reactivated Fertile Fields of Manteigas.

BIBLIOGRAPHY

- Aguas Termais de Portugal. "Caldas de Manteigas e Fonte Santa." http://www.aqua.ics.ul.pt/guarda_manteigas/html.
- Baptista, H.M., Campon Cerro, A.M., Ferreira Martins, A.V. "Impacts of Small Tourism Events on Rural Places," *Journal of Place Management and Development* 3, 1 (2010): 22-37.
- Barbosa Angelina and Correia António. *Discovering the Region of the Serra da Estrela*. Lisbon: National Parks, Reserves and Nature Conservation Department, 1992.
- Batista, José. *Dispersália (Estudos Vários Locais e Regionais)*. Manteigas: Câmara Municipal de Manteigas, 2005.
- BBC News. "Common Agricultural Policy." <http://news.bbc.co.uk/2/hi/4407792.stm>.
- Bell, Aubrey. *Four Plays of Gil Vicente*. Cambridge: University Press, 1920.
- Brugniaux, J. V., Schmitt, L., Robach, P., Nicolet, G., Fouillot, J. P., Moutereau, S., Lasne, F., Pialoux, V., Saas, P., Chorvot, M. C., Cornolo, J., Olsen, N.V., and Richalet, J.P. "Eighteen Days of "Living High, Training Low" Stimulate Erythropoiesis and Enhance Aerobic Performance in Elite Middle-Distance Runners." *Journal of Applied Physiology* 100, 1 (2006): 203-211.
- Burkert, Walter. *Greek Religion*. Maiden: Blackwell Publishing, 1977.
- Carreira P.M., J.M., Marques, J. Espinha Marques, H.I., Chaminé, P.E., Fonseca, F., Monteiro Santos, R. Moura, and J.M., Carvalho. "Tracing the Dynamics of Thermomineral Resources at Serra da Estrela High Mountain Area: An isotopic and hydrogeochemical approach," *Central Portugal. Hydrogeology Journal* 19(1) (2011): 117-131.
- Cassey, Edward. *Getting Back Into Place*. Indianapolis: Indiana University Press, 1993.
- Coelho, Paulo. Paulo Coelho Blog, (June, 2011): http://www.paulocoelho.net/blog/_archives/2007/10/15/3293057.html.
- Cosgrove, Denis. *Palladian Landscape*. University Park: Pennsylvania State University Press, 1993.
- Cudworth, Erika. *Environment and Society*. London: Routledge, 2003.
- Cunha, Lúcio. "Portugal's Mountain Regions, Challenges for the 21st Century," In Jones, Garret. *Leimgruber, Walter e NEL, Etienne – Issues in Geographical Marginality*. IGU, Grahymstown (2007).
- De Almeida, António Campar. "Rural Abandonment and Landscape Evolution in the Central Region of Portugal." In *Issues in Geographical Marginality: Papers presented during the Commission Meetings 2001-2004 held at the Rhodes University*, 53-63. Grahamstown: Rhodes University, 2007.
- Duarte Lucas and Baptista José. *Três Realidades Numa Fantasia Literária!* Manteigas: Biblioteca Municipal de Manteigas, 1979.
- Estrela Green Tracks, Cultural Heritage. "Fátima – Saint John Legend in the Beira-Baixa." <http://www.manteigastrilhosverdes.com/en/?cultural-heritage&cod=14.html>.
- European Commission: Directorate-General for Agriculture and Rural Development. "The Common Agricultural Policy Explained." http://ec.europa.eu/agriculture/publi/capexplained/cap_en.pdf.
- European Commission. "EU Rural Development Policy 2007-2013." http://ec.europa.eu/agriculture/publi/fact/rurdev2007/2007_en.pdf.
- European Environmental Agency. "Special Area of Conservation (SAC)." <http://eunis.eea.europa.eu/designations/80:IN09?fromWhere=en.html>.
- European Parliament. "Second Pillar of the CAP: Rural Development Policy." http://www.europarl.europa.eu/parliament/expert/displayFtu.do?id=74&ftuid=FTU_4.2.5.html&language=en.
- European Travel Commission. "Tourism Trends for Europe." <http://www.etc-corporate.org/market-intelligence/reports-and-studies.html>.
- Ezzati, M., Horwitz, E. M, Thomas, D. S. K., Friedman, A. B., Roach, R., Clark, T., Murray, C. J. L. "Altitude, Life Expectancy and Mortality from Ischaemic Heart Disease, Stroke, COPD and Cancers: National Population-based Analysis of US counties." *Journal of Epidemiology & Community Health*. (2001): DOI:10.1136/jech.2010.112938.
- Fellegi, Ivan. Statistics Canada, (September 1996): <http://www.statcan.gc.ca/pub/21f0016x/rural96/html/onefile-unfichier/4148134-eng>.
- Fiammetta, Rocco. *The Miraculous Fever-Tree. The Cure that Changed the World*. San Francisco: Harper Collins, 2004.

Figueiredo, Elisabete. "O Sol na Eira e a Chuva no Nabal – Que rural propõem as políticas de desenvolvimento," *V Colóquio Hispano-Português de Estudos Rurais* (2003).

Figueiredo, Elisabete. "One Rural, Two Visions—Environmental Issues and Images on Rural Areas in Portugal," *European Countryside* 1, 1 (2009): 9-21.

Fleig, Karl. *Alvar Aalto*, translated by William B. Gleckmann. Zurich: Buchdruckerei Winterthur, 1965.

Fritz, Schmid. *Richard Neutra, Buildings and Projects*, translated by Werner Czapski. Zurich: Effingerhof A.G., Brugg, 1955.

Fuller, E. T. and Yolken, R.H. "Their Bugs are Worse Than Their Bite," *The Washington Post*, April 3, 2005, B-01.

Gadrey, Jean. "Is The Concept of Economics Growth Autistic." *Post-Autistic Economics Review* 11 (March 2001): <http://www.paecon.net/PAERreview/wholeissues/issue11.html>.

Gallery Kovacs, Maureen. *The Epic of Gilgamesh*. Stanford: Stanford University Press, 1989.

George, Lianne. "Kids, Come Back!" *Maclean's*, November 29, 2004, 58-59.

Gourgoulouianis, K., Brelas, N., Hatziparasides, G., Papayianni, M., and Molyvdas, P. The Influence of Altitude in Bronchial Asthma." *Archives of Medical Research* 32, 5 (2001): 429-431.

Gregory, D. *The Dictionary of Human Geography: Edition 5*. Chichester: Wiley-Blackwell, 2009.

Gribble, F. *The Story of Alpine Climbing*. London: George Newnes, Ltd. Southampton Street, Strand, 1904.

Haldenby, Rick. "Lecture Notes on Hadrian's Villa." *Lecture at Hadrian's Villa - University of Waterloo Rome 4B Program*, Tivoli, Italy, September 2007.

Hazell, Peter. "The Green Revolution," *Oxford Encyclopedia of Economic History* (2003).

Healy, John, *Pliny the Elder on Science and Technology*. Oxford: Oxford University Press, 1999.

Hertle, Peter and Wegerhoff, Erik. *Architecture and Identity*. Berlin: Lit Verlag, 2008.

Hespanha, Pedro. "The Dynamics of Globalization: Social Crisis and Conflict in Portuguese Rural Areas," *Centro de Estudos Sociais Oficina do CES* 85 (1996): 1-17.

Instituto Nacional de Estatística (Statistics Portugal). "Resultados Preliminares 2011." http://www.ine.pt/scripts/flex_v10/Main.html.

International Soccer Network, "Hysteria in Covilha for the Portugal National Team," <http://www.internationalsoccernetwork.com/Gaspar5.html>.

Interpretation Centre of the Serra da Estrela (CISE). *Plantas Aromáticas e Medicinais do Parque Natural da Serra da Estrela: Guia Etnobotânico*. Seia, Portugal: CISE, 2011.

Jackson, Danny. *The Epic of Gilgamesh*. Wauconda: Bolchazy-Carducci Publishers, 1992.

Johnston, Matthew. "Industry of Leisure: Tourism Culture and Design." *Master diss., University of Waterloo*, 2002.

Karagulle, Z. "Medical Hydrology, Balneotherapy, Thalassotherapy and Therapy: Understanding How Research which Validates Spa Therapies can Greatly Increase your Bottom Line." *Lecture presented at the Global Spa Summit, Interlaken, Switzerland*, May 2009.

Klein, Naomi. *The Shock Doctrine: the Rise of Disaster Capitalism*. New York: Metropolitan Books/Henry Holt, 2007.

Kneipp, Sebastian. *A Legacy to The Health and the Sick*. London: H. Grevel & Co., 1896.

Koehler, Christopher W. "Consumption, The Great Killer," *Modern Drug Discovery* 5, 2 (2002): 47-49.

LeCorbusier, *The Modular*, trans. Peter de Francia and Anna Bostock. Basel: Faber and Faber, 1954.

Leet, Stephen. *Richard Neutra's Miller House*. New York: Princeton Architectural Press, 2004.

Lesparre, Daniel and Crespo, Eduardo. *A Herpetofauna do Parque Natural da Serra da Estrela*. Seia: CISE, 2008.

Live Strong. "High Altitude Athletic Training." <http://www.livestrong.com/article/90441-high-altitude-athletic-training/html>.

Lund, John. "Spas and Balneology in the United States." *Geo-Heat Centre: Quarterly Bulletin* 16 (2003): 1-3.

Macmillan, Sebastian. *Designing Better Buildings: Quality and Value in the Built Environment*. London: Spn Press, 2004.

Manteigas-Trilhos Verdes. "Glacier Route." http://www.manteigastrilhosverdes.com/en/uploads/pr_6_mtg_ing.pdf.

- Marques, Helena. "Research Report: Searching for Complementarities Between Agriculture and Tourism – the Demarcated Wine-producing Regions of Northern Portugal," *Tourism Economics* 12, 1 (2006): 147-160.
- Marques, J.E., Marques, J., Chaminé, H.I., Afonso, M. J., Carreira, P.M., Fonseca, P.E., Cabral, J., Monteiro Santos, F.A., Vieira, G.T., Mora, C., Gomes, A., Teixeira, J., Samper, J., Pisani, B. J., Aguiar, C., Gonçalves, J.A., Almeida, P.G., Cavaleiro, V., Carvalho, J.M., Sodré Borges, F., Aires-Barros, L., Rocha, F.T. (2005). "Hydrogeological Study of a High Mountain Area (Serra da Estrela, Central Portugal): a Multidisciplinary Approach," *Cadernos Lab. Xeol. Laxe, A Coruña* 30 (2005): 145-166.
- Maslanka, Jadwiga. "Demographic Changes in Portugal at the Turn of the 21st Century," (Master's thesis, Nicolaus Copernicus University Torun, 2007) p.92.
- Matz, H., Orion, E., and Wolf, R. "Balneotherapy in Dermatology," *Dermatology Unit, Kaplan Medical Center* 16 (2003).
- McCoy, Esther. *Richard Neutra*. New York: George Braziller, Inc., 1960.
- Metcalfe, Richard. *Life of Vincent Priessnitz*. London: Simpkin, Marshall, Hamilton, Kent & Co. Ltd., 1898.
- Michel, F. B., Cour, P., Quet, L., and Marty, J.P. "Qualitative and Quantitative Comparison of Pollen Calendars for Plain and Mountain Areas." *Clinical & Experimental Allergy*, 6, 4 (1976): 383-393.
- Minder, Raphael. "Portugal Agrees to a \$116 Billion Bailout." *The New York Times*, May 3, 2011, B1.
- Mitten, Denise. "The Healing Power of Nature: The Need for Nature for Human Health, Development, and Wellbeing." *Paper presented at the 150 Year International Dialogue Conference Jubilee Celebration*, North Troendelag University College, Levanger, Norway, September 14-19, 2009.
- Município de Manteigas. *Diagnóstico Social*. Manteigas: Câmara Municipal de Manteigas, 2004.
- Museus de Cordoba. "Arab Baths of Caliphate Alcazar." <http://www.artencordoba.co.uk/MUSEUMS/Museums-Cordoba-Arab-Baths-Caliphate-Alcazar.html>.
- Norberg-Schulz, Christian. *Genius Loci, Towards a Phenomenology of Architecture*. New York: Rizzoli, 1980.
- Palmer, R. "In this our Lightye and Learned Tyme: Italian Baths in the Era of the Renaissance," *Medical History Supplement* 10 (1990): 14-22.
- Pereira, S., Mantino, F., Fagiani, P., and Tarangioli, S. "Country Profile on Rural Characteristics, Portugal – Assessing the Impact of Rural Development Policies (incl. LEADER)." *National Institute of Agricultural Economics* 7 (2008): 2-33.
- Phillip, Sharon, Hunter, Colin and B., Kristy. "A Typology for Defining Agritourism," *Tourism Management* 31 (2010): 754-758.
- Potts, D.T. *Mesopotamian Civilization, the Material Foundations*. London: Athlone Press, 1997.
- Price, L. W., *Mountains and Man: a Study of Process and Environment*. London: University of California Press, 1981.
- Quinta do Pomarinho. "Turismo Rural Alto Alentejo." <http://www.pomarinho.com/alentejo-portugal/.html>.
- Quintela, J. A., Corriea, A. G., and Antunes, J. G., "Service Quality in Health and Wellness Tourism – Trends in Portugal," *International Journal of Business, Management and Social Sciences* 2, 3 (2011).
- Região de Turismo da Serra Estrela. "Serra da Estrela, More than a Mountain." www.rt-serradaestrela.pt.
- Rossi, Aldo. *The Architecture of the City*. Cambridge: Oppositions Books, 1982.
- Russell R. and Paterson M. "Ganoderma- A Therapeutic Fungal Biofactory," *Phytochemistry* 67, 18 (2006): 1985-2001.
- Sanner, Burkhard. "Baden-Baden: A Famous Thermal Spa with a Long History," *Geo-Heat Center: Quaterly Bulletin* 21, 3 (2000): 16-22.
- SOL. "Serra da Estrela: Souto de Moura Promete Recriar 'Serenidade Monumental' Na Futura Pousada." http://sol.sapo.pt/inicio/Cultura/Interior.aspx?content_id=16233.
- Spieksma, F., Zuidema, P., and Leupen, M., "High Altitude and House-dust Mites." *British Medical Journal*, (1971): 82-84.
- St. Louis, R. *Portugal*. Singapore: Lonely Planet Publications Pty. Ltd., 2007.
- Stanislawski, Dan. *Landscapes of Bacchus; The Vine in Portugal*. Austin: University of Texas Press, 1970.
- Steele, James. *Salk Institute*. London: Phaidon Press Limited, 1993.
- Sternberg, Esther. *Healing Spaces: The Science of Place and Well Being*. Cambridge: First Harvard University Press, 2010.
- Storti, Maristella. "Il Paesaggio Storico delle Cinque Terre." *PhD diss.*, Firenze University, 2004.
- Stove, R. J. "A Patriot for Portugal" Review of Salzar: Apolitical Biography by Filipe Ribeiro De Meneses. *The Remnant*, May 31, 2010, 1516.
- Sukhdev, Sandhu. "Last Train Home: Interview with Lixin Fan." *The Telegraph*, February 4, 2011.

- Swanner, Grace Maguire. *Saratoga – Queen of Spas*. Utica: North Country Books, Inc., 1988.
- Táboas Daniel and Casteleiro André, “The Portuguese “Estado Novo”: Programmes and Hindrances for Agrarian Modernization (1933 – 1974),” in *Fascism and Agriculture, Santeiago de Compostela: Proceedings of the Conference held at the University of Santiago*. Santiago: University of Santiago de Compostela, 2011.
- Teixeira, Carlos and Da Rosa, Victor M.P. *The Portuguese in Canada – Diasporic Challenges and Adjustments*. Toronto: University of Toronto Press, 2009.
- Time Magazine World. “Letter From Sardinia: Something in the Air.” <http://www.time.com/time/magazine/article/0,9171,338592,00.html>.
- U.S. Geological Survey. “Earthquake Hazards Program.” http://earthquake.usgs.gov/learn/topics/faults_east.php.
- United Nations Educational, Scientific and Cultural Organization. “World Heritage List.” <http://whc.unesco.org/en/list>.
- University of Delaware. “Human Benefits of Green Spaces.” http://ag.udel.edu/udbg/sl/humanwellness/Human_Benefits.pdf.
- Unwin, Simon. *Twenty Buildings Every Architect Should Understand*. New York: Routledge, 2010.
- Van Tubergen, A., Van der Linden, S. “A Brief History of Spa Therapy,” *Annals of the Rheumatic Diseases: The EULAR Journal* 61, 3 (2002): 273-275.
- Ventura-Lucas Maria Raquel, Marques Carlos, de Belem Martins Maria, and Fragoso Rui. “Portuguese Agriculture and its Role in Multifunctional Rural Development.” *Applied Studies in Agribusiness and Commerce* (2011): 39-46.
- Vieira, G., Jansen, J., and Ferreira, N. “Environmental Setting of the Serra da Estrela, Portugal: a short-note,” *Landscape Ecology Series* 21 (2009).
- Vieira, Gonçalo. “Combined Numerical and Geomorphological Reconstruction of the Serra da Estrela Plateau Icefield, Portugal,” *Geomorphology* 97 (2008): 190-207.
- Wageningen University. “Enlarging Theoretical Understanding of Rural Development.” http://www.rso.wur.nl/NR/rdonlyres/713DAFEA-B959-4165-8BDF-9E6F67756999/108004/D_44__D_43_IT_Lunigiana_CSA.pdf.
- Wikipedia. “Humorism” <http://en.wikipedia.org/wiki/Humorism/html>.
- World Health Organization. “Traditional Medicine.” <http://www.who.int/mediacentre/factsheets/fs134/en/index/html>.
- World Heritage Convention. “Prehistoric Rock Art Sites in Côa Valley and Siega Verde.” <http://whc.unesco.org/en/list/866.html>.
- World Tourism Organization (UNWTO). “World’s Top Tourism Destinations.” http://www.unwto.org/facts/eng/pdf/indicators/ITA_top25.pdf.
- Yegül, Fikret. *Bathing in the Roman World*. New York: Cambridge University Press, 2010.
- Yegül, Fikret. *Baths and Bathing in Classical Antiquity*. New York: The MIT Press, 1995.
- Yurtkuran, M., Alp, A., Nasircilar, A., Bingol, U., Altan, L., Sarpdere, G., “Balneotherapy and Tap Water Therapy in the treatment of Knee Osteoarthritis.” *Rheumatol International* 27, 1 (2006): 19-27.
- Zangara, A. “The Psychopharmacology of Huperzine A; An Alkaloid with Cognitive Enhancing and Neuroprotective Properties of Interest in the Treatment of Alzheimer’s Disease,” *Pharmacology Biochemistry and Behavior* 75, 3 (2003): 675-686.
- Zubieta-Calleja, G., Paulev, P. E., Zubieta-Calleja, L. Zubieta-Castillo, G., “Altitude Adaptation Through Hematocrit Change,” *Journal of Physiology and Pharmacology* 58, 5 (2007): 811–818.
- Zumthor Peter and Hauser Sigrid. *Peter Zumthor, Therme Vals*. Zürich: Scheidegger & Spiess, 2007.

APPENDIX A

A Translation of the Legend of Manteigas

THREE REALITIES IN A LITERARY FANTASY

(Regional Legend of the Serra da Estrela)

By: Jose Baptista Duarte Lucas

Manteigas, Portugal – July 1979

Fantasies that have fed a foolish period of my life motion me for a few moments to celebrate the colourful images, which still survive and relive, with certain nostalgia, a few hours of my youth. The story starts at a pleasant and warm month in June. The village's youth gathered with an overflowing joy in preparation of a delightful evening. The romanticism of this evening was still filled with the scents of spring. The streets began to be filled with clouds of smoke, as a strong scent of burned brushes broke through from inside of the local houses. On the eve of *São João*, it was characteristic to smell lavender mixed with touches of the tambourine, hear people singing, and see middle-aged woman sitting by their doors continuing the tradition of dwelling on a nostalgic past. One could not pass without partaking in the festivities and bonfires of *Praça da Louça*. I returned home by midnight or so, more than a decent hour to dwell on a night like that of *São João* in those days. However, rest is not compatible with the bustle of the streets. Thus, I sit at my bedroom window and breathe in the smell of burnt rosemary that comes from the fire that burns in the village square outside my window. Outside people whirl around, inspired by the dance music of the triangle and the castanets, the people sing excitedly:

*There is thick bush to burn people,
São João is upon us, fireworks to the air;
As each Manuel has his Maria
Each Maria has her Manuel.*

As the flames flickered, boys jumped the fire. Eventually, the fire died out and only rosemary remained, but without reducing their excitement of dance, the people's refrain was repeated:

There is thick bush to be burnt people!

Finally the dance ended, but the lively animation resumed. The rush of music accompanied with triangles, castanets and tambourines continued to make noise and people could be heard singing popular praises to São João full of symbolism! From my window I follow the march of people as they drowned the sorrows of everyday life with songs. Now, I can hear only in the distance, the fluttering of the songs that climb down the side of the village slopes. Gradually the attention disappeared from here, leaving me in contemplation of the moon that sprinkled over the dew of São João, forced by the rays of a half-moon that sank to the west along the peak of Fraga Cruz. The last rays of the moon penetrated into my room, producing magical effects over the rooftops of the village houses. Some quick moments more, and the moon disappeared over the summit plateaus. It got me contemplating the contours of the Serra, now well defined in light sprinkled across the ridge.

And so... in this state of contemplation of the Mountain and the Stars, I remembered the "Legend of the Serra da Estrela" by Gentil Marques, full with symbolism and poetry and depiction of a star that shines every night more intensely over the Mountain. I then start to recite quietly the famous sonnet of Eugenio de Castro, "The Council of the Star."

*Before heading to bed I close the window,
As I am used to always sleeping in the dark.
But when closing it, I am told by the heights
A small golden star:
- Will you sleep with a night so beautiful?
- Do you not see how we shine so pure?*

When you die you will have the darkness that you search for.

- So much so ... that you will tire of it!

- Sleep to forget ... but otherwise,

- Stare at us well with those mild eyes.

- What is sleep, but to die a little?

- Live! Enjoy life, poor fool!

- Look, because soon you will stop seeing us!

In this state of contemplation sleep overcomes me and I fall asleep. Tonight, an old vision escapes through the window left ajar and a dream takes hold of me.

In my dream I find myself alone on a plateau of a summit of a very high mountain. It's late afternoon and the sun is sinking towards the west. A slight breeze caresses my face and the air that I breathe in instils in me a strange vigour that encourages me to search a region full of great natural wonders. The breeze carries me on its wings as I continue in my quest to explore the mountainous landscape. I descend deep valleys and climb cliffs and massive forests of an incomparable greatness! I then overcome awful pits, deep gorges, and hard granite rocks. I then skirt a pond and quench my thirst in fountains of crystal clear water. I then venture off and at the base of an enormous cliff, at the bottom of a long valley, I see a small volume of gushing water to the surface from the rock. Further down the valley, the tiny flow of water meets a big spring whose waters the cattle use to bath in and to quench their thirst. At the foot of the mountain I see warm waters flowing where people bath hoping to recover movement to their limbs that have been paralyzed by serious diseases. I then ascend up the valley slopes, the weather very quickly transforming to the cool of the afternoon. Once again, I find myself again at the summit of the mountain. At the top everything I see is full of natural beauty. By now, the sun has disappeared below the horizon; the night takes over, jealously hiding all the beauty of the world.

As darkness falls, the slopes of the valley start to echo with sounds full of great mystical tinkling of bells blended with sharp whistles of cow herders and the strong barking of cattle dogs. The atmosphere on the mountain now shifts towards a rustic pastoral landscape full of rare beauty. The breeze is cooler now, and a thin air penetrates my face and hands. As night falls, the stars begin to light up throughout the sky. Among the many stars, one flickers more pronounced, shining brighter than all the others. I stay awhile under the moonlight, but soon I start to look for shelter for the night. I find a cavity within the rock mountain. As I enter the cavity, I quickly encounter to my horror two lights being projected from the bottom of the cave. Soon I hear a loud and prolonged howl that shocks my ears! I am full with fear now. I start to run as fast as I can, stumbling at every step, until I no longer have strength to move. I then fall lifeless...

I then wake up to a sound of a melody that comes down from up high! I gather the strength to look up. I then see a star directly above me that shines more than all the others. As my vision becomes clearer, I see with astonishment that this star has a child's face! I am confused and delighted, but still not yet quite relaxed from the scare of the cave. The child's face then smiles at me and, with a gentle child's voice says:

- Do not be afraid, no harm can occur to you.

- I'm the queen of the Mountain, and the elements and animals all obey me blindly ...

- Recompose and regain peace and calm.

The star told me a story of a shepherd who one day had his domain over the Mountain. The shepherd was guided to the Mountain from afar by the star, and here they both ruled, giving the hills the name *Serra da Estrela* (Star Mountain). The star then narrated to me the historical facts of a distant past that unfolded on the *Serra da Estrela* starting with the struggles waged between the Visigoths and the Moors, followed by the exploits of Viriatio and the Lusitano people against the Roman legions who came to occupy. The star also told me of buried treasures, among others seven thousand guineas in gold along the *Poio of Leão* that is jealously kept within the

earth! The star then told me the story of the local Moorish Emir who was lord of these limits, and his daughter Fatima, who was more beautiful than any that had existed on these sites. Then suddenly, the star stopped and waited for me to speak.

In my bewilderment I told the star of my admiration for all that I had heard and what I've seen through the hills and the valleys that I had traversed. I finally asked the star to tell me who had been responsible for implementing this majestic natural beauty that I had so much admiration for. Who is responsible for the bubbling fresh water from the slopes and the mysterious hot springs that flowed, down there at the foot of the mountain? Who made so pure and healthy air to breathe; that upon inhaling it, it restores so much strength and vigour?

The star's childlike face then took on an Angel, smiled again, and continued to speak to me.

You see, after the work of Creation, the Creator saw that Heaven and Earth, light and darkness, water and animals, Man, and everything else that exists in the universe was made perfect, so on the seventh day, he decided to take a rest.

The star tells me that riding on a chariot of fire headed by a legion of angels, God traveled through the clouds full of thunder and lightning on a mission to find a relaxing place to rest. As God passed through the sky, he saw the work that was created and upon seeing a vast plain stretching across the top of Serra, he ordered that tents be lifted here, and the site became his resting place on the seventh day. Soon temples and altars arose on three large golden thrones where the Eternal Trinity of love was set for the countless legions of the heavens. All the buildings were of solid gold, and so we still find the name *Penhas Douradas* (Golden Cliffs), which today are a few large boulders that are nothing more than charred, remains of columns of a majestic temple that once stood. After the camp was raised, the three great thrones of gold remained in defiance to snows and storms. Today, huge cliffs called *Cantaro Gordo*, *Cantaro Magro*, and *Cantaro Raso* can be seen exactly where the great thrones of gold once stood. The mountain rocks known as *Altar*, was exactly where the Creator, was offered sacrifices of calves and lambs brought from the fertile grazing pastures. The many ponds that are scattered on the Serra were once places where the Angels purified their wings.

After resting on the plateaus, God ordered the lifting of the camp, but before leaving the site, he wanted to leave behind his Eternal presence. On the high pinnacle called *Fraga of Cruz*, in a gesture of magnitude, God outstretched his arms and gave three angels each a mission to fulfil with the speed of light. The first angel was ordered to shape the nature with wonderful lines that are now the wonderful panorama that the region offers. The second angel was asked by the Almighty to put fresh waters on the slopes at the bottom of a river valley and fertilize the adjacent soils. At the foot of the mountain, the second angel was tasked with injecting a source of hot water infused with the power to cure various diseases. Finally, God sent the third angel across the sky to cleanse the air with its wings so that the air on the mountain could restore and revive the body and the spirit. And so, a Trinity was created of natural richness, water, and pure air in permanent and eternal homage to the Trinity and God, the Eternal Creator.

Here ended the narrative path of the star. Eventually, the star gradually started losing brightness. When the star disappeared, I found myself alone again, on the plateau on the summit of a high mountain! At that moment I came to remember the howl of the cave, which seemed to hurt again and terrify my ears. I shuddered and woke up with my heart pounding. It took some time to regain composure, but after making sure that it was just a dream, I snuggled up tight in my bed. I then peer through the half-open window of my room and see a reddish crowning on the ridge overlooking the Serra. It is the high pinnacle called *Fraga of Cruz*, the gesture of magnitude where God once stood with outstretched arms to give three angels a mission that blessed the Serra da Estrela with natural richness, water, and pure air in permanent and eternal homage to the Eternal Creator.

APPENDIX B

Population Graphs

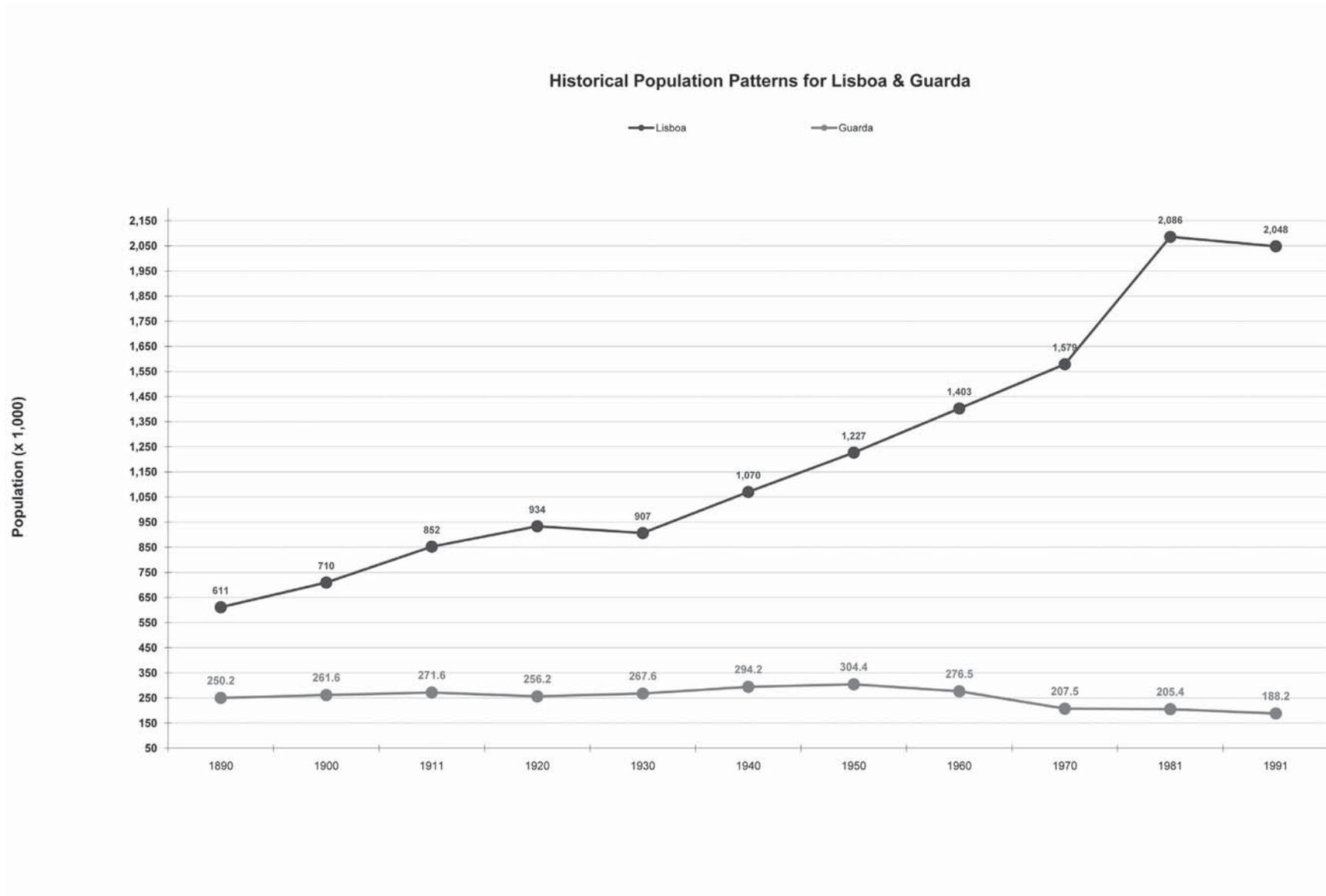


Figure B.1: Historical Population Patterns for Lisbon and Guarda.

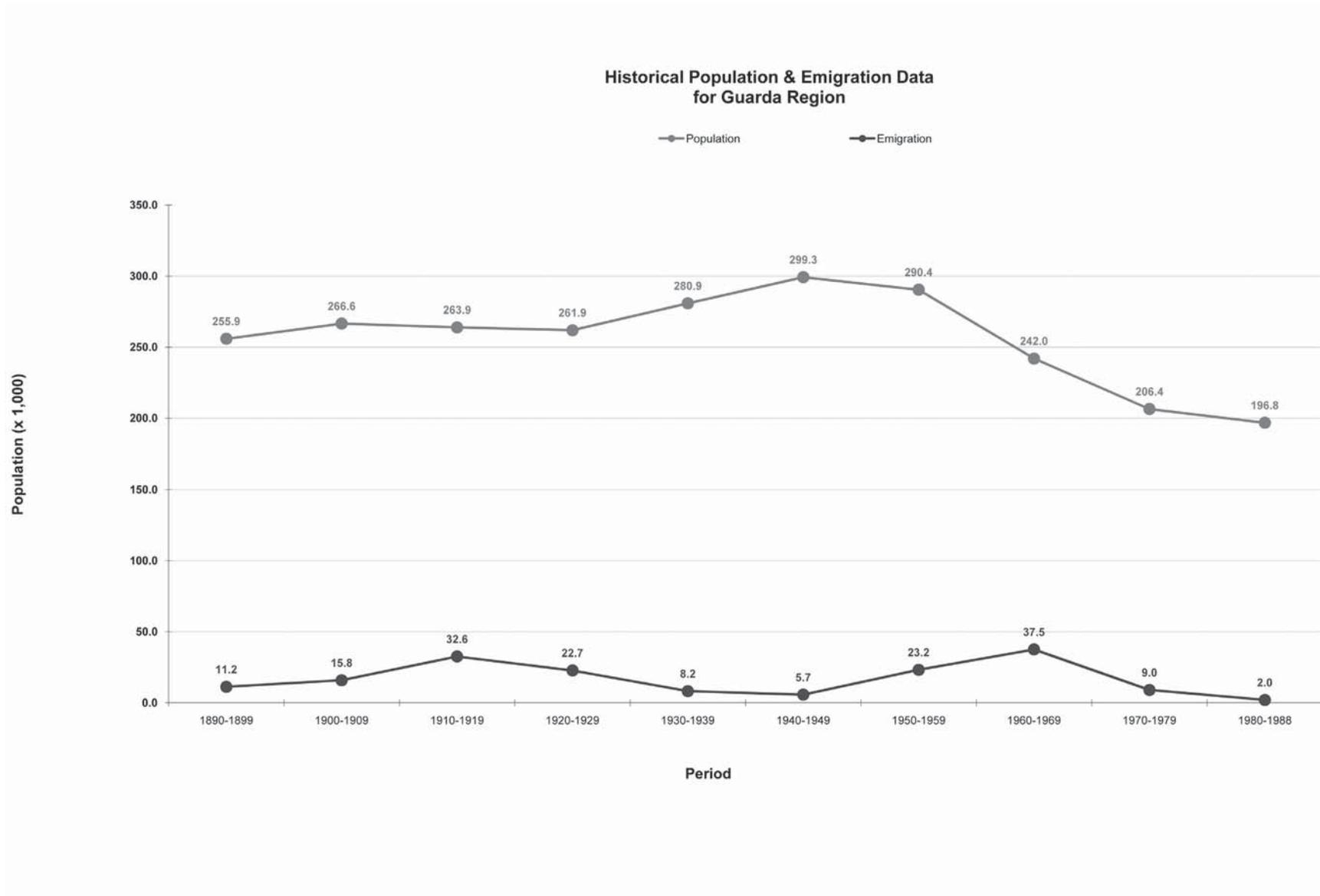


Figure B.2: Historical Population & Emigration Data for Guarda Region.

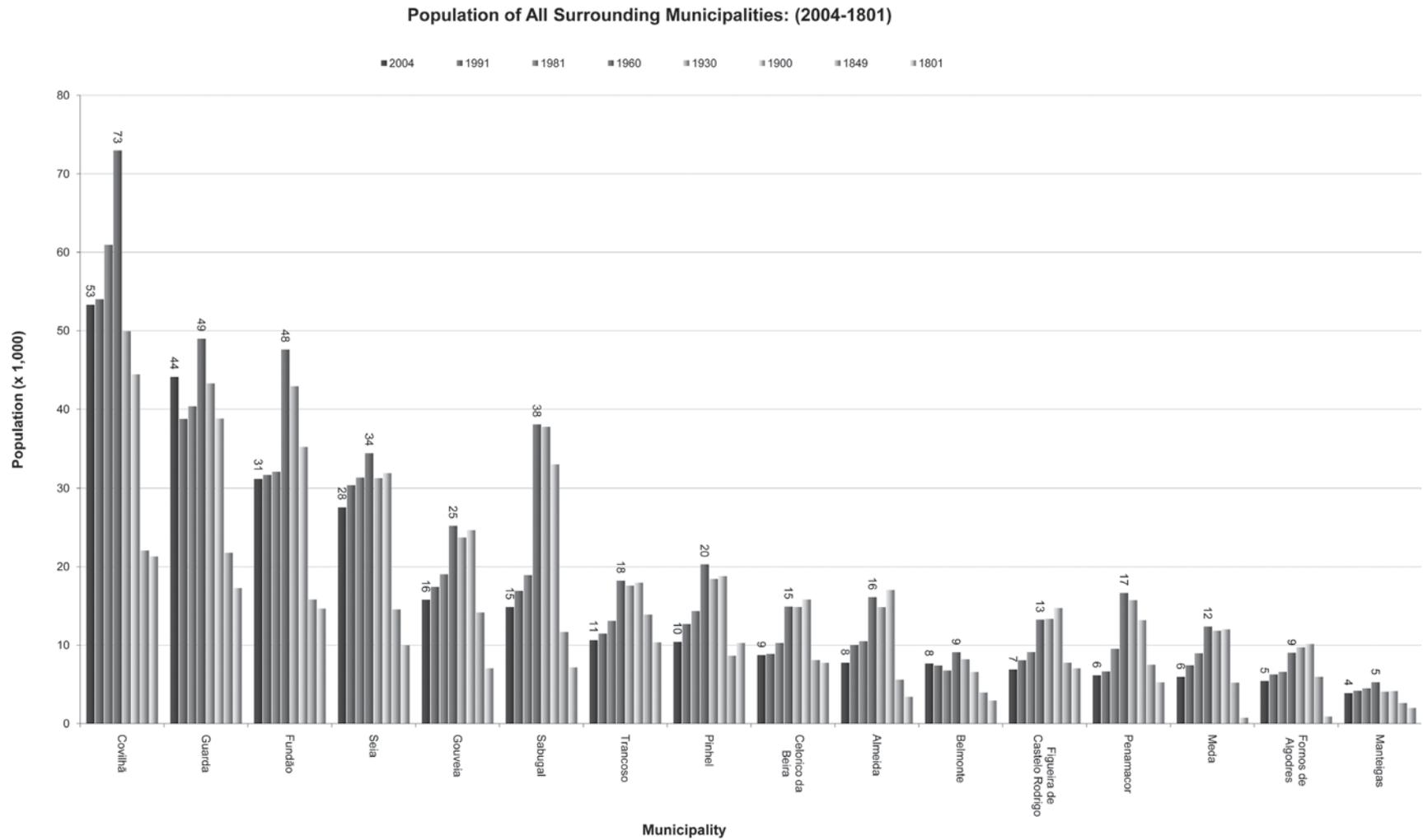


Figure B.3: Population of All Surrounding Municipalities; (current and peak population values shown).

APPENDIX C

Design Principles Summary Table

DESIGN PRINCIPLE	GUIDING STRATEGY	DESCRIPTION OF STRATEGY	PRECEDENT(S)	FULLFILMENT OF THE GUIDING STRATEGY BY THE PROJECT
Improve The Quality Of Life	Additional Employment Opportunities	<ul style="list-style-type: none"> Introduce programs that add permanent and temporary jobs. Employ a collaborative process where local professionals are included in the conception, construction, and operation phases of the architectural intervention. Provide an incentive for the local community to develop supporting businesses. 	<ul style="list-style-type: none"> Zumthor's <i>Thermae Vals</i> led to the creation of jobs both within the thermal bath facility, as well as in the adjacent hotel complex. The thermal baths also led to the development of additional jobs in the service industry in the village of Vals. 	<ul style="list-style-type: none"> The new facility will be dependent on the employment of professionals, technical staff, and support staff to operate both the research and treatment programs. The rural community can easily undertake many of the support staff positions within the operation of the project. Plants needed by both the treatment and research programs within the facility, and the local food products used in the restaurant and bistro will need to be supplied by the local community. This will create opportunities for the agriculture to become a productive industry again, and provide farmers interested in cultivating the local lands a renewed source of income.
	Generate Wealth from Local Resources	<ul style="list-style-type: none"> Use architecture to valorize local resources and use them towards the generation of wealth for the rural community. Incorporate local cultural and natural assets into the design. Add wealth to the community by increasing value of local properties. Invest generated wealth in the upkeep of rural resources and rural infrastructure. 	<ul style="list-style-type: none"> In the <i>Cinque Terre</i> precedent the five distinct rural villages are the local resources that attract tourism and generate wealth for the Liguria region. Wealth is generated from the sale of ferryboat and a train line tickets that bring tourists to the <i>Cinque Terre</i>. This wealth is then used to maintain the pedestrian trail that connects the five villages, the terraced farms, and the infrastructure of each village. 	<ul style="list-style-type: none"> In Manteigas, it is the trinity of natural treasures (rich biodiversity, thermal water, and clean high-altitude air) that are used by the architectural intervention to generate wealth. These three local resources are deemed to be of rare quality and are marketed through various experiences provided by the intervention. Treatment and research centers allow for generation of new wealth by providing new employment opportunities. The architecture celebrates the availability of water and finds ways that allow locals to experience this unique resource by creating public bath spaces. The siting of the project is very strategic. The building positions itself as a bridge over the Zézere River (the town's greatest natural resource). At the core of this project is a 'nature courtyard' that seems to slip underneath the building. The 'nature courtyard' can be used as a venue for rural events such as displays and outdoor rural fairs to generate wealth.
	Advance the Sense of Belonging	<ul style="list-style-type: none"> A more qualitative improvement in the quality of rural life coming from the establishment of a sense of belonging and regional pride. The project intervention improves the sense of belonging by providing spaces for collective gathering and social events. Promotion of rural products. 	<ul style="list-style-type: none"> In Vals, the endogenous vision for a thermal spa and its ultimate success has created local pride and has increased the sense of belonging among the rural population. In the Liguria region, the sense of regional belonging comes from the successful union of five distinct villages where collective collaboration has created a climate of 	<ul style="list-style-type: none"> Project intervention fully integrates the participation of the local community by extending the research space to include local agriculture. The 'Community Exchange' program also strengthens the sense of belonging by providing opportunities for local participation from farmers and offering various training and monetary incentives in return. Building offers several spaces for group gatherings, for a

DESIGN PRINCIPLE	GUIDING STRATEGY	DESCRIPTION OF STRATEGY	PRECEDENT(S)	FULLFILMENT OF THE GUIDING STRATEGY BY THE PROJECT
			<p>reinvesting wealth generated from tourism in the maintenance of the authentic and genuine local experiences.</p> <ul style="list-style-type: none"> ▪ The sense of belonging is also strengthened through collective promotion of regional wine, pesto, and olive based products. 	<p>variety of purposes: an inviting large lobby and lounge area, exhibition space, auditorium, library, classrooms, meeting rooms, group treatment studios, etc.</p> <ul style="list-style-type: none"> ▪ The outdoor pool is a space that can be easily transformed into a stage for hosting cultural events (because of it's central location and visibility from other outdoor spaces within the project).
	Improve the Potential of the Local Community	<ul style="list-style-type: none"> ▪ Improvement in the quality of life through training and employment opportunities that allow for improvement of the human potential of the rural inhabitants. ▪ Intervention project allocates spaces for learning (i.e., classrooms, workshops, and lecture halls). 	<ul style="list-style-type: none"> ▪ Both the <i>Thermae Vals</i> and the <i>Cinque Terre</i> precedents point to revitalized rural areas where the local population has more opportunities to improve their potential through training and employment. 	<ul style="list-style-type: none"> ▪ Within the research area there are various learning spaces (classrooms, lecture halls, workshops, library – all of which are open to the public). These facilities will be utilized to offer training opportunities to the local community on the theme of natural healing, foreign language, and computer skill development. ▪ The vision is to engage the local community through education and discussion. In return for training, participants will be required to contribute back to the local community through various rural development initiatives. ▪ Community Exchange program introduced by the project intervention is meant to spur greater community involvement on the research side. This will lead to greater learning and employment opportunities for the local inhabitants that can be directed towards the collective community goal that sees Manteigas as a place for natural healing.
	Protect and Improve the Health of the Local Community	<ul style="list-style-type: none"> ▪ Project intervention to be themed on the idea of providing healthy lifestyles. 	<ul style="list-style-type: none"> ▪ The <i>Cinque Terre</i> precedent serves as an example of a region that protects the health and wellbeing of the community by providing food products that are free of chemical fertilizers. This has elevated the status of the local organic produce both within and beyond the region. ▪ The pedestrian trails that link the <i>Cinque Terre</i> promotes a more active lifestyle in the region. ▪ The Vals thermal baths provide an example of a rural population that has acquired an appreciation of alternative healing and therapy methods. 	<ul style="list-style-type: none"> ▪ The mountainous landscape and the underground tectonic forces provide a rural setting for locals to restore and renew their physical state by bathing in rejuvenating thermal pools. ▪ The central theme of this project is health and wellness. All therapy programs are made available to the local community. ▪ An atmosphere of active living created by the outdoor water pools, trails, outdoor courtyards, and green nature paths. ▪ Building making use of natural light. Solar and geothermal heating is included; mountain air is circulated throughout to provide a healthy working environment. ▪ Service rooms have secondary containment tanks to prevent water treatment chemicals impacting the local environment.

DESIGN PRINCIPLE	GUIDING STRATEGY	DESCRIPTION OF STRATEGY	PRECEDENT(S)	FULLFILMENT OF THE GUIDING STRATEGY BY THE PROJECT
	Promote Recreation	<ul style="list-style-type: none"> ▪ Situate on a site that includes access to local trail paths. ▪ Become an element along a recreational route. ▪ Include rest stations along the trail paths and include information stations. 	<ul style="list-style-type: none"> ▪ In Vals, the mountainous landscape and the underground tectonic forces provide a rural setting where people can restore and renew their physical state by bathing in rejuvenating thermal pools. ▪ The <i>Thermae Vals</i> baths also promote the restoration of the spiritual state by providing numerous rest areas that allow guests to absorb the sun's rays and enjoy a tranquil mountain setting full of restoring sounds and scenery. ▪ The <i>Cinque Terre</i> precedent provides a trail network that allows for leisure walks between five hidden villages contributing towards restoration of physical and mental wellbeing through movement and pleasant meandering in an inspiring rural area. 	<ul style="list-style-type: none"> ▪ Project is located on the Serra da Estrela Glacier Route, the project proposal will maintain this route and facilitate its access through the central courtyard. ▪ The project will engage the existing footpath network by providing visibility into the activities of research and treatment, as well as signage to highlight special vegetation and geological features found along the trail route.

DESIGN PRINCIPLE	GUIDING STRATEGY	DESCRIPTION OF STRATEGY	PRECEDENT(S)	FULLFILMENT OF THE GUIDING STRATEGY BY THE PROJECT
Prevent the Loss of Local Assets	Originate from Local Roots	<ul style="list-style-type: none"> Develop from something inherent in the local area and maintain the local values. Build a theme and identity around local historic, cultural and natural features. 	<ul style="list-style-type: none"> The Vals precedent is an example of a project that originates from the local natural resources (thermal waters) The thermal baths are integrated with the existing hotel infrastructure originally built in the 1960s. 	<ul style="list-style-type: none"> In Manteigas, the intervention emerges from the existing local assets (rich biodiversity of plants, therapeutic thermal waters, and clean mountain air). The vision of the project is to be in-line with the existing <i>genius loci</i> of the locale, making full use of the unique natural resources (waters for operation, granite rocks for construction, and fertile soils for cultivation of medicinal plants). The design is based on established man-made artifacts (town, roads, trout pools, etc), and incorporates socio-cultural needs into the design (areas of community social gathering, events and learning spaces).
	Utilize Local Materials	<ul style="list-style-type: none"> Incorporate local building materials into the project, as applicable. Design the project to be in harmony with its surroundings. Promote local building materials. 	<ul style="list-style-type: none"> In Vals, Peter Zumthor used locally quarried <i>Valser</i> quartzite stone, which has been used for centuries as roofing and building material in the region. This promoted a local material as something of high quality that has subsequently been sought after on other projects. 	<ul style="list-style-type: none"> When possible the design retains characteristics of the site and makes them prominent features, particularly the large granite boulders found on the site. Project incorporates the local water (thermal and natural spring) for its operation and as features of the design in the water gardens and cool water zone located on the outdoor pool. Project mediates the terrain so that it is in harmony with its surroundings The material palette is reflective of the local natural resources: granite stone, slate, and lumber from the local pine and Pyrenean oak forests.
	Celebrate Local Assets	<ul style="list-style-type: none"> Incorporate local assets in the design. Allow visitors to experience moments that reveal realities of the local community. 	<ul style="list-style-type: none"> The pedestrian trail in the <i>Cinque Terre</i> is successful because it celebrates five distinct villages, which are the main assets of the Liguria region. The local assets are also the premium grapes, olives and fruits grown on the surrounding sloped terraced farms. A journey on the pedestrian trail allows visitors to come into direct contact with agricultural lands where the region's produce is grown, bringing added appreciation of Liguria's high-quality produce. 	<ul style="list-style-type: none"> The building form itself becomes an icon that celebrates unique moments of the site by transforming from a simple square to respond to the main site conditions (the fault line, the nature in the courtyard, the valley slopes, the Zêzere stream, and the existing trail). Areas where one can experience the unique local water becomes a place where the local asset of <i>water</i> is celebrated.

DESIGN PRINCIPLE	GUIDING STRATEGY	DESCRIPTION OF STRATEGY	PRECEDENT(S)	FULLFILMENT OF THE GUIDING STRATEGY BY THE PROJECT
	Create an Authentic Experience	<ul style="list-style-type: none"> ▪ Project needs to be original, sensitive and responsive to genuine qualities pertaining specifically to the local community. ▪ Preference given to the use of quality durable local materials vs. synthetic materials. 	<ul style="list-style-type: none"> ▪ The <i>Cinque Terre</i> precedent serves as a destination point for authentic experiences. The genuine quality of the rural villages is ensured through the restriction of foreign vehicular traffic in the villages. Furthermore reinvestments of proceeds from the sale of train and ferryboat tickets into the upkeep of each village, and the refurbishment of the connecting leisure trails and the terraced farms. 	<ul style="list-style-type: none"> ▪ The building has an original design founded on the specific characteristics of the site. The form is a morphed geometrical figure with a symbolic relationship to the local conditions/context. ▪ Building makes the most use of the available natural light by incorporating strategic openings on the elevation, including skylights and walkouts to roof top terraces. ▪ Design provides unique experiences of the landscape that are not possible without the existence of this project: bathing in outdoor pools that overlook the town and the valley year round, roof gardens, water pool gardens, outdoor courtyard, and viewing platforms.

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<p>Establish a Healthy Rural Economy</p>	<p>Diversify the Rural Economy</p>	<ul style="list-style-type: none"> ▪ Two or more additional industries introduced by the intervention that compliments each other. ▪ The project supports diversification of the local economy by introducing new economic sectors. 	<ul style="list-style-type: none"> ▪ The Vals precedent provides an example of existing agricultural industry being supplemented by recreational tourism. <ul style="list-style-type: none"> ⇒ In the early 20th century mountaineering and skiing came to the region, diversifying the rural agricultural economy. By the 1960s a hotel complex was built allowing the ski industry to further develop in Vals, allowing for extended stays in the area. ⇒ Zumthor's thermal spas further strengthened the tourism sector by using the therapeutic waters of Vals to offer additional leisure/recreation experiences to tourists. ⇒ The introduction of the thermal spas brought additional benefit to a rural economy by allowing the agricultural industry to further promote the local dairy products and further develop agritourism in Vals. 	<ul style="list-style-type: none"> ▪ The proposed intervention combines research and treatment, introducing new sectors to the rural economy. ▪ The intervention aims to strengthen the agricultural sector, significantly develop the existing recreational tourism in the area, and make Manteigas into a regional hub for scientific research and alternative medical treatment. ▪ Research and treatment industries in the context of this intervention are dependent on the availability of local natural resources such as plants and water (requiring sub-industries in agricultural production to form in order to support the main operations).
	<p>Strengthen the Agricultural Industry</p>	<ul style="list-style-type: none"> ▪ Agriculture continues to be the primary industry, thus a project intervention should find ways to strengthen it by making it an integral part of the programming. 	<ul style="list-style-type: none"> ▪ Vals serves as an example where a modern architectural intervention has indirectly strengthened local agriculture. <ul style="list-style-type: none"> ⇒ In the Vals valley one finds intact traces of traditional alpine farming consisting of spring and fall pastures where cattle and sheep graze. The setting also consists of large livestock barns and village enterprises where fresh alpine milk, cream, butter, yogurt and cheese are produced. ⇒ Zumthor's intervention has increased the number of tourists who upon spending time in the wellness spas supplement their experiences in Vals by undertaking walks on the valley's hiking trails. ⇒ The hiking trials bring tourists into contact with alpine pasture farming, increasing the likelihood that they will purchase the local high-quality dairy products. 	<ul style="list-style-type: none"> ▪ In Manteigas the design intervention mandates the reactivation of previously abandoned farming fields into extensions of the treatment and research programs. ▪ The intervention depends on locally grown crops for food served in the cafe and the lunch bistro restaurant included in the project. In addition, locally grown plants with medicinal properties are used in the research side of the intervention. ▪ Roof growing/testing laboratories and adjacent laboratory fields are included in the programming of the design. ▪ Deteriorating trout farms are converted into water gardens containing healing plants and are made an integral part of the experiencing a formal symbolic journey into the building. ▪ The outcome of the research conducted is aimed towards the development of productive industries that can expand over time. ▪ There are opportunities for reactivation of abandoned textile warehouses and factories remaining in the town as extension of the research/treatment programs.

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	Consider Research and Development Industries	<ul style="list-style-type: none"> ▪ The rural environment is undisturbed and rich with natural and historic elements where researchers routinely venture to in order to conduct field sampling and confirm scientific theories. ▪ Introduce appropriate facilities for Research and Development (if possible, in locations with high scientific interest). 	<ul style="list-style-type: none"> ▪ In the <i>Cinque Terre</i> precedent local actors have set up research farming laboratories at the local level to investigate natural biological techniques that will optimize the organic farming methods employed in the region. 	<ul style="list-style-type: none"> ▪ Project proposes a facility for research into natural healing methods that uses the surrounding landscape as the laboratory. ▪ The research portion of the complex provides spaces for scientists, researchers and other educated professionals to conduct laboratory experiments on/with medicinal plants found in the Serra da Estrela mountain range. ▪ Research and Development labs and lecture halls provided to attract professionals to the area who will not only work in the research centre, but also reside in the local community.
	Consider the Tourism Industry	<ul style="list-style-type: none"> ▪ Tourism is a growing industry as more people from emerging market nations embark in search of rural authentic regions. ▪ Architecture has the power to enhance the experience of the tourist. ▪ An experience in a rural area can be enhanced if the intervention project includes open public spaces for gatherings and supporting amenities (parking, rest rooms, coat rooms, reception areas, etc.). 	<ul style="list-style-type: none"> ▪ Both the Vals thermal spas and the <i>Cinque Terre</i> pedestrian trails serve as precedents of interventions primarily dedicated to providing authentic experiences to experienced contemporary travelers. ▪ Both precedents valorize local resources, ensuring their protection and promotion. ▪ The <i>Cinque Terre</i> precedent provides an example of agritourism – a specific type of rural tourism that is integrated into the agricultural estate, allowing visitors to take part in agricultural or complementary activities on the farm property. 	<ul style="list-style-type: none"> ▪ The project promotes health and wellness tourism. This is a growing industry that has the potential to attract people from abroad and is a growing industry that provides many financial benefits to the rural. ▪ The architecture of the project responds to a contemporary demographic by providing very welcoming, unique and comfortable experiences to all guests. ▪ Guests are encouraged to venture to the research wing, to become self-informed of the innovative and important medical work being conducted onsite.

DESIGN PRINCIPLE	GUIDING STRATEGY	DESCRIPTION OF STRATEGY	PRECEDENT(S)	FULLFILMENT OF THE GUIDING STRATEGY BY THE PROJECT
Establish a Long-Term Vision for the Rural	Provide a Stimulating Working Environment	<ul style="list-style-type: none"> Provide satisfying and engaging work environments. Design spaces to be prestigious to continually attract outsiders. Accommodate modern technological features in the program. 	<ul style="list-style-type: none"> The <i>Cinque Terre</i> precedent provides an example of a stimulating working environment where the local farmers interact with visiting tourists passing on the connecting pedestrian trails. Farms engage with visitors and convey their knowledge of the region and the organic growing methods that are employed. This in turn provides for a stimulating and encouraging working environment. 	<ul style="list-style-type: none"> Project has a modern research facility that features all necessary technological features, as well as spaces for comfortable work. All offices will have natural light, and views to outside. Lecture halls will allow for external professionals to come to the facility and present their findings. The design intervention is easily accessible by regional roads, and incorporates interior spaces for broadcasting lectures and conference discussions. Manteigas offers an attractive landscape where professionals who work within the project can reside in a stimulating environment.
	Provide Year-round Benefit to a Rural Community	<ul style="list-style-type: none"> Provide spaces that allow the project to be operational the entire year. Provide spaces that facilitate tourism activities. Allocate spaces for production activities. Allocate spaces for research and development activities. Provide occupants with comfortable work environments during all seasons. 	<ul style="list-style-type: none"> The thermal baths in Vals provide an example of an intervention that brings year-round benefit to a rural community. The spa's thermal pools are used by skiers visiting the region in the winter months and also by summer visitors who use the outdoor pools and sunbathe on the patio. 	<ul style="list-style-type: none"> Research and treatment programs designed to operate year-round. Reactivation of abandoned farm fields for use as growing outdoor laboratories for cultivating medicinal plants. Pools (including outdoor pool) to operate even in the winter months. Tourism, production, and research programs are incorporated. Building is sustainable and used geothermal heating from underground sources to allow operation during the colder winter months.
	Create an Atmosphere that Encourages New Businesses	<ul style="list-style-type: none"> Exclude essential program components. Limit the scale of other program components. Encourage local development. Encourage businesses to promote local products. 	<ul style="list-style-type: none"> Zumthor's <i>Thermae Vals</i> is dependent on services (dining out, accommodation) from the local village to support visiting tourists. The <i>Cinque Terre</i> precedent provides an example of a rural region where supporting service businesses have emerged to allow tourists an experience of tasting the quality <i>Sciaccheta</i> wine, pesto sauces, and olives of the region. 	<ul style="list-style-type: none"> Small convenient services (small-scale café, lunch bistros, gift shops, bookstores) are included in the design intervention to allow for a comfortable experience. All other service voids are to be filled by local entrepreneurial endeavors. Accommodation and services are expected to expand over time. Services in the facility are dependent on the supply (production of the local community) <ul style="list-style-type: none"> ⇒ Restaurant - Supported by locally grown foods. ⇒ Treatment - Supported by people from the local community.

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	Establish a Timeless Presence	<ul style="list-style-type: none"> ▪ A timeless presence is one where: <ul style="list-style-type: none"> ⇒ The design intervention is distinct and in harmony with the <i>genius loci</i> of the rural community. ⇒ The design intervention is constructed of durable, high-quality materials that have historically been used in the local community. ⇒ The design intervention embodies the values, culture and technology of the time while also incorporating forward looking programs and features. ⇒ Intervention project continues to inspire tourists long after visiting. ⇒ Design intervention is promoted and attracts visitors to the rural through "word of mouth" advertising. 	<ul style="list-style-type: none"> ▪ Zumthor's <i>Thermae Vals</i> presents a distinct design that is in harmony with the atmosphere of alpine leisure. ▪ The thermal bath established a timeless presence and harmony with the local surroundings through exclusive use of locally quarried Vals quartzite stone. ▪ The thermal bath is enduring because it makes use of the existing resources (thermal waters, local stone, and surrounding hotel infrastructure for accommodation). ▪ The <i>Thermae Vals</i> inspires visitors by providing a memorable modern spa experience that is mystical, sensual and of human scale. ▪ The design of the thermal bath in Vals continues to attract new visitors while also inspiring visitors long after their visit. 	<ul style="list-style-type: none"> ▪ Project is embedded in the local terrain. ▪ The design is envisioned as a permanent feature that incorporates durable high-quality local stone materials. ▪ The importance of the design arises from its conceptual foundation in a long history of regional geology, and in millennia of human recognition of natural healing modalities. ▪ Project aims to achieve a monolithic presence meant to mimic the exposed rock surfaces of the adjacent valley slopes and higher plateaus through use of local granite stone. ▪ Project acts as a register of the geological forces that have shaped and continue to shape the region, something that is unique and leaves an impact on the memory of the visitor.