# Archaeology on the Apulian – Lucanian Border

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with contributions by

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Cover images:
View from San Felice (Site 223) towards the ridge of Lamiecelle. The Canadian excavation in the Roman villa on Site 229 is visible beyond the van, and the Masseria Vagnari in the middle distance;
back cover: Loomweight with seal impression of a bull-stag with monogram between the horns, from Site 813, No.1949 in the catalogue.

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# Contents

**Preface** ..... xi

**I. GENERAL INTRODUCTION** 1

1. Communications ..... 2
   i. Land routes ..... 2
   ii. The Bradano – Basentello river ..... 4
2. Three levels of focus ..... 6
   i. The Basentello valley survey (Our Survey Area) ..... 6
      Vagnari ..... 7
   ii. The Older Surveys ..... 8
      a. The Vinson Survey ..... 8
      b. The Chapman and Ammerman survey ..... 9
      c. The Aldridge survey ..... 9
      d. A comparison between the New and Older Surveys ..... 9
   iii. The Fossa Bradanica ..... 10
3. The limits to contextualizing ..... 11
4. Changes in land-use ..... 13
5. Climate and the environment ..... 14
6. Plague and malaria ..... 14
7. Periodization ..... 16

**II. THE BASENTELLO VALLEY FIELD SURVEY 1996–2008: AN OVERVIEW** 18

1. Methods ..... 18
   i. Findspots and sites ..... 21
   ii. Gridding ..... 21
   iii. Processing of finds ..... 22
   iv. Field-walking ..... 22
   v. Distorting factors and limitations of the Survey ..... 23
2. The results of the Survey ..... 24
   i. Changing settlement patterns ..... 24
   ii. Changes in land use in the Survey Area ..... 27
   iii. Off-Site scatter ..... 28
3. The crossing of the Basentello ..... 32
4. Table of site occupancy in our Survey Area ..... 32

**Chapter I. The Palaeolithic period** ..... 36
1. Middle Palaeolithic (ca. 300,000 – 50,000/40,000 BC) ..... 36
2. Upper Palaeolithic (ca. 50,000/40,000 – 10,000 BC) ..... 36

**Chapter II. The Neolithic Period** ..... 38
1. Chronology ..... 38
2. Climate and agriculture ..... 38
3. Neolithic settlements in the Fossa Bradanica and adjoining areas ..... 39

**III. DIACHRONIC INTERPRETATIONS** 39

   i. Early Neolithic settlements (ca. 6200 – 5600 BC) ..... 40
   ii. Middle Neolithic settlements (ca. 5600 – 4800 BC) ..... 43
   iii. Late Neolithic settlements (ca. 4800 – 4300 BC) ..... 44
   iv. Final Neolithic settlements (ca. 4300 – 4000 BC) ..... 45
4. The Older Surveys in the Fossa Bradanica ..... 46
   i. Classes of Neolithic pottery and their distribution within the Older Survey Areas ..... 48
      a. Impressed ware (Early/ Middle Neolithic) ..... 49
      b. Matera scratched ware (Advanced Early Neolithic/ Middle Neolithic) ..... 49
      c. Masseria La Quercia ware (Advanced Early Neolithic) ..... 49
      d. Red painted wares *(Ceramica a fasce rosse)* (Middle Neolithic) ..... 49
      e. Serra d'Alto ware (Late Neolithic) ..... 49
      f. Diana – Bellavista ware (Final Neolithic) ..... 49
      g. Unpainted *figulina* ware (Middle – Final Neolithic) ..... 49
   ii. Lithics on the Older Surveys ..... 49
   iii. Summary ..... 50
5. Our Survey Area ..... 50
   i. Wares, types, and the chronology of the sites ..... 50

ii. Site locations ..... 51
iii. Internal organisation ..... 53
iv. Site sizes and hierarchies ..... 53
v. Regional communications ..... 54
vi. Lithics in our Survey Area ..... 55
vii. Conclusions ..... 55

**Chapter III. The Eneolithic Period (Copper Age)** ..... 57
1. Climate, Settlement, Economic and Social trends ..... 57
2. Eneolithic in the Fossa Bradanica: the Older Surveys ..... 59
3. Eneolithic in our Survey Area: continuity and discontinuity ..... 60

**Chapter IV. The Bronze Age** ..... 61
1. Chronology ..... 61
2. The climate, the environment and the economy ..... 61
i. Stock-raising ..... 61
ii. Hunting ..... 62
iii. Agriculture ..... 63
iv. Bronze ..... 63
v. Lithics ..... 64
vi. The pottery ..... 64
2. Settlement patterns and territorial organization ..... 64
i. Distribution ..... 64
ii. Consolidation ..... 66
iii. Huts ..... 66
3. Burials ..... 66
4. Trade ..... 67
5. The Older Surveys ..... 67
6. Our Survey Area. The Early, Middle and Late Bronze Age ..... 69
i. Continuity and discontinuity ..... 69
ii. The character of Bronze Age settlements in the Survey Area ..... 69
iii. The change to the Final Bronze Age ..... 71
iv. Conclusions ..... 72

**Chapter V. The Final Bronze Age (ca. 1200 – 1000 BC) / Early Iron Age I (ca. 1000 – 750 BC)** ..... 73
1. Chronology ..... 73
2. Climate ..... 73
3. Economy ..... 73
i. Stock-raising ..... 73
ii. Textiles ..... 74
iii. Vegetation and cultivation ..... 74
a. Olives ..... 74
b. Vines and wine production ..... 75
c. Cereals and legumes ..... 75
4. The material culture ..... 75
5. Settlements ..... 77
i. Late Bronze Age to Final Bronze Age ..... 77
ii. Final Bronze Age to Early Iron Age ..... 77
iii. Minor settlements in the Fossa Bradanica ..... 78
iv. The origins of the Bradano culture ..... 79
v. Settlement organization ..... 79
6. Burials ..... 80
i. Burial practices ..... 80
ii. Burials and social organization in the Early Iron Age ..... 81
7. The Older Surveys ..... 83
8. Excavations near the Survey Areas ..... 84
i. Botromagno ..... 84
ii. Monte Irsi ..... 85
9. Our Survey Area ..... 85
10. Conclusions ..... 88

**Chapter VI. The Early Iron Age II and Middle Iron Age** ..... 89
I. THE EARLY IRON AGE II (PERIOD GRAVINA II) ..... 89
1. Chronology ..... 89
2. Pottery ..... 90
Bichrome pottery ..... 90
3. Greek "colonisation" ..... 90
Greek pottery imports ..... 93
II. THE MIDDLE IRON AGE (MIA) ca. 675 – 500 BC ..... 94
1. Chronology ..... 94

2. Pottery ... 94
i. Indigenous matt-painted geometric pottery ... 94
ii. The function of the bichrome "subgeometric" wares ... 94
iii. The problem of the ethnic classification of the ceramic styles ... 95
iv. Distribution of regional and sub-regional ceramic styles ... 95
v. Ethnic units and ceramic styles in Central Apulia and the Fossa Bradanica ... 98
vi. Wheel-made wares ... 98
3. Settlement patterns ... 99
i. Fortification ... 100
ii. Territorial organization ... 100
iii. Internal settlement organization ... 100
a. Acropoleis / suburbs ... 100
b. Humbler buildings ... 101
4. Burials ... 101
i. Élite burials ... 101
ii. Lesser burials ... 103
iii. Female burials ... 103
iv. Burials and Greek pottery imports ... 103
5. The rural economy ... 104
i. Agriculture ... 104
ii. Olives and grapes ... 105
iii. Fauna ... 105
iv. Commerce ... 107
6. The Older Surveys ... 107
7. Our Survey Area ... 109
Settlements and their territories ... 110
8. Conclusions ... 110

**Chapter VII. The Late Iron Age (Lucanian / Late Peucetian period)** ... 112
1. The pottery ... 112
i. Painted (slipped) wares ... 112
ii. Plain and cooking wares ... 112
2. The historical context ... 112
i. The 5th century: Taras / Tarentum ... 112
ii. The 5th century: Metapontion / Metapontum ... 113
iii. The 5th century: Athens and South Italy ... 115
a. Attic red-figure pottery in Peucetia ... 115
b. Attic imports in the Fossa Bradanica ... 116
c. The political context ... 117
iv. Peucetians ... 117
v. The Oscan-speaking tribes: Samnites and Lucanians ... 118
vi. The wars of the 4th century BC ... 120
3. Settlement patterns ... 121
i. Lucanian settlements ... 121
a. Fortifications ... 121
ii. Peucetian settlements ... 122
a. Fortifications ... 122
b. Internal structures of the large Peucetian settlements ... 123
iii. The model of the Greek polis? ... 124
iv. Farmhouses ... 124
a. Metapontine farmhouses ... 124
b. Farmhouses in Lucania ... 125
c. Farmhouses in Apulia ... 126
4. Cults ... 126
i. Communal cults ... 126
ii. Household cults ... 127
The cult of ancestors in Peucetia ... 128
5. Burial customs ... 128
i. Extended burials ... 128
ii. Flexed (*rannicchiato*) burials ... 128
iii. Neonates ... 129
iv. Cremation ... 129
6. Burials as evidence for Social structures ... 129
i. The élite: Apulia ... 129
ii. Lesser warriors: Apulia ... 130
iii. Lucania. Élite and warrior tombs ... 130
iv. Artisans ... 131
v. The lower classes, slaves ... 131
vi. Grave goods as evidence for social change ... 131

7. City status and state formation ... 132
i. Peucetia ... 132
ii. Lucania ... 133
iii. Consolidation of the urban communities ... 133
iv. Coinage as a means of hoarding wealth ... 133
8. Private life ... 134
i. Changes in domestic activity ... 134
ii. Signet rings ... 134
9. Farming in the 5th – 3rd centuries BC ... 135
i. Carbonized seed analyses ... 135
ii. Pollen analyses ... 136
iii. Olives and vines ... 136
iv. Other fruits ... 137
v. Stock-raising ... 137
10. Sources of wealth ... 139
11. The Survey Areas ... 141
i. The Older Surveys ... 141
ii. Our Survey Area ... 141
iii. The economic status of the rural sites ... 143
a. Figured wares ... 143
b. *Dolia* ... 143
iv. Site grouping and territorial organization in the area of the Surveys ... 143
a. The left bank of the Basentello: Botromagno ... 144
b. The left bank of the Basentello: Settlements of intermediate size ... 144
c. The left bank of the Basentello: Small settlements ... 145
d. The right bank of the Basentello ... 146
12. Conclusions ... 146

**Chapter VIII. The Hellenistic Period** ... 149
1. Pottery and other artifacts ... 149
i. Black-gloss ... 149
ii. Grey-gloss ... 149
iii. Relief-decorated bowls ... 150
iv. Plain and banded wares ... 150
v. Unguentaria ... 150
vi. Thin-walled ware ... 150
vii. Glass vessels ... 151
viii. Cooking ware ... 151
ix. Amphorae ... 151
x. Lamps ... 151
2. The transformation of the economy and material culture in the last three centuries BC ... 151
i. Coinage ... 151
a. Greek versus Romano-Campanian coins ... 151
b. Roman coins ... 151
c. Peucetian coins ... 152
ii. Agricultural processing ... 153
iii. Construction techniques ... 153
iv. Houses ... 153
v. Eating and drinking habits ... 154
vi. Religion and cult ... 154
vii. New burial customs ... 155
3. The historical context: the 3rd century BC ... 155
i. The Second Samnite War and the invasion of 306 BC ... 155
The impact of the Roman invasion on Botromagno/ Silvium ... 156
ii. The foundation of Venusia in 291 BC and its impact ... 157
a. Venusia (Venosa) ... 157
b. Bantia (Banzi) ... 157
iii. The conflict of Rome with Tarentum ... 157
a. Cleonymus ... 157
b. Pyrrhus ... 158
iv. The Fossa Bradanica in the 3rd century BC ... 158
a. Monte Serico ... 158
b. Jazzo Fornasiello ... 159
c. Botromagno ... 159
d. Monte Irsi ... 159
e. Timmari ... 159
f. Montescaglioso ... 159
g. Difesa San Biagio ... 160
h. Cozzo Presepe ... 160

j. Metapontum ... 160
4. The historical context: the Second Punic War ... 161
5. The historical context: the 2nd century BC ... 161
i. Confiscations ... 161
Traditional peasant economy reinforced at Venusia ... 161
ii. *Ager publicus* ... 161
a. *Ager publicus* and grazing limits ... 162
b. Transhumance and drove roads ... 162
c. Slave herdsmen ... 163
iii. The weaving economy ... 163
iv. Use of the Greek language ... 165
v. Commerce ... 165
vi. Roads: the Via Appia ... 166
vii. The Gracchan land reforms ... 166
6. Settlement and land use: The Fossa Bradanica in the 2nd and 1st centuries BC ... 168
i. Venusia ... 168
ii. Monte Serico ... 169
iii. Metapontum ... 169
iv. Botromagno / Silvium ... 170
a. The re-foundation of Silvium ... 170
b. The toponym Silvium ... 173
c. The economy of Silvium: weaving ... 174
d. The economy of Silvium: industrial activities ... 174
e. The economy of Silvium: animal resources ... 174
f. The wooded environment of Botromagno ... 175
v. Monte Irsi ... 175
7. The Older Survey sites in the Hellenistic period ... 175
i. Sites of the 3rd and early 2nd centuries BC ... 175
ii. Sites of the mid-2nd – late 1st century BC ... 176
8. Our Survey Area ... 179
i. Our Survey Area in the 3rd and early 2nd centuries BC ... 179
a. The decline of San Felice ... 179
b. Vagnari: probable abandonment of the site ... 180
ii. Our Survey Area in the late 2nd and early 1st centuries BC ... 180
Sites of the period in our Survey Area ... 180
b. Vagnari: resumption of occupation ... 182
9. The 1st century BC down to the beginning of the Principate ... 182
i. Romanization ... 182
ii. The Social War ... 182
iii. Municipalization ... 183
iv. A *praefectura* of the Silvini? ... 184
v. The end of Silvium ... 184
vi. Slingshots on Botromagno and the war of Spartacus ... 185
vii. Amphorae and brick stamps as evidence for the rise of great estates ... 185
viii. Pompey as an estate owner in our Survey Area ... 185
ix. Pompey and the war of Spartacus ... 186
x. *Inanissima pars Italiae* ... 187
xi. The acquisition of the estate by Octavian / Augustus ... 187
xii. The veteran settlement at Venusia ... 188
10. The environment in the Fossa Bradanica in the mid-1st century BC ... 188
11. Hannibal's legacy ... 188
12. Conclusions ... 189

**Chapter IX. The Roman imperial period** ... 192
1. Pottery and other artifacts ... 192
i. Italian terra sigillata (ITS) (see Kenrick's introduction in Cat. 15 A) ... 192
ii. Eastern Sigillata B (ESB) ... 192
iii. African red slip (ARS) (see Kenrick's Introduction Cat. 15 B) ... 192
iv. Regional red slip (RRS) and thin-walled wares ... 192
v. Cooking wares ... 192
vi. Plain wares ... 193
vii. Amphorae ... 193
viii. *Dolia* ... 193
ix. Lamps ... 193
x. Loomweights ... 193
xi. Glass ... 193
xii. Tiles ... 193
2. Regional factors ... 194
i. The Augustan regions ... 194

ii. The development of regional organization in the 2nd and 3rd centuries ... 195
3. Cities in the first three centuries AD ... 195
*Curatores* ... 196
4. The landowning classes ... 197
i. The greatest landowners ... 197
a. Domitia Lepida ... 197
b. Calvia Crispinilla ... 197
5. Settlement in the countryside: villas, farms and villages ... 198
i. Huts and cottages ... 198
ii. Farmhouses ... 198
iii. Villas in the first three centuries AD ... 199
a. Excavated villas ... 199
b. Villas in field surveys ... 201
iv. *Vici* ... 202
*Vici* in field surveys ... 202
6. The supposed crisis of the 3rd century AD ... 203
7. Imperial estates ... 204
The administration of the imperial estates ... 205
8. Roads ... 206
i. The public roads in the first three centuries AD ... 206
ii. Drove roads ... 207
9. Stock-raising and agriculture ... 208
10. Commerce ... 209
11. The administration of the Fossa Bradanica in the Early and Middle Empire. ... 211
12. Field surveys in the Fossa Bradanica ... 211
i. The *Ager Venusinus* ... 211
ii. The survey around Monte Serico ... 212
iii. Survey in the Chora of Metaponto ... 212
iv. The Older Surveys ... 212
a. Sites of the Early Empire ... 212
b. Sites of the Middle Empire ... 215
13. Excavated sites in the vicinity of our Survey Area ... 215
i. Botromagno ... 215
ii. Monte Irsi ... 217
14. Our Survey Area in the 1st – 3rd centuries AD ... 217
i. Sites known from the Survey ... 217
a. Sites South of the drove road and West of the Basentello (in Lucania) ... 217
b. Sites South of the drove road and East of the Basentello (in Apulia) ... 218
c. Sites North of the drove road and East of the Basentello (in Apulia) ... 218
ii. Vagnari ... 218
a. The settlement ... 218
b. The cemetery and the human osteology ... 219
c. The faunal remains ... 220
d. Cultivated plants ... 220
e. The carbonized wood remains ... 221
f. A problem of interpretation: olive cultivation and the production and use of olive oil ... 221
g. Coinage in the economy ... 221
h. Summary of the economy ... 222
iii. The villa on San Felice (Site 229) ... 223
iv. The imperial estate centred on Vagnari ... 223
a. The estate in the Early Empire ... 223
b. The development of the estate in the 2nd and 3rd centuries AD ... 224
c. The agronomics of the imperial estate ... 225
d. Sub-regional economic factors relating to the estate ... 226

**Chapter X. The Late Roman Empire** ... 230
1. Pottery and other artifacts ... 230
i. African red slip (ARS) ... 230
ii. Amphorae ... 230
iii. Other wares ... 230
2. The Historical background ... 230
i. South Italy in the Later Roman Empire ... 230
ii. The provincialization of Italy ... 231
3. Taxation ... 231
i. Pork levy in Lucania ... 232
ii. Grain levy in Apulia ... 232
iii. Taxation in the countryside ... 232
4. Roads ... 233
5. Ports ... 236

6. Cities ... 236
i. Jews in the cities ... 238
ii. Christians and pagans ... 238
7. Social structures ... 240
i. The landowning classes – *possessores* ... 240
ii. *Coloni* ... 241
8. Settlement patterns ... 241
i. Villas ... 241
ii. *Vici* ... 242
iii. *Casae* ... 243
9. Imperial estates ... 243
*Coloni* on imperial estates ... 244
10. Abandoned and unprofitable land ... 244
11. Some comparative survey results from our broader study area. ... 245
12. Monetary circulation ... 247
13. Commerce ... 247
14. Agriculture and stock-raising ... 248
i. Stock-raising ... 248
ii. Cultivation ... 249
15. Brigandage ... 251
16. Vagnari ... 251
i. The settlement ... 251
ii. The cemetery ... 252
iii. Stock-raising ... 252
iv. The forest environment ... 253
17. The Older Surveys ... 253
18. Our Survey Area ... 255
i. Sites S of the drove road and W of the Basentello (in Lucania) ... 255
ii. Sites S of the drove road and E of the Basentello (in Apulia) ... 256
iii. Sites N of the drove road and E of the Basentello (in Apulia) ... 256
iv. Imported amphorae in the context of the Late Roman settlement pattern ... 256
19. Conclusions ... 257

**Chapter XI. Late Antiquity and the Early Middle Ages to the mid- 7th century** ... 259
1. Pottery and other artifacts ... 259
i. African red slip ... 259
ii. Late Roman Painted Ware ... 259
iii. Plain wares ... 259
iv. Cookpots ... 259
v. Amphorae ... 259
vi. Glass ... 259
vii. Combed tiles ... 259
2. The historical background before Justinian ... 260
i. Barbarian settlement and other population movements ... 260
ii. Administration ... 261
The provisioning of Rome and the army ... 261
iii. Socio-economic change ... 262
a. The cities ... 262
b. The disintegration of the old city centres ... 263
c. Burials ... 264
d. Villas ... 264
e. The rural population ... 265
f. Christianity in the countryside ... 265
g. Jews ... 266
h. Agriculture ... 266
3. From the Greco-Gothic war to the invasion of Constans II ... 267
i. The Greco-Gothic war ... 267
ii. The Lombard invasion in 568 AD ... 267
iii. The Lombard settlement ... 268
iv. The Byzantine administration ... 268
v. The papal properties ... 269
4. Socio-economic developments ... 269
i. The landowning class ... 269
ii. The church ... 269
iii. Jews ... 270
5. Settlement in Apulia and Lucania ... 270
i. Demographic decline? ... 270
ii. Cities ... 271
iii. The countryside ... 273

iv. Rural churches ... 273
v. Early Lombard burials ... 273
Lombard-type burials in the vicinity of the Older Surveys ... 275
vi. Combed tiles ... 276
vii. Some conclusions on rural settlement ... 277
6. Economic and social change, late 5th – late 7th century AD ... 277
i. Roads ... 277
ii. Commerce and the circulation of goods ... 278
iii. The environmental evidence; stock-raising and cultivation ... 281
7. Settlement patterns ... 282
i. Comparative survey results ... 282
ii. The Older Surveys ... 282
iii. Vagnari ... 284
iv. Our Survey Area ... 285
a. Site occupancy in the Late Antique period ... 285
b. Settlement types in the Late Antique period ... 286
c. Settlement in our Survey Area in the Early Middle Ages, late 6th to early 8th centuries ... 287
d. Santo Staso ... 289
e. The end of the period in our Survey Area ... 289
8. Conclusions ... 290

**Chapter XII. The Middle Ages. Late 7th – 15th century** ... 291
1. Early Medieval artifacts mid-7th – 11th century ... 291
i. Broad line (Nos.2089-2091) ... 291
ii. Narrow line (Nos.2092-2093) ... 291
iii. Cooking pots ... 291
2. Central and Later Medieval artifacts 12th – mid-14th century ... 291
i. Lead-glazed wares ... 291
ii. Tin-glazed ware: protomaiolica ... 291
iii. Plain wares ... 291
iv. Cookpots ... 291
v. Chaffy ware (*ceramica da fuoco vacuolata*) ... 291
vi. Lamps ... 291
vii. Coins ... 291
viii. Tiles (*coppi vacuolati*) ... 292
3. The historical evidence: late 7th–9th century ... 292
i. Shifting power: Lombards, Byzantines and Franks ... 292
ii. Cities ... 293
iii. Rural settlement ... 294
4. Settlement in the late 7th – late 9th century: the archaeological evidence ... 295
i. Problems of evidence ... 295
ii. Our Survey Area ... 296
iii. General remarks on the settlement pattern ... 296
5. The historical evidence: later 9th – 11th centuries ... 296
i. Historical summary ... 297
ii. The Byzantine recovery ... 297
iii. Administration ... 299
iv. Settlement ... 300
v. The Church. *Eigenkirchen* and monasteries ... 303
6. The 11th and 12th centuries: the Norman influx ... 304
i. The Normans in the vicinity of Gravina ... 306
ii. Our Survey Area: 10th–12th century ... 307
7. The Hohenstauffen ... 308
i. Castles and *comuni* ... 308
ii. Population growth ... 311
iii. The Survey Areas ... 312
a. The Older Surveys ... 312
b. Our Survey Area ... 312
8. The Later Middle Ages ... 312
i. The Angevins. Population decline ... 312
ii. Causes of the decline ... 315
iii. The rural economy ... 316
a. Cereals ... 316
b. Equines and cattle ... 317
c. Forests ... 317
d. Sheep ... 318
e. Olives and vines ... 318
f. Fish: the Pantano ... 319
g. The fair of San Giorgio ... 319

iv. The Survey Area ... 319
9. Conclusions ... 319

SECTION IV. LIST OF SITES 321

SECTION V. CATALOGUE OF ARTIFACTS FOUND IN OUR SURVEY AREA 396

1. THE LITHICS ... 396
2. THE NEOLITHIC POTTERY ... 399
3. IMPASTO POTTERY OF THE COPPER, BRONZE AND IRON AGES ... 411
4. MATT-PAINTED SOUTH ITALIAN GEOMETRIC WARES ... 427
5. WHEEL-MADE PAINTED (WMP) POTTERY ... 452
6. IMPORTED GREEK POTTERY ... 466
7. SOUTH ITALIAN RED-FIGURE WARES ... 472
8. OVER-PAINTED WARES ... 477
9. BLACK-GLOSS WARES ... 482
10. GREY-GLOSS WARE ... 498
11. PRE-ROMAN RED-SLIP WARE ... 502
12. *UNGUENTARIA* ... 503
13. HELLENISTIC RELIEF-DECORATED BOWLS ... 505
15. ROMAN FINE WARES ... 506
14. THIN-WALLED WARE – UNSLIPPED ... 506
16. LATE ROMAN PAINTED WARE ... 513
17. THE PLAIN WARES ... 523
18. COOKING POTS ... 538
19. THE AMPHORAE ... 551
20. *PITHOI/ DOLIA, GLIRARIA* AND *PUTEALIA* ... 565
21. LAMPS ... 575
22. LOOMWEIGHTS AND SPINDLE WHORLS ... 579
23. GLASS VESSELS AND BEADS ... 594
24. METAL OBJECTS INCLUDING COINS ... 597
25. MILLSTONES ... 598
26. MARBLE OBJECTS ... 602
27. THE ARCHITECTURAL TERRACOTTAS ... 603
28. TERRACOTTA MODELLED OBJECTS ... 606
29. DAUB ... 607
30. INDUSTRIAL OBJECTS ... 609
31. MEDIEVAL WARES ... 613
32. TILES ... 622
33. GAMES BOARDS (*TABULAE LUSORIAE*) ... 641

SECTION VI. THE OLDER SURVEYS 642

I. Introduction ... 642
1. Surveyors and survey methods ... 642
2. Mapping the Old Surveys ... 645
3. Problems of classification ... 646
4. Changes in site occupancy ... 646
5. The List entries ... 648
6. Illustrations ... 649
7. Abbreviations ... 649

II. List of Sites on the Older Surveys ... 650

III. Table of illustrated artifacts from the Older Surveys ... 671

Artifact Figures ... 675

Artifact Plates ... 733

BIBLIOGRAPHY 789

APPENDIX Le anfore dalla valle del Basentello: ricostruire la rete dei commerci e dei consumi delle derrate 835

# Preface

The subject of this book is the archaeology of the broad geological rift known in Italian as the *Fossa Bradanica* (in English, the Bradano Trough). It separates the limestone plateau of the Murge in South East Italy from the Apennine mountains in the Central South of the peninsula and forms a natural corridor linking Central Italy with the southern Ionian coast. The part of the Fossa which particularly interests us extends from Venosa in the North to Metaponto in the South. Communications from the one end to the other are easy, following the river system of the Fiumara di Venosa to its headwaters, and then by an almost imperceptible watershed to the valley of the Basentello, a tributary of the Bradano which reaches the sea at Metaponto. This natural route is crossed at various points by others which run from East to West linking the Adriatic Sea with the mountain valleys. The most convenient of these, which is followed by the main modern road connecting the provincial capitals of Bari and Potenza, descends from the Murge in the vicinity of the medieval and modern town of Gravina, crosses the Basentello river a little to the North of the flat-topped hill of Monte Irsi, and then follows a tributary of the Basentello into the interior.

The area where these two routes intersect is the primary focus of this study. It was the subject of an intensive archaeological field survey carried out between 1996 and 2008 over an area of ca. 100 $km^2$ by a team of archaeological students directed by ourselves. Inside it, we identified 130 sites and numerous casual find-spots which range in date from Upper Palaeolithic to Late Medieval. The sites are described in the List of Sites (Section IV) in which the material found is listed and analysed. All the more diagnostic pieces – the fragments of pottery and other artifacts which provide the main evidence for the chronology, economy and social function of each site – are classified and illustrated in the Catalogue of Artifacts (Section V).

Beyond this area of primary focus is a much larger study area which was surveyed by several scholars in the 1960s and 1970s in connection with the excavations carried out by the British School at Rome on the Iron Age site of Botromagno in the vicinity of Gravina. The data accumulated in these surveys are also presented here, extending the scope of the study.

The results of all these surveys are integrated into a broader interpretative framework in twelve chapters organized by period in which the data from our surveys are related to other archaeological studies of sites in the Fossa Bradanica and adjacent regions. Various factors are considered which affected the pattern of human settlement in the Fossa including climatic change, the introduction of new species such as the grape vine and olive, technological development and malaria.

### Apologia

(AMS)
This study has had a very long gestation period. My interest in the area goes back to 1965 when I began my term as a research scholar at the British School at Rome. The director of the School, John Ward-Perkins, had been invited by Attilio Stazio, the *Soprintendente alle Antichità della Puglia* at the time to organize a British archaeological excavation on Botromagno where the Peucetian tombs were being ravaged by clandestine diggers. Ward-Perkins was renowned for his work on the topography of Southern Etruria and for his use, then novel in Italy, of field survey techniques to reveal how the patterns of settlement shifted over time within geographical areas defined by ancient Roman roads. He visited Botromagno and quickly grasped its importance as a nodal point in the communications of pre-Roman Italy. But before organizing the excavation it was necessary to have a clearer idea of the extent and chronology of the site, so I was sent, together with Campbell Macknight, at that time a visiting Australian student at the School, to survey the hill-top and its surroundings using the techniques of field-walking which Ward-Perkins had applied in Etruria. The results of the survey are briefly summarized in *Gravina I*, 25-27. The excavation began in a small way in 1966, and was expanded in 1967 under the direction, first of Molly Cotton, and then of Joan du Plat Taylor of the Institute of Archaeology in London. Between then and 1970 the team excavated several parts of the hill-top under Joan's direction, revealing a large number of Peucetian burials of the 6th–4th centuries BC, and substantial parts of a settlement of the late Hellenistic period which overlay the remains of the Peucetian city. I took part in these excavations with special responsibility for recording and classifying the Peucetian pottery.

The excavation was supported in part by the University Museum of Pennsylvania under its director, Froelich Rainey, who sent a PhD student, Sterling Peter Vinson, to carry out a field survey of South Etrurian type in the surrounding area with the idea of defining the route taken by the Via Appia between Botromagno (Roman *Silvium*) and Venosa (Roman *Venusia*). Vinson published the preliminary results of his search for the road in the *Papers of the British School at Rome* for 1972, and in 1974 and 1975 he brought out two articles on his excavation of a Neolithic Site at Casa San Paolo which he had discovered in the course of this fieldwork. But much of the topographical work which he carried out in the area in the early 1970s remained unpublished. Two other field surveys were organized in connection with the project on Botromagno. In 1970 the late Hugh Chapman surveyed part of the area between Gravina and Altamura, and in 1971–2, Dennis Aldridge undertook a small survey of the valley of the Torrente di Gravina between the edge of the town of Gravina and the border with the province of Matera for his MA thesis at the Institute of Archaeology of the University of London. Neither survey was published.

In 1968 I was appointed to a position in the University of Alberta, and in 1969 and 1970 I brought Canadian students to work on the excavation on Botromagno. In 1971 and 1972, however, I moved at the suggestion of Dinu Adamesteanu, *Soprintendente* for Basilicata, across the provincial boundary and, with Edith Wightman of McMaster University and Marie Odile Jentel of the Université Laval, I directed a Canadian excavation on Monte Irsi. As on Botromagno, it revealed remains of an Iron Age site and of a Late Hellenistic and Roman settlement which superseded it.

The excavation of Monte Irsi was published in 1976, but the publication of the much more complex excavation on Botromagno took longer, and Joan Du Plat Taylor was not able to see these various projects through to publication. Some time before her death in 1983, she wrote to me in Canada asking me to coordinate the publication of the field surveys carried out in connection with the excavation on Botromagno, which I undertook to do. Sterling Vinson put a full typescript of all his discoveries at my disposal; as did Hugh Chapman for the area between Gravina and Altamura and Dennis Aldridge for that in the valley between Gravina and Matera.

I had not progressed far with editing this intended survey volume when Joan wrote to me again saying that she was seriously ill and asking me to edit the volume on the excavations on Botromagno for publication. This was the more urgent task, so I set aside the proposed volume on the surveys and began editing the two volumes of *An Iron Age and Roman Republican Settlement on Botromagno, Gravina di Puglia. Excavations of 1965–1974*, which was published as an Archaeological Monograph of the British School at Rome in 1992. I then returned to editing the volume on what we now call the "Older Surveys" and with the help of John Hayes retrieved as much as could be found of the material collected by the original surveyors and reclassified it in the light of more recent comparanda, and especially of Hayes' work on Late Roman Pottery. In 1996 I submitted a text based on the original surveyors' notes with a revised catalogue of artifacts, and an interpretative outline to be considered for publication. It was very long, and in the view of the editorial committee of the British School it required substantial recasting. The committee's decision was reasonable, but I was reluctant to act on it, since the methodology of these surveys of the late 60's and early 70's by then seemed out of date. Moreover, a large part of the area originally covered by Vinson to the North-West of the Basentello watershed was the subject of a new survey directed by Maria Luisa Marchi who, in 1996, published the first of three volumes on the territory of Venusia, together with Giulio Sabbatini. The third volume, most directly relevant to Vinson's survey, written by Marchi, followed in 2010.

## The Re-formulated Project

(AMS and CMS)
We therefore decided to put the publication of the Older Surveys on hold, and in 1996 we began a new, much more intensive survey at the confluence of the Bradano and Basentello valleys below Monte Irsi with the aim, initially, of investigating the ancient environment of Monte Irsi, which had not formed part of the excavation project of 1971–1972. We also wanted to compare settlement patterns at the confluence of the two rivers with those being revealed by Helena Fracchia and Maurizio Gualtieri, our colleagues at the University of Alberta, in the upper reaches of the Bradano near Oppido Lucano. A further aim was to compare our results with those of the Older Surveys, and especially with Vinson's work further up the Basentello valley. That was our original plan which we put into effect in our first year, with a small team drawn largely from the University of Alberta. In the second year (1997) we were obliged to change direction and re-formulate the objectives of the field survey after encountering administrative problems which made it difficult for us to work that year in Basilicata. The area where we had begun the survey in the previous year was immediately contiguous with the territory of Gravina in Puglia, and with the goodwill of Angela Ciancio, then *Ispettrice* of the *Soprintendenza Archaeologica per la Puglia*, and of the *Soprintendente*, Giuseppe Andreassi, we crossed the border of the *Regione* and extended the survey North-West along the valley of the Basentello as far

as the artificial reservoir created by the Diga (dam) del Basentello. In 1998, however, we were permitted to return to Basilicata and surveyed the area around the village of Santa Maria d'Irsi where the regional boundary crosses the Basentello, as well as a strip of fertile land on the W bank of the river.

By then we had retired from the University of Alberta and returned to the United Kingdom where we were both given Honorary Fellowships at the University of Edinburgh. The rest of the project was carried out with the help of colleagues and students from Edinburgh. Karen Stears of the Department of Classics and Mark Trewin of the Department of Scottish Studies worked on the project in 2000 and 2001, and Robert Leighton of the Department of Archaeology directed part of the project on San Felice in 2006.

The site recording was done by Carola Small assisted for much of the time by Tracy Prowse from MacMaster University and in several years by Michael MacKinnon, then a Ph.D student at the University of Alberta, both of whom had worked with us previously on Botromagno as graduate students at the University of Alberta. In the early years of the project we were greatly assisted by Annalisa Di Zanni and Pasquale Favia who were recommended by Giuliano Volpe, then at the University of Bari.

The reformulated project had enormous advantages which gradually became clear as the work progressed. It enabled us to discover a series of Iron Age hill-top sites above the left bank of the river, of which the most important was San Felice (Site 223) which we surveyed in great detail. Below it was Vagnari, the largest Roman site in this part of the valley, where in 2000 we began the excavation which enabled us to prove that the site was both a *vicus* (village) and the centre of a vast imperial estate. Beyond Vagnari we surveyed the ridge which extended eastwards above the seasonal river of the Pentecchia di Chimienti to a point where it impacted on Vinson's survey of the environs of Botromagno. As a result we have the evidence to reconstruct the settlement landscape between Monte Irsi and Botromagno, and we have a more valid base for assessing the results of the Older Surveys in the light on the new data.

**Writing up the Project**

The field work finished in 2008, but as always in such projects, the study of the material has taken much longer. Most of the detailed recording of the artifacts was done during the course of the project by Alastair Small, assisted by several students, and in 2000–2001 by Karen Stears. We are grateful to two of our contributors, John Hayes and Philip Kenrick for much invaluable help with this part of the project.

Most of the artifacts illustrated in this book were drawn by Sally Cann, though some are by John Hayes and Alastair Small. The preliminary drawings of amphorae were done by Giacomo Disantarosa and the final versions by Vincenzo Acquafredda of the University of Bari. The photographs of artifacts are by Franco Taccogna, Philip Kenrick and Alastair Small. The maps and Site plans were done in ArcView GIS and edited in Paint Shop Pro by Carola Small. The small-scale maps were produced by Alastair Small in AutoCad14 and edited in Paint Shop Pro.

We are very grateful for help with specialised aspects of the publication. The late Ian Campbell was with us for five years (1996–9, 2001) studying the geomorphology of the area. The project benefited greatly from his expert study of the land forms round Vagnari. A synthesis of his work can be found in the publication of Vagnari, but he made considerable studies of Sites 401 and 407 (see List of Sites *sv*). Some parts of the catalogue we have been able to entrust to expert colleagues, and thank especially Philip Kenrick for his sections on the Hellenistic relief wares and the Roman fine wares, Giacomo Disantarosa for the amphorae, Vito Volterra for the lithics, Pasquale Favia and Vincenzo Valenzano for the medieval ceramics and Jeremy Rossiter for the lamps. Angelica Portagnuolo helped to find comparanda for the Bronze Age pottery when she was an archaeology student at the University of Bari. The late Giuseppina Canosa gave advice on the red-figure pottery. We are grateful to all our collaborators for their patience during the long process of preparing the publication.

For most of the Catalogue of Artifacts, however, Alastair Small is responsible, and any errors of identification or interpretation must be laid at his door. There will inevitably be some because it is next to impossible to keep fully up-to-date with such a wide range of material. The last 20 years have been a time of intense archaeological activity in South Italy spurred on by the archaeological institutes of the principal universities in this part of the peninsula – the Universities of Bari and Foggia, and of the Salento (at Lecce) and Basilicata (at Matera); and there has been a great increase in the archaeological work carried out by the archaeological superintendencies, often in advance of major construction works for new gas lines, aqueducts and wind-farms. We are tempted to view our project as a mosaic in which we hope to be able to interpret the broad picture, even though some of the tesserae are missing. Because of time constraints, we have not been able to take proper account of new works published after the beginning of

2020. We have, however, been able to make use of some of the chapters in the important book on the new phase of excavations in the settlement at Vagnari directed by Maureen Carroll which she has kindly made available to us as she received them. Like our own book, it will be published by Archaeopress (Carroll, ed., forthcoming).

Our book has been finished during the Covid19 pandemic. The restrictions on movement imposed by governments to prevent the spread of the virus have allowed us to work intensively on the text, but they have made it impossible for us to visit libraries to read publications not available on the internet, or to return to Italy to check a few last things in the deposits. We are, however, unwilling to delay the publication any further in order to cross and dot a few more metaphorical "i"s and "t"s.

The degree of detail may seem excessive to some, but we have been motivated throughout by the belief that most archaeological field surveys are inadequately published, and that the evidence on which important conclusions are based is often only mentioned in summary form. By publishing all the diagnostic evidence on which we have based our arguments, we hope to have made it possible for others to check them and, where desirable, to challenge and revise them.

## Acknowledgements

We have incurred numerous debts of gratitude during this long project. It was made possible by various granting agencies and other organizations in Canada, Italy and the United Kingdom to all of whom we are deeply grateful. The first three years of the survey were financed by generous grants from the Social Sciences and Humanities Research Council of Canada (1996, 1997-9).[1] From 2000 onwards the survey formed part of the broader Vagnari project, which included the excavation, and was supported in the United Kingdom by The Society of Antiquaries of London (research grants in 2000, 2001 and 2002) and by the British Academy (2003-4, 2007). The University of Edinburgh made funding available to Karen Stears and Alastair Small through grants from the University's Development Trust Research Fund and Munro Lectureship Research Fund, and a Research Travel grant. In Italy the project was sustained by a series of grants awarded by the *Comune di Gravina in Puglia* (2001-3), by the *Fondazione Ettore Pomarici Santomasi* of Gravina (2001-4, 2007-9 and 2012), by the *Banca Popolare di Puglia e Basilicata* (2000, 2002-4, 2007-8), and by *Nuova Energia srl* (2009 and 2010). The British School at Rome provided welcome administrative support thanks to the then Director, Andrew Wallace-Hadrill, and Secretary, Maria Pia Malvezzi. Nevertheless, the grant money had to be stretched a long way. Many of our volunteers paid for themselves, and small contributions were of great value. Susan Arculus lent a car which was driven by her daughter Alessia and greatly simplified the problem of getting to San Felice for the intensive survey in 2007 and 2008. John Hunt, who was undertaking a resistivity survey on Vagnari, came briefly to San Felice in 2007 in advance of the construction of the wind turbines to carry out three small surveys there.

We are immensely grateful to successive *Soprintendenti* for their support: in Basilicata to Angelo Bottini, Maria Luisa Nava, Marcello Tagliente and Antonio De Siena; in Puglia to the late and much missed Giuseppe Andreassi, to Teresa Cinquantaquattro and Luigi La Rocca. Other senior staff of the *Soprintendenze* – the *ispettori* and *direttori* of the museums – helped us greatly at various times. They include Angela Ciancio, Francesca Radina and Maria Rosaria Depalo in Gravina, Donata Venturo and Elena Saponaro in Altamura, Beatrice Amendolagine and Anna Maria Patrone in Matera. Special mention must be made of Giuseppina Canosa, a generous and kind friend, who, as director first of the *Museo Ridola* in Matera and then (after 2003) of the *Centro Operativo* at Gravina, arranged for the consignment of our finds and provided us with work-space and encouragement in both places. The personnel of the *Centro Operativo* (most of them now retired) were invariably helpful: Maria Ceriaca Digiesi, Francesca Ariani, Giacomina Cacciapaglia and Michele Colonna. We are grateful too to the staff of the *Museo Ridola*, especially Pino Loforese.

We also received much generous help from the municipal authorities at both Irsina and Gravina. At Irsina in 1996 the *Sindaco*, Giuseppe Gurrado, and *Assessore alla Cultura*, Angelo Candela, found accommodation for the team at the expense of the *Comune* in the *masseria* of the late Giovanni Lorusso, who treated us with great kindness and generosity and allowed us to field-walk inside his vineyards. At Gravina, where Alastair Small has been an Honorary Citizen since 1994, we are grateful to successive *Sindaci* for their interest in the project, including Remo Barbi, Rino Vendola, Giovanni Divella, and Alessio Valente. The contribution made to the project by the *Banca Popolare di Puglia e Basilicata*, already mentioned, was of great importance, and we honour the memory of the then President of the bank, the late Raffaele D'Ecclesiis, for his exceptional support of our work. In the last years of the project the firm of wind-farm contractors, *Nuova Energia*, was given permission to erect two wind turbines on the plateau of San Felice where we

[1] The grant in 1997-1999 was for a joint project with Helena Fracchia and Maurizio Gualtieri in the Bradano valley, for which Fracchia was the principal investigator.

had carried our our most intensive field survey. We thank Agostino Terenzini, *Amministratore unico* of the firm, for his concern to avoid damage to the site and for his interest in our project.

The *Fondazione Santomasi*, mentioned above, is a wonderful cultural resource for Gravina. The Council of the *Fondazione* saw our project as contributing to the cultural assets of the city, and under a series of Presidents, Ugo Rubini, Mario Terlizzi, Agostino Giglio and Mario Burdi, provided the grants for it mentioned above, and gave us precious work space during our many visits to study our material stored there. The staff of the Fondazione have been invariably kind and helpful. Many of those who were there at the beginning have retired, but among past and present members, special mention must be made of the late Adele Iannuzziello Vitucci, Secretary for most of the time we were there, of Marco Sallicati and Rosa Di Benedetto, successive librarians, and of Leonardo Cucuglielli, Isa Cicala, Paola Elia, Donato Nardulli, Romina Alfonso and Maria Teresa Di Noia. The late Pasquale Vitucci, for many years a member of the Council of the *Fondazione* was an invaluable friend and mentor, passionately interested in the history and archaeology of Gravina, who guided us in our dealings with landlords and local granting agencies and generally promoted the project in Gravina. This book is dedicated to his memory.

Many other Gravinesi contributed in one way or another to the success of the project, *in primis* Franco Taccogna, our informal consultant in information technology including graphics and photography, who surveyed and laid out the grids of 10×10 m squares on most of our major sites, including San Felice. He helped us with GIS and offered us generous hospitality during our many out-of-season visits to Gravina to work on the survey material. Other friends of Gravina gave up their time to assist him with the survey, notably Filippo Garibaldi. Antonia Petrafesa cleaned the coins and restored the metal artifacts. We learned much on history and customs of rural life (the *civiltà contadina*) of the territory from Giuseppe Schinco. He also helped to find accommodation for the team in the city, as did Don Saverio Paternoster, parish priest of the church of Sant'Agostino. This recurring problem was eventually solved by Giovanni Paternoster who made a large apartment available to us. Others put their knowledge of local history and archaeology at our disposal. Fedele Raguso guided us in the local archival sources, most importantly the copies, then little known, of the lost Angevin registers. Giuseppe Ardito provided information on cartography, and copies of local maps. Antonio Florido shared with us his close knowledge of the archaeology of the area. Vito Nicefalo advised us on many matters, notably on the contents of the ecclesiastical archives of Gravina, then difficult to enter. Salvatore Pace, landlord of our largest site at San Felice, gave us willing access to it and welcomed us to his *masseria*. Eufemia Iannetti did important work on some of the Roman material from the Older Surveys for her doctoral thesis, which she placed at our disposal and of which we have made considerable use. We have enjoyed the hospitality of numerous friends at Gravina. It would be impossible to list them all, and invidious to name only some of them.

In Irsina, Giuseppe Basile, President of the *Archeo-Club di Irsina*, helped us with arrangements in the town, and Michele Calia, local historian, shared his great knowledge of the archaeology of the territory with us, and accompanied us frequently in field-walking in the first year, as did Donato Masiello. In Gravina Emanuele Caroselli and Innocente Cataldi, successive Presidents of the *Archeo-Club di Gravina,* worked with us from time to time in the field and inspired some of the numerous volunteers who helped with field-walking and washing pottery. Those *Gravinesi* who worked with us most regularly are listed below with an * along with other team members. The list includes several people who assisted with the organization and classification of the material between 2009 and 2012, after the end of the field work.

Our thanks go to the following scholars who gave us generous advice and contributions on particular artifacts: to Paul Pettitt for some identifications and many helpful comments on the lithics; to Custode Fioriello for observations on the lamps; to Giuseppe Sarcinelli for his identification of the near-illegible Tarentine diobol No.2021; to Andrew Rich for the identification of the Medieval coins; and to Paolo Poccetti for his comments on the transcription and interpretation of the inscribed loomweight No.1961.

Most crucially our thanks go to the student members of the field-walking teams without whom the Survey could not have been carried out and who cheerfully put in long hours of work often in intense summer heat.

Team of 2007

*Students and other members of the team, in addition to those mentioned above, who worked full time on the Survey for one or more seasons.*

Tana Allen 1996; Maria Giuseppina Allogio* 2003–4; Tertia Barnett 2006; Matthew Biwer 2008; Andrea Bradley 1997; Lauren Burnett 2007; Sausan Cameron 2007–8; Ewen Campbell 1996; Innocente Cataldo* 1998–9; Clare Chapman 2007; Genevieve Close 2006; Pasqua Colonna* 2006; Maria Grazia Conca* 2003; Alan Dalton 2008; Onofrio Derosa* 1999; Isabella Digiesi* 2002; Giudita Dimattia* 2004; Grazia Dimattia* 2004, 2006; Aaron Dublenko 1998; Alessia Elia 2007–8; Edward Fisher 2006; Giuseppe Garofalo* 2002, 2007–8; Grazia Giovanniello* 2006, 2008; Claire Herbert 2001–2; Hazel Johnson 2007–8; Anna Maria Labellarte* 2003; Maria Lorusso* 2003; Michele Maiullari* 2006; Luciana Matera* 2002–3; Katy Molyneux 2007; Giacomina Montemurro* 2008–2012; Rita Muncipinto* 2008–2012; Domenico Paternoster 2006; Concetta Pepe* 2004; Angelica Portagnuolo* 2003–4, 2006–12; Anastasia Porter 1999; Lucia Ricciardi* 2002; Andrew Rich 2006–8; Beth Richert 2007; Kim Robertson 2006; Brent Roe 1996–7; Anita Ross 1998; Antonella Rubino* 2004; Melodie Sept 1997; Charmaine Sipe 1996–8; Margaret Small 1997, 1999, 2001, 2003–4; Sandy Small 1996; Victoria Suzman 2003; Maria Turturo* 2002–3; Chris Vallis 2007–8; Julie Williams 2008; Ian Whalley 1996–7.

In addition to the above, other students from the University of Edinburgh, McMaster University in Canada and the Università di Foggia working on the excavation at Vagnari occasionally joined the field-walking team, as did students from Mount Allison University and St Mary's University in Halifax, Canada excavating the villa on San Felice. We also had some help in the last two years from High School students in an Italian field school organized by Angelica Portagnuolo.

Sterling Peter Vinson was an especially welcome member of the team when he returned in 2001–2 and 2004 to join us on the scene of his former labours. His wife, Mary Kierzeck, joined us in 2002. We are very grateful to them both.

The cost of publishing this work in Open Access has been met with the help of a legacy from our good friend Eva Mitchell, an enthusiastic amateur archaeologist with whom we spent many happy hours exploring archaeological sites in Scotland.

Finally we are most grateful to Archaeopress for undertaking to publish this large book, and especially to Mike Schurer who guided us initially in our dealings with the Press and to Rajka Makjanic who formatted the complex work and dealt with our corrections with great patience and good will.

Pasquale Vitucci,
20 July 1943 – 9 June 2012

The book is dedicated to the memory of the late Pasquale Vitucci of Gravina, great friend and mentor of the project.

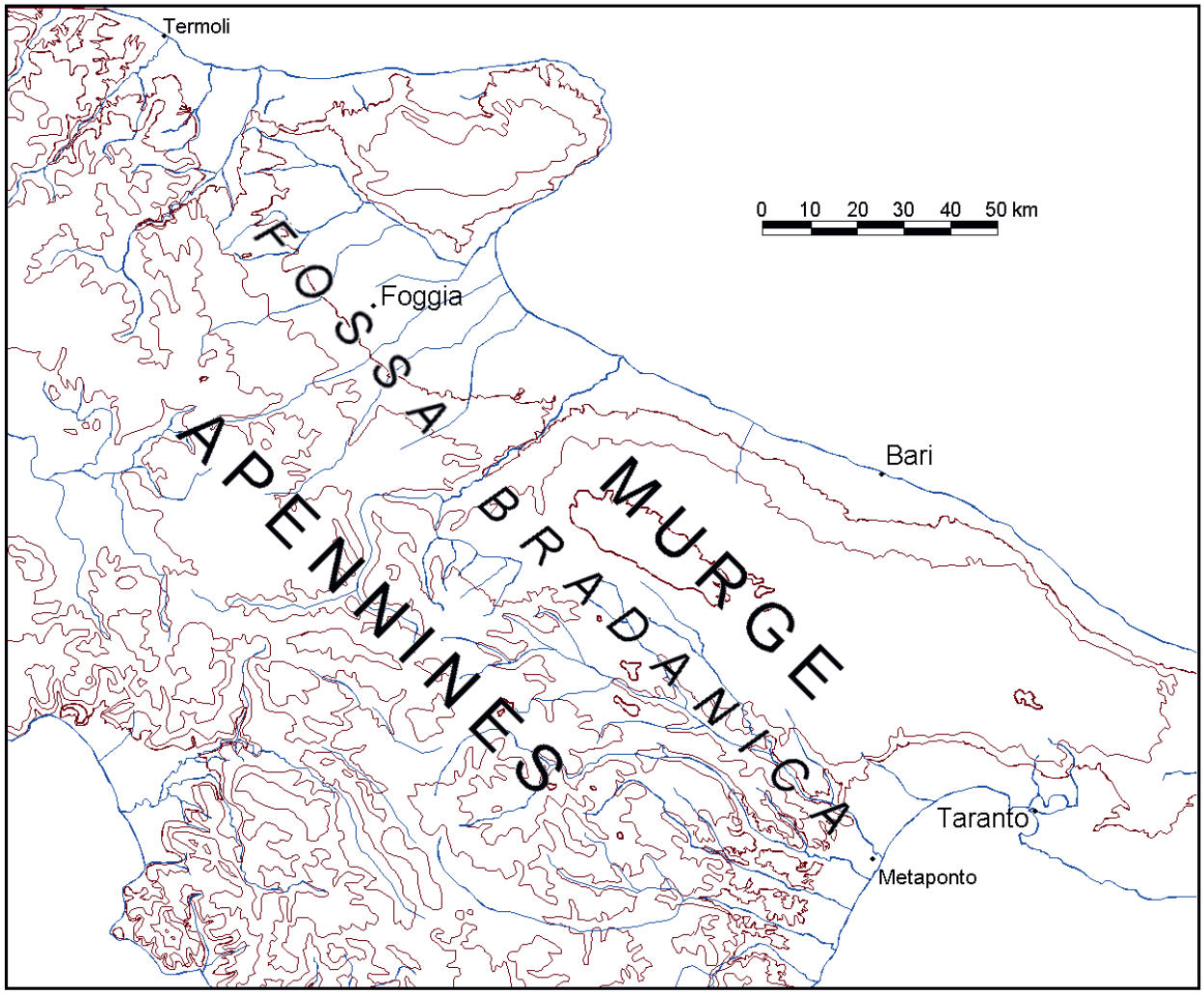
# I. GENERAL INTRODUCTION

The *Fossa Bradanica* (Bradano Trough) runs roughly NW–SE from the Ionian Gulf to the Adriatic Sea near Termoli separating the Apennine mountains to the W from the Cretaceous limestone plateau of the Murge to the E (Map Introduction-1). It consists of a deep series of sedimentary marine deposits laid down in the Pliocene and thrust up to varying heights above sea level in the momentous seismic upheavals of the Pleistocene. The same events created the volcanic masses which fringe the W side of the Apennines in broad areas of Etruria, Lazio and Campania, and (uniquely) at Monte Vulture on the E side of the mountain range. This extinct volcano fringes the Fossa at its N-W edge, where the surrounding terrain of the Melfese has been crumpled by the upthrust of the volcano (Map Introduction-2). Deposits of tephra derived from the volcano extend into the Fossa as far as Venosa. To the E the plateau of the Murge rises steeply above the plain of the Fossa, reaching its highest point at Torre Disperata (671 masl) near its N end, and slopes down more gradually in a series of terraces towards the Adriatic. It is a karstic formation, so porous that normal rainfall is absorbed into the bedrock, and there are no large river valleys to give easy access to the high tops from the bottom of the Fossa. Such routes as there are follow ravines cut into the scarp by seasonal *torrenti*.

Beyond the Melfese and the N scarp of the Murge the landscape is dissected by the valley of the Ofanto, which rises deep in the Apennine mountains. The Fossa Bradanica continues across it as the North Apulian plain, the Tavoliere (table-land), fringed at its N end by the limestone massif of the Gargano.

In strict geological terms, the Fossa to the S of the Melfese includes the sedimentary pre-Apennine hills above the lower reaches of the Basento river, but our main area of interest is limited to its E edge below the Murge, where the Basentello river (not to be confused with the Basento) joins the Bradano to form a natural corridor leading into the interior from the Ionian Gulf.

Photo ntroduction-1. The arable land of the Fossa Bradanica and the scarp of the Murge between Gravina and Spinazzola. Photo Margaret Ward-Perkins 1965.




Map Introduction-1. The Fossa Bradanica.

## 1. Communications

### *i. Land routes*

Since the beginning of the Neolithic period the Fossa Bradanica has formed a natural route of communications connecting the coastal plain of the Ionian Gulf near Metaponto with the middle reaches of the Ofanto valley and the Tavoliere. There was no single track through the Fossa, but the terrain is easily traversed on foot or on mule-back, and more than one route ran through the central part of it. Two which are of special importance for this study linked the territory of Venosa with the lower Bradano valley following different courses. One passed below the scarp of the Murge to Gravina and then followed the valley of the Torrente di Gravina to its confluence with the Bradano in the vicinity of Matera. It was the route taken by the main drove road (*tratturo*) through the Fossa until the abolition of transhumance in the 1950s, and it is followed, as far as Gravina, by the *strada statale 97*, and by the now-disused railway that connected Foggia with Taranto by way of Candela and Gioia del Colle. The other, which is of even greater interest to us, followed the valley of the Matinella to near Palazzo San Gervasio where it crossed the low watershed to the headwaters of the Basentello which it followed to its confluence with the Bradano below Monte Irsi.[1]

Other routes ran E-W across the Fossa and linked the settlements there with those on the Murge and the Adriatic coast. The easiest point of access to the Murge from the central part of the Fossa is at Gravina where the plateau shelves down to a lower terrace and there is a gap in the scarp. It was the preferred route used by shepherds driving sheep to and from the plateau, and in recent times it was flanked by *jazzi*, large sheep folds with makeshift accommodation for the shepherds, where the migrant sheep could be corralled for milking or shearing (Photo Introduction-2). Traders must also have passed this way at all times. In the Iron Age the route connected the Peucetian settlements on the Murge (especially those at Altamura and Monte

[1] Small 2019.

Photo Introduction-2. The Jazzo Pantano at the edge of the Murge scarp.

Sannace) with Botromagno, the principal Iron Age settlement in this part of the Fossa. Other tracks led over the Murge to the Gulf of Taranto where the Spartans founded the settlement of *Taras* (Roman *Tarentum*) in the late 8th century BC. As the city grew in power in the 5th and 4th centuries, the route across the Murge was increasingly used. It acquired still greater importance after the Roman conquest when the Via Appia was extended from Campania through *Venusia* and *Silvium* (Botromagno) to *Tarentum* (Taranto) and *Brundisium* (Brindisi). Its primary purpose was to facilitate the movement of Roman troops destined for the Greek East, but it also had an economic role, and its construction led to the revival of settlement in South Italy in the period following the 2nd Punic War (see Chap.VIII.5.vi and 8.ii). There is still some controversy over the precise route chosen by the Roman engineers where it passed through the Fossa but it most probably followed the Matinella and Basentello valleys from Venosa as far as Vagnari, and then crossed the plateau of San Felice to Botromagno/ *Silvium*.[2]

Another route of great importance for our study led westwards from Gravina in the direction of the pre-Apennine mountains. It crossed the seasonal *torrente*[3] of the Pentecchia di Chimienti below Botromagno and ascended the ridge beyond it by way of the pass of Sferacavallo (so named because of the risk that horses might lose their shoes there), then descended again to cross the more serious obstacle of the Basentello river below the medieval and modern hill-town of Irsina.[4] From here a small anonymous tributary of the Basentello leads westwards into the Lucanian mountains. This was the most convenient route across the central part of the Fossa Bradanica, and for hundreds of years it was followed by shepherds who led their flocks this way along a defined drove road between their winter pastures in the plains and their summer pastures in the mountains.[5] The practice continued until the post-World War II agricultural reforms put an end to the age-old practice of transhumance. It was the route used for the narrow-gauge railway, now called the *Ferrovia Appulo-Lucana*, which was built through this area in the early 1930s to link Bari with Potenza deep in the Apennine mountains.

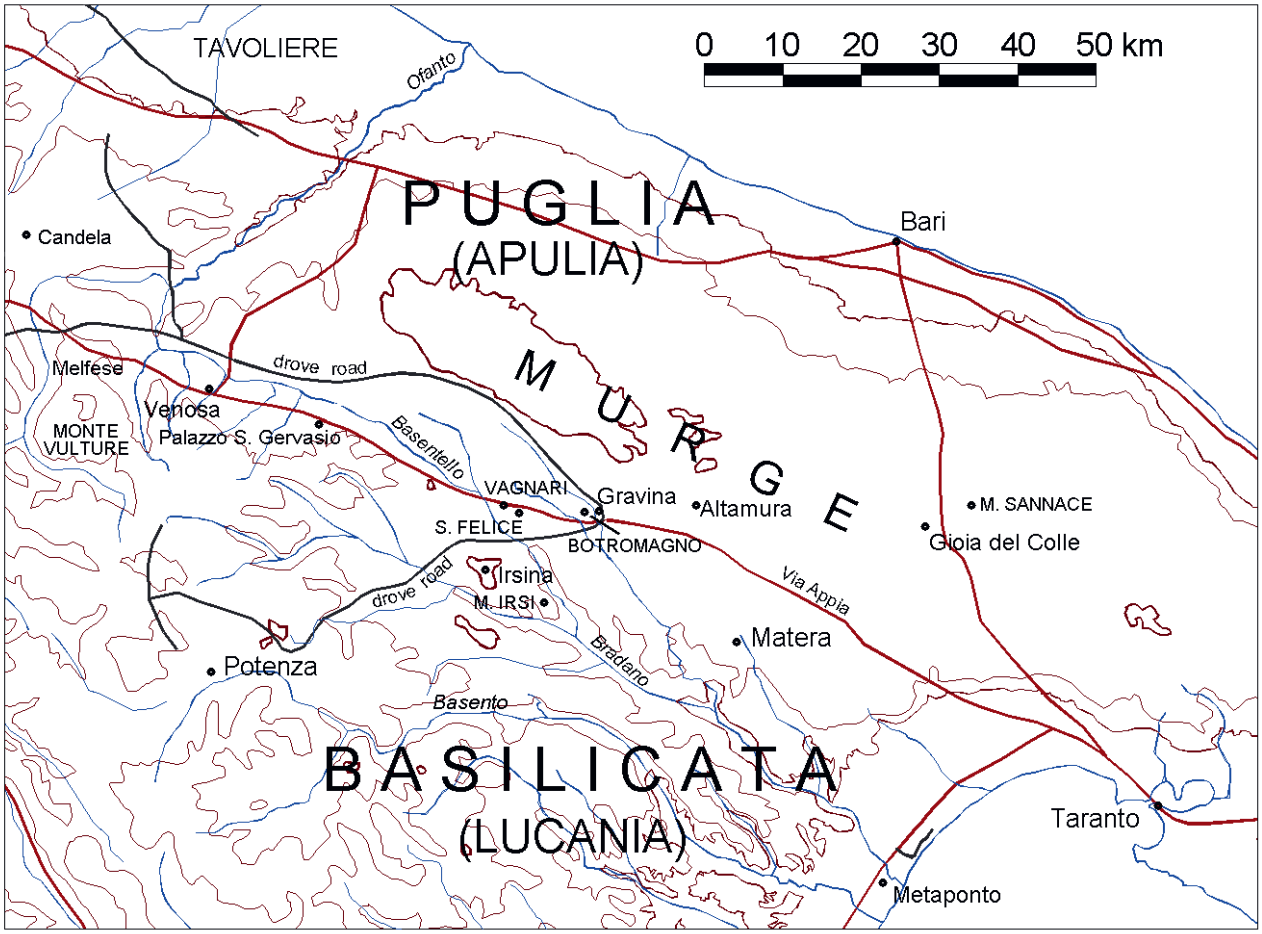
These are the principal routes in the central part of the Fossa Bradanica, and they give special importance

[2] Small & Small 2011

[3] *Torrente*: i.e. a watercourse liable to drastic seasonal fluctuations.

[4] The town was for long known as Montepeloso, but was renamed Irsina in the late 19th century, to the disgust of the local antiquary and historian Michele Ianora (1901, *Introduzione*, esp. XIX-XXIII). Earlier historical writing and all of the pre-20th century documentation appear under the earlier name.

[5] It is documented in the archives of the *Dogana della mena delle pecore*, which, from the mid-15th century until Napoleon, controlled and taxed transhumance, throughout South Italy (See Chap.XII.8.iii.d), but there can be no doubt that it was already in use in the Roman and Hellenistic periods (see Chap.VIII.5.ii.b).




Map Introduction-2. Places mentioned in the Introduction.

to our Survey Area which extends along the Basentello river from its confluence with the Bradano below Monte Irsi to the point 15 km further N where the valley is flooded by a modern dam (the *Diga del Basentello*). The area covered by the Survey is divided by the E–W drove road, and includes the course of the Via Appia where it passes Vagnari and skirts the plateau of San Felice. The Older Surveys, which are also considered here, extend the study area further to the N and E through the central part of the Fossa.

### *ii. The Bradano – Basentello river*

After the foundation of Metapontion in the 2nd half of the 7th century BC there was intensive interaction between the Greek settlement and the indigenous inhabitants of the interior, including our Survey Area. The goods traded are likely to have been brought on baggage animals following tracks that were never formalized as roads. For the whole length of the river valley at least as far as the confluence between the Bradano and Basentello, the low hills flanking the river provided no serious obstacles for this kind of traffic. In the Hellenistic and Roman period, however, there were heavier goods to be transported including amphorae and *dolia* which would have been more easily carried by river barges. The importance of river transport in the Roman state is shown by various responses in the *Digest* which aimed to protect rivers and their banks from any actions that might impede navigation.[6] Major rivers in N and Central Italy were equipped with wharves and warehouses where freight could be loaded and unloaded. Examples have been identified at various points on the Tiber and its tributaries where goods were loaded for shipping to Rome.[7]

The flow of the South Italian rivers is less reliable, but there are nevertheless some indications in the literary sources that they too were used for transport, at least in their lower reaches. Strabo, referring to Heraclea, says that the two rivers of the territory, the Sinni and the Agri, were both navigable, though he gives no indication of how far the river transport would have reached into the interior.[8] He says nothing about the navigability of the Bradano, but we may suppose that if the Sinni and Agri were navigable, the Bradano was so too. Much later, the Arab geographer, Idrîsî, writing at the court of

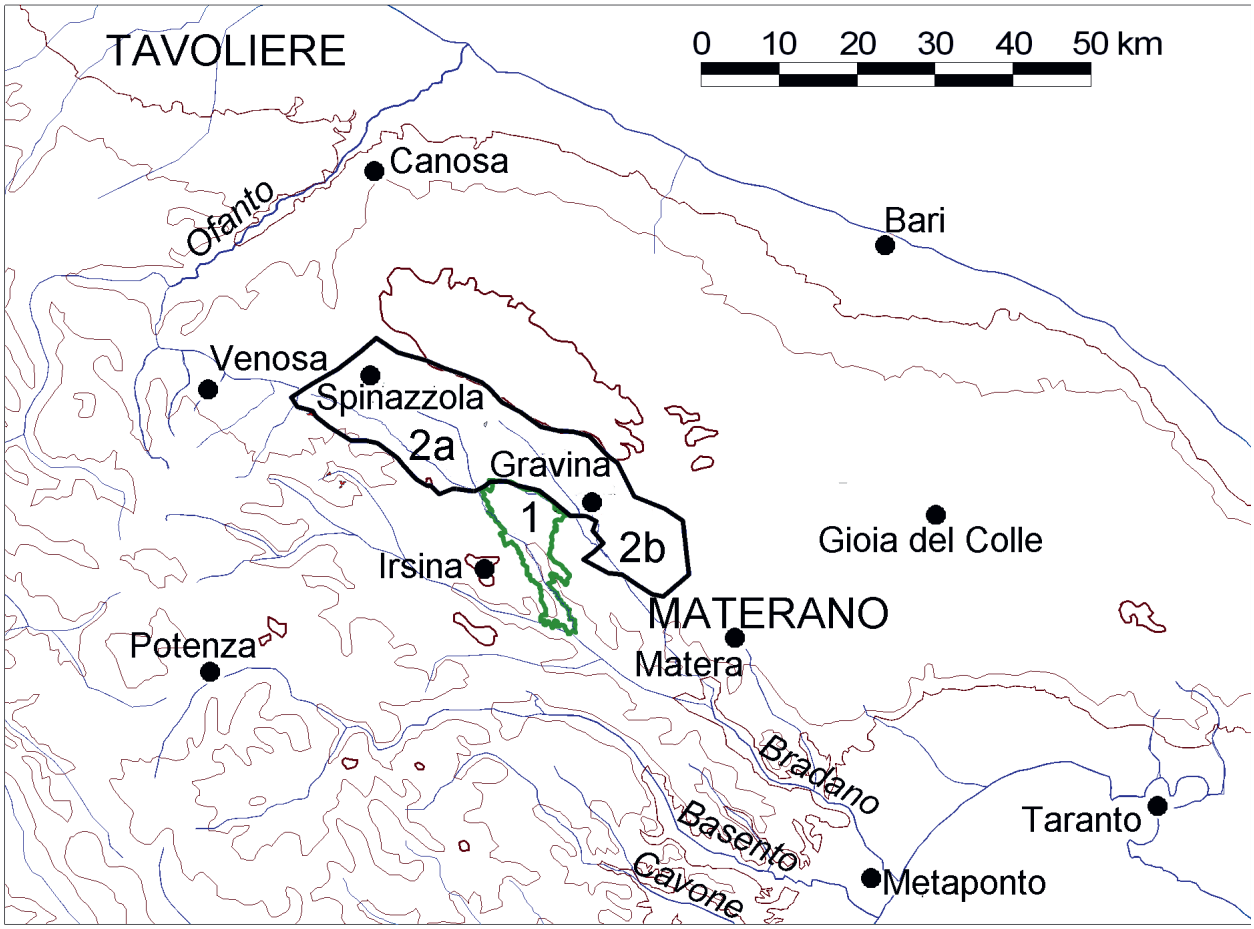
[6] *Digest* XLIII.12-15.
[7] Summarized in J. Patterson 2004, 63. See also Keay, Millett *et al.* 2004, 232 for the wharves and other installations at Seripola near Orte.
[8] Strabo VI.1.14.

Photo Introduction-3. The pass of Sferacavallo showing the modern *superstrada*, the narrow-gauge railway, and 19th century Masseria Capone. The line of the drove road can be seen behind the Masseria. Monte Irsi is visible in the background, partly covered with oak forest. Viewed from the *Strada Statale* 96, looking S.

Roger II in Sicily in the 12th century describes the river as used for shipping timber (willow and pine) that was floated down it,[9] and in a document of 1271, Charles of Anjou gave instructions for boats to be got ready on the Bradano and Basento rivers for transporting men and supplies.[10]

Now that the rivers have been dammed and much of the water is extracted for irrigation, it is very difficult to imagine that the Bradano could have been navigable. Even before the post-World War II works of *bonifica* the river cannot normally have been used for transporting goods, since Lacava, writing in 1891, described it as the river of Basilicata which carried least water in summer time when it sometimes dried up completely, and as the one which collected most water in time of rain.[11] His description might seem to rule out its suitability for navigation, but Lacava was writing after the massive deforestation of the Lucanian Apennines in the 19th century which must have had a drastic effect on the hydrography of the region,[12] and J.T. Abbott's geomorphological studies in the hinterland of Metaponto have shown that at various times during the Greco-Roman period low-energy conditions prevailed in the rivers, during which thick accumulations of mud were deposited in the channels, indicating that the streams were not simply flashy, intermittent watercourses.[13] It is possible, therefore, to imagine that in some periods the river could be navigated, even if only in rainy seasons, at least from its confluence with the Basentello to the sea at Metaponto. Since the river-bed at the confluence is at 121 masl, and its present-day course is ca. 64km long, the gradient of the river in this reach was approximately 1m in 1.89km and would present no problems for navigation when the water level was high other than the numerous meanders that would have to be negotiated; but these are an unknown factor since the course of the river has changed many times.

[9] Idrîsî in his "Book of Roger", Bresc & Nef ed. 1999, 298
[10] *Reg. Ang,* 1,273-277; cited in Carter, *Chora* III.2, 625.
[11] Lacava 1891, 11.
[12] Tichy 1957.
[13] Abbott 2011, 53-55.




Map Introduction-3. Map of the central part of the Fossa Bradanica with the approximate areas of Our Survey (1) and the Older Surveys (2a = Vinson Survey, 2b = Chapman and Aldridge surveys).

There are also some archaeological indications that that the Bradano was navigable as far as our Survey Area in the Roman period. In particular our Site 145-9 is unusual in being situated close to the river. It yielded fragments of several very large Roman *dolia*, the largest found on the survey, and numerous sherds of amphorae of various kinds. We have suggested that it should be interpreted as an entrepot where goods going down the river could be loaded, and those coming up the river could be unloaded to be stored and redistributed to other places in the interior (Chap. IX.14.1.a,b). At the other end, there were wharves on the river at Metaponto where goods could be transhipped.[14] This argument assumes that goods could be moved up-river as well as floated down-river. The river bank was perhaps adapted for towing with draft animals, but there can be no proof of this since it is impossible that traces of towpaths could have survived the centuries of erosion.[15]

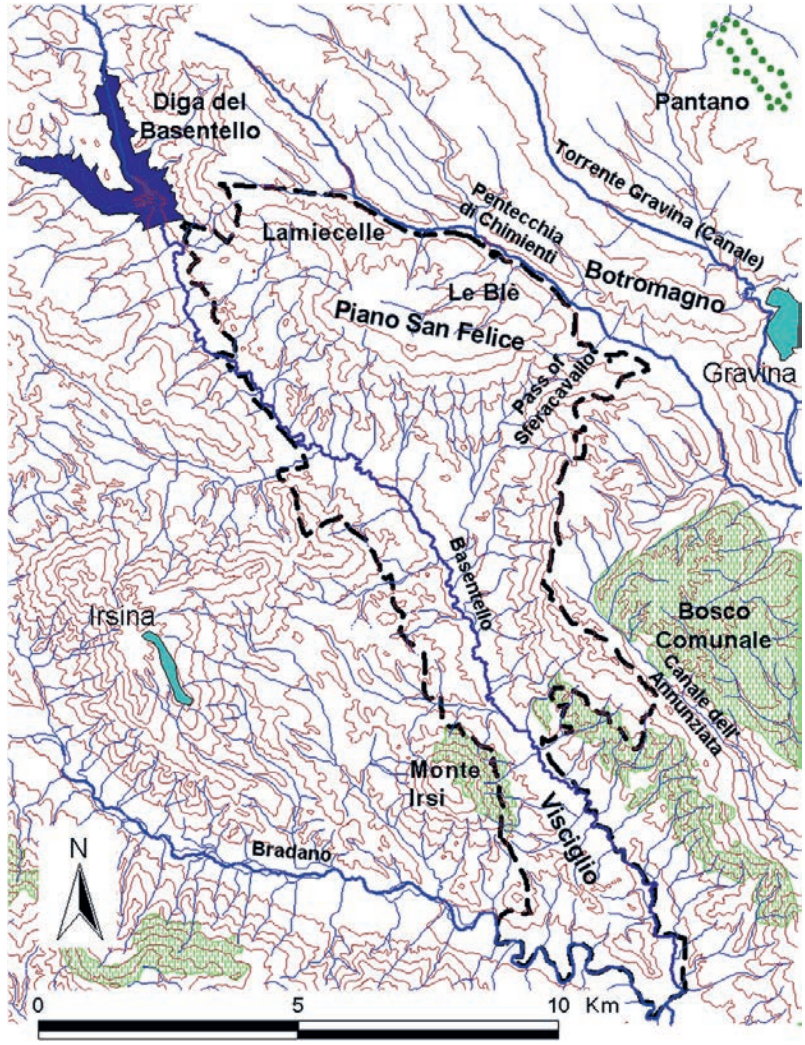
[14] Giardino 1999, 185; Carter, *loc. cit.*
[15] For towing with draft animals, see Casson 1971, 332.

## 2. Three levels of focus

Our study has three levels of focus which correspond to the degree of detail in which the archaeological evidence for settlement and land use in the area is presented and analysed.

### *i. The Basentello valley survey (Our Survey Area)*

The primary level of focus is the central part of the Fossa Bradanica where, as we have said, the route from the North Apulian plain to the Ionian coast crosses that from the Adriatic coast to the heart of the Apennines. It was chosen for special study with several objectives in mind. The first was to investigate the area between two sites which Alastair Small had already been involved in digging, Botromagno in Puglia and Monte Irsi in Basilicata, in order to throw further light on their economic and social context (see Preface). Botromagno just outside the town of Gravina-in-Puglia was a very large Iron Age site which was founded around 1000 BC and prospered (with some vicissitudes) down to the time of the Roman conquest at the end of the 4th century BC. It declined thereafter, but was re-founded in the late 2nd century BC as a village centred on an




Map. Introduction-4. The area of Our Survey giving the river names and topographical areas used by us in this study. Shaded area is woodland.

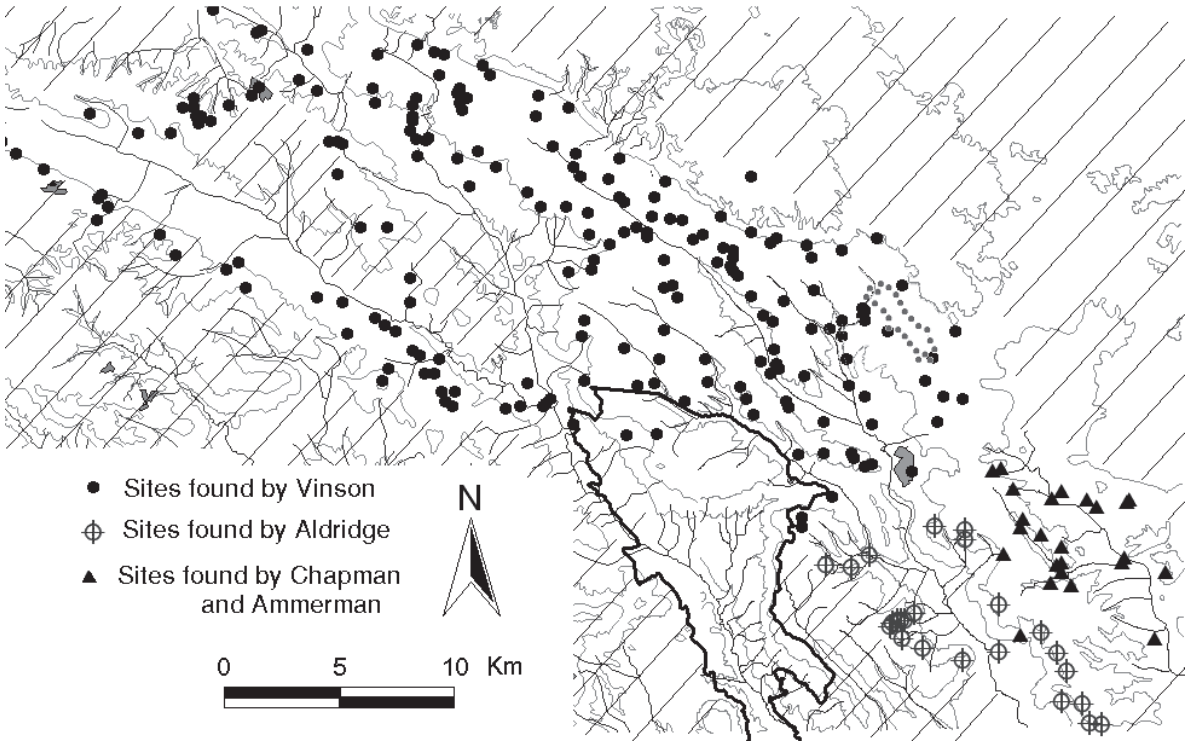
early courtyard villa.[16] This failed in the 1st century BC and the latest ancient building erected on the hilltop was a house built in the Augustan period. The second site on Monte Irsi was a smaller Iron Age hill settlement, situated some 15 kilometres away beyond the pass of Sferacavallo and across the valley of the Basentello river from Botromagno. Here too the Iron Age settlement was replaced in the Late Hellenistic period by a Roman villa which was abandoned early in the 1st century BC and replaced after an interval by another which lasted into the Middle Imperial period,[17] but unlike Botromagno, Monte Irsi had an after-history in the form of a small medieval village and castle.[18]

A second aim was to extend the area covered by the Older Surveys, mentioned in the Preface, which had been undertaken in the 1960s and 1970s, and to provide a control on the information that can be derived from them. Their nature and scope is explained below and in Section VI of this book. Essentially our plan was carried out. We surveyed just under 100km$^2$ along the valley of the Basentello. To the S-E the Survey Area is bounded by the ridge between the Basentello valley and the communal forest (*Bosco comunale*) of Gravina, and to the W by the first (and lowest) of a series of ridges running N from Monte Irsi that separates the valley of the Basentello from the upper reaches of the Bradano. To the N the artificial reservoir of the *Diga del Basentello* provided an obvious stopping point, and to the N-E the Pentecchia di Chimienti marked a clear boundary. Within these limits we were able to link up with the Older Surveys along the N and NE edge of the area (see Map Introduction-2), and we covered the whole of the intervening ground between Botromagno and Monte Irsi. We have as a result been able to understand much better the relation of these pre-Roman settlements to their environment.

*Vagnari*

At the centre of our Survey Area lies the Roman *vicus* of Vagnari which we identified early on in our field survey as the most important Roman settlement in

[16] Small *et al.* 1994, Small 2020.
[17] Small ed. 1972
[18] Cotton, Cherry & D. Whitehouse, 1971, 138-170.




Map Introduction-5. Sites found on the Older Surveys. The diagonal lines indicate roughly the areas which were not then surveyed. The perimeter of our own Survey Area in the Basentello valley is indicated by the heavy black line.

the central part of the Fossa Bradanica and began excavating in 2000. The excavations are still going on, now under the direction of Maureen Carroll and Tracy Prowse (see Preface). The discovery that Vagnari was a *vicus* at the centre of an imperial property is crucial for understanding the economic development of the whole Survey Area in the Roman period.

### *ii. The Older Surveys*

The second level of focus is the analysis of the Older Surveys. The three earlier campaigns of field survey had their origins in the late 1960s when the British School at Rome was excavating the Peucetian and Hellenistic settlement on Botromagno. Although the methodology used in these earlier surveys would now be considered out of date, the principal surveyors recorded numerous sites and collected much material on the surface which is still of great value for reconstructing the settlement history of the central part of the Fossa. They worked in three principal areas.

#### *a. The Vinson Survey*

By far the greatest area was covered by Sterling Peter Vinson who explored a large part of the Fossa Bradanica between Gravina and Venosa, especially along the routes most likely to have been followed by the Via Appia which his study aimed to trace – i.e. below the scarp of the Murge, and along the right bank of the Basentello river. Part of this vast work[19] was published by him in 1972,[20] but a large number of sites subsequently discovered by him in 1974-5 and 1977-1978 have remained unpublished until now, although a few more recent articles incorporate some of the data.[21] In a later study he followed the route of the Via Herculia S from Venosa. Since, however, the present study focusses on the border between Apulia and Lucania, we have not used his finds from the Via Herculia survey which took him far into Lucania, though we hope to do so in a future article. At present we have concentrated on his work NW from Gravina to the watershed between the Basentello and the Matinella, the area most relevant to our own survey. Beyond it lies the territory of Roman Venusia which has since been surveyed much more thoroughly by Maria Luisa Marchi and Giulio Sabatini.[22]

Since finding the route of the Via Appia in this area was his primary objective, Vinson aimed to investigate the land within 1–2km on either side of the presumed

[19] He estimates that he covered in all some 1,059 km$^2$.
[20] Vinson 1972, 58-90. There is a partial publication of his work on the line of the Via Herculia in Vinson 1985.
[21] Alastair Small made use of some of Vinson's data in his study of Late Roman rural settlement in Basilicata and W Apulia (1991), in his articles on Grain from Apulia (1994), and on Changes in the pattern of settlement and land use around Gravina and Monte Irsi (4th century BC–6th century AD) (2001). Andrew Sargent used Vinson's prehistoric data in his study of changing settlement location and subsistence in later prehistoric Apulia (2001).
[22] Marchi & Sabbatini 1996; Marchi 2010.

road. In practice, he sometimes went further, but he did not usually investigate areas through which roads were unlikely to have been built, nor did he establish very clear-cut boundaries for his survey. The larger areas which he did not cover are indicated by light diagonal shading on the maps in the diachronic section of this publication, but there were some smaller areas which he also ignored. Within the very considerable areas which he did cover, however, his search was exhaustive and revealed a very large number of sites, for some of which his work remains the only evidence (for example in the area now flooded by the Diga del Basentello). Deep ploughing, then only just beginning in much of the territory of his survey, is also likely to have destroyed much of the evidence for the sites which he found. The quality of his finds is often remarkably good. Many of the sherds are large, some giving whole shapes, in notable contrast to our much more fragmented survey material. We have published a selection of the pieces found by him (Plates 50-56 with a Table containing brief descriptions (Section VI.III)). He did not, of course, have the benefit of any GPS system, but in cases in which his sites have been revisited, his mapping has generally been found to be accurate to within 50–100m, despite the absence of landmarks which makes surveying by compass difficult in this terrain. He collected and recorded enough pottery and other finds to make it possible to give broad dates to his sites and he frequently gave some indication of site size although not consistently.

*b. The Chapman and Ammerman survey*

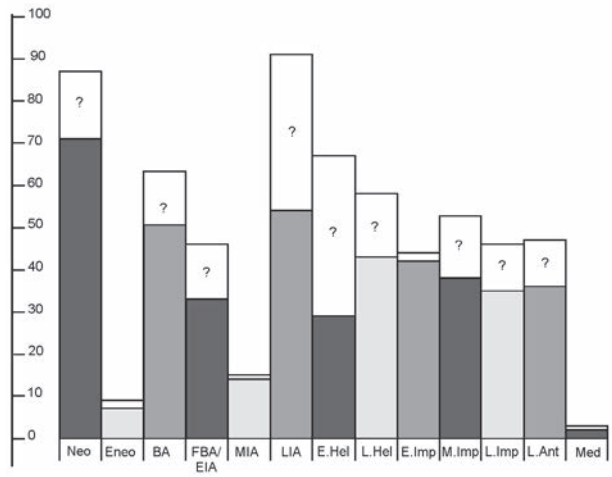
The second earlier study, now published here, was carried out over two summer seasons in 1969 and 1970 by the late Hugh Chapman, assisted in 1970 by Albert Ammerman, between Gravina and Altamura, and was written up by Chapman for publication before his death in 1992. It adds considerably to our knowledge of the archaeology of the lower slopes of the Murge to the E of Gravina, and is especially useful for sites of the Roman period. Chapman and Ammerman aimed at a full record of the sites in a relatively small area. They listed all pottery found, but removed only selected diagnostic pieces for closer analysis.

*c. The Aldridge survey*

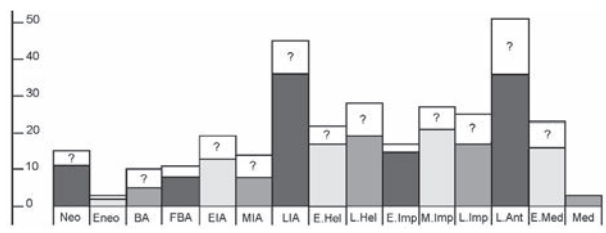
The third of these earlier studies was carried out by Dennis Aldridge between Gravina and Matera and followed the course of the Torrente Gravina as far as the Puglia/Basilicata border. The field work, which was carried out in 1972 and 1973, formed the basis of his MA thesis for the Institute of Archaeology in the University of London.[23] It was accepted for the degree, but has remained unpublished. Like Chapman and Ammerman he aimed at full coverage of a fairly small area. He collected for analysis all diagnostic shapes (rims, bases, handles, lids), all worked stone, and a sample of wall sherds. He worked along the ridges on either side of the valley, and recorded 18 sites in detail, and listed more summarily another 8 which he had investigated only partially. He did not explore the valley bottom fully since it is covered with an infill of alluvium which is likely to have buried ancient sites, but he surveyed a transect across it at roughly 2km intervals. No sites were found in these transects, though occasionally slope-wash from higher sites was identified.

*d. A comparison between the New and Older Surveys*

A comparison of the two histograms showing site occupancy by period in the Older Surveys and our own provides a useful basis for assessing the reliability of the Older Surveys and the inferences that can be drawn from their records. Differences between the histograms may reflect real differences in site distribution between micro-regions, or they may result from differences in the intensity of the surveys or in the methods of analysis of the results.




Graph Introduction-1. Histogram showing site occupancy by period on the Older Surveys. "?" = period classification uncertain.




Graph Introduction-2. Histogram showing site occupancy by period on our Survey. "?" = period classification uncertain.

[23] Aldridge 1973.

The most remarkable discrepancies are in the prehistoric period. In the Older Surveys the Neolithic period saw the highest number of dated sites, with a total of 71 certain and 16 possible instances, equivalent to between 29.5% and 36% of all sites. This compares with 11 certain and 4 possible Neolithic sites in our own Survey Area, amounting to between 8.5% and 11.5% of our sites. There is no need to doubt the much higher numbers in the Old Surveys since they echo the very high numbers of Neolithic settlements identified in the North Apulian plain and in the Materano, and most of them were located in the low arc of terrain below the scarp of the Murge which links those two areas. By contrast, the Neolithic sites in our Survey Area are outliers on the margin of the region of Neolithic settlement in an area which had probably not yet been cleared of forest.

Both surveys register a steep decline in site numbers in the Eneolithic period when settlement density reached an extreme low. It rose again in the Bronze Age, but to a much greater extent in the area of the Older Surveys, and probably for the same reason, that the arc of fertile land below the Murge was especially favourable for settlement. There was also access from it to rough pasture on the plateau for communities which depended in part on stock-raising. But some caution is needed in interpreting the data since without drawings and detailed fabric descriptions it is difficult to distinguish between pottery of the Middle and Later Bronze Age on the one hand and the Final Bronze Age/ Early Iron Age on the other. It is possible, therefore, that the decline in settlement numbers in the latter period was less severe than appears in the histogram. In our own Survey Area, the trend was in the other direction with an increase in sites in the Final Bronze Age which continued into the Early Iron Age.

After this point the trends in the two analyses are in better relation with each other, with settlement numbers falling perceptibly in the Middle Iron Age and then rising dramatically in the Late Iron Age, only to fall again precipitously in the Early Hellenistic period. Numbers then rise again in the Late Hellenistic period, but more steeply in the Older Surveys, and fall off slightly in the Early Empire in both cases. From this point on the histograms diverge more significantly. In the Older Surveys the number of occupied settlements declines gradually through the Middle and Late Empire then rises slightly in Late Antiquity to 36 reliably dated cases, equivalent to 15% of the total number of sites. In our own Survey Area the numbers rise in the Middle Empire, fall off slightly in the Late Empire, and then rise much more dramatically in Late Antiquity, also to 36 which is equivalent to 28.5% of all our sites. The difference between the two trajectories can be explained in several ways. Comparison with other surveys in North Apulia and elsewhere suggests that it is our own field survey that is anomalous rather than the Older Surveys, in which case its unusual pattern can best be explained by the subdivision of the imperial estate at Vagnari. On the other hand, the fact that the rise in settlement in the Late Antique period is much less steep in the Older Surveys may result from the fact that the type-ware of the period, Late Roman Painted Ware, was not generally recognized at the time the surveys were carried out. It also seems probable that some of the small sites without tiled roofs typical of the period in our own Survey Area were missed. The Early Medieval period is not registered at all in the histogram of the Older Surveys because details of tiles were not recorded by the surveyors, and so nothing is known of the combed tiles which provide most of the evidence for settlement of the period in our own Survey Area. Finally, both histograms indicate a drastic reduction in the number of settlements inhabited in the Middle Ages.

Although there is some reason to think that the data from the Older Surveys may be defective or may have been misread for some periods, in general the comparison between the two surveys confirms the value of the Older Surveys as evidence for trends in site occupancy. Although the earlier surveys were generally less intensive than our more recent work in the Basentello valley, the conclusions that can be drawn from them are broadly reliable for most periods. They vastly expand the distribution map and make it possible to draw conclusions about the broader pattern of settlement in the Central part of the Fossa Bradanica.

The reasons for the fluctuations in settlement are an important theme in the diachronic chapters of this book.

### *iii. The Fossa Bradanica*

The third level of focus is more general. In order to understand the development of our Survey Area more fully, we have expanded the comparative study to include other sites in and around the Fossa Bradanica. An understanding of the broader context of the first two levels of survey data is essential for their interpretation in all periods. The development of the Neolithic in our Survey Area has to be viewed in relation to other developments of the period not only in the Tavoliere and the Materano, but also on the Adriatic coastal fringe. In the Bronze Age the cultural contact with the Tavoliere was less important, but other connections took their place, especially with sites in the middle Ofanto valley, the Materano and the Adriatic fringe. In the pre-Roman Iron Age, the most important single factor affecting the development of the indigenous cultures of the Fossa Bradanica was the foundation of Greek settlements on the Ionian coast, first at Incoronata, then at Metaponto, while the Spartan colony of Taras (Tarentum) exerted an increasingly powerful influence. Equally important

was the interaction between the indigenous cultural and ethnic groupings in and around the Fossa Bradanica. They shifted over time, but by the 4th century BC had consolidated with Lucanians to the W of the Bradano-Basentello corridor, Samnites to the N-W, Daunians to the N and Peucetians to the E. The last two shared numerous cultural and ethnic traditions common to the broader group of Apulian peoples.

With the beginning of Roman conquest around the end of the 4th century BC the interconnections between the regional and local cultures in the Fossa Bradanica changed. Botromagno/ Silvium was reduced to minor importance, Metaponto was eclipsed, and a new pole of attraction was created by the Romans at Venusia near the N end of the Fossa. Vast changes in land use followed. The territory of Venusia was centuriated and parcelled out in lots to small farmers, but elsewhere in the Fossa much land that had once been arable was allowed to revert to pasture (especially in the aftermath of the Hannibalic War), and long- distance transhumance trails were developed for sheep which were moved between winter pastures on the plains and summer pastures in the mountains. As we have seen, one of the most important drove roads passed through the Bradano-Basentello corridor and linked with other trails which led into the Lucanian mountains. The Via Appia was extended from Venusia to Tarentum, passing through the northern part of the Fossa by way of the Basentello valley, before crossing the Murge to reach the Tarentine plain. The central part of the Fossa Bradanica was effectively ruralized, with no convenient city to act as a market centre.

Under the Empire the state of affairs established in the Late Republic continued but was gradually modified over time. An important new element was the creation of a large imperial estate centred on the village (*vicus*) at Vagnari which developed as an alternative economic centre for the area in the absence of any municipality to provide for the needs of the rural population. During the Middle and Late Empire much of the estate was subdivided into small-holdings which could be rented out to long-term tenants (*coloni*), so simplifying the administration of the imperial property, but the *vicus* at Vagnari continued to function; indeed its role was extended in the Later Empire when Italy was provincialized and subjected to taxation in kind. There is good reason to think that Vagnari, situated on the Via Appia was a collection centre for the surrounding area – but only on the left bank of the Basentello, since the right bank fell in Lucania and was subject to a different taxation regime. This state of affairs survived the end of the Empire in the West, but it did not outlast the Greco-Gothic war of the mid-6th century. Nevertheless, many settlements lasted well into the Early Medieval I period when new centres of power emerged in the Fossa Bradanica, especially in the Materano which began to recover some of the importance that it had had in the prehistoric period. The Central Middle Ages were characterized by the concentration of the population in the countryside into villages often with a small castle, and hamlets, while a few towns grew in importance, notably Matera, Gravina, Montepeloso/ Irsina and, beyond the watershed of the Basentello, Venosa.

Our third focus is therefore a study of interactions within and beyond the survey areas, and of the role of the Fossa Bradanica as both a communications corridor and a regional boundary, albeit a rather fluid one. This aspect of the study draws on the work of other groups in several parts of the Fossa, and especially in the territories of Venosa and Metaponto at opposite ends of the Bradano-Basentello corridor.[24] Among recent studies within our Survey Area, articles by Myles McCallum and Hans Vanderleest (2011, 2014) on their excavations in the villa at San Felice are essential to this study as is the volume on San Felice edited by Lara Cossalter and Maria Rosaria Depalo (*PSF* 2017). References to many other publications of sites in the Fossa Bradanica will be found throughout the text.

### 3. The limits to contextualizing

This study therefore aims to contextualize the results of the surveys published here. To do so in a manageable way we have rather arbitrarily constructed a geographical frame within which we have looked for useful comparanda for our survey material with some consistency (though inevitably we will have overlooked much that might have been useful). This is the frame used in the relatively small-scale maps that illustrate each period. It has been designed to include Taranto and Metaponto to the S, the Adriatic harbours between Egnazia and the mouth of the Ofanto to the E, Salapia and Ordona to the N, and the important Late Roman/ Late Antique villas of Faragola, San Giovanni di Ruoti, and the Masseria Ciccotti in the Upper Bradano valley to the W. We believe that many of the questions of economic interaction and cultural exchange which affect our Survey Area can be resolved by drawing on comparative data from sites within this frame. Beyond it we have referred to numerous other sites for comparanda, but less systematically: to have tried to do more would have made this publication impossible.

Underlying our selection of this area is an awareness that the material culture of South Italy was never uniform. Certain products, especially high-quality table

[24] The archaeology of Metaponto and its hinterland is particularly well known, thanks to the admirable work carried out by the Archaeological superintendency for Basilicata and the programme of surface survey and excavation by teams from the Institute of Archaeology of the University of Texas directed by Joseph C. Carter (*Chora Metaponto I-VII)*. The archaeology of Venosa is less accessible but there are recent studies by Mariarosaria Salvatore, Maria Luisa Marchi and others; and important surveys of the hinterland (Marchi & Sabbatini 1996, Sabbatini 2001).

wares, had a wide distribution in some periods, but most plain and cooking wares were locally produced and distributed within much smaller regions. Even within the frame of the map there were subregional variations – differing patterns of land use determined partly by the long-term factors of soil conditions and micro-climates, and partly by more changeable circumstances such as the availability of markets for the produce of the land. Even the modes of landholding and organization of labour might vary from one sub-region to another, as the discovery of the imperial estate at Vagnari makes clear: it resulted in a pattern of settlement which was significantly different from that in the surrounding area, and remained so for more than 500 years from the time of its creation early in the Principate until well into the Gothic period, even though the way it was administered changed over time.

Our Survey Area can therefore be seen as one of many micro-ecologies within the Italian regions which had their own distinctive characteristics but were nevertheless linked to other adjacent micro-ecologies in ways that might change with changes in external circumstances. The regions of Italy and indeed of the whole of the Mediterranean world were composed of just such inter-connected micro-ecologies, as a recent study by Peregrine Horden and Nicholas Purcell has emphasized.[25]

But the ceramic evidence also shows how our Survey Area always formed part of larger economic and cultural sub-regions which had fluid boundaries and varied over time. There are some indications of this already in the Neolithic and Bronze Ages, but the phenomenon becomes much more evident in the Middle Iron Age when the indigenous geometric wares were decorated in styles that circulated freely in some areas and were sometimes exported beyond them. The pieces listed in our Catalogue show that the sites in our Survey Area had close cultural links with others, both in the Bradano basin and on the central and W part of the Murge. These cultural subregions corresponded only loosely with the tribal territories of the Oenotrians and Peucetians in so far as they can be made out from the later historical sources. In the 4th century BC, after the formation of the Lucanian *natio*, the political configuration of this part of Italy becomes clearer, with Lucanians, broadly speaking, occupying the area to the W of the Bradano/ Basentello river and the Peucetians to the E, although this notional border was infringed at several points. In this period the material culture of our Survey Area was more closely integrated with the Peucetian culture which had become more homogeneous and extended across the Murge to the Adriatic coast.

In the Greek sources, the region now known as Puglia was defined in terms of the principal ethnic units inhabiting it: Daunians, Peucetians and Messapians. They spoke a common language (Messapic) and shared various social and funerary customs. This tribal structure came under strain as the larger settlements began to envisage themselves as autonomous units, equivalent to Greek city states, and it broke down completely in the Roman period when the former ethnic groupings effectively disappeared. In their place the Romans created the geographical region of Apulia and Calabria (Calabria meaning the Salentine peninsula), unified by roads – the Via Appia and the Via Minucia (redeveloped by Trajan as the Via Traiana), which linked the component parts together and tied them firmly into the economy of the city of Rome. It was one of eleven regions into which Augustus divided Italy, supposedly based on ethnic traditions which were already moribund, but reinterpreted to suit the geographical factors more conveniently. In naming *Regio II* "Apulia et Calabria" Augustus abandoned the ancient tribal names (Daunians, Peucetians and Messapians) found in earlier Greek historians and chose instead the names of minor sub-tribes (the *Apuli* and the *Calabri*) known to more recent Roman writers, and he included in the region the territory of the former Samnite tribe of the *Hirpini* whose name did not even appear in the title of the region. Lucania to the W of the Bradano-Basentello corridor was linked with the territory of the Bruttii in *Regio III*, extending to the Straits of Messina.

The micro-region of our Survey Area straddled these two Augustan regions and was connected economically to both – to Regio II by the Via Appia, and to Regio III by the drove road; but as time went on and transhumance declined in this area (for reasons discussed in Chap. IX.14.iv.d) the Lucanian link became less important to the imperial estate on the left bank of the river. The division between the two regions was reinforced by the reforms of Diocletian and Constantine at the end of the 3rd century and beginning of the 4th, which effectively converted the regions into provinces (with slightly altered borders) and imposed different requirements for the payments of taxes in kind. Our Survey area now formed part of two more distinct economic zones. In the W part, on the Lucanian side of the river the agricultural economy must have been geared to producing pigs required for the distribution of pork in the city of Rome; the E part, in Apulia, was probably directed to the production of grain. The pattern of settlement revealed by our field survey is compatible with this interpretation.

After the end of the Roman empire the economic forces tended in the opposite direction. The Late Roman Painted Ware which was widely distributed in inland South Italy, shows that E Lucania and central Apulia were linked by internal markets in a trading network

[25] Horden & Purcell 2000, esp. 59-65 on Southern Etruria.

which barely reached as far as Naples. New sub-regional types of cooking pots emerged which reflect the incipient de-centralisation of the material culture, no longer dominated by the production centres of Latium and Campania. Such centrifugal tendencies increased after the Lombard invasion which finally broke down the economic and administrative unity of Italy and loosened the interconnection between the regions and the city of Rome. These factors confirm the view that Italy had split into micro-regions.[26]

In the confused period of the Early Middle Ages, there were numerous changes in the administrative regions as Lombards and Byzantines struggled for control of South Italy. These are outlined in Chapters XI and XII. Generally, however, the concept of the Bradano/ Basentello corridor as a significant border between economic and cultural regions seems to have survived, perhaps more as a symbolic than a real frontier. In South Italy it was not until the 13th century that administrative units were established by Frederick II in areas roughly similar to those now in use. These comprised one in the "toe" (*Calabria* – the name was transferred from the Salentine peninsula under the Byzantines), a second, broadly speaking, in the area of the former Lucania which he called *Basilicata*, and a third, the *Capitanata*, which roughly corresponded to the area of modern Puglia. He soon afterwards divided the Capitanata into three by creating new units, the *Terra d'Otranto* and the *Terra di Bari*, the last including Gravina and the E part of our Survey Area. North of the *Terra di Bari*, the Tavoliere and the coastlands N of it continued to be called the Capitanata. Its centre of administration is uncertain, possibly Lucera.

Our study therefore adds to the kaleidoscope of micro-regions and their changing relationship to larger regions which has been a recurring theme in recent studies of the Italian countryside, but by enlarging the interpretative framework we have aimed to avoid the pitfall of seeing the micro-region of our Survey Area as a unique phenomenon only loosely related to developments elsewhere.[27] Moreover, by combining the archaeology of Central Apulia with that of Eastern Basilicata this study breaks with the long established tradition of regional scholarship that generally prevails in Italy. The Italian regions are still powerful entities in Italian culture today, not least in archaeology. The archaeological superintendencies are admirable institutions, but being regionally organized, they determine the conceptual parameters of much scholarly work. As a result, there are numerous histories and archaeologies of Puglia and of Basilicata in which vision is restricted to analysis of significant factors within each region without considering their implications beyond the regional boundaries. We have ourselves contributed to such studies.[28] This work, however, aims to look across the regional boundary in the hope of establishing how the cultural development in the one region (or sub region) affected that in the other.

### 4. Changes in land-use

There are two fundamental factors which have always contributed to regional and sub-regional differentiation, namely the agricultural capacity of the land and the availability of markets for its produce. In the central part of the Fossa Bradanica much of the land is fertile, especially on the eroded sedimentary plateaus like that at Vagnari. The soil and climatic conditions are well suited for cereal cultivation, especially of durum wheat; but much of the land in and around our Survey Area is well-watered and can also be used for growing vegetables and vines. "Granum dat et vina / clara urbs Gravina" is a ditty cherished by the city, traditionally attributed to Frederick II. But the optimum use of the arid lands on the high plateau of the Murge is as rough grazing for sheep, which could be driven down from the plateau to graze among the stubble after harvest time, or, under a different economic system, could be driven to summer pastures in the high Apennines. The land therefore offered various possibilities for balancing the traditional subsistence economy which must have prevailed in the sub-region throughout the prehistoric period and well into the 1st millennium BC, and surfaced again in Late Antiquity and the Early Middle Ages. But the changed conditions of the Hellenistic world offered different possibilities. Cheap slave labour was available; war and poverty had reduced the local population, and the new class of rich landowners could extract more economic value from the land by converting arable to pasture and raising transhumant sheep to produce wool, which could be woven in commercial workshops into fabrics that could be marketed in Taranto or beyond. Later, for various reasons connected with the complexity of managing the vastly increased number and size of imperial estates, the policy was adopted of subdividing the land and leasing parcels on long contracts to tenants whose first aims were to provide for their own subsistence, and only secondarily to produce a marketable cash crop. With the introduction of taxation in kind, they must have been required to produce cereals to meet the levy of grain. When the system of taxation broke down after the Lombard conquest, the wheel had turned full circle, and the peasant population reverted to subsistence agriculture.

[26] Wickham 2005, 481.

[27] See the remarks by Attema, Burgers and van Leusen in their introduction to their comparative study of the Pontine Plain in Lazio, the territory of Sybaris in Calabria, and the Salento isthmus in Puglia, emphasising the need to set regional studies into a broader interpretative context (2010, esp. 7-8).

[28] Small 1999.

## 5. Climate and the environment

The changes in the pattern of land use were not, of course, brought about just by economic factors. Climate change must also be taken into account, although the evidence for it is often controversial. Much of it depends on proxy factors which may have alternative explanations: it may be agreed, for instance, that the alternating sequences of incision and infill of alluvial deposits in the mountain valleys correspond to periods of greater and lesser erosion,[29] but whether the erosion was caused by climatic factors, including long spells of heavier rainfall, or by human activity (typically involving the clearing of forest for grazing or agriculture) cannot be proved without additional evidence, especially for agricultural practices. Analyses of faunal and vegetable remains may give a picture of the environmental conditions of a site in the period from which they come, but it requires a further step to argue from these to broader climatic conditions of the time. As the volume of evidence increases, so the argument becomes more reliable. Much progress has been made in recent years, both in collecting and analysing relevant data and in combining them in works of synthesis,[30] but the coverage is still very uneven both by period and by region, and there is still little agreement on some of the theories that have been proposed.

In the diachronic chapters we have summarized some of these arguments where they seem most relevant, but we have not tried to impose a comprehensive theory of the effects of climate on settlement and land use, for which we do not have the evidence – or the competence. There are, however, some changes which can hardly be explained without recourse to climate theory, for example, the rapid decline of Neolithic settlement in the 5th millennium BC.

## 6. Plague and malaria

Another factor which may have affected the pattern of settlement distribution is the occurrence of disease. Epidemics were no doubt a normal feature of life in Ancient Italy, though they were probably more frequent in towns than in the countryside. Most are unlikely to have had a long-term demographic effect. The sources, however, record two major pandemics which might have a bearing on population levels and so on settlement patterns more broadly in the ancient world. One, under Marcus Aurelius, originated in Babylonia in AD 165 and swept across the Roman Empire at least as far as Gaul, reaching Rome in AD 166.[31] In Italy, according to Orosius, it led to widespread abandonment of farms, fields and towns.[32] The second, which broke out under Justinian, has been shown by palaeobiological analysis to have been bubonic plague, *Yersinia pestis*.[33] It is said to have appeared first in Egypt, and to have spread by way of Palestine to Constantinople which it reached in AD 541. From there it passed westwards to Italy, where, according to Paul the Deacon, it ravaged Liguria.[34]

Both plagues affected Italy to some degree, and both may have had a lasting impact on population numbers in the peninsula as a whole; but since there are no reliable statistical data there is much argument about their prevalence and long-term economic consequences. No doubt some parts of Italy were affected more seriously than others, especially ports and areas that were frequented by long-distance traders. Our Survey Area, being relatively remote, may have escaped the worst effects of both plagues. At any rate there is no sign of any reduction in settlement numbers that might have been brought about by the plague in the time of Marcus – on the contrary, the number of small rural buildings increased in the course of the 2nd and 3rd centuries. The Justinianic plague may have had more serious effects, but it is impossible in the present state of the evidence to correlate the plague with the settlement data since the main dating tool, Late Roman Painted Ware, can only be dated broadly to the Gothic and Early Lombard period; but the fact that the number of sites occupied within the time range of the ware shows no decline must at least cast some doubt on the extent to which it affected communities in this part of the Fossa Bradanica. We cannot rule out the possibility that the decline in settlement numbers seen in the early Lombard period may have been brought about at least in part by the plague, but there are other causes of demographic decline at that time including war and famine (see Chap. XI.5.i).

These are unlikely to have been the only plagues to affect South Italy. There must have been other local outbreaks of disease not recorded by the meagre literary sources, but which may leave archaeological traces. Among these, perhaps, are five communal pit graves containing the remains of at least 48 individuals found in the remains of the Roman bath suite near the

[29] Vita-Finzi 1969; Boenzi *et al.* 1989, 2008 (Basilicata).

[30] See esp. Costantini & Stancanelli 1994 (Neolithic); Fiorentino 1998 (Bronze Age); Fiorentino *et al.* 2013 (Neolithic); Lentjes 2016 (Iron Age and Hellenistic). There is no comparable synthesis yet for the Roman period in South Italy.

[31] See esp. Duncan-Jones 1996. The epigraphic evidence from Rome used in the article is disputed by Bruun (2003).

[32] Orosius (VII.15.5-6) sees the plague as following Marcus Aurelius' persecution of the Christians: *secuta est lues plurimis infusa prouinciis, totamque Italiam pestilentia tanta uastauit, ut passim uillae, agri atque oppida sine cultore atque habitatore deserta in ruinas siluasque concesserint*.

[33] McCormick 2015, 343; 2016, 1004.

[34] *Historia Langobardorum* II.4. There is much controversy on the effects of the plague, For a recent article asserting its long-term consequences, see Meier 2016, with bibliography on p. 268, fn 5. For a contary view, Eisenberg & Mordechai 2019.

complex of the SS. Trinità at Venosa. They are datable before the 8th century AD.[35]

Malaria must have been a more serious problem in the longer term, as recent and ongoing studies are showing. It used to be argued that the Greek cities on the Ionian and Tyrrhenian coasts could not have succeeded as they did between the late 8th and early 3rd centuries BC if malaria had already been endemic in those parts; and some scholars held a similar view of the Roman period. Kahrstedt, writing in 1960 about the economy of Magna Graecia in the imperial period, stopped short of denying that malaria was endemic in South Italy, but he argued that it can have had little effect – as is shown by the string of villas along the coastal strip of Calabria which was a hotbed of malaria in recent times.[36] Even the desolation of Metapontum and Heraclea could, in his view, have had nothing to do with malaria, since the few villas that there were in the vicinity of Metaponto lay mainly in the coastal fringe; and Heraclea could not have died of malaria if Lagaria was flourishing a couple of kilometres down the coast.

More recently, however, the study of malaria in ancient Italy by G. Sallares gives a very different picture of the prevalence of the disease, based partly on palaeopathological evidence that was unknown when Kahrstedt was writing.[37] Malaria, he argues, was endemic in low-lying coastal plains already in the Neolithic period and remained so until it was eradicated at the end of World War II; but its prevalence varied from one period to the next. New strains of the *Plasmodium falciparum* parasite may have developed from time to time, but the main factor affecting the spread of the disease was the availability of suitable breeding conditions for the *Anopheles labranchiae* mosquito (the main vector species in Italy) – especially a warm climate and swampy water. The progressive alluviation in the coastal plains and the consequent rise in the water table after the 6th century BC (Chap. VII.2.ii) created just the kind of swampy conditions that the mosquitos needed.

Mosquitos do not normally travel more than 2-5km,[38] so sites out of range of their breeding waters may escape the worst ravages of the disease. This must have been the case with the rare Metapontine villas which were situated on terraces above the coastal plain, as it was also with Roman Salapia which was moved, with authorization of the senate, from the site on the edge of the lagoon where Salapia had existed since Daunian times to a new site further inland, 4 Roman miles from its predecessor.[39] The move must have been made necessary by the gradual silting up of the lagoon which created a swampy environment ideal for the spread of malaria.

It is probable that malaria impacted especially severely on communities living in the coastal plains. The high incidence of porotic hyperostosis found in the human skeletons in the Pantanello necropolis in the Chora of Metaponto is probably an indication of malarial infection,[40] but absolute proof requires DNA analysis of the parasite remains. The discovery by Tracy Prowse and her team of Canadian palaeo-osteologists of mtDNA fragments of *Plasmodium falciparum* in the skeletons of two individuals from Velia and Vagnari, now provides absolute proof of the existence of the disease in South Italy in the 1st–2nd centuries AD,[41] and it shows that in the Roman imperial period malaria had penetrated well into the interior.

If, as seems likely, malaria was endemic at Vagnari in the Mid-Imperial period (and perhaps long before then), then it is worth considering what impact the disease may have had on the pattern of settlement in and around our Survey Area. There can have been no lack of suitable breeding areas for the mosquitos. It is likely that in summer-time the Basentello river, the Pentecchia and other *torrenti* were reduced to slow-flowing streams with marshy edges – as they still are today. Most Roman sites were situated well above the valley bottoms. The *vicus* at Vagnari was founded on a low natural terrace 2.5km from the Basentello, and the Roman villas on Sites 229 and 372 were built on higher ground. The sites located closest to the Basentello in the Hellenistic period, Sites 302, 303 and the more doubtful site 318, had disappeared by the imperial period, leaving only Site 124 within 1km of the river. It stood 50m above the flood plain on gravelly terrain. The arable land surrounding it is good, and the owner may have thought it was worth maintaining a small villa here to exploit it, in spite of the health risk to his work-force. He did not, after all, know of the connection between malaria and mosquitos, and may have thought that his site was sufficiently high above the river to avoid the *bad air* associated with the disease. Another site to be considered here is Site 145-9 situated 400–500m from the Bradano river at the extreme S end of our Survey Area. It was conspicuous among our survey sites for the number and size of the *dolium* rims and

[35] Marchi & Salvatore 1997, 337; McCormick 2016, 1024 no. 53.
[36] Kahrstedt 1960, 124.
[37] Sallares 2002.
[38] European Centre for Disease Prevention and Control "Anopheles labranchiae – Factsheet for experts." https://www.ecdc.europa.eu/en/disease-vectors/facts/mosquito-factsheets/anopheles-labranchiae.
[39] Vitruvius I.4.12. The date is uncertain but was presumably after the municipalization of Italy in the mid–1st century BC, and ca. 15 BC when Vitruvius died.
[40] M. Hennenberg & R. J. Hennenberg in *Chora Metaponto I,* vol. 2, 503-559. A similar argument has been used by D. Soren (1998, 519-523) to explain the traces of porotic hyperostosis in the skulls and long-bones of 6 infant skeletons buried at Lugnano in the Tiber valley in the Late Antique period.
[41] Marciniak, Prowse *et al.* 2016.

the variety of amphorae found on it, which suggest that the settlement may have been an entrepot where goods going down the valley could be loaded on carts or barges, and those coming up the river system could be unloaded and redistributed. Such activities must always have continued in areas where the prevalence of the disease was moderate and the local population had developed a degree of immunity.[42]

**7. Periodization**

There is much argument both about the periodisation of South Italian archaeology and the dates to be assigned to the periods used. This is not the place to pursue that discussion. Suffice it to say that for the prehistoric periods we have followed recent tabulations of cultural phases and radiocarbon dates, which generally suit our survey data well. In the transition from Bronze to Iron Age the problem becomes more complicated, and a conflict opens up between radiocarbon dates and the traditional chronology derived from literary sources, and especially from the dates given by Thucydides and other ancient historians for the foundation of Greek colonies in Sicily and Italy. Here too we have preferred to follow the new "high" chronology founded on the radiocarbon readings with its implications for the structure and date of the earliest Greek settlements in the West. After the end of the 6th century BC when the literary evidence starts to become more abundant and there are fewer radiocarbon dates available, we have attempted to strike a balance between dates linked to pottery typologies and significant historical turning points, so as to fit information about the development of settlements and material culture into its historical context. This issue is discussed separately at the beginning of each chapter in the diachronic section. We have deliberately avoided the use of the terms "archaic" and "classical" used by many scholars who have written on the indigenous cultures of Apulia and Lucania, since these concepts are derived from Greek culture and come associated with problematic ideas of Hellenization. Instead, we have used the neutral term "Iron Age" to refer to the whole period of the pre-Roman indigenous cultures in Apulia and Basilicata from their beginnings ca. 1,000 BC down to the beginning of Roman conquest in the late 4th century BC, and have subdivided this long period into three phases: Early, Middle and Late Iron Age, following the system Alastair Small used thirty years ago to classify the material from Botromagno in *Gravina* I and II. We have, however, given the term Hellenistic to the subsequent period when the particular cultural characteristics of the indigenous peoples had practically vanished, subsumed in the vast cultural complex of the Hellenistic world.

For the Roman period we have followed the conventional divisions into Early, Middle and Late Imperial, and have identified the ceramic types most indicative of those phases in our Survey Area. After the end of the Roman Empire in the West, however, we have deviated from established period definitions so in Chapter XI we have used the term Late Antique to refer to the period which immediately followed the end of the Roman Empire in the W and ended with the Lombard invasion of ca 570 AD. We have however combined it with the post-Justinianic Greek/ Byzantine period in South Italy which comprised also the early phases of Lombard Settlement since LRPW, the principal archaeological dating tool, continued in use into the second half of the 7th century. We have used the term Early Medieval I rather than Early Lombard, to refer to this later period since the initial boundary between Lombard dominated territory and the part of South Italy which remained in what is now called Byzantine hands was precisely in our area and the Byzantine presence was thereforefore as important as that of the Lombards.

Our period Early Medieval II begins in the 660s with the Lombard exapansion into all of South Italy except the "toe" (modern Calabria) and the "heel" (the Salento peninsula). By that time LRPW ceased to be used and our archaeological dating evidence is largely restricted to combed tiles. For this time and for the subsequent Norman and Angevin periods we have very few data from our Survey Area, but the site of San Felice (Site 223) lasted into the 14th century and perhaps the 15th, so we discuss them together as the Medieval period in a final interpretative chapter. The Middle Ages also present some problems of nomenclature. The period from 660 to about 1000 can be regarded as Early Medieval II. The period from about the year 1000 to about 1300 is conventionally referred to as the High or, less often, Central Middle Ages. Since the Italian term "alto medievale" denotes the Early Middle Ages, we have avoided the use of the word "High", which could be confusing, and used Central when necessary.

The structure of periods and phases used, with their approximate dates, is as follows.

Palaeolithic (Pal). (No Lower Palaeolithic material was found)
- Middle Palaeolithic (ca. 300,000–50,000/40,000 BC)
- Upper Palaeolithic (ca. 50,000/40,000–11,000 BC)
- Epipalaeolithic/ Mesolithic (ca. 11,000–6,000 BC)

Neolithic (Neo) subdivided where appropriate into:
- Early Neolithic (ca. 6200–5600 BC)
- Middle Neolithic (ca. 5600–4800 BC)
- Late Neolithic (ca. 4800–4300 BC)
- Final Neolithic (ca. 4300–4000 BC)

Eneolithic (Eneo) (ca. 3650–2350 BC)
Bronze Age (BA) subdivided where appropriate into:

[42] For the acquisition of a degree of immunity to malaria by local populations constantly exposed to it, see Sallares 2002, 36-38, 82-83, 223-224.

- Early Bronze Age (EBA) (ca. 2150–1700/1600 BC)
- Middle Bronze Age (MBA) (ca. 1700/1600–1350/1300 BC)
- Late Bronze Age (LBA) (ca. 1350/1300–1200 BC)
- Final Bronze Age (FBA) (ca. 1200–1000 BC)

Iron Age (IA) subdivided into:

- Early Iron Age I (EIA I) (ca. 1000–750 BC; Period Gravina I)
- Early Iron Age II (EIA II) (ca. 750–675 BC; Period Gravina II)
- Middle Iron Age (MIA) (ca. 675–500 BC; Periods Gravina III and IV)
- Late Iron Age (LIA) (ca. 500–300 BC; Periods Gravina V and VIa)

Hellenistic (Hel) subdivided into:

- Early Hellenistic (E.Hel) (ca. 300–200 BC; Period Gravina VIb)
- Late Hellenistic (L.Hel) (ca. 200–90/70 BC, Periods Gravina VII and VIIIa)

Roman Republican (Rom RP) (ca. 90/70–30 BC; Period Gravina VIIIb)

Roman Imperial (Rom Imp) subdivided into

- Early Imp (E.Imp) (30 BC–ca. 100 AD)
- Middle Imp (M.Imp) (ca. 100–280 AD)
- Later Imp (L.Imp) (ca. 280–470 AD)

Late Antique (L.Ant) (ca. 470–570 AD)

Early Medieval I (E.Med I) ca. 570–660 AD

Early Medieval II (E.Med II) ca. 660–I000

Medieval (Med) (includes Central Medieval ca. 1000–1250/1300 AD and Late Medieval ca.1250/1300– ca.1450 AD)