1

A bibliography of computer applications and quantitative methods in archaeology

N. S. Ryan*

The bibliography on the following pages represents an attempt to bring together papers from earlier CAA proceedings with a significant proportion of other material on related topics. The bibliography originated as a machine-readable resource from that published in Richards & Ryan 1985. Subsequently it has been maintained by the author and has been augmented by contributions from many others; in particular it has benefited from further material assembled by Julian Richards during the preparation of the IFA *Computer Usage in British Archaeology* volume (Richards 1986b). In this form its primary use has been in the automatic generation of citations and lists of references using the UNIX *bib* and *refer* packages in conjunction with the *troff* typesetting software. More recently it has been converted into a simple database using *Ingres* from which various formats including BIBTEX (used in the preparation of this volume) can be generated.

Whereas a computer based bibliography can accommodate a variety of classification and ordering schemes through the use of keywords and other fields, a single scheme is required for a printed list. A list ordered by author's name and date would serve little purpose beyond demonstrating the scale of the literature. Clearly some form of classification was needed. Initial attempts to divide the material into wholly archaeological or wholly computing oriented subjects proved unsatisfactory so a hybrid approach using the following headings was adopted:

1. Quantitative methods and simulation

2. Finds analysis

3. Survey and excavation recording, and stratigraphic analysis

4. Sites and monuments records

5. Graphics

6. Expert systems and knowledge representation

7. Education

* Computing Laboratory,
University of Kent at Canterbury
Canterbury
Kent CT2 7NF

8. Publication

9. Scientific techniques

10. Museums

11. General

Within these categories items are ordered firstly by date and then by author to give an indication of the development of the literature through time.

No simple classification can be entirely satisfactory and although the assignment of articles to the *finds analysis*, *survey and excavation recording*, and *sites and monuments records* sections proved relatively straightforward, many articles could have been classified under more than one heading. For example, many articles with a quantitative theme have been included under such archaeological headings as finds or site analysis where they concentrate on the application of the techniques in those areas. The *quantitative methods and simulation* section thus includes those articles in which quantitative methods were the primary topic, and those with a significant quantitative element but which otherwise ranged over a variety of archaeological subject areas. The *Graphics* section section is similar, with a number of 'applied' articles appearing under other headings.

Three small sections cover topics that have shown signs of an increasingly specialised interest in recent years; *expert systems and knowledge representation*, *education*, and *publication*.

Two further relatively brief sections deal with work in related areas, each of which have their own extensive literature. In both cases the coverage is limited to articles published in the archaeological computing literature with no attempt to include related material published in specialist journals in these areas. The *scientific techniques* section covers a wide variety of topics including geophysical prospecting, pathology and the various environmental disciplines. This particular subject has received far more detailed coverage in the Leicester University *KRAS* project (Martlew 1984). The *museums* section consists largely of material published by or emanating from the Museums Documentation Association, most of which has either appeared in, or has been cited in, the archaeological computing literature.

Finally, the *General* section includes all those works that would not fit easily into other sections.

The extent of coverage of each topic is variable and the content owes much to bias in my own interests and those of other contributors. Many specialists may find their own particular field has been less than fully covered. To them I can only apologise for the ommissions and request that they respond positively by supplying more extensive lists of references.

Copies of the entire bibliography may be obtained by electronic mail from either nsr@uk.ac.ukc (in BIBTeX or *Bib* format) or spqr@uk.ac.soton.cm (in BIBTeX format), and the database is also accessible for interactive use through the *Archaeological Information Exchange* (send electronic mail to aie-request@uk.ac.soton.cm for details). The database will continue to grow as new material is added and contributions, whether single items or entire bibliographies, will be welcomed. It may be possible to publish a list of each year's additions in subsequent CAA volumes.

References

MARTLEW, R. D. 1984. "Bibliographic databases in archaeology". *in* Martlew, R. D., (ed.), *Information systems in archaeology*, pp. 99–105. Alan Sutton, Gloucester.

RICHARDS, J. D., (ed.) 1986. *Computer usage in British Archaeology*. Occasional Paper 1. Institute of Field Archaeologists, Birmingham.

RICHARDS, J. D. & N. S. RYAN 1985. *Data Processing in Archaeology*. Cambridge University Press, Cambridge.

1.1 Previous CAA proceedings cited

1. CAA (1974) *Computer Applications in Archaeology 1974*, University of Birmingham

2. CAA (1975) *Computer Applications in Archaeology 1975*, University of Birmingham

3. CAA (1976) *Computer Applications in Archaeology 1976*, University of Birmingham

4. CAA (1977) *Computer Applications in Archaeology 1977*, University of Birmingham

5. CAA (1978) *Computer Applications in Archaeology 1978*, University of Birmingham

6. CAA (1979) *Computer Applications in Archaeology 1979*, University of Birmingham

7. CAA (1980) *Computer Applications in Archaeology 1980*, University of Birmingham

8. CAA (1981) *Computer Applications in Archaeology 1981*, University of Birmingham

9. CAA (1982) *Computer Applications in Archaeology 1982*, University of Birmingham

10. CAA (1983) *Computer Applications in Archaeology 1983*, University of Bradford

11. CAA (1984) *Computer Applications in Archaeology 1984*, University of Birmingham

12. CAA (1985) *Computer Applications in Archaeology 1985*, London Institute of Archaeology, University of London

13. CAA (1986) *Computer Applications in Archaeology 1986*, University of Birmingham

14. Ruggles, C. L. N. and Rahtz, S. P. Q., editors (1988). *Computer and Quantitative Methods in Archaeology 1987*, International Series 393, Oxford, British Archaeological Reports.

1.2 Quantitative methods and simulation

1. G. W. Brainerd, "The place of chronological ordering in archaeological analysis," *American Antiquity*, vol. 16, no. 4, pp. 301–313, 1951.

2. W. S. Robinson, "A method for chronologically ordering archaeological deposits," *American Antiquity*, vol. 16, pp. 293–301, 1951.

3. A. C. Spaulding, "Statistical techniques for the discovery of artefact types," *American Antiquity*, vol. 18, pp. 305–13, 1953.

4. A. C. Spaulding, "Statistical description and comparison of artefact assemblages," in *The application of quantitative methods in archaeology* (R. F. Heizer and S. Cook, eds.), no. 28 in Viking Fund Publications in Anthropology, 1960.

5. J. A. Ford, *A quantitative method for deriving cultural chronology*. No. 1 in Technical Manual, Washington D. C.: Dept. of Social Affairs, Pan American Union, 1962.

6. F. R. Hodson, P. H. A. Sneath, and J. E. Doran, "Some Experiments in the Numerical Analysis of Archaeological Data," *Biometrika*, vol. 53, no. 3, pp. 311–24, 1966.

7. V. K. Goldmann, "Zur Auswertung archaeologischer Funde mit Hilfe von Computern," *Die Kunde*, vol. 19, pp. 122–9, 1968.

8. F. R. Hodson, "Classification by computer," in *Science in Archaeology* (D. Brothwell and E. Higgs, eds.), pp. 649–60, London: Thames and Hudson, 1969.

9. C. Renfrew and G. Sterud, "Close-proximity analysis: a rapid method for the ordering of archaeological materials," *Am. Antiquity*, vol. 34, no. 3, pp. 265–277, 1969.

10. J. E. Doran, "Systems theory, computer simulations and archaeology," *World Archaeology*, vol. 1, pp. 289–98, 1970.

11. F. R. Hodson, "Cluster analysis and archaeology: some new developments and applications," *World Archaeology*, vol. 1, pp. 300–20, 1970.

12. C. R. Orton, "The production of pottery from a Romano-British kiln site: a statistical investigation," *World Archaeology*, vol. 1, no. 3, pp. 343–58, 1970.

13. I. Hodder, "The Use of Nearest Neighbour Analysis," *Cornish Archaeology*, vol. 10, pp. 35–6, 1971.

14. F. R. Hodson, D. G. Kendall, and P. Tautu, *Mathematics in the archaeological and historical sciences: proceedings of the Anglo-Romanian Conference, Mamaia 1970*. Edinburgh: Edinburgh University Press, 1971.

15. D. G. Kendall, "Seriation from abundance matrices," in *Mathematics in the Archaeological and Historical Sciences* (F. R. Hodson, D. G. Kendall, and P. Tautu, eds.), pp. 215–52, Edinburgh: Edinburgh University Press, 1971.

16. D. G. Kendall, "Construction of Maps from 'Odd Bits of Information'," *Nature*, vol. 231, pp. 158–9, May 21 1971.

17. R. M. Newcomb, "Comments on 'The Use of Nearest Neighbour Analysis'," *Cornish Arch.*, vol. 10, p. 36, 1971.

18. L. Bourelly, "Quelques aspects de la notion moderne de simulation," in *Les Methodes mathematiques de l'archaeologie* (M. Borillo, ed.), pp. 186–99, 1972.

19. A. L. Christenson and D. W. Read, "Numerical taxonomy, R-mode factor analysis, and archaeological classification," *American Antiquity*, vol. 12, pp. 163–179, 1972.

20. K. Goldmann, "Zwei Methoden chronologischer Gruppierung," *Acta Praehistorica et Archaeologica*, vol. 3, pp. 1–34, 1972.

21. M. Levison, R. G. Ward, and J. W. Webb, "The settlement of Polynesia: a report on a computer simulation," *Archaeology and Physical Anthropology in Oceania*, vol. 7, pp. 234–45, 1972.

22. D. H. Thomas, "A computer simulation model of Great Basin Shoshonean subsistence and settlement patterns," in *Models in Archaeology* (D. L. Clarke, ed.), pp. 671–704, London: Methuen, 1972.

23. A. J. Ammerman and L. L. Cavalli-Sforza, "A population model for the diffusion of early farming in Europe," in *The Explanation of Culture Change: models in Prehistory* (C. Renfrew, ed.), pp. 343–57, London: Duckworth, 1973.

24. J. E. Doran, "Explanation in archaeology: a computer experiment," in *The explanation of culture change: models in prehistory* (C. Renfrew, ed.), London: Duckworth, 1973.

25. D. H. Thomas, "An empirical test for Steward's model of Great Basin settlement patterns," *American Antiquity*, vol. 38, pp. 155–76, 1973.

26. G. A. Clark, "On the analysis of multidimensional contingency table data using log linear models," in CAA 74, pp. 47–58.

27. D. F. Green and E. I. DeBloois, "Computer random model generation for prehistoric settlement studies," in CAA 74, pp. 30–5.

28. I. Hodder, "The distribution of Savernake Ware," *Wilts. Archaeological Magazine*, vol. 69, pp. 67–84, 1974.

29. I. Hodder, "Regression analysis of some trade and marketing patterns," *World Archaeology*, vol. 6, pp. 172–89, 1974.

30. D. G. Kendall, "Archaeology and Mathematics," *Antiquity*, vol. 48, pp. 40–5, 1974.

31. L. D. Smith, "Cluster analysis of twenty-nine epipalaeolothic sites in Israel," in CAA 74, pp. 3–15.

32. I. Graham, P. Galloway, and I. Scollar, "Model studies in seriation techniques," in CAA 75, pp. 18–24.

33. D. F. Green, "Testing a traditional typology using cluster analysis," in CAA 75, pp. 25–32.

34. D. G. Kendall, "The recovery of structure from fragmentary information," *Philosophical Transactions Royal Society London A*, vol. 279, pp. 547–82, 1975.

35. J. E. Doran, "Complex process models and the understanding of prehistoric change," in CAA 76, pp. 21–5.

36. P. Galloway, "Cluster analysis using fragmentary data," in CAA 76, pp. 41–7.

37. I. D. G. Graham, P. Galloway, and I. Scollar, "Model Studies in Computer Seriation," *Journal of Archaeological Science*, vol. 3, pp. 1–30, 1976.

38. I. Hodder and C. Orton, *Spatial analysis in archaeology*. Cambridge: Cambridge University Press, 1976.

39. I. O. Angell and J. S. Barber, "An application of curve-fitting techniques to the study of megalithic stone rings," in CAA 77, pp. 10–20.

40. J. A. Bubenko, "The temporal dimension in information modelling," in *Architecture and Models in Data Base Management Systems* (G. M. Nijssen, ed.), Amsterdam: North Holland, 1977.

41. A. J. Chadwick, "Computer simulation of settlement development in Bronze Age Messenia," in *Mycenaean geography: proceedings of the Cambridge colloquium* (J. L. Bintliff, ed.), Cambridge, 1977.

42. G. A. Clark, R. W. Efflund, and J. C. Johnstone, "Quantitative spatial analysis: computer applications of nearest neighbor and related approaches to the analysis of object s distributed across two-dimensional space," in CAA 77, pp. 27–44.

43. F. R. Hodson, "Quantifying Hallstatt: some initial results," *American Antiquity*, vol. 42, no. 3, pp. 394–412, 1977.

44. I. Johnson, "Local density analysis: a new method for quantitative spatial analysis," in CAA 77, pp. 90–8.

45. J. C. Johnstone, R. W. Efflund, and G. A. Clark, "The Arizona State University nearest neighbor program: documentation and discussion," in CAA 77, pp. 45–54.

46. R. Reece and I. A. Hodder, "A model for the distribution of coins in the Western Roman Empire," *JAS*, vol. 4, pp. 1–18, 1977.

47. J. D. Wilcock, "A comparison of monothetic divisive and polythetic agglomerative classifications of archaeological data," in CAA 77, pp. 55–60.

48. M. S. Aldenderfer and R. K. Blashfield, "Cluster analysis and archaeological classification," *American Antiquity*, vol. 43, pp. 502–505, 1978.

49. I. O. Angell, "Computerised Celtic art," in CAA 78, pp. 61–8.

50. R. K. Blashfield and M. S. Aldenderfer, "The Literature on Cluster Analysis," *Multivariate Behavioral Research*, vol. 13, pp. 271–95, 1978.

51. A. J. Chadwick, "A computer simulation of a Mycenean settlement," in *Simulation studies in archaeology* (I. Hodder, ed.), New Directions in Archaeology series, pp. 47–57, Cambridge: Cambridge University Press, 1978.

52. P. Galloway, "Restoring the Map of Medieval Trondheim: a Computer-aided investigation into the Nightwatchman's Itinerary," *Journal of Archaeological Science*, vol. 5, pp. 153–165, 1978.

53. I. Hodder, *Simulation studies in archaeology*. New Directions in Archaeology series, Cambridge: Cambridge University Press, 1978.

54. P. Ihm, "Statistik in der Archeologie: Probleme der Anwendung, allgemeine Methoden, Seriation und Klassifikation," *Archaeo-Physika*, vol. 9, 1978.

55. S. Laflin, "A study of similarity coefficients," in CAA 78, pp. 69–76.

56. D. Moore, "Simulation languages for archaeologists," in *Simulation studies in archaeology* (I. A. Hodder, ed.), New Directions in Archaeology series, pp. 11–19, Cambridge: Cambridge University Press, 1978.

57. I. O. Angell, "Arguments against the existence of the 'Megalithic Yard'," in CAA 79, pp. 13–19.

58. O. H. J. Christie, J. A. Brenna, and E. Straume, "Multivariate Classification of Roman Glasses found in Norway," *Archaeometry*, vol. 21, no. 2, pp. 233–41, 1979.

59. K. L. Cooke and C. Renfrew, "An experiment on the simulation of culture changes," in *Transformations: Mathematical Approaches to Culture Change* (K. L. Cooke and C. Renfrew, eds.), pp. 327–48, New York: Academic Press, 1979.

60. J. E. Doran, "Fitting models and studying process: some comments on the role of computer simulation in archaeology," *Bulletin of the Institute of Archaeology*, vol. 16, pp. 81–93, 1979.

61. S. Laflin, "A density function for cluster analysis," in CAA 79, pp. 36–8.

62. S. G. H. Daniels, "Two software packages for archaeological quantitative data analysis," in CAA 80, pp. 3–8.

63. S. G. H. Daniels, "Algorithms from AQUA and ARCHON," *Science and Archaeology*, vol. 22, pp. 25–31, 1980.

64. M. Fletcher and G. Lock, "Computer assisted pattern perception within post hole distributions," in CAA 80, pp. 39–41.

65. I. D. G. Graham, "Micro computers for archaeological excavation recording," Tech. Rep. 5600, British Library, 1980.

66. I. D. G. Graham, "Spectral Analysis and Distance Methods in the Study of Archaeological Distributions," *Journal of Archaeological Science*, vol. 7, pp. 105–129, 1980.

67. I. Hodder, "An analysis of the distribution of coins in the Western Roman Empire," *Bonner Jahrbucher*, 1980.

68. N. Iliff, "The use of simulation in the understanding of patterning in cemeteries—its potentials, problems and limitations," in CAA 80, pp. 28–34.

69. C. Orton, *Mathematics in archaeology*. London: Collins, 1980.

70. M. S. Aldenderfer, "Creating assemblages by computer simulation: the development and uses of ABSIM," in *Simulations in archaeology* (J. A. Sabloff, ed.), pp. 67–117, Albuquerque: University of New Mexico Press, 1981.

71. M. S. Aldenderfer, "Computer simulation for archaeology: an introductory essay," in *Simulations in archaeology* (J. A. Sabloff, ed.), pp. 11–49, Albuquerque: University of New Mexico Press, 1981.

72. J. A. Bell, "Scientific method and the formulation of testable computer simulation models," in *Simulations in archaeology* (J. A. Sabloff, ed.), pp. 51–64, Alburquerque: University of New Mexico Press, 1981.

73. L. S. Cordell, "The Wetherill Mesa simulation: a retrospective," in *Simulations in archaeology* (J. A. Sabloff, ed.), pp. 119–41, Alburquerque: University of New Mexico Press, 1981.

74. A. S. Gilbert, B. H. Singer, and D. Perkins, "Quantification experiments on computer-simulated faunal collections," *Ossa*, vol. 8, pp. 79–94, 1981.

75. M. E. Harlan, "ARCHAEOSTAT 2. 0 Program Manual," *Human Systems Research Inc, Tularosa*, 1981.

76. V. C. Rideout, "The Modelling of Socio-Economic Resource Systems," *Mathematics and Computers in Simulation*, vol. 23, pp. 111–26, 1981.

77. J. A. Sabloff, *Simulations in archaeology*. Alburquerque: University of New Mexico Press, 1981.

78. E. B. W. Zubrow, "Simulation as a heuristic device in archaeology," in *Simulations in archaeology* (J. A. Sabloff, ed.), pp. 143–88, Alburquerque: University of New Mexico Press, 1981.

79. E. Bolviken, E. Helskog, K. Helskog, I. M. Holm-Olsen, L. Solheim, and R. Bertelsen, "Correspondence analysis: an alternative to principal components," *World Archaeology*, vol. 14, no. 1, pp. 41–60, 1982.

80. G. A. Clark and C. R. Stafford, "Quantification in American archaeology: a historical perspective," *World Archaeology*, vol. 14, no. 1, pp. 98–119, 1982.

81. J. E. Doran, "A computational model of socio-cultural systems and their dynamics," in *Theory and explanation in archaeology* (C. Renfrew, M. J. Rowlands, and B. Seegraves, eds.), London: Academic Press, 1982.

82. N. Fieller and S. O'Neill, "Orientations of Bronze-Age houses: statistical analysis of directional data," in CAA 82, pp. 172–81.

83. C. R. Orton, "Stochastic Process and Archaeological Mechanism in Spatial Analysis," *Journal of Archaeological Science*, vol. 9, no. 1, pp. 1–23, 1982.

84. C. R. Orton, "Cheam: a computer-assisted study of the pottery from a medieval kiln site," in *Computer Applications in Archaeology 1981*, (Birmingham), pp. 95–100, 1982.

85. C. R. Orton, "Computer simulation experiments to assess the performance of measures of quantity of pottery," *World Archaeology*, vol. 14, pp. 1–20, 1982.

86. N. S. Ryan, "Characterising fourth century coin loss: an application of principal components analysis to archaeological time-series da ta," *Science and Archaeology*, vol. 24, pp. 25–32., 1982.

87. P. H. A. Sneath, "Classification and identification with incomplete data," in CAA 82, pp. 182–7.

88. B. L. Stark and J. T. Hepworth, "A diversity index approach to analysis of standardisation in prehistoric pottery," in CAA 82, pp. 87–104.

89. N. Fieller, R. Nolan, and D. Dobson, "Spatial analysis in irregular regions," in CAA 83, pp. 161–70.

90. A. J. Goodier, "The formation of boundaries in the pagan Anglo-Saxon period: a statistical study," in CAA 83, pp. 93–102.

91. M. A. Kelly and J. G. B. Haigh, "Determination of archaeological structure by spatial analysis and association," in CAA 83, pp. 181–8.

92. M. N. Leese, "Statistical Methodology in Numismatic Studies," *Journal of Archaeological Science,* vol. 10, pp. 29–33, 1983.

93. C. D. Litton and J. Restorick, "Computer analysis of post hole distributions," in CAA 83, pp. 85–92.

94. J. A. W. Lock, "Pitfalls in the preparation of a computer-based archive for palaeo-entomological records," in CAA 83, pp. 67–74.

95. C. Orton, "A statistical technique for integrating C-14 dates with other forms of dating evidence," in CAA 83, pp. 115–24.

96. I. O. Angell and R. E. M. Moore, "On archaeological applications of the Voronoi tesselation," in CAA 84, pp. 9–14.

97. J. Dean and J. Nichol, "Burial Mound—a simulation of an archaeological dig," in CAA 84, pp. 38–48.

98. P. L. Eidenbach, "ARCHAEOSTAT 2. 0—Applesoft programs for data analysis," *Advances in Computer Archaeology,* vol. 1, no. 2, pp. 26–36, 1984.

99. M. Fletcher and G. Lock, "Post-built structures at Danebury hillfort. An analytical search method with statistical discussion," *Oxford Journal of Archaeology,* vol. 3, no. 2, pp. 175–96, 1984.

100. A. D. Guio and G. Secco, "A new computer seriation algorithm," in CAA 84, pp. 199–209.

101. R. G. Reynolds, "A computational model of hierarchical decision systems," *Journal of Anthropological Archaeology,* vol. 3, pp. 159–89, 1984.

102. W. Williams and H. Pike, "The layout of Woodhenge," in CAA 84, pp. 189–98.

103. M. Attas, J. M. Fossey, and L. Yaffee, "Provenance-group formation using general-purpose statistical analysis package," *Advances in Computer Archaeology,* vol. 2, no. 2, pp. 1–30, 1985.

104. M. Fletcher, "Statistical notes (1)," *Archaeological Computing Newsletter,* vol. 2, pp. 6–8, 1985.

105. M. Fletcher, "Statistical notes 2: measures of central tendency," *Archaeological Computing Newsletter,* vol. 3, pp. 6–7, 1985.

106. M. Fletcher, "Statistical notes 3: Display," *Archaeological Computing Newsletter,* vol. 4, pp. 17–20, 1985.

107. M. Fletcher, "Statistical notes 4: measures of variability," *Archaeological Computing Newsletter,* vol. 5, pp. 20–4, 1985.

108. C. R. Orton, "Two useful parameters for pottery research," in *Computer Applications in Archaeology 1985,* (London), pp. 114–20, Institute of Archaeology, University of London, 1985.

109. P. Reilly and R. Zambardino, "Boundary associations and the manipulation of ancient boundaries: a computerised approach," in *To pattern the past* (A. Voorips and S. Loving, eds.), pp. 15–30, Amsterdam: P. A. C. T. (11), 1985.

110. C. R. Stafford, "Data transformations of archaeological variables: a computer-assisted graphic approach," *Advances in Computer Archaeology,* vol. 2, pp. 38–51, 1985.

111. S. Bennett, "Dig—an archaeological simulation," *Archaeological Computing Newsletter,* vol. 7, pp. 18–20, 1986.

112. J. E. Doran, "A contract-structure model of sociocultural change," in CAA 86, pp. 171–8.

113. R. C. Dunnell, P. A. Teltser, and R. Vercruysse, "Efficient error reduction in large data sets," *Advances in Computer Archaeology,* vol. 3, no. 2, pp. 22–39, 1986.

114. M. Fletcher, "Statistics notes 5: probability," *Archaeological Computing Newsletter,* vol. 6, pp. 10–12, 1986.

115. J. G. B. Haigh and M. Kelly, "Interactive spatial analysis on a micro," in CAA 86, pp. 162–70.

116. P. H. A. Sneath, "Some experiments in fitting pairs of diagrams that lack defined reference points," in CAA 86, pp. 179–96.

117. Z. E. Szafranski, "The application of numeric methods in archaeology in Poland," *Archaeological Computing Newsletter,* vol. 6, pp. 17–21, 1986.

118. M. Avery, "DATRAN: analysing radiocarbon dates," in Ruggles and Rahtz (CAA 87), pp. 75–78.

119. R. Bertelsen, "Correspondence analysis as explorative tool," in Ruggles and Rahtz (CAA 87), pp. 25–28.

120. R. Cribb, "Some spatial analysis applications programs," *Archaeological Computing Newsletter,* vol. 13, pp. 6–12, 1987.

121. N. Fieller and E. Flenley, "Statistical Analysis of Particle Sizes and Sediments," in Ruggles and Rahtz (CAA 87), pp. 79–93.

122. M. Fletcher and M. Attwell, "How many tombs make a site?," in Ruggles and Rahtz (CAA 87), pp. 61–74.

123. A. Gob, "Multivariate Analysis of lithic industries," in Ruggles and Rahtz (CAA 87), pp. 15–24.

124. K. Kintigh, "The archaeologists analytical toolkit," *Archaeological Computing Newsletter,* vol. 10, pp. 4–6, 1987.

125. R. R. Laxton, "Some results on mathematical seriation with applications," in Ruggles and Rahtz (CAA 87), pp. 39–44.

126. M. N. Leese, "Calendar date bands from from multiple-valued radiocarbon calibration curves," in Ruggles and Rahtz (CAA 87), pp. 147–152.

127. R. Martlew, "Digging deeper into history: a computer-based simulation pack," *Archaeological Computing Newsletter*, vol. 13, pp. 1–5, 1987.

128. T. Ringrose, "Correspondence analysis for stratigraphic abundance data," in Ruggles and Rahtz (CAA 87), pp. 3–14.

129. P. Rodgers, "Multi-Response permutation procedures," in Ruggles and Rahtz (CAA 87), pp. 45–54.

130. R. Tomber, "Multivariate statistics and assemblage comparison," in Ruggles and Rahtz (CAA 87), pp. 29–38.

131. S. Vaughan and D. Guppy, "Statistics and the archaeological sample," in Ruggles and Rahtz (CAA 87), pp. 55–60.

1.3   Finds analysis

1. J.-C. Gardin, "Four codes for the description of artefacts: an essay in archaeological technique and theory," *American Anthropologist*, vol. 60, pp. 335–57, 1958.

2. J. E. Doran and F. R. Hodson, "A digital computer analysis of Palaeolithic flint assemblages," *Nature*, vol. 210, pp. 688–9, 1966.

3. J.-C. Gardin, "Methods for the descriptive analysis of archaeological material," *American Antiquity*, vol. 32, pp. 13–30, 1967.

4. J. D. Wilcock, "Petroglyphs by computer," *Science and Archaeology*, vol. 2-3, pp. 27–9, 1970.

5. M. Forsstrom, "On automatic data treatment as an aid to the recording and processing of archaeological finds," *Norwegian Archaeological Review*, vol. 5, pp. 28–44, 1972.

6. R. R. Newell and A. P. J. Vroomans, *Automatic artefact registration and systems for archaeological analysis with the Phillips P1100 computer: a Mesolithic te st-case.* Oosterhout: Anthropological Publications, 1972.

7. J. Poulsen, "On the processing of pottery data," *Jysk Arkaeologisk Selskabs Handboger*, vol. 11, 1972.

8. R. Whallon, "A new approach to pottery typology," *American Antiquity*, vol. 37, pp. 13–33, 1972.

9. P. Allsworth-Jones and J. D. Wilcock, "Palaeolithic leafpoints—an experiment in taxonomy," in CAA 74, pp. 36–46.

10. B. Hulthen, "On documentation of pottery," *Acta Archaeologica Lundensia Ser in 8 minore*, vol. 3, 1974.

11. H. H. M. Pike and R. Bradley, "Notes on the analysis of lithic assemblages," in CAA 74, pp. 27–9.

12. P. Allsworth-Jones, "A cluster analysis of some Aurignacian and some Szeletian assemblages," in CAA 75, pp. 81–92.

13. P. C. Barker, "An exact method of describing metal weapon points," in CAA 75, pp. 3–8.

14. F. S. Celoria and J. D. Wilcock, "A computer-assisted classification of British Neolithic axes," *Science and Archaeology*, vol. 16, pp. 11–29, 1975.

15. D. F. Chantrey, J. D. Wilcock, and F. S. C. Celoria, "The sorting of archaeological materials by computer and by man: an interdisciplinary study in pottery classification," *Science and Archaeology*, vol. 14, pp. 5–31, 1975.

16. A. Lengyel, "Computerisation of pottery finds," in CAA 75, pp. 57–62.

17. R. R. Newell, "Automatic artifact registration," in CAA 75, pp. 69–80.

18. J. D. Wilcock and S. J. Shennan, "Shape and style variation in Central German Bell Beakers: a computer assissted study," *Science and Archaeology*, vol. 15, pp. 17–31, 1975.

19. J. D. Wilcock and S. J. Shennan, "The computer analysis of pottery shapes with application to bell beaker pottery," in CAA 75, pp. 98–106.

20. P. Callow, "British and French handaxe series," in CAA 76, pp. 33–40.

21. J. A. Riley, "Quantification of Roman pottery of the Mediterranean," in CAA 76, pp. 53–7.

22. P. Callow and R. E. Webb, "Structure in the S. W. French Mousterian," in CAA 77, pp. 69–76.

23. L. D. Smith and D. F. Green, "Determination of vessel morphology from sherd weight: a statistical model for Mississipian funerary ceramics," in CAA 77, pp. 77–90.

24. M. E. Townsend, "A cluster analysis of weapon heads," in CAA 77, pp. 99–104.

25. S. Turpin and J. A. Neely, "An automated computer technique for vessel form analysis," *Plains Anthropol*, vol. 22, pp. 313–319, 1977.

26. S. Heinemann, "Computerized axial tomography—application to archaeological material," *Anthropological Journal of Canada*, vol. 16, no. 3, pp. 13–6, 1978.

27. M. J. Joukowsky, "Computer use in pottery studies in Aphrodisias," *Journal of Field Archaeology*, vol. 5, pp. 431–42, 1978.

28. M.-S. Lagrange, "A comparative study of the logical structure of information recorded about material objects in computerised databases in archaeology, history of art and related fields," in *International Conference on Automatic Processing of Art History Data and Documents* (P. Barocchi and F. Bisogni, eds.), Pisa: Scuola Normale Superiore, 1978.

29. R. R. Mertz and G. J. Levenbach, "An information theory approach to Mycenean pottery," in *Computer Applications in Archaeology 1978*, vol. 6, (Birmingham), pp. 29–33, University of Birmingham, 1978.

30. P. V. Clarke, "Processing of pottery from the Wroxeter Baths Basilican Area excavations of 1966-77," in CAA 79, pp. 39–44.

31. M. N. Leese, "A statistical study of Welsh Bronze Age metal artefacts," in CAA 79, pp. 45–52.

32. S. Cope, "The statistical analysis of coin weights by computer and a rationalised method for producing histograms," *Numismatic Chronicle*, vol. 20, pp. 178–184, 1980.

33. J. Ferguson, "Application of Data Coding to the Differentiation of British Flint Mine Sites," *Journal of Archaeological Science*, vol. 7, pp. 277–286, 1980.

34. P. M. Kenrick, "Vector MZ microcomputer used for cataloguing pottery by the Colchester Archaeological Trust," in *Microcomputers in archaeology* (J. D. Stewart, ed.), no. 4 in Occasional Paper, pp. 35–7, Duxford, Cambridge: Museum Documentation Association, 1980.

35. H. Pike, "Cluster analysis of Greek pottery from Carthage," in *Computer Applications in Archaeology 1980*, vol. 8, (Birmingham), pp. 17–27, University of Birmingham, 1980.

36. A. S. Burger, "Late Roman money Circulation in Pannonia," Budapest, 1981.

37. D. R. Crowther, "The Chenhall system of artifact classification: an archaeologist's assessment," *MDA Information*, vol. 5, pp. 7–9, 1981.

38. C. Haselgrove and J. Collis, "A computer-based information storage and retrieval scheme for Iron Age coin finds in Britain?," in *Coinage and society in Britain and Gaul* (B. W. Cunliffe, ed.), no. 38 in Research Report, pp. 57–60, London: Council for British Archaeology, 1981.

39. V. R. Anderson-Stojanovic, "Computer-assisted analysis of pottery at Stobi, Yugoslavia," *Journal of Field Archaeology*, vol. 9, pp. 335–48, 1982.

40. P. Callow, "Have computer, will classify? A stone age problem," in *Computer Applications in Archaeology 1981*, (Birmingham), pp. 26–35, 1982.

41. D. R. Crowther and B. K. W. Booth, *A microcomputer catalogue for excavation small finds.* London: Institute of Archaeology, 1982.

42. G. Depeyrot, *Le numeraire gaulois du IVe siecle: aspects quantitatifs*, vol. 127 of *International series*. Oxford: British Archaeological Reports, 1982.

43. I. D. G. Graham, "Analysis of finds from archaeological sites," *Times Higher Educational Supplement 25. 6. 82*, 1982.

44. M. Mardaga-Campbell, A. B. Pomeroy, and J. B. Campbell, "It all hinges on stone: establishing a data bank for north Queensland prehistory," *Australian Archaeology*, vol. 14, pp. 67–71, 1982.

45. J. D. Richards, "Profile analysis of early Anglo-Saxon pottery," in CAA 82, pp. 105–13.

46. N. S. Ryan, "Micro-computer analysis of Romano-British coin loss," in CAA 82.

47. N. Hawley, "Surveying and lithics analysis using the TRS-80," in CAA 83, p. 191.

48. E. Healey and J. P. J. Catton, "Lithics and computers: towards a standard question list," *Lithics*, vol. 4, pp. 50–66, 1983.

49. M. N. Leese and P. L. Main, "An approach to the assessment of artefact dimensions as descriptors of shape," in CAA 83, pp. 171–80.

50. S. J. Pierpoint and A. M. C. Rochfort, "The Romano-British pottery assemblage from Wroxeter: problems in assembling a database," in CAA 83, pp. 15–22.

51. P. Tyers and A. Vince, "Computing the DUA pottery," *London Archaeologist*, vol. 4, no. 11, pp. 299–304, 1983.

52. K. R. Crouch and S. A. Shanks, "Processing the Roman pottery from the excavations in Staines, Surrey," 1984.

53. K. Greene, "The Roman fortress at Usk, Wales, and the processing of Roman pottery for publication," *Journal of Field Archaeology*, vol. 2, pp. 405–12, 1984.

54. K. Greene, "Pots, people and probability: a spatial analysis of pottery in the Neroniah legionary fortress at Usk, Gwent," *Studien Zur Romischen Keramik 12-15 Sept. 1982*, 1984.

55. S. McNally and V. Walsh, "The Achmim data base: a multi-stage system for computer-assisted analysis of artifacts," *Journal of Field Archaeology*, vol. 11, pp. 47–59, 1984.

56. S. J. Pierpoint, "An assessment of the use of the RAPPORT system for the Romano-British pottery assemblage from Wroxeter," in CAA 84, pp. 129–33.

57. Y. D. Stallard, W. A. Gray, and N. J. Fiddian, "Creating a conservation record database using a relational database management system," in CAA 84, pp. 78–92.

58. S. Laflin, "Input and analysis of profiles using a microcomputer," in CAA 85, pp. 91–4.

59. E. Pace, "Computers aid study of ancient artifacts," *New York Times National Edition, Aug. 13 (46500)*, vol. 134, pp. 19–22, 1985.

60. G. Siromoney, S. Govindaraju, and M. Bagavandas, "Temple carvings of Southern India," *Perspectives in Computing*, vol. 5, no. 1, pp. 34–43, 1985.

61. J. D. Wilcock and T. Coombes, "Some further developments in hardware and software for the automatic capture of artefact shapes by television camera," in CAA 85, pp. 145–51.

62. P. Zimansky and E. C. Stone, "Ceramic analysis and the personal computer: a case study from 'Ain Dara," *Context*, vol. 4, no. 4, pp. 14–16, 1985.

63. A. B. Havercroft, G. Rugg, and A. Turner-Rugg, "Analysis of sizes and shapes of pottery: three programs for a small computer," *Archaeological Computing Newsletter*, vol. 7, pp. 10–13, 1986.

64. S. Laflin, "Use of a Sinclair Spectrum for shape analysis," in *Computer Applications in Archaeology 1986*, (Birmingham), pp. 83–90, University of Birmingham, 1986.

65. M. L. Ryder, "The use of a digitising tablet to measure fibre diameters in textile remains," *Archaeological Computing Newsletter*, vol. 7, pp. 21–4, 1986.

66. S. Ward, "Samian ware on a home computer," *Archaeological Computing Newsletter*, vol. 8, pp. 6–9, 1986.

67. L. D. Jones, "Some computer applications to petrological analysis of pottery," in Ruggles and Rahtz (CAA 87), pp. 253–262.

68. P. L. Main, "Accessing outline shape information efficiently," in Ruggles and Rahtz (CAA 87), pp. 243–252.

69. N. S. Ryan, *Forth-century coin finds from Roman Britain: a computer analysis*, vol. 183 of *British Series*. Oxford: British Archaeological Reports, 1988.

1.4 Survey and excavation recording, and stratigraphic analysis

1. F. Hole and M. Shaw, "Computer analysis of chronological seriation," *Rice University Studies*, vol. 53, no. 3, 1967.

2. G. L. Cowgill, "Computer analysis of archaeological data from Teotihuacan, Mexico," in *New perspectives in archaeology* (S. R. Binford and L. R. Binford, eds.), Chicago: Aldine, 1968.

3. R. E. Linington, "The Rome computer system for treating archaeological survey results. First part," *Prospezione Archaeologiche*, vol. 3, pp. 19–36, 1968.

4. R. E. Linington, "The Rome computer system for treating archaeological survey results. Second part," *Prospezione Archaeologiche*, vol. 4, pp. 9–38, 1969.

5. E. Oldenburg and O. Mollerop, "An attempt to code grave descriptions," *Norwegian Archaeological Review*, vol. 2, pp. 78–85, 1969.

6. S. W. Gaines, "Computer utilization for archaeological field problems," *Science and Archaeology*, vol. 8, 1971.

7. P. Buckland, "An experiment in the use of a computer for on-site recording of finds," *Science and Archaeology*, vol. 9, pp. 22–4, 1973.

8. M. L. Shackley, "Computers and sediment analysis in archaeology," *Science and Archaeology*, vol. 9, pp. 29–30, 1973.

9. J. D. Wilcock, "The use of remote terminals for archaeological site records," *Science and Archaeology*, vol. 9, p. 25, 1973.

10. J. A. Brown and B. Werner, "An on-site data management system application in field archaeology," *Communications of the ACM*, vol. 17, pp. 644–7, 1974.

11. S. Laflin, "Recording archaeological excavations," in CAA 74, pp. 71–4.

12. F. M. M. Pryor, *Excavation at Fengate, Peterborough, England: the first report*. No. 3 in Archaeology Monograph, Toronto: Royal Ontario Museum, 1974.

13. M. L. Shackley and J. D. Wilcock, "Pit sediments at Danebury and the computer," in CAA 74, pp. 82–90.

14. S. Cleuziou, J. P. Demole, and A. Duponcel, "Towards an automatic archaeological data processing system applied to Neolithic sites," in CAA 75, pp. 107–8.

15. E. C. Harris, "Stratigraphic analysis and the computer," in CAA 75.

16. S. S. Lukesh, "Excavation recording at Buccino, South Italy," in CAA 75, pp. 63–8.

17. J. D. Wilcock, "Archaeological context sorting by computer," in CAA 75, pp. 93–7.

18. S. Bishop and J. D. Wilcock, "Archaeological context sorting by computer: the STRATA program," *Science and Archaeology*, vol. 17, pp. 3–12, 1976.

19. I. D. G. Graham, "Intelligent Terminals for Excavation Recording," in CAA 76, pp. 48–51.

20. A. Lengyel, "Computerised topo-bibliography of Carthage," in CAA 76, pp. 26–32.

21. M. L. Shackley, A. G. MacGregor, and J. M. Duncan, "Information Retrieval and Graphics at Danebury and York," in CAA 76, pp. 72–9.

22. S. Donaghey and J. D. Wilcock, "[Reply to Harris 1977]," *Science and Archaeology*, vol. 20, pp. 28–9, 1977.

23. E. C. Harris, "Archaeological context sorting by computer (reply to Bishop & Wilcock 1976)," *Science and Archaeology*, vol. 20, pp. 21–2, 1977.

24. J. S. Jeffries, "Excavation records: techniques in use by the Central Excavation Unit," Occasional Paper 1, Directorate of Ancient Monuments and Historic Buildings, Department of the Environment, 1977.

25. J. Saers, "Birka graves by computer," *Norwegian Archaeological Review*, vol. 11, pp. 84–91, 1978.

26. N. G. Steger, V. Jones, D. J. Keene, and S. V. Keene, "Practical applications of computer processing in Winchester," in *Computer Applications in Archaeology 1978*, (Birmingham), pp. 77–84, University of Birmingham, 1978.

27. W. Schauffler, "Computerized data base management systems in archaeological research: a SELGEM case study," *MASCA Journal*, vol. 1, pp. 50–2, 1979.

28. D. G. Benson and J. S. Jeffries, "Microprocessors and archaeological records," in *Microcomputers in Archaeology* (J. D. Stewart, ed.), Museum Documentation Association Occasional Paper 4, pp. 5–12, Duxford, Cambridge: MDA, 1980.

29. B. K. W. Booth, "Computing on excavations," *Popular archaeology*, vol. 2, no. 4, pp. 37–9, 1980.

30. B. K. W. Booth, "A general program for archaeological data base management," in *Microcomputers in archaeology* (J. D. Stewart, ed.), MDA Occasional Paper 4, pp. 13–20, Duxford, Cambs: MDA, 1980.

31. B. K. W. Booth, "The Maxey micro," *Rescue News*, vol. 23, p. 6, 1980.

32. P. J. Fasham and J. W. Hawkes, "Computerised recording systems and analysis in an archaeological unit," in *Microcomputers in archaeology* (J. D. Stewart, ed.), vol. 4 of *Museum Documentation Association Occasional Paper*, pp. 21–4, Duxford, Cambridge: MDA, 1980.

33. K. Flude, "Computing in the Department of Urban Archaeology," in *Microcomputers in archaeology* (J. D. Stewart, ed.), MDA Occasional Paper 4, pp. 25–30, Duxford, Cambs: MDA, 1980.

34. I. D. G. Graham, "Microcomputers for archaeological recording: a draft standard," in *Microcomputers in archaeology* (J. D. Stewart, ed.), MDA Occasional Paper 4, pp. 47–9, Duxford, Cambs: MDA, 1980.

35. G. D. Hathaway, "Towards the development of a viable computer-aided site analysis tool for archaeologists," in *Microcomputers in archaeology* (J. D. Stewart, ed.), MDA Occasional Paper 4, pp. 31–4, Duxford, Cambs: MDA, 1980.

36. I. Johnson, "The computer recording of excavation data from hunter-gatherer sites," in *Computer Applications in Archaeology 1980*, (Birmingham), pp. 9–16, University of Birmingham, 1980.

37. J. A. Brown, C. Clayton, T. Wendt, and B. Werner, "The Koster Project information retrieval application," in *Computer data bank applications in archaeology* (S. W. Gaines, ed.), pp. 67–79, Tucson: University of Arizona Press, 1981.

38. R. G. Chenhall, "Computerized data bank management," in *Computer data bank applications in archaeology* (S. W. Gaines, ed.), pp. 1–8, Tucson: University of Arizona Press, 1981.

39. D. T. Freemen, "On site visualisation and data processing techniques of survey data in archaeological prospection," mphil thesis, Bradford University, 1981.

40. S. W. Gaines, *Data Bank Applications in Archaeology*. Tucson: Univ. of Arizona Press, 1981.

41. S. W. Gaines, "Computer data bank applications at a remote site location," in *Computer data bank applications in archaeology* (S. W. Gaines, ed.), Tucson: University of Arizona Press, 1981.

42. I. Johnson, "Bytes from sites: the design of an excavation data recording system," in *Holier than thou: proceedings of the 1978 Kioloa Conference on Australian Prehistory* (I. Johnson, ed.), pp. 91–118, RSPacS, Australian National Museum: Department of Prehistory, 1981.

43. C. S. Peebles and P. Galloway, "Notes from underground: archaeological data management from excavation to curation," *Curator*, vol. 24, no. 4, pp. 225–51, 1981.

44. J. D. Wilcock, "STRATA—the microcomputer version," in CAA 81, pp. 112–114.

45. B. K. W. Booth, "Some projects to store and process data from survey and excavation with the aid of a computer," in CAA 81, pp. 20–5.

46. J. P. J. Catton, M. U. Jones, and J. C. Moffett, "The 1965–1978 Mucking excavation computer database," in CAA 82, pp. 36–43.

47. K. Flude, S. George, and S. Roskams, "Uses of an archaeological database: with particular reference to computer graphics and the writing-up process," in CAA 81, pp. 51–60.

48. S. W. Gaines and R. Most, "Computerised data sharing: the SARG example of cooperative research," in CAA 82, pp. 19–32.

49. I. D. G. Graham, J. C. Moffett, K. Flude, and B. K. W. Booth, "Computer recording of archaeological excavations," *Bulletin of the Institute of Archaeology of London*, vol. 19, pp. 123–59, 1982.

50. B. J. Grimley and J. G. B. Haigh, "A general purpose data management system for archaeologists," in CAA 82, pp. 63–8.

51. J. G. B. Haigh, "Procedures for the surface sampling of archaeological sites," in CAA 82, pp. 61–9.

52. S. S. Lukesh, "A databank for archaeological research," in CAA 82, pp. 33–55.

53. F. Bettess and G. Bettess, "Use of computers in surveying archaeological sites," in CAA 83, pp. 75–84.

54. B. K. W. Booth, "The changing requirements of an archaeological database," in CAA 83, pp. 23–9.

55. K. Flude, "Using computers at Billingsgate," *Bulletin of the Institute of Archaeology*, vol. 19, pp. 127–46, 1983.

56. I. D. G. Graham, "Computer recording of archaeological excavations," *Bulletin of the Institute of Archaeology*, vol. 19, pp. 123–6, 1983.

57. B. J. Grimley, "Relational problems in archaeological data handling," in CAA 83, pp. 31–8.

58. J. G. B. Haigh and J. D. Wilcock, "Some further developments of the STRATA system," in CAA 83.

59. J. W. Hawkes, "Wessex Archaeological Committee: proposed computerisation of post-excavation systems." Unpubl. 2pp, 1983.

60. P. J. Huggins, "Saxon building measurements," in CAA 83, pp. 103–10.

61. G. Lock, "Computer-assisted seriation of the pits at Danebury hillfort," *Science and Archaeology*, vol. 25, pp. 3–8, 1983.

62. J. C. Moffett, "The generation of archaeological excavation computer databases," *Bulletin of the Institute of Archaeology*, vol. 19, pp. 127–46, 1983.

63. C. S. Peebles, "Basic data and data processing in the Lubbub Creek archaeological locality," in *Prehistoric Agricultural Communities in West Central Alabama*, vol. III, Ann Arbor: University of Michigan, 1983.

64. D. J. Powlesland, "Pots, pits and portables," *Practical Computing*, vol. 6, no. 6, pp. 144–6, 1983.

65. A. A. Arndt, *A Microprocessor Computer System for Field Capture of Archaeological Data*. PhD thesis, University of Minnesota, 1984.

66. D. G. Benson, "Information technology: application by the Dyfed Archaeological Trust," in *Information systems in archaeology* (R. Martlew, ed.), pp. 54–62, Gloucester: Alan Sutton Publishing Ltd, 1984.

67. B. K. W. Booth, R. Brough, and F. M. M. Pryor, "The flexible storage of site data: a microcomputer application," *Journal of Archaeological Science*, vol. 11, pp. 81–9, 1984.

68. R. P. Case, "Microcomputers in the field," *Byte*, vol. 9, no. 6, pp. 243–50, 1984.

69. J. Chapman, "Design of a database for archaeological site data," in CAA 84, pp. 119–28.

70. K. Flude, "Setting up an archaeological computer system—an introduction," in *Information systems in archaeology* (R. Martlew, ed.), pp. 31–44, Gloucester: Alan Sutton Publishing Ltd, 1984.

71. S. W. Gaines and S. Lerner, "The role of a large scale, automated data base in on-going excavations: an example from the American Southwest," in CAA 84, pp. 63–77.

72. I. Johnson, "MINARK: a database system for archaeologists," *Advances in Computer Archaeology*, vol. 1, no. 1, pp. 12–27, 1984.

73. G. Lock, "Computerised post-excavation work at Danebury hillfort," *Archaeological Computing Newsletter*, vol. 1, pp. 2–5, 1984.

74. G. Lock, *Computing and statistics in archaeology: Danebury hillfort, a case study*. PhD thesis, North Staffordshire Polytechnic, 1984.

75. G. R. Lock, "The computing," in *Danebury, an Iron Age hillfort in Hampshire* (B. W. Cunliffe, ed.), Research Report, London: CBA, 1984.

76. S. S. Lukesh, "A databank for excavation recording," in CAA 84, pp. 134–60.

77. J. C. Moffett, "Simple data entry and retrieval package: user's manual." Unpubl. 28pp, 1984.

78. J. C. Moffett, "Report on the current status of Mucking excavation data." Unpubl. 9pp, 1984.

79. M. J. Rains, "Home computers in archaeology," in CAA 84, pp. 15–26.

80. C. J. Arnold, "Computing and the archaeological excavation," *Archaeological Computing Newsletter*, vol. 5, pp. 2–3, 1985.

81. J. Beavis, "Theodilite program for Tl 58/59 calculator," 1985. Unpubl. 4pp.

82. B. K. W. Booth, *MAXARC manual: introduction*. Unpubl. 3pp, 1985.

83. J. Bowler, "From site to software," *Popular Archaeology*, vol. 6, no. 5, pp. 42–3, 1985.

84. P. Crummy, "Converting site notes into a database," in CAA 85, pp. 57–61.

85. HBMC, "Guide to the services available from the Ancient Monuments Laboratory," 1985.

86. J. G. B. Haigh, "The Harris Matrix as a partially ordered set," in CAA 85, pp. 81–90.

87. I. Johnson, *MINARK. Archaeological database system. User manual*. Brisbane, QLD, Australia: Minark Research, 1985.

88. S. Katz and P. Katz, "Automated data recording in archaeology," *Advances in Computer Archaeology*, vol. 2, pp. 1–20, 1985.

89. T. B. Kormso, F. Plog, S. Upham, and L. Cordell, "An application of computers and computerized devices in the field," *Advances in Computer Archaeology*, vol. 2, no. 2, pp. 31–43, 1985.

90. G. Lock, "A new direction or a new distraction: a pragmatic assessment of computer applications in archaeology based on work at Dan ebury hillfort," in *Current Issues in Archaeological Computing* (M. A. Cooper and J. D. Richards, eds.), vol. 271 of *International series*, pp. 35–46, Oxford: British Archaeological Reports, 1985.

91. G. Lock, "Computerised post-excavation work at Danebury—part 2," *Archaeological Computing Newsletter*, vol. 2, pp. 8–10, 1985.

92. J. McVicar, "Using microcomputers in archaeologgy: some comments and suggestions," in CAA 85, pp. 102–8.

93. H. L. O'Brien and C. L. Redman, "The microcomputer: an effective field tool?," *Advances in Computer Archaeology*, vol. 2, no. 2, pp. 43–67, 1985.

94. J. Schofield and P. Tyers, "Towards a computerised archaeological research archive," in *Current Issues in Archaeological Computing* (M. A. Cooper and J. D. Richards, eds.), vol. 271 of *International Series*, pp. 5–16, Oxford: British Archaeological Reports, 1985.

95. D. J. Smith and M. Aitken, "Computing and the vicarage," in CAA 85, pp. 133–8.

96. Central Excavation Unit, *Central Excavation Unit Manual: Part 2: Recording*. London: HBMC(E), 1985.

97. D. H. Brown, "Working computers in archaeology," *Archaeological Computing Newsletter*, vol. 7, pp. 14–17, 1986.

98. R. Cribb, "Introducing the concept of a dedicated spatial analysis package for archaeology," *Archaeological Computing Newsletter*, vol. 9, pp. 5–12, 1986.

99. A. B. Knapp, "Micros, Minark, and data processing at Pella in Jordon," *Advances in Computer Archaeology*, vol. 3, no. 2, pp. 1–21, 1986.

100. B. Levitan, "On-site recording and the microcomputer," *Archaeological Computing Newsletter*, vol. 8, pp. 15–20, 1986.

101. J. B. McVicar and S. Stoddart, "Computerising an archaeological excavation: the human factors," in *Computer Applications in Archaeology 1986*, (Birmingham), pp. 225–7, University of Birmingham, 1986.

102. H. Mytum, "Recording and analysing graveyard data using the BBC micro," *Archaeological Computing Newsletter*, vol. 8, pp. 3–5, 1986.

103. D. J. Powlesland, "On-site computing: in the field with the silicon chip," in *Computer usage in British Archaeology* (J. D. Richards, ed.), IFA Occasional Paper No. 1, pp. 39–43, Birmingham: Institute of Field Archaeologists, 1986.

104. F. M. M. Pryor, "Post-excavation computing: some whys and wherefores," in *Computer usage in British Archaeology* (J. D. Richards, ed.), vol. 1 of *IFA Occasional Paper*, pp. 45–50, Birmingham: Institute of Field Archaeologists, 1986.

105. N. S. Ryan, "Some Thoughts on an Archaeologist's Toolkit," in CAA 85, pp. 126–32.

106. J. Schofield, "The publication of London's past," *Popular Archaeology*, vol. March 1986, pp. 22–6, 1986.

107. H. Welfare, "The current use of computers in surveying earthworks," in *Computer usage in British Archaeology* (J. D. Richards, ed.), IFA Occasional Paper No. 1, pp. 51–3, Birmingham: Institute of Field Archaeologists, 1986.

108. M. A. Cooper, "Using archaeological stratigraphy," *Archaeological Computing Newsletter*, vol. 12, pp. 3–13, 1987.

109. P. J. Fasham and J. W. Hawkes, "Computerised site archives: a response," *Archaeological Computing Newsletter*, vol. 12, p. 1, 1987.

110. P. Reilly and A. Walter, "Three-dimensional digital recording in the field," *Archaeological Computing Newsletter*, vol. 10, pp. 7–11, 1987.

111. P. Rodgers, "The utilisation of computerised site archives," *Archaeological Computing Newsletter*, vol. 11, pp. 1–4, 1987.

112. N. S. Ryan, "Data structures for stratigraphic analysis," *Archaeological Computing Newsletter*, vol. 14, pp. 1–11, 1988.

113. Dorset Institute of Higher Education Computer Service, *MicroQUERY for archaeologists*. Unpubl. 31pp, ND. service:n. d.

114. Dorset Institute of Higher Education Computer Service, *Archaeology context manual*. Unpubl. 30pp, ND.

115. Greater Manchester Archaeology Unit, *Introduction to the GMAU computer system*. Unpubl. 48pp, ND.

116. B. K. W. Booth, "The recording system used at Maxey," in *Archaeology and environment of the Lower Welland Valley* (F. M. M. Pryor and C. I. French, eds.), no. 3 in Northamptonshire Archaeological Monograph, in press.

1.5 Sites and monuments records

1. R. G. Chenhall, "Computers in Anthropology and Archaeology," publication no ge20-0384, IBM, 1971.

2. D. G. Benson, "On a sites and monument record for the Oxford region," *Oxoniensia*, vol. 37, pp. 226–37, 1972.

3. D. G. Benson, "A museum: Oxfordshire (sites and monuments record)," 1972.

4. S. Laflin, "Computer system for county gazetteers," *Science and Archaeology*, vol. 9, pp. 26–8, 1973.

5. R. A. Pryor, "A general scheme for local inventories," *Science and Archaeology*, vol. 9, pp. 7–16, 1973.

6. R. G. Chenhall, "Computerised data banks for archaeologists," *Archaographie*, vol. 3, pp. 23–34, 1974.

7. P. A. G. Clack, "The Northern archaeological index information retrieval system," in *Computer Applications in Archaeology 1975*, (Birmingham), pp. 9–17, University of Birmingham, 1975.

8. J. B. Kenworthy, J. R. Stapleton, and J. H. Thurston, *The Fife Archaeological Index—a computer implementation*. University of Birmingham, 1975.

9. B. Sheppard, *Handbook 1: recording the evidence*. Liverpool: Archaeological Survey of Merseyside, Merseyside Archaeological Society, 1977.

10. R. Canham and S. Hartgroves, *Computerisation of sites and monuments record: long term objectives*. Unpubl. 3pp, 1978.

11. G. Foard, *The Northamptonshire Sites and Monuments Record. Part I: Archaeology. A guide to the structure, purpose and use of the ar chaeological record*. Northampton: Northants County Council, 1978.

12. A. J. Parker and J. M. Painter, "A computer-based index of ancient shipwrecks," *International Journal of Nautical Archaeology and Underwater Exploration*, vol. 8, no. 1, pp. 69–70, 1979.

13. S. Scholtz, *A management information system design for archaeology*. PhD thesis, University of Arkansas, 1980.

14. W. F. Limp and T. G. Cook, "The ORACLE computerized information retrieval system," in *Computer data bank applications in archaeology* (S. W. Gaines, ed.), pp. 57–66, Tucson: University of Arizona Press, 1981.

15. F. Plog, "SARG: The computer in a cooperative effort," in *Computer data bank applications in archaeology* (S. W. Gaines, ed.), pp. 46–56, Tucson: University of Arizona Press, 1981.

16. A. Rieger, "AZSITE: The Arizona State Museum site survey data base," in *Computer data bank applications in archaeology* (S. W. Gaines, ed.), pp. 27–45, Tucson: University of Arizona Press, 1981.

17. S. Scholtz and M. Million, "A management information system for archaeological resources," in *Computer data bank applications in archaeology* (S. W. Gaines, ed.), pp. 46–56, Tucson: University of Arizona Press, 1981.

18. M. H. Smailes, "Feasibility study for archaeological records." Unpubl. 8pp, 1981.

19. Hampshire County Council, *Planning archaeological record and computer system. User manual*. County Planning Dept. Unpubl. 94pp, 1981.

20. J. Copeland, *A survey of record retrieval systems in archaeological units, planning departments and museums*. Unpubl, 1982.

21. T. H. Loy, "Experience with the National Inventory Programme of Canada," in *Computer Applications in Archaeology 1982*, (Birmingham), pp. 114–6, University of Birmingham, 1982.

22. NYCC, *Archaeological record system*. Northallerton: North Yorkshire County Council Computer Services, 1982.

23. M. H. Smailes and M. Griffiths, "Archaeological record system," Northallerton, 1982.

24. Anon, *The Wiltshire sites and monuments record users' guide*. Unpubl. 5pp, 1983.

25. P. Chadwick, *Berkshire County Council: archaeological record system*. Unpubl, 1983.

26. J. Copeland, *A study of the use of archaeological records and related material by professional and amateur archaeologists*. Unpubl, 1983.

27. J. M. Copeland, "Information retrieval systems for archaeological data," in *Computer Applications in Archaeology 1983*, (Bradford), pp. 39–46, University of Bradford, 1983.

28. R. Poulton, "Sites and monuments record. Instructions for completing computer coding form." Unpubl. 27pp. Surrey, 1983.

29. R. C. H. M. (Scotland), "User requirement specifications for computerised data storage and retrieval system." 1983.

30. D. M. Evans, "A national archaeological archive—computer database applications," in CAA 84, pp. 112–8.

31. T. M. Harris and C. Dudley, "A computer-based archaeological site information retrieval system for the Brighton area: a preliminary report," *Sussex Archaeological Newsletter*, vol. 42, p. 366, 1984.

32. J. C. Moffett, "The Bedfordshire County sites and monuments record database management system," in CAA 84, pp. 101–9.

33. G. Presland, "A cautionary tale: computerization of the Victoria archaeological survey sites register," *Advances in Computer Archaeology*, vol. 1, no. 1, pp. 7–11, 1984.

34. A. Simco, "Bedfordshire sites and monuments record: manual." Unpubl. 16pp, 1984.

35. A. Simco, "Bedfordshire sites and monuments record: a guide to computerisation." Unpubl. 3pp, 1984.

36. B. Ware, "Avon SMR manual." Unpubl. 36pp, 1984.

37. East Sussex County Council , *Manual for East Sussex Sites and Monuments Record*. Unpubl. 25pp, 1984.

38. Gloucestershire County Council, *Manual for Gloucestershire Sites and Monuments Record*. Unpubl. 5pp, 1984.

39. Scottish Office Computer Service, "Feasibility report for the RCHM (Scotland) on the computerisation of the National Monuments Record for Scotland." 1984.

40. Somerset County Council, "Sites and structures record. Manual for compilation of records." 7th edition. Unpubl, 1984.

41. Anon, *Manual for Essex sites and monuments record*. Unpubl. 45pp, 1985.

42. D. Baker, "The national/local interface: a county view," in *County archaeological records: progress and potential* (I. Burrow, ed.), pp. 64–7, Association of County Archaeological Officers, 1985.

43. D. G. Benson, "Problems of data entry and retrieval," in *County archaeological records: progress and potential* (I. Burrow, ed.), pp. 27–34, Association of County Archaeological Officers, 1985.

44. J. Bowler, "Computerising Northamptonshire's sites and monuments record," *Archaeological Computing Newsletter*, vol. 5, pp. 4–8, 1985.

45. I. Burrow, "The history of the sites and monuments record system," in *County archaeological records: progress and potential* (I. Burrow, ed.), pp. 6–15, Association of County Archaeological Officers, 1985.

46. I. Burrow, *County archaeological records: progress and potential*. Association of County Archaeological Officers, 1985.

47. P. N. Cheetham, "The archaeological database applied: North Yorkshire County Council Sites and Monuments Record at the University of Bradford," in CAA 85, pp. 49–56.

48. G. Chitty *et al.*, "Greater London Sites and Monuments Record," *Rescue News*, vol. 38, p. 8, 1985.

49. D. Evans, "Computerisation of sites and monuments records: the development of policy," in CAA 85, pp. 62–74.

50. D. Evans, "Computerisation and information (mis)management," *Archaeological Computing Newsletter*, vol. 5, pp. 13–15, 1985.

51. P. Fowler, "The national/local interface: a view from RCHM," in *County archaeological records: progress and potential* (I. Burrow, ed.), pp. 56–63, Association of County Archaeological Officers, 1985.

52. D. Fraser, "Sites and monuments records: the state of the art," in *County archaeological records: progress and potential* (I. Burrow, ed.), pp. 47–55, Association of County Archaeological Officers, 1985.

53. M. Taylor, "Computerisation of Lincolnshire's sites and monuments record," *Rescue News*, vol. 36, p. 12, 1985.

54. Norfolk Archaeological Unit, "Sites and monuments records manual for compilation of computer records." Unpubl. 27pp, 1985.

55. W. A. Boismier and P. Reilly, "Using graphics and DBMS in non-site archaeology," *Archaeological Computing Newsletter*, vol. 7, pp. 6–10, 1986.

56. D. Charles, "Computers in the national monuments record," *Archaeological Computing Newsletter*, vol. 9, pp. 2–4, 1986.

57. T. M. Harris, "Geographic information system design for archaeological site information retrieval," in CAA 86, pp. 148–61.

58. M. Redknap and L. Emptage, "Marine archaeological surveys: mapping the underwater cultural heritage," in CAA 86, pp. 49–58.

59. Anon, *The Suffolk sites and monuments record: a guide*. Unpubl, ND. anon.

60. C. Howard-Davis, "The Lancashire Sites and Monuments Register and its Computerisation," ND.

61. B. Sheppard, *A thesaurus for the classification of types of archaeological site in Merseyside*. Merseyside Archaeological Survey, ND.

62. B. Sheppard, *Computer handling of sites and monuments records: user's handbook*. Liverpool: Archaeological Survey of Merseyside, Merseyside Archaeological Society, ND.

1.6 Graphics

1. I. Scollar, "Transformation of extreme oblique aerial photographs to maps or plans by conventional means or by computer," in *Aerial reconnaissance for archaeology*, no. 12 in Research Report, pp. 52–8, Council for British Archaeology, 1975.

2. J. D. Wilcock, "Presentation of computer classification results: a comparison of graphical methods," *Science and Archaeology*, vol. 15, pp. 32–7, 1975.

3. R. W. Kaplan and M. D. Coe, "Pictures of the past: artefact density and computer graphics," *Hist Archaeol*, vol. 10, pp. 54–67, 1976.

4. P. Lankford and F. G. Stickel, "The archaeological potential of SYMAP: computer manual and case application," *Journal of New World Archaeology*, vol. 4, pp. 1–65, 1976.

5. R. Palmer, "A method for transcribing archaeological sites from oblique aerial photographs," *Journal of Archaeological Science*, vol. 3, pp. 391–4, 1976.

6. S. A. Copp, "A quick plotting program for archaeological data," *Newsletter of Computer Archaeology*, vol. 13, no. 1, pp. 17–24, 1977.

7. J. M. Duncan and P. L. Main, "The drawing of archaeological sections and plans by computer," *Science and Archaeology*, vol. 20, pp. 17–26, 1977.

8. P. L. Main and J. M. Duncan, "GRASP: graphical routines for archaeological plans and sections," in CAA 77, pp. 61–76.

9. R. Palmer, "A computer method for transcribing information graphically from oblique aerial photographs to maps," *Journal of Archaeological Science*, vol. 4, pp. 283–90, 1977.

10. I. Scollar, "L'informatique appliquee a la photographie aerienne," *L'archaeologie*, vol. 22, pp. 78–87, 1977.

11. I. Scollar, "Image processing via computer in aerial archaeology," *Computers and the Humanities*, vol. 11, pp. 347–51, 1977.

12. I. Scollar, T. S. Huang, B. Weidner, and G. Tang, "An installation for interactive transfer of information from oblique aerial photos to maps," in CAA 77, pp. 105–18.

13. I. O. Angell, "Megalithic science: ancient or modern?," in CAA 78, pp. 5–12.

14. P. L. Main, "The storage, retrieval, and classification of artefact shapes," in CAA 78, pp. 39–48.

15. R. Palmer, "Computer transcriptions from air photographs," *Aerial Archaeology*, vol. 2, pp. 5–9, 1978.

16. I. Scollar, "Computer image processing for archaeological air photographs," vol. 10, pp. 71–87, 1978.

17. F. G. Fedele, A. Mottura, and S. Straneo, "Computer and stratigraphy: profile drawing from plans," in CAA 79, pp. 20–35.

18. H. J. Hietala and P. A. Larson, "SYMAP analyses in archaeology: intrasite assumptions and a comparison with TREND analysis," *Norwegian Archaeological Review*, vol. 12, pp. 57–64, 1979.

19. P. L. Main, "Desirable attributes for a data-bank of archaeological shapes," in CAA 79, pp. 5–12.

20. C. W. McNett, "Computer graphics in the analysis of an Eastern Palaeoindian site," in *Computer graphics in archaeology: statistical, cartographic applications to spatial analysis* (S. Upham, ed.), vol. 15 of *Anthropological Research Papers*, pp. 69–79, Arizona State University, 1979.

21. I. Scollar, "Computer production of orthophotos from single oblique images or from rotating mirror scanners," *Aerial Archaeology*, vol. 4, pp. 17–28, 1979.

22. I. Scollar and B. Weidner, "Computer production of orthophotos from single oblique images or from rotating mirror scanners," *Aerial Archaeology*, vol. 4, pp. 17–28, 1979.

23. S. Upham, "Computer graphics in archaeology: statistical, cartographic applications to spatial analysis," Tech. Rep. 15, Arizona State University, 1979.

24. M. Wobst, "Computers and coordinates: strategies for the analysis of palaeolithic stratigraphy," in *Computer graphics in archaeology: statistical, cartographic applications to spatial analysis* (S. Upham, ed.), vol. 15 of *Anthropological Research Papers*, pp. 61–8, Arizona State University, 1979.

25. J. G. B. Haigh, B. K. Kisch, and M. U. Jones, "Computer plot and excavated reality," in *The impact of aerial reconnaissance on archaeology* (G. S. Maxwell, ed.), vol. 49 of *CBA Research Report*, London: CBA, 198.

26. S. Cogbill, "Computer post-hole analysis with reference to the British Bronze Age," in *Computer Applications in Archaeology 1980*, vol. 8, (Birmingham), pp. 35–8, University of Birmingham, 1980.

27. J. G. B. Haigh, "A small computer system to provide direct transformation of oblique aerial photographs," *Proceedings CBA Symposium on Aerial Reconnaissance, Nottingham. Dec. 1980*, 1980.

28. G. Lock, "Some archaeological uses of the PICASO computer graphics package," *Science and Archaeology*, vol. 22, pp. 16–24, 1980.

29. R. Palmer, "A proposed microcomputer system for the transformation of air photograph interpretations," in *Microcomputers in archaeology* (J. D. Stewart, ed.), MDA Occasional Paper 4, pp. 41–2, Duxford, Cambs: MDA, 1980.

30. P. L. Main, *A method for the computer storage and comparison of the outline shapes of archaeological artefacts*. PhD thesis, North Staffordshire Polytechnic, 1981.

31. C. W. McNett, "Computer graphics in the analysis of archaeological data," in *Computer data bank applications in archaeology* (S. W. Gaines, ed.), pp. 90–9, Tucson: University of Arizona Press, 1981.

32. I. O. Angell, "A construction of 3-Dimensional views from the silhouette data of pottery," in CAA 82, pp. 117–27.

33. I. O. Angell, "Patterns on the rim, bases and sides of hemispherical wooden bowls," in CAA 81, pp. 1–3.

34. J. B. Arnold, "Archaeological applications of computer graphics," in *Advances in Archaeological Method and Theory* (M. B. Schiffer, ed.), vol. 5, pp. 179–216, 1982.

35. C. B. Bayliss, "AUTO-HERALD: a program for the construction of heraldic drawings," in CAA 82, pp. 128–38.

36. G. Briggs, "Graphical representation of survey data," in CAA 82, pp. 139–41.

37. M. P. Chamberlain and J. G. B. Haigh, "A microcomputer system for practical photogrammetry," in CAA 82, pp. 142–9.

38. P. L. Main, "SHU—an interactive graphics program for the storage, retrieval and analysis of artefact shapes," in CAA 81, pp. 75–82.

39. G. Morris and C. R. Scarre, "Computerised analysis of the shapes of a class of prehistoric stone tools from west central France," in CAA 81, pp. 83–94.

40. M. J. O'Brien, "Digital enhancement and grey-scale slicing of aerial photographs: techniques for archaeological analysis of intrasite var iability," *World Archaeology*, vol. 14, pp. 173–90, 1982.

41. J. D. Wilcock and T. Coombes, "A television camera interface for the automatic capture of artefact shapes by microcomputer," in *Proceedings of the micro-computer jamboree* (A. Aspinall and S. E. Warren, eds.), pp. 27–33, University of Bradford, 1982.

42. C. D. Burnside, A. S. Walker, J. N. Hampton, and G. Soffe, "A digital single photograph technique for archaeological mapping and its application to map revision," *Photogrammetric Record*, vol. 11, no. 61, pp. 59–68, 1983.

43. S. Laflin and N. D. Sutton, "Graphical representation of survey data," in *Computer Applications in Archaeology 1983*, vol. 11, (Bradford), pp. 111–4, University of Bradford, 1983.

44. N. S. Hall and S. Laflin, "A computer aided design technique for pottery profiles," in CAA 84, pp. 178–88.

45. M. L. Larson and L. Chronic, "The plot thickens: computer mapping and artifact patterning," *Advances in Computer Archaeology*, vol. 1, no. 2, pp. 13–25, 1984.

46. D. McKay, "Landscape scaling using standard surveying data: an implementation using the BBC Model B Micro," in CAA 84, pp. 170–7.

47. B. A. P. Alvey and J. C. Moffett, "Hard copy graphic displays for archaeologists," *The London Archaeologist*, vol. 9, no. 5, pp. 40–6, 1985.

48. Anon, "Reconstructing artifacts with 3-D computer graphics," *Computer Graphics World*, vol. 8, no. 2, pp. 87–8, 1985.

49. S. M. Colley, S. J. P. Todd, and N. R. Campling, "An application of the Winchester Graphics System to the archaeology of Saxon Southampton," Tech. Rep. 133, IBM UK Scientific Centre, 1985.

50. J. Huggett, "Computer graphics and site survey data," *Archaeological Computing Newsletter*, vol. 5, pp. 9–12, 1985.

51. P. Reilly, "The use of stereoscopy as an aid in interpreting survey data: a burial ground on the Isle of Man," *Science and Archaeology*, vol. 27, pp. 25–6, 1985.

52. R. D. Spicer, "Stereoscopic representation of archaeological data: a case for drawing conclusions in depth," *Science and Archaeology*, vol. 27, pp. 13–24, 1985.

53. B. A. P. Alvey and J. C. Moffett, "Single context planning and the computer: the plan database," in CAA 86, pp. 59–72.

54. U. Kampffmeyer, "ARCOS — a video - computer - documentation system for use in Archaeology and Historic Sciences," in CAA 86, pp. 91–147.

55. U. Kampffmeyer, "ARCOS: a documentation and database system for the use in archaeology," *Advances in Computer Archaeology*, vol. 3, no. 1, pp. 1–40, 1986.

56. P. L. Main, "Accessing outline shape information efficiently within a large database," in CAA 86, pp. 73–82.

57. B. S. Ottaway, L. Sawyer, and A. Miller, "Archaeology gets graphic," *Nature*, vol. 323, no. 16 October, pp. 651–52, 1986.

58. J. Sanders and P. Sanders, "Archaeological graphic services' remote mapping system," *Advances in Computer Archaeology*, vol. 3, no. 1, pp. 40–55, 1986.

59. L. Welbourne and S. Laflin, "Representation of surfaces: an algorithm for a three-dimensional histogram with hidden-line removal," in CAA 86, pp. 38–48.

60. W. A. Boismier and P. Reilly, "Expanding the Role of Computer Graphics in the Analysis of Survey Data," in Ruggles and Rahtz (CAA 87), pp. 221–226.

61. K. W. Brodlie, "Standardisation in computer graphics: an introduction to GKS," in Ruggles and Rahtz (CAA 87), pp. 155–160.

62. M. Fletcher and D. Spicer, "Experiments with gridded survey data," in Ruggles and Rahtz (CAA 87), pp. 201–220.

63. T. Harris, "Digital terrain modelling in archaeology and regional planning," in Ruggles and Rahtz (CAA 87), pp. 161–172.

64. P. Reilly and J. Richards, "New perspectives on Sutton Hoo," in Ruggles and Rahtz (CAA 87), pp. 173–186.

65. D. Spicer, "Computer graphics and the perception of archaeological information," in Ruggles and Rahtz (CAA 87), pp. 187–200.

66. K. Goodson, "A graphically orientated archaeological database," *Archaeological Computing Newsletter*, vol. 14, pp. 16–9, 1988.

67. J. G. B. Haigh, *The Bradford aerial photograph rectification system. Provisional user's manual.* Unpubl, ND.

68. J. D. Wilcock, "Computers in archaeological draughtsmanship," *Association of Archaeological Illustrators and Surveyors Technical Paper No 3*, ND.

69. S. M. Colley, S. J. P. Todd, and N. R. Campling, "Investigating refuse disposal at Saxon Southampton using a relational database and three-dimensional computer graphics," forthcoming.

1.7 Expert systems and knowledge representation

1. J. E. Doran, "Archaeological reasoning and machine reasoning," in *Archaeologie et Calculateurs* (J.-C. Gardin, ed.), Paris: Editions du CNRS, 1970.

2. J. E. Doran, "Automatic generation and evaluation of explanatory hypotheses," in *Proceedings of a Colloquium on Mathematical Methods in Archaeology, October 1971*, Marseilles: CADA, CNRS, 1972.

3. J. E. Doran, "Computer models as tools for archaeological hypothesis formation," in *Models in Archaeology* (D. L. Clarke, ed.), London: Methuen, 1972.

4. J. E. Doran, "Knowledge representation for archaeological inference," in *Machine Intelligence* (D. W. Elcock and D. Michie, eds.), vol. 8, pp. 433–54, 1977.

5. R. Ennals and D. Brough, "Representing the knowledge of the Expert Archaeologist," in *Computer Applications in Archaeology 1982*, (Birmingham), pp. 56–62, University of Birmingham, 1982.

6. M. C. Bishop and J. Thomas, "BEAKER—an expert system for the BBC Micro," in CAA 84, pp. 56–62.

7. E. Bourrelly and E. Chouraqui, "Système expert et simulation d'un raisonnement en archéologie," *Informatique et Gestion*, vol. 151, pp. 46–51, 1984.

8. D. R. Brough and N. Parfitt, "An expert system for the ageing of a domestic animal," in CAA 84, pp. 49–55.

9. J. Huggett, "Expert systems in archaeology," in *Current Issues in Archaeological Computing* (M. A. Cooper and J. D. Richards, eds.), pp. 123–42, Oxford: British Archaeological Reports, 1985.

10. J. Huggett and K. G. Baker, "The computerised archaeologist: the development of expert systems," *Science and Archaeology*, vol. 27, pp. 3–7, 1985.

11. M.-S. Lagrange and M. Renaud, "Intelligent knowledge-based systems in archaeology: a computerized simulation of reasoning by means of an expert system," *Computing in the Humanities*, vol. 19, no. 1, pp. 37–52, 1985.

12. J. D. Wilcock, "A review of expert systems: their shortcomings and possible applications in archaeology," in *Computer Applications in Archaeology 1985*, (London), pp. 139–44, Institute of Archaeology, University of London, 1985.

13. K. Baker, "Expert systems. . . a case of look before you leap," *Archaeological Computing Newsletter*, vol. 6, pp. 14–17, 1986.

14. K. G. Baker, "Archaeology and expert systems: some problems encountered during practical work," in *Second International Expert System Conference*, (Oxford, New Jersey), pp. 211–9, Learned Information, 1986.

15. G. Rugg, "On expert systems," *Archaeological Computing Newsletter*, vol. 7, pp. 2–4, 1986.

16. K. G. Baker, "Red flag or red herring? The problems of fossilisation in archaeological expert systems," *Archaeological Computing Newsletter*, vol. 12, pp. 20–4, 1987.

17. K. G. Baker, "Towards an archaeological methodology for expert systems," in Ruggles and Rahtz (CAA 87), pp. 229–236.

18. J. Doran, "Expert systems and archaeology: what lies ahead?," in Ruggles and Rahtz (CAA 87), pp. 237–242.

1.8   Education

1. Anon, "Newsoft: software to dig with from Cambridge," *Educational Computing*, vol. 5, no. 11, p. 11, 1984.

2. P. Callow, "Bailing out the inexperienced computer user: some recurrent problems," in CAA 85, pp. 41–8.

3. D. J. Powlesland and C. Haughton, *Archaeology and computers*. Archaeology for Schools Series, London: Council for British Archaeology, 1985.

4. J. D. Richards, "Into the black art: achieving computer literacy in archaeology," in CAA 85, pp. 121–5.

5. J. D. Richards, "Training archaeologists to use computers," *Archaeological Computing Newsletter*, vol. 2, pp. 2–5, 1985.

6. D. Breedon, "Sandwell Adventure: an educational computer package," in *Presenting Archaeology to Young People* (S. Cracknell and M. Corbishley, eds.), vol. 64 of *Research Report*, pp. 24–5, Council for British Archaeology, 1986.

7. J. D. Richards, "Archaeologists and the computer," in *Information Technology in the Humanities: tools, techniques and applications* (S. Rahtz, ed.), pp. 159–69, Ellis Horwood Ltd, 1987.

8. K. Greene, "Teaching computing to archaeology students: an off-the-peg solution," *Archaeological Computing Newsletter*, vol. 14, pp. 21–4, 1988.

1.9   Publication

1. M.-S. Lagrange, "Archaeological literature in the computer age," in *Computer Applications in Archaeology 1977*, (Birmingham), pp. 3–9, University of Birmingham, 1977.

2. T. G. Hassall, "Publication: crisis and inaction," in *Information systems in archaeology* (R. Martlew, ed.), pp. 142–59, Gloucester: Alan Sutton Publishing Ltd, 1984.

3. A. Sutton, "Cost-effective publishing," in *Information systems in archaeology* (R. Martlew, ed.), pp. 115–25, Gloucester: Alan Sutton Publishing Ltd, 1984.

4. N. S. Hall, "Towards the inclusion of graphics in an electronic journal system," in CAA 86, pp. 197–224.

5. S. Rahtz, "Word-processing and beyond," *Archaeological Computing Newsletter*, vol. 6, pp. 6–8, 1986.

6. S. Rahtz, "Possible directions in electronic publishing in archaeology," in CAA 86, pp. 3–13.

7. A. Sutton, "The use of computers in publishing archaeology," in *Computer usage in British Archaeology* (J. D. Richards, ed.), IFA Occasional Paper No. 1, pp. 69–73, Birmingham: Institute of Field Archaeologists, 1986.

8. J. D. Wilcock and R. D. Spicer, "Standardisation of word processing for publication," in CAA 86, pp. 21–8.

9. A. Girdwood, "Phototypesetting and desk-top publishing systems in archaeology," in Ruggles and Rahtz (CAA 87), pp. 295–297.

10. A. R. Winterflood, G. G. Wilkinson, and M. Rhodes, "A bibliographic information system for archaeological reports," in Ruggles and Rahtz (CAA 87), pp. 285–294.

1.10   Scientific techniques

1. I. Scollar and F. Kruckeberg, "Computer treatment of magnetic measurements from archaeological sites," *Archaeometry*, vol. 9, pp. 61–71, 1966.

2. I. Scollar, "Automatic recording of magnetometer data in the field," *Prospezioni Archaeologiche*, vol. 3, pp. 105–10, 1968.

3. I. Scollar, "A program package for the interpretation of magnetic data," *Prospezioni Archeologiche*, vol. 3, pp. 9–18, 1968.

4. I. Scollar, "Some techniques for the evaluation of archaeological magnetometer surveys," *World Archaeology*, vol. 1, pp. 77–89, 1969.

5. I. Scollar, "Program for the simulation of magnetic anomalies of archaeological origin in a computer," *Prospezioni Archeologiche*, vol. 4, pp. 59–83, 1969.

6. J. D. Wilcock, "Computer analysis of proton magnetometer readings from South Cadbury 1968: a long distance exercise," *Prospezioni Archeologiche*, vol. 4, pp. 85–93, 1969.

7. J. D. Wilcock, "Prospecting at South Cadbury: an exercise in computer archaeology," *Science and Archaeology*, vol. 1, pp. 9–11, 1970.

8. I. Scollar, "Interactive processing of geophysical data from archaeological sites," in *Computer Applications in Archaeology 1974*, (Birmingham), pp. 75–80, University of Birmingham, 1974.

9. Bui-Thi-Mai and I. Johnson, "The computer as a tool in palynology," in CAA 76, pp. 5–12.

10. D. T. Gittins, "Computer processing of geological data," in CAA 76, pp. 13–20.

11. D. P. Gifford and D. C. Crader, "A computer coding system for archaeological faunal remains," *American Antiquity*, vol. 42, pp. 225–37, 1977.

12. J. A. Hall and A. D. Hewson, "On-line computing and radiocarbon dating at the British Museum," *Journal of Archaeological Science*, vol. 4, pp. 89–94, 1977.

13. S. Hillson, "Computers and the study of past human populations: their ecology and disease," in *Computer Applications in Archaeology 1978*, (Birmingham), pp. 13–20, University of Birmingham, 1978.

14. A. D. H. Bartlett, "The development of a computer display system for archaeological prospecting," Master's thesis, University of Surrey, 1979.

15. R. T. Jones, S. M. Wall, A. M. Locker, J. Maltby, and J. M. Coy, "Computer based osteometry. Data capture user manual (1). First supplement to AML Report No. 2333," Tech. Rep. 3342, Ancient Monuments Laboratory, 1980.

16. E. Hardy, "A microcomputer-based system for recording bones from archaeological sites," in *Proceedings of the micro-computer jamboree* (A. Aspinall and S. E. Warren, eds.), University of Bradford, 1982.

17. C. D. Litton, "Dendrochronological analysis of timbers from Lincoln Cathedral," in *Computer Applications in Archaeology 1981*, vol. 9, (Birmingham), pp. 70–4, 1982.

18. J. C. Moffett and R. E. Webb, "Database management of radiocarbon dates," in *Proceedings of the Archaeometry conference* (A. Aspinall and S. E. Warren, eds.), pp. 67–72, University of Bradford, 1982.

19. D. W. Perry, "Cluster analysis: an aid to environmental interpretation?," in *Computer Applications in Archaeology 1982*, vol. 10, (Birmingham), pp. 150–61, University of Birmingham, 1982.

20. J. B. Tyldesley, "Exploration of cattle bone measurements by statistical techniques including principal component analysis," in *Proceedings of the Micro-Computer Jamboree* (A. Warren and S. E. Aspinall, eds.), pp. 5–10, University of Bradford, 1982.

21. M. C. Bishop and M. V. Andrews, "Absolute pollen analysis: an example of the use of the 'home computer' in archaeology," in CAA 83, pp. 59–66.

22. S. M. Colley, "Animal bones from the Hamwic Pit Project (Six Dials Excavation, Site 31, F20008)," *Report to the Ancient Monuments Laboratory No. 4071*, 1983.

23. R. R. Laxton and C. D. Litton, "Information theory and dendrochronology: the effect of pre-whitening," in CAA 83, pp. 137–50.

24. G. Lock, "The computing of Danebury," in CAA 83, pp. 47–57.

25. J. C. Moffett and R. E. Webb, "Database management systems, radiocarbon and archaeology," *Radiocarbon*, vol. 25, no. 2, pp. 667–8, 1983.

26. T. D. Short, J. D. Wilcock, and A. P. Greaves, "The Harwell low level measurements laboratory microcmputer network," in CAA 83, pp. 125–36.

27. J. B. Tyldesley, E. A. Hardy, and M. H. Williamson, "Estimating missing measurements on animal bone," in CAA 83, pp. 151–60.

28. A. R. Hall and H. K. Kenward, "A computer system for the preparation of statistics for the interpretation of archaeological insect assemblages," report, Ancient Monuments Laboratory, 1984.

29. M. A. Kelly, "Bradford archaeological geophysics system user manual. Release 1. 1." 1984.

30. M. A. Kelly, "Resistance survey computer system user manual. Release 1. 2." 1984.

31. M. A. Kelly, P. Dale, and J. G. B. Haigh, "A microcomputer system for data logging in geophysical surveying," *Archaeometry*, vol. 26, no. 2, pp. 183–91, 1984.

32. M. A. Kelly and J. G. B. Haigh, "Automatic data logging for resistance surveying and subsequent data processing," in CAA 84, pp. 161–9.

33. R. E. Webb, "Radiocarbon databases: a progress report," in CAA 84, pp. 110–1.

34. E. L. Hardy and H. K. Kenward, *A data input and formatting system for archaeological insect remains.* Unpubl, 1985.

35. HBMC, "SAMSON User Manual Version I." 1985.

36. A. Bartlett, "Computing and archaeological geophysics," in *Computer usage in British Archaeology* (J. D. Richards, ed.), vol. 1 of *IFA Occasional Paper*, pp. 55–61, Birmingham: Institute of Field Archaeologists, 1986.

37. K. Cruz-Uribe and R. G. Klein, "Pascal programs for computing taxonomic abundance in samples of fossil mammals," *Journal of Archaeological Science*, vol. 13, pp. 171–87, 1986.

38. J. Greig, "Micro-computer use and data transfer in environmental archaeology," *Archaeological Computing Newsletter*, vol. 10, pp. 21–3, 1987.

39. R. T. Jones, "Computer-based osteometric archaeozoology," ND.

1.11 Museums

1. N. Gessler, "Simple computerised record keeping for archaeologists and museologists," *Newsletter of Computer Archaeology*, vol. 9, no. 1, pp. 1–5, 1973.

2. J. Cutbill, "Computer-based filing systems," in *Computer Applications in Archaeology 1974*, vol. 2, (Birmingham), p. 81, University of Birmingham, 1974.

3. R. G. Chenhall, "Museum data bank reports," *Archaographie*, vol. 5, pp. 19–24, 1975.

4. R. G. Chenhall, "Nomenclature for museum cataloguing: a system for classifying man-made objects," *Am. Assn. State & Local History, Nashville, Tenn*, 1978.

5. D. A. Roberts, "Documentation of archaeology in museums," in *Computer Applications in Archaeology 1978*, (Birmingham), pp. 21–8, University of Birmingham, 1978.

6. S. M. Stone, "St. Albans Museums documentation project," *Museums Journal*, vol. 78, no. 3, 1978.

7. S. M. Stone, "MDA user experience: St. Albans Museums," *MDA Information*, vol. 3, p. 7, 1979.

8. M. A. Brisbane, *SMART: a brief introduction.* Unpubl. 3pp, 1980.

9. M. A. Brisbane and R. G. Thomson, "Computer facilities and archaeology: a museum view," in *Microcomputers in archaeology* (J. D. Stewart, ed.), MDA Occasional Paper 4, pp. 75–6, Duxford, Cambs: MDA, 1980.

10. T. H. Loy and G. R. Powell, "Archaeological data recording guide," *British Columbia Provincial Museum Heritage Record No. 3*, 1980.

11. MDA, *Introduction to the MDA.* Duxford, Cambs: MDA, 1980.

12. MDA, *Guide to GOS.* Duxford, Cambs: MDA, 1980.

13. MDA, *Description of the internal structure of GOS.* Duxford, Cambs: MDA, 1980.

14. MDA, *Archaeology object card instructions (M. D. S.).* Duxford, Cambs: MDA, 1980.

15. E. Orna and C. Pettit, *Information handling in museums.* New York: K G Saur-Clive Bingley, 1980.

16. M. E. Porter, "How to use GOS," *MDA, Duxford, Cambs*, 1980.

17. D. A. Roberts, "Data standards for archaeology," in *Microcomputers in archaeology* (J. D. Stewart, ed.), no. 4 in Occasional Paper, pp. 87–97, Duxford, Cambridge: MDA, 1980.

18. D. A. Roberts, "Survey of recent documentation work at the National Maritime Museum," *MDA Information*, vol. 4, pp. 20–2, 1980.

19. D. A. Roberts and R. B. Light, "Progress in documentation," *Journal of Documentation*, vol. 36, no. 1, pp. 42–84, 1980.

20. D. A. Roberts, R. B. Light, and J. D. Stewart, "The Museum Documentation Association," *Museums Journal*, vol. 80, pp. 81–5, 1980.

21. J. D. Stewart, "Integrated excavation and museum recording systems: methods, theories and problems," *Museum Archaeologist*, vol. 5, pp. 11–27, 1980.

22. R. B. Light and D. A. Roberts, "International museum data standards and experiments in data transfer," Occasional Paper 5, MDA, MDA, Duxford, Cambs, 1981.

23. MDA, *Data definition language and data standard.* Duxford, Cambs: MDA, 1981.

24. D. J. H. Michelmore, "The storage of archaeological records," in *Archaeological Storage* (A. Partington-Omar and A. J. White, eds.), Society of Museum Archaeologists and Yorkshire and Humberside Federation of Museums and Art Galleries, 1981.

25. M. E. Porter, "GOS reference manual," *MDA, Duxford, Cambs*, 1981.

26. D. A. Roberts, "Museums and documentation: current publications," *MDA Information*, vol. 5, pp. 5–6, 1981.

27. D. A. Roberts, "Care and maintenance of collections: challenges and constraints," *Museum Association, London*, 1981.

28. R. B. Light and D. A. Roberts, "International museum data standards and experiments in data transfer," Occasional Paper 5, M.D.A, Duxford, Cambridge, 1982.

29. MDA, *Guide to the Museum Documentation System, 2nd edition.* Duxford, Cambs: MDA, 1982.

30. MDA, *Practical museum documentation, 2nd edition.* Duxford, Cambs: MDA, 1982.

31. J. D. Stewart, "Computerising archaeological records—a progress report on the work of the M. D.A," in CAA 82, pp. 4–10.

32. J. D. Stewart, "MDA, MDS and computerised archaeology," in *Computer Applications in Archaeology 1981*, (Birmingham), pp. 101–11, 1982.

33. J. D. Stewart, "Computerised archaeological records—a progress report on the work of the MDA," in CAA 82, pp. 4–10.

34. B. K. W. Booth, "A documentation system for archaeology," in CAA 84, pp. 5–8.

35. R. B. Light, "Microcomputers in museums," in CAA 84, pp. 33–7.

36. R. B. Light and D. A. Roberts, "Microcomputers in museums," Occasional Paper 7, MDA, MDA, Duxford, Cambs, 1984.

37. MDA, *Computing support: user notes. UN11 Introduction to the GOS information management package*. Duxford, Cambs: MDA, 1984.

38. J. D. Stewart, "Museums—'cabinets of curiosities' or centres of information?," in *Information systems in archaeology* (R. Martlew, ed.), pp. 77–89, Gloucester: Alan Sutton Publishing Ltd, 1984.

39. B. K. W. Booth, "Information project group at the National Maritime Museum," in *Computer Applications in Archaeology 1985*, pp. 36–40, London: Institute of Archaeology, University of London, 1985.

40. C. F. G. Debenham, "A study of computer use in Southampton City Museums Archaeology Section," 1985.

41. MDA, *Computing support: user notes. UN5 MDA inhouse computing system*. Duxford, Cambs: MDA, 1985.

42. D. A. Roberts, R. B. Light, and J. D. Stewart, *Museum documentation systems*. Butterworths, 1985.

43. S. M. Stone, "Collection recording at St. Albans," in *Museums Museum documentation systems* (D. A. Roberts, R. Light, and J. D. Stewart, eds.), Butterworths, 1985.

44. P. Arnold, "The relational database and the small museum," *Archaeological Computing Newsletter*, vol. 6, p. 4, 1986.

45. E. C. Southworth, "Computers in museums," *Archaeological Computing Newsletter*, vol. 6, pp. 9–10, 1986.

46. P. Arnold, "A relational database for the small museum?," *Archaeological Computing Newsletter*, vol. 10, p. 18, 1987.

47. J. C. Moffett, "Computing in the Department of Antiquities of the Ashmolean Museum," *Archaeological Computing Newsletter*, vol. 13, pp. 15–20, 1987.

48. National Maritime Museum, "Documentation of objects in the Archaeological Research Centre." ND.

49. National Maritime Museum, "Documentation of contexts in the Archaeological Research Centre." ND.

1.12 General

1. J.-C. Gardin, *Le fichier mécanographique de l'outillage*. Institute Francais d'Archaéologie de Beyrouth, 1956.

2. R. G. Chenhall, "The description of archaeological data in computer language," *American Antiquity*, vol. 32, pp. 161–7, 1967.

3. G. L. Cowgill, "Computer applications in archaeology," *AFIPS Conference Proceedings: 1967 Fall Joint Conference*, vol. 31, pp. 331–7, 1967.

4. G. L. Cowgill, "Computer Applications in Archaeology," *Computers and the Humanities*, vol. 2, no. 1, pp. 17–23, 1967.

5. J. E. Doran, "Computers in archaeology," *72nd ordinary meeting of the British Region of the Biometric Soc, 7 Dec 1967, London*, 1967.

6. R. G. Chenhall, "The impact of computers on archaeological theory: an appraisal and projection," *Computers and the Humanities*, vol. 3, no. 1, pp. 15–24, 1968.

7. Metropolitan Museum of Art, "Computers and their potential applications in museums," *Arno Press, New York*, 1968.

8. J. D. Wilcock, "Computer applications in archaeology," in *Datafair 69. Abstracts of the British Computer Society Symposium Papers*, (London), British Computer Society, 1969.

9. V. Burton, A. Bonin, J. Lourie, and T. Spiselman, "The computer and archaeology," *American Journal of Archaeology*, vol. 74, pp. 221–3, 1970.

10. J.-C. Gardin, *Archaeologie et Calculateurs*. Paris: Editions du CNRS, 1970.

11. M. Borillo, "Formal procedures and the use of computers in archaeology," *Norwegian Archaeological Review*, vol. 4, pp. 2–27, 1971.

12. R. G. Chenhall, "The archaeological data bank: a progress report," *Computers and the Humanities*, vol. 5, no. 3, pp. 159–69, 1971.

13. S. W. Gaines, "Computer application in an archaeological field situation," *Newsletter of Computer Archaeology*, vol. 7, no. 1, pp. 2–4, 1971.

14. J.-C. Gardin, "Archaeologie and computers: new perspectives," *International Social Science Journal*, vol. 23, no. 2, pp. 189–203, 1971.

15. S. Laflin, "Computer applications," *West Midlands Archaeological News Sheet*, vol. 14, pp. 2–5, 1971.

16. E. Shorter, *The historian and the computer: a practical guide*. New Jersey: Prentice Hall, 1971.

17. J. D. Wilcock, "Non-statistical applications of the computer in archaeology," in *Mathematics in the archaeological and historical sciences: proceedings of the Anglo-Romanian Conference, Mamaia 1970* (F. R. Hodson, D. G. Kendall, and P. Tautu, eds.), pp. 470–81, Edinburgh: Edinburgh University Press, 1971.

18. R. Whallon, "The computer in archaeology: a critical survey," *Computers and the Humanities*, vol. 7, no. 1, pp. 29–45, 1972.

19. F. B. Fryman *et al.*, "Data banks and related use of computers in archaeology," *Newsletter of Computer Archaeology*, vol. 8, no. 4, pp. 1–6, 1973.

20. J. D. Wilcock, "A general survey of computer applications in archaeology," *Science and Archaeology*, vol. 9, pp. 17–21, 1973.

21. L. Biek, "Progress with Lernie," in CAA 74, pp. 59–63.

22. J. E. Doran, "What computers can't do for archaeologists," in CAA 74, pp. 69–70.

23. T. H. Loy, "Computers and the study of archaeology in British Columbia," in CAA 74, pp. 17–26.

24. J. D. Wilcock, "The Plutarch System," in CAA 74, pp. 64–8.

25. J. D. Wilcock, "The facilities of the PLUTARCH system," *Science and Archaeology*, vol. 11, pp. 16–24, 1974.

26. J. E. Doran and F. R. Hodson, *Mathematics and Computers in Archaeology*. Edinburgh: Edinburgh University Press, 1975.

27. A. H. Kromholz, "A generalised information system for archaeological use," in *Computer Applications in Archaeology 1975*, (Birmingham), pp. 49–56, University of Birmingham, 1975.

28. L. Biek, "Lernie—Phase III," in CAA 76, pp. 65–71.

29. P. A. Conway, "Computer helps archaeologists unearth prehistoric communities," *Computers and people*, vol. 25, no. 4, p. 2, 1976.

30. J. A. Hall, "Keeping up with the literature: a practical example of retrieving information," in CAA 76, pp. 58–64.

31. S. Scholtz and R. G. Chenhall, "Archaeological data banks in theory and practice," *American Antiquity*, vol. 41, no. 1, pp. 89–96, 1976.

32. L. Biek, "LERNIE—Phase IV," in *Computer Applications in Archaeology 1977*, vol. 5, (Birmingham), pp. 21–6, University of Birmingham, 1977.

33. S. W. Gaines, "Computer aided decision making procedures for archaeological field problems," in *Revista Mexicana de Estudios Antropologicos*, vol. 22, (Mexico City), 1977.

34. L. D. Smith, "Programmable pocket calculators: some archaeological applications," *Newsletter of Computer Archaeology*, vol. 12, no. 3, pp. 1–26, 1977.

35. British Library Research and Development Department, "Problems of information handling in Archaeology. Report of a seminar," Tech. Rep. 5329, British Library, London, 1977.

36. L. Biek, "LERNIE—Phase V," in CAA 78, pp. 53–60.

37. S. W. Gaines, "Computer applications of SARG data," in *Investigations of the Southwestern Anthropological Research Group* (R. C. Euler and G. J. Gummerman, eds.), Flagstaff: Museum of Northern Arizona, 1978.

38. N. Iliff, "The problems of preparing pre-recorded data for computer retrieval and analysis," in CAA 78, pp. 34–38.

39. J. L. Maitre, "La rationalisation des systèmes de traitement de l'information en Archéologie," tech. rep., Centre de Recherches Archéologiques, Centre National de la Recherche Scientifique, Paris, 1978.

40. J. D. Wilcock, "The automated archaeologist," in CAA 81, pp. 49–52.

41. S. W. Gaines and W. M. Gaines, "Future trends in computer applications," *American Antiquity*, vol. 45, pp. 462–471, 1980.

42. J. G. B. Haigh, "Some considerations for the design of a system to store archaeological data," in *Microcomputers in archaeology* (J. D. Stewart, ed.), MDA Occasional Paper 4, pp. 51–3, Duxford, Cambs: MDA, 1980.

43. F. M. M. Pryor, "Maxey, micros and myself—a personal assessment from the archaeologist's viewpoint," in *Microcomputers in archaeology* (J. D. Stewart, ed.), vol. 4 of *Occasional Paper*, pp. 99–102, Duxford, Cambridge: MDA, 1980.

44. M. W. Read, "Ethnographic fieldwork and interview transcripts: some observations on the computer management of text," tech. rep., SRU, University College, Cardiff, 1980.

45. J. L. M. Richaud, A.-M. B. Lequex, and D. Trousson-Liberatore, *Le RIDA. Réseau d'information et de documentation archéologiques; essai de realisation (1974–1979)*. Paris: Editions ADPF, 1980.

46. J. D. Stewart, *Microcomputers in archaeology*. MDA Occasional Paper 4, Duxford, Cambs: MDA, 1980.

47. S. W. Gaines, "Computerized Data Banks in Archaeology: the European Situation," *Computers and the Humanities*, vol. 15, pp. 223–6, 1981.

48. S. W. Gaines and W. M. Gaines, "What future databases have to offer in archaeology," in *Proceedings of the X Congress*, (Mexico City), Union Internatcional de Ciencias Prehistoricas y Protohistoricas, 1981.

49. J. L. Maitre, "SOFIA: a data base management system applied to archaeology," in *Computer data bank applications in archaeology* (S. W. Gaines, ed.), pp. 123–9, Tucson: University of Arizona Press, 1981.

50. J. D. Wilcock, "Information retrieval for archaeology," in *Computer data bank applications in archaeology* (S. W. Gaines, ed.), pp. 9–14, Tucson: University of Arizona Press, 1981.

51. J. D. Wilcock, "Information retrieval applications for archaeology in Britain," in *Computer data bank applications in archaeology* (S. W. Gaines, ed.), pp. 100–22, Tucson: University of Arizona Press, 1981.

52. A. Aspinall and S. E. Warren, *Proceedings of the Micro-Computer Jamboree.* University of Bradford, 1982.

53. L. Biek, B. M. Hawker, N. E. Lindsey, and G. N. Lupton, "Lernie VIII," in CAA 81, pp. 8–19.

54. K. Camidge, "Computers: the future for the Trust [for Lincolnshire Archaeology]," *Archaeology in Lincoln 1981-2*, pp. 39–40, 1982.

55. A. H. Friedmann, "A computer reconstruction of the city of Nuzi," in CAA 82, pp. 11–8.

56. N. Heite and L. Heite, "Breaking the jargon barrier: designing programs for humanists," *Byte*, vol. 7, no. 7, pp. 76–104, 1982.

57. J. Litvak-King, "Microcomputers in archaeology: yesterday, today and tomorrow," in *Proceedings of the micro-computer jamboree* (A. Aspinall and S. E. Warren, eds.), pp. 1–4, University of Bradford, 1982.

58. I. Scollar, "Thirty years of computer archaeology and the future," in CAA 82, pp. 189–98.

59. N. Strudwick, "An application of information retrieval and analysis in Egyptology," in CAA 82, pp. 79–86.

60. J. S. F. Walker, "Mass data collection: the viewpoint of a unit," in CAA 82, pp. 69–75.

61. K. Flude, "Problems in archaeological computing," in *Computer Applications in Archaeology 1983*, vol. 11, (Bradford), pp. 7–14, University of Bradford, 1983.

62. K. Flude, "Computers in Archaeology," *Popular Archaeology*, pp. 37–41, December 1983.

63. S. Laflin, "Software for archaeologists at Birmingham University," *West Midlands Archaeology*, vol. 26, pp. 160–1, 1983.

64. J. D. Richards and M. Ehrenberg, "Computer archaeology," *Leeds University Reporter*, vol. 213, pp. 6–7, 1983.

65. Anon, "Computers in archaeology," *Essex Chronicle*, vol. Sept 21, p. 7, 1984.

66. Anon, "Philips helps to unravel the past," *Electronics Weekly*, vol. 1248, 1984.

67. Anon, "Archaeological lab digs software use to sort 1630 site," *PC Week*, vol. 1, no. 24, p. 13, 1984.

68. Anon, "Technology aids in re-creation of ancient Mexican city," *Computerworld*, vol. 18, no. 37, p. 35, 1984.

69. Anon, "Analyzing archaeological data," *T-H-E Journal*, vol. 11, no. 7, p. 71, 1984.

70. H. Cleere, "Only connect," in *Information systems in archaeology* (R. Martlew, ed.), pp. 9–20, Gloucester: Alan Sutton Publishing Ltd, 1984.

71. J.-P. Farrugia and R. Martlew, "Retrieving information from computerised data-bases: keywords and FRANCIS," in *Information systems in archaeology* (R. Martlew, ed.), pp. 106–10, Gloucester: Alan Sutton Publishing Ltd, 1984.

72. S. W. Gaines, "The impact of computerized systems on American archaeology: an overview of the past decade," in *Information systems in archaeology* (R. Martlew, ed.), pp. 63–76, Gloucester: Alan Sutton Publishing Ltd, 1984.

73. J. Huggett and P. Reilly, "An elementary, non-automated bibliographic help facility," *Archaeological Computing Newsletter*, vol. 1, pp. 9–10, 1984.

74. I. Johnson, "Computer applications in Australia," *Advances in Computer Archaeology*, vol. 1, no. 1, pp. 1–7, 1984.

75. C. Lavell, "Forty years of information collection by the Council for British Archaeology," in *Information systems in archaeology* (R. Martlew, ed.), pp. 111–4, Gloucester: Alan Sutton Publishing Ltd, 1984.

76. R. Martlew, *Information systems in archaeology.* Gloucester: Alan Sutton Publishing Ltd, 1984.

77. R. Martlew, "Bibliographic databases in archaeology," in *Information systems in archaeology* (R. Martlew, ed.), pp. 99–105, Gloucester: Alan Sutton Publishing Ltd, 1984.

78. M. McEnaney, "High-tech tools fuel debate over archaeological dig," *Computerworld*, vol. 18, no. 44, p. 32, 1984.

79. J. C. Moffett, "An archaeological network database management system," in CAA 84, pp. 93–100.

80. J. C. Moffett, "Data management software for microcomputers," *Humanities Communication Newsletter*, vol. 3, pp. 1–3, 1984.

81. D. H. O'Neil, "Archaeological uses of micro-computers with 'off the rack' software," *American Antiquity*, vol. 49, no. 4, pp. 809–14, 1984.

82. C. Oppenheim, "Online information retrieval, data-bases and networks," in *Information systems in archaeology* (R. Martlew, ed.), pp. 90–8, Gloucester: Alan Sutton Publishing Ltd, 1984.

83. P. Reilly, "Talking shop—which forum?," *Archaeological Computing Newsletter*, vol. 1, pp. 5–6, 1984.

84. R. D. Spicer, "On monkeys, typewriters and . . .," *Archaeological Computing Newsletter*, vol. 1, pp. 7–9, 1984.

85. D. V. M. Stephen and D. B. Craig, "Recovering the past bit by bit with microcomputers," *Archaeology*, vol. 37, no. 4, pp. 20–6, 1984.

86. A. Voorrips, "Data catchment analysis and computer carrying capacity," in *Information systems in archaeology* (R. Martlew, ed.), pp. 45–53, Gloucester: Alan Sutton Publishing Ltd, 1984.

87. R. Whinney, "The MIDAS, MP/M and the MSC," in CAA 84, pp. 27–32.

88. J. D. Wilcock, "A brief introduction to the technology of IT," in *Information systems in archaeology* (R. Martlew, ed.), pp. 21–30, Gloucester: Alan Sutton Publishing Ltd, 1984.

89. R. A. Adkins, "Computerise or be damned," *Antiquity*, vol. 59, pp. 127–9, 1985.

90. L. Biek, "LERNIE XIV: comparology and stereovideo," in CAA 85, pp. 1–35.

91. M. O. H. Carver, "The friendly user," in *Current Issues in Archaeological Computing* (M. A. Cooper and J. D. Richards, eds.), vol. 271 of *International series*, pp. 47–62, Oxford: British Archaeological Reports, 1985.

92. M. Cherrington, "Programming the past," *Earthwatch. Spring 1985*, pp. 14–8, 1985.

93. N. Clubb and P. James, "A computer record for Greater London's heritage," *London Archaeologist*, vol. 5, pp. 38–9, 1985.

94. S. Colley and S. Todd, "Archaeological computing at the IBM UK Scientific Centre," *Archaeological Computing Newsletter*, vol. 4, pp. 3–8, 1985.

95. M. A. Cooper, "Computers in British archaeology: the need for a national strategy," in *Current Issues in Archaeological Computing* (M. A. Cooper and J. D. Richards, eds.), no. 271 in International series, pp. 79–92, Oxford: British Archaeological Reports, 1985.

96. M. A. Cooper and J. D. Richards, *Current Issues in Archaeological Computing*, vol. 271 of *International series*. Oxford: British Archaeological Reports, 1985.

97. M. A. Cooper and J. D. Richards, "Computers and the Institute of Field Archaeologists," *Archaeological Computing Newsletter*, vol. 4, pp. 9–10, 1985.

98. S. R. Durand and J. O. Davis, "Archaeological computer applications with an IBM-PC," *Advances in Computer Archaeology*, vol. 2, pp. 21–38, 1985.

99. K. Flude, "Computers and archaeology," *Archaeological Computing Newsletter*, vol. 5, pp. 18–20, 1985.

100. S. George, "Interrogating fuzzy data," in CAA 85, pp. 75–80.

101. E. Halliday, "Working with archaeologists!," *Archaeological Computing Newsletter*, vol. 3, pp. 2–4, 1985.

102. M. Heyworth, "An archaeological exchange," *Archaeological Computing Newsletter*, vol. 2, pp. 5–6, 1985.

103. J. Hinchliffe and J. Jefferies, "Ten years of data-processing on the Central Excavation Unit," in *Current Issues in Archaeological Computing* (M. A. Cooper and J. D. Richards, eds.), pp. 17–22, Oxford: British Archaeological Reports, 1985.

104. C. Lavell, "Possible outputs from a national archaeological data base," in CAA 85, pp. 95–101.

105. G. Lock and R. D. Spicer, "Real and imaginary limitations of micro-computers in archaeology," in *Current Issues in Archaeological Computing* (M. A. Cooper and J. D. Richards, eds.), vol. 271 of *International series*, pp. 103–22, Oxford: British Archaeological Reports, 1985.

106. J. C. Moffett, "Archaeological databases and microcomputers," in CAA 85, pp. 109–13.

107. D. J. Powlesland, "Random access and data compression with reference to remote data collection: 1 and 1 = 1," in *Current Issues in Archaeological Computing* (M. A. Cooper and J. D. Richards, eds.), vol. 271 of *International series*, pp. 23–34, Oxford: British Archaeological Reports, 1985.

108. P. Reilly, "Computers in field archaeology: agents of change?," in *Current Issues in Archaeological Computing* (M. A. Cooper and J. D. Richards, eds.), vol. 271 of *International series*, pp. 63–78, Oxford: British Archaeological Reports, 1985.

109. J. D. Richards, "Standardising the record," in *Current Issues in Archaeological Computing* (M. A. Cooper and J. D. Richards, eds.), vol. 271 of *International series*, pp. 93–102, Oxford: British Archaeological Reports, 1985.

110. J. D. Richards and N. S. Ryan, *Data Processing in Archaeology*. Cambridge: Cambridge University Press, 1985.

111. N. S. Ryan, "Databases: Part 2—Modelling the data," *Archaeological Computing Newsletter*, vol. 4, pp. 12–16, 1985.

112. J. P. Small, "How to transfer data between different database programs in seven easy stages," *Archaeological Computing Newsletter*, vol. 5, pp. 16–17, 1985.

113. D. J. Smith, "Databases: an introduction and some issues," *Archaeological Computing Newsletter*, vol. 2, pp. 12–16, 1985.

114. D. J. Smith, "dBase II: some notes and comparisons," *Archaeological Computing Newsletter*, vol. 4, pp. 20–2, 1985.

115. R. D. Spicer, "Amstrad CPC6128 microcomputer review," *Archaeological Computing Newsletter*, vol. 4, pp. 22–4, 1985.

116. P. Swinson and G. Thursfield, "A terminal emulator for the BBC-B microcomputer," *Archaeological Computing Newsletter*, vol. 3, pp. 16–17, 1985.

117. V. A. Walsh and P. C. Patton, "Further developments in computer-aided Aegean archaeology," in *Minneapolis Contributions to Minoan Archaeology* (N. C. Wilkie and W. D. F. Coulson, eds.), pp. 245–57, Kenadall-Hunt Publishing Co, 1985.

118. A. Aberg, "Computer data in archaeology," in *Computer usage in British Archaeology* (J. D. Richards, ed.), vol. 1 of *IFA Occasional Paper*, pp. 9–11, Birmingham: Institute of Field Archaeologists, 1986.

119. A. Allden, "The use of computers for sites and monuments records," in *Computer usage in British Archaeology* (J. D. Richards, ed.), vol. 1 of *IFA Occasional Paper*, pp. 33–7, Birmingham: Institute of Field Archaeologists, 1986.

120. B. K. W. Booth, "Computing at English Heritage," *Archaeological Computing Newsletter*, vol. 6, pp. 3–4, 1986.

121. S. Grant, "A note on the IFA/RCHME working party on computer usage in archaeology," *Archaeological Computing Newsletter*, vol. 6, pp. 13–14, 1986.

122. S. Grant, "Summary and recommendations," in *Computer usage in British Archaeology* (J. D. Richards, ed.), IFA Occasional Paper No. 1, pp. 13–31, Birmingham: Institute of Field Archaeologists, 1986.

123. C. Lavell, "Getting it back: some desiderata for information retrieval in archaeological computer archives," in *Computer usage in British Archaeology* (J. D. Richards, ed.), IFA Occasional Paper No. 1, pp. 75–9, Birmingham: Institute of Field Archaeologists, 1986.

124. R. H. Leech, "Computerisation of the National Archaeological Record," in CAA 86, pp. 29–37.

125. S. Palmer, "Computer usage at the Oxford Archaeological Unit," *Archaeological Computing Newsletter*, vol. 8, pp. 11–14, 1986.

126. S. Palmer, "Computers and office management: computer usage in Oxford Archaeological Unit," in *Computer usage in British Archaeology* (J. D. Richards, ed.), IFA Occasional Paper No. 1, pp. 63–7, Birmingham: Institute of Field Archaeologists, 1986.

127. S. Rahtz, "KERMIT—a file transfer program," *Archaeological Computing Newsletter*, vol. 6, p. 21, 1986.

128. S. Rahtz, "AIE—Archaeological Information Exchange," *Archaeological Computing Newsletter*, vol. 8, p. 10, 1986.

129. J. D. Richards, *Computer usage in British Archaeology*. IFA Occasional Paper No. 1, Birmingham: Institute of Field Archaeologists, 1986.

130. J. D. Richards, "Computers in archaeological theory and practice," in *Computers, Quantitative Methods and Archaeological Theory: The Glasgow TAG, 1985* (J. A. Bell, G. R. Lock, and P. Reilly, eds.), no. 28, pp. 51–5, Science and Archaeology, 1986. (special issue).

131. N. S. Ryan and D. J. Smith, "Databases, Data Models and Archaeological Theory," in *Computers, Quantitative Methods and Archaeological Theory: The Glasgow TAG, 1985* (J. Bell, G. Lock, and P. Reilly, eds.), no. 28, Science and Archaeology, 1986. (special volume).

132. D. Wake, "Computer conferencing and electronic journals for the scientific community," in CAA 86, pp. 14–20.

133. J. Bell, G. Lock, and P. Reilly, *Computers, Quantitative Methods and Archaeological Theory: The Glasgow TAG, 1985*. published as Science and Archaeology, Vol 28, 1987.

134. C. Dallas, "Death, costume and social identity," *Archaeological Computing Newsletter*, vol. 11, pp. 9–16, 1987.

135. J. Huggett, "Data compression: some practical examples," *Archaeological Computing Newsletter*, vol. 12, pp. 15–9, 1987.

136. J. Huggett, "Compacting Anglo-Saxon cemetery data," in Ruggles and Rahtz (CAA 87), pp. 269–274.

137. S. D. Stead, "The Integrated Archaeological Database," in Ruggles and Rahtz (CAA 87), pp. 279–284.

138. G. Høy, "From hand-written archive to computer-readable data," in Ruggles and Rahtz (CAA 87), pp. 275–278.

139. T. Madsen, "Prospects for the use of computer applications in Denmark," *Archaeological Computing Newsletter*, vol. 14, pp. 14–6, 1988.

140. P. Reilly, *Computer Analysis of an Archaeological Landscape: Medieval Land Division in the Isle of Man*, vol. 190 of *British Series*. Oxford: British Archaeological Reports, 1988.

141. I. Johnson, *The getting of data*. Unpubl. phd thesis., Canberra University, Australia, ND.

142. H. Weir, "A survey and costing of computer hardware for an integrated archaeological recording system," ND.

Part I

DATA ANALYSIS TOOLS