

# Contents

<b>1 Spatial Science and Its Traditions.....</b>	<b>1</b>
1.1 What is Spatial Science?.....	2
1.2 The Place of the Spatial Science.....	4
1.3 Spatialized Disciplines.....	4
1.3.1 Spatial Science Beyond the Academy.....	5
1.4 The Scientific Method & Other Ways of Knowing.....	6
1.4.1 Empiricism.....	6
1.4.2 Logical-Positivism.....	6
1.4.3 Behaviouralism.....	7
1.4.4 Humanism.....	7
1.4.5 Structuralism and Post-structuralism.....	8
1.5 Organization of the Book.....	9
1.6 Closing Thoughts.....	9
References.....	10
<b>2 Literature Reviews.....</b>	<b>11</b>
2.1 The Process.....	11
2.2 Finding the Literature.....	12
2.3 Conceptual & Methodological Reviews.....	15
2.4 The Write Up.....	16
2.5 Narrowing.....	19
2.6 Differentiating the Purpose of the Literature Review.....	19
2.7 MA Thesis.....	20
2.8 Doctoral Dissertation.....	21
2.9 Articles.....	22
2.10 Review Articles.....	23
2.11 Conclusion.....	24
References.....	24
<b>3 Research Questions.....</b>	<b>27</b>
3.1 Importance of research questions.....	27
3.2 Identifying research questions.....	28
3.3 Qualities of an Effective Research Question and Hypothesis.....	31
3.4 Types of Research Questions.....	33
3.5 “Bonding” with One’s Research Objectives.....	35
3.6 Conclusion.....	36
References.....	36

<b>4 Data and Methods in Spatial Science.....</b>	<b>37</b>
4.1 Understanding Data.....	37
4.2 The Hierarchy of Data Sources.....	39
4.3 Quantitative and Qualitative Data.....	41
4.3.1 Intensive and Extensive Approaches in Spatial Science.....	42
4.4 Ethics in Data Collection.....	43
4.5 Sampling & Statistics.....	44
4.6 How to Present the Data & Analysis Portions of Your Study.....	45
4.7 Conclusion.....	46
References.....	46
<b>5 Graduate Degree Proposals.....</b>	<b>49</b>
5.1 Graduate Committee.....	49
5.2 Topic Selection.....	50
5.2.1 Proposals are Contracts.....	50
5.3 Graduate Proposal Structure.....	50
5.3.1 Literature Review.....	50
5.3.2 Methods.....	51
5.3.3 Expected Results and Conclusions.....	51
5.3.4 Preliminary Studies.....	51
5.4 Proposal Defense.....	52
5.4.1 Presentation.....	52
5.5 Conclusion.....	52
<b>6 Grants and Grant Writing.....</b>	<b>55</b>
6.1 Opportunity and Challenge.....	55
6.2 Extramural Grants and Funding Agencies.....	55
6.2.1 RFPs and NRAs.....	56
6.2.2 Proposal Review.....	56
6.2.3 Funding Cycles.....	57
6.3 Contracts.....	57
6.4 Sheltered Competitions & Earmarks.....	58
6.5 Intramural Grants.....	58
6.6 Grants and Contracts Administration.....	59
6.7 Proposal Structure.....	59
6.7.1 Project Summary.....	61
6.7.2 Introduction.....	61
6.7.3 Literature Review and Background.....	61
6.7.4 Methods.....	61
6.7.5 Expected Results.....	62
6.7.6 Budget and Budget Justification.....	62
6.7.7 References.....	62

6.7.8 CVs and Bio-sketches.....	63
6.8 Dissemination of Results.....	63
6.9 Final Agency Reports.....	63
6.10 How to Deal with Rejection.....	64
<b>7 Disseminating Research.....</b>	<b>65</b>
7.1 Traditional Formats.....	65
7.1.1 Presentations.....	65
7.1.2 Posters.....	67
7.1.3 Articles.....	69
7.1.4 Proceedings.....	71
7.1.5 Research Notes.....	71
7.1.6 Monographs.....	72
7.2 Emerging Venues.....	72
7.2.1 E-Journals.....	73
7.2.2 Working Papers & Technical Reports.....	73
7.2.3 Information Sharing.....	73
7.2.4 Illustrated Papers.....	74
7.3 Outreach.....	74
7.4 The Problem with Spatial Science Research.....	75
References.....	76
<b>8 Reflections on Proposal Writing in Spatial Science.....</b>	<b>77</b>
<b>9 Model Proposals.....</b>	<b>79</b>
<b>10 Thesis I: Human Systems-Qualitative.....</b>	<b>81</b>
10.1 Moving Uptown: Minority representations in a Chicago .....neighborhood.....	81
10.1.1 Theoretical framework: Social constructionism.....	81
10.1.2 Research objective: Identify inter-minority representations.....	85
10.1.3 Study area: Uptown neighborhood Chicago, Illinois.....	86
10.1.4 Methods: Data collection, fieldwork, and interviews.....	86
References.....	88
Reflection.....	89
<b>11 Thesis II: Human Systems.....</b>	<b>91</b>
11.1 Understanding Forestry Policies in Malaysia.....	91
11.1.2 Conceptual Framework.....	92
11.1.3 Research Questions.....	96
11.1.4 Research Methods.....	97
11.1.5 Feasibility assessment.....	100
References.....	100

Appendix I – Timeline.....	103
Appendix II – Budget.....	105
Reflection.....	106
<b>12 Dissertation I: Human Systems.....</b>	<b>107</b>
12.1 Regional Institutions, Scalar Shifts, & Emerging Networks.....	107
12.1.1 The transitional politics of community colleges.....	107
12.1.2 Hypothesis.....	108
12.1.3 Methodology.....	108
12.1.4 Positionality.....	112
12.1.4 Study Area.....	112
12.1.5 Literature Review.....	113
12.1.6 Summary.....	119
References.....	119
Reflection.....	121
<b>13 Dissertation II: Geo-Techniques.....</b>	<b>123</b>
13.1 Accuracy of Neural Network Classifiers/Humid Tropical Areas... 123	
13.1.1 Problem Statement.....	123
13.1.2 Limitations of current classifiers.....	124
13.1.3 Alternative classifiers.....	124
13.1.4 Special feature extraction.....	124
13.1.5 Adaptation to new sensors.....	125
13.1.6 Objectives and Hypotheses.....	125
13.1.7 Development of Neural Networks.....	126
13.1.8 Previous Knowledge of Neural Network Classifiers.....	128
13.1.9 Applications of Neural Networks/Trop.Land Cover Study.....	129
13.1.10 Study Area.....	130
13.1.11 Remotely Sensed Data.....	130
13.1.12 Hybridized Approach.....	136
13.1.13 Expected Results.....	137
References.....	137
Reflection.....	142
<b>14 Dissertation III: Physical Systems.....</b>	<b>143</b>
14.1 Variation in Wetland Stream Morphology.....	143
14.1.1 Literature Review.....	144
14.1.2 Methods.....	149
14.1.3 Specific Morphological Feature Comparisons.....	150
14.1.4 Evaluation Procedure.....	155
References.....	155
Reflection.....	158

<b>15 Extramural Grant I: Research.....</b>	<b>159</b>
15.1 The Maintenance of Genetic Diversity.....	160
15.2 The Evolution of Alternative Life-history Strategies.....	161
15.3 The Proposed Research.....	165
15.3.1 <i>General Method</i> .....	166
15.4 Significance.....	173
Timetable for the Project.....	174
References.....	174
Reflection.....	179
<b>16 Extramural Grant II: Instrumentation.....</b>	<b>181</b>
16.1 Acquisition of AISA+ Hyperspectral Sensor.....	181
16.1.1 Remote Sensing Technologies.....	181
16.1.1 Remote Sensing at Indiana State University.....	183
16.1.2 Current Research.....	184
16.1.3 Impact of Infrastructure Projects.....	189
16.1.4 Utilization Plan.....	192
References.....	193
Reflection.....	195
<b>17 Extramural III: Doctoral Dissertation Research Improvement Grant.....</b>	<b>197</b>
17.1 Long-term reconstruction of oak mast in the southern Appalachian region.....	197
17.1.1 Background.....	198
17.1.2 Research Objectives.....	200
17.1.3 Study Area and Methods.....	202
17.1.4 Significance of Research.....	204
References.....	204
Reflection.....	206
<b>18 Intramural Grants.....</b>	<b>207</b>
18.1 Abstract.....	207
18.2 The Politics of Weather: Voter turnout in Kentucky.....	208
18.2.1 Objective.....	208
18.2.2 Literature.....	209
18.2.3 Study Area.....	210
18.2.4 The Data.....	210
References.....	212
Reflection.....	213
<b>Index.....</b>	<b>215</b>