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*Settlement and Landscape in the Northern Isles;
a Multidisciplinary Approach*

*Archaeological research into long term settlements and their
associated arable fields from the Neolithic to the Norse periods*

Volume 1 of 2

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Doctor of Philosophy by Published Work

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Abstract

The research contained in these papers embodies both results from direct archaeological investigation and also the development of techniques (geophysical, chronological and geoarchaeological) in order to understand long-term settlements and their associated landscapes in Orkney and Shetland.

Central to this research has been the study of soil management strategies of arable plots surrounding settlements from the Neolithic to the Iron Age. It is argued that this arable system provides higher yields in marginal locations. The ability to enhance yield in good years and to store surplus can mitigate against shortage. Control and storage of this surplus is seen as one catalyst for the economic power of elite groups over their underlying or 'client' population. The emergence of a social elite in the Iron Age, building brochs and other substantial roundhouses of near broch proportions, is seen as being linked to the control of resources. Evidence at the site of Old Scatness indicated that there was a continuity of wealth and power from the Middle Iron Age through the Pictish period, before the appearance of the Vikings produced a break in the archaeological record. The Viking period saw a break in building traditions, the introduction of new artefacts and changes in farming and fishing strategies. Each of the papers represents a contribution that builds on these themes.

Keywords: Orkney, Shetland, Neolithic, Iron Age, Viking, Chronology, Palaeoeconomy, Palaeosols, Power, Sustainability

Acknowledgements

I would like to thank all of those with whom I have worked over the years. Particular thanks must go to Cathy Batt, Julie Bond, Andy Dugmore, Noel Fojut, Rebecca Nicholson, Tom McGovern, Mark Pollard, Ian Simpson. This thesis would not have been submitted if not for the encouragement of Louise Brown, Carl Heron and most of all my wife, Julie.

I would like to dedicate this work to the memory of the late Alec Miles, an extraordinary amateur archaeologist from whom as a school boy I learnt so much; to the late Arnold Aspinall, Archaeological Sciences' first Head of Department, who took a chance on a young circuit digger and who encouraged him to undertake independent research; and lastly to my mother and late father who encouraged and believed in me.

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Graded List of Publications by Type and Year

R	refereed	*	sole author
U	un-refereed	**	principal author
P	available in the public domain	***	joint author
N-P	not available	****	Contributor

Edited Books

Nicholson, R.A. and Dockrill, S.J. (eds.) 1998. *Old Scatness Broch, Shetland: Retrospect and Prospect*. North Atlantic Biocultural Organisation Monograph No. 2, Bradford Archaeological Sciences Research 5. Bradford: Department of Archaeological Sciences.

R P

- Dockrill, S.J. 1998a. Northern Exposure: Phase 1 of the Old Scatness Excavations 1995–1998. In Nicholson, R.A. and Dockrill, S.J. (eds.) *Old Scatness Broch, Shetland: Retrospect and Prospect*. North Atlantic Biocultural Organisation Monograph No. 2, Bradford Archaeological Sciences Research 5. Bradford: Department of Archaeological Sciences. 59–80.

R P *

Book conceived by Dockrill as a reflective interim statement on the project. Dockrill was co-editor and chapter author.

Turner, V.E., Nicholson, R.A., Dockrill, S.J. and Bond, J.M. (eds.) 2005. *Tall Stories? Broch Studies, Past Present and Future*. Oxford: Oxbow.

R P

- Dockrill, S.J., Bond, J.M. and Batt, C.M. 2005a. Old Scatness: The First Millennium AD. In V. E. Turner, R. A. Nicholson, S. J. Dockrill and J. M. Bond (eds.) *Tall Stories? Broch Studies, Past Present and Future*. Oxford: Oxbow. 52-65.

R P **

Edited book resulting from the Tall Stories conference held in Shetland in 2000. Dockrill co-editor and was lead chapter author describing the archaeological sequence.

Dockrill, S.J., Bond, J.M., Nicholson, R. and Smith, A. 2007. *Investigations on Sanday, Orkney, Volume 2: Tofts Ness: An Island Landscape Through 3000 Years of Prehistory*. Kirkwall: The Orcadian/Historic Scotland.

R P

Dockrill, S.J. 2007a. Mound 11: the Neolithic and Early Bronze Age. In Dockrill, S.J., Bond, J.M., Nicholson, R. and Smith, A. *Investigations on Sanday, Orkney, Volume 2: Tofts Ness: An Island Landscape Through 3000 Years of Prehistory*. Kirkwall: The Orcadian/Historic Scotland. 13-39.

R P *

Dockrill, S.J. 2007b. Mound 11: the Late Bronze Age and Early Iron Age. In Dockrill, S.J., Bond, J.M., Nicholson, R. and Smith, A. *Investigations on Sanday, Orkney, Volume 2: Tofts Ness: An Island Landscape Through 3000 Years of Prehistory*. Kirkwall: The Orcadian/Historic Scotland. 41-112.

R P *

Dockrill, S.J., Gater, J.A. and Simpson, I.A. 2007. Beyond Mound 11: investigations within the Tofts Ness landscape. In Dockrill, S.J., Bond, J.M., Nicholson, R. and Smith, A. *Investigations on Sanday, Orkney, Volume 2: Tofts Ness: An Island Landscape Through 3000 Years of Prehistory*. Kirkwall: The Orcadian/Historic Scotland. 113-141.

R P *

Dockrill, S.J. 2007c. Discussion. In Dockrill, S.J., Bond, J.M., Nicholson, R. and Smith, A. *Investigations on Sanday, Orkney, Volume 2: Tofts Ness: An Island Landscape Through 3000 Years of Prehistory*. Kirkwall: The Orcadian/Historic Scotland. 381-395.

R P *

Co-editor of volume and lead chapter author describing the archaeological remains and providing the discussion. The co-authored landscape chapter conceived and largely written by Dockrill incorporating geophysical text by Gater and soils work by Simpson.

Dockrill, S.J., Bond, J.M., Turner, V.E., Brown, L.D., Bashford, D.J, Cussans, J.E. and Nicholson, R.A. 2010. *Excavations at Old Scatness, Shetland Volume 1: The Pictish Village and Viking Settlement*. Lerwick: Shetland Heritage Publications.

R P

Dockrill, S.J. and Bond, J.M. 2010a. An introduction to the archaeological excavations at Old Scatness. In Dockrill, S.J., Bond, J.M., Turner, V.E., Brown, L.D., Bashford, D., Cussans, J.E., Nicholson, R.A. *Excavations at Old Scatness, Shetland Volume 1: The Pictish Village and Viking Settlement*. Lerwick: Shetland Heritage Publications. 1-25.

R P **

Dockrill, S.J. and Bond, J.M. 2010b. Old Scatness: A Discussion of the Pictish, Viking and Norse Evidence. In Dockrill, S.J., Bond, J.M., Turner, V.E., Brown, L.D., Bashford, D., Cussans, J.E., Nicholson, R.A. *Excavations at Old Scatness, Shetland Volume 1: The Pictish Village and Viking Settlement*. Lerwick: Shetland Heritage Publications. 353-369.

R P **

Dockrill, S.J. 2010c. The Pictish Village. In Dockrill, S.J., Bond, J.M., Turner, V.E., Brown, L.D., Bashford, D.J, Cussans, J.E. and Nicholson, R.A. 2010. *Excavations at Old Scatness, Shetland Volume 1: The Pictish Village and Viking Settlement*. Lerwick: Shetland Heritage Publications. 27-75.

R P **

Co-editor, head of publication team and lead author for the introduction, structural and depositional chapter on the Pictish Village, and interpretation of the archaeology within the discussion chapter.

Book Chapters

Dockrill, S.J. 1980, Appendix 1, Binchester Geophysical Survey 1979 in Ferris, I. and Jones, R. Excavations at Binchester 1976-9. In Hanson, W.S. and Keppie, L.J.F. (eds.) *Roman frontier studies 1979: papers presented to the 12th International Congress of Roman Frontier Studies*. BAR International Series 71. Oxford: Archaeopress. 233-254.

R *

Dockrill authored a report on the geophysical survey (Earth Resistance Survey of Binchester) published as Appendix 1 within this paper and termed a contribution.

Dockrill, S. and Gater, J. 1992. Tofts Ness: Exploration and interpretation in a prehistoric landscape. In Spoerry P. (ed.) *Geoprospection in the archaeological landscape*. Oxbow Monograph 18. Oxford: Oxbow Books. 25-31.

R P ***

Co-authored paper with Gater who described the methodology, with Dockrill discussing the archaeological interpretations.

Dockrill, S.J., Bond, J.M., Milles, A., Simpson, I.A. and Ambers, J. 1994. Tofts Ness, Sanday, Orkney: An Integrated Study of a Buried Orcadian landscape. In Luff, R.M. and Rowley-Conwy P.A. (eds.) *Whither Environmental Archaeology?* Oxbow Monograph 38. Oxford: Oxbow Books. 115–132.

R P ***

Chapter initiator / editor, contributor to the introduction and author of the magnetic susceptibility components.

Dockrill, S.J., Bond, J.M. and O'Connor, T.P. 1998. Beyond the Burnt Mound. The South Nesting Palaeolandscape Project. In Turner, V. (ed.) *The Shaping of Shetland*. Lerwick: Shetland Times Ltd. 61-82.

R **

Paper conceived by Dockrill, who was the Project Director and principal author.

Dockrill, S.J. 2002. Brochs, Economy and Power. In Ballin Smith, B. and Banks, I. (eds.) *In the Shadow of the Brochs: The Iron Age in Scotland*. Stroud: Tempus. 153–162.

R P *

Sole authored paper.

Dockrill, S.J. 2003. Broch, wheelhouse, and cell: redefining the Iron Age of Shetland. In Downes, J. and Ritchie, A. (eds.) *Sea Change Orkney and Northern Europe in the Later Iron Age AD 300-800*. Angus: The Pinkfoot Press. 83-94.

R P *

Sole authored paper.

Dockrill, S.J. and Batt, C.M. 2004. Power over time: an overview of the Old Scatness Broch Excavations. In Housley, R.A. and Coles, G. (eds.) *Atlantic Connections and Adaptations: Economies environments and subsistence in lands bordering the North Atlantic*. Symposia of the Association for Environmental Archaeology No. 21. Oxford: Oxbow. 128-137.

R **

Paper conceived and instigated by Dockrill. Dockrill as principal author discussed the archaeology and economic model. Batt described the dating programme and chronological results.

Bond, J.M. and Dockrill, S.J. 2013. Excavations at Upper House, Underhoull. In Turner, V.E., Bond, J.M. and Larson, A.-C. (eds.). *Excavation and Survey in Northern Shetland 2006-2010*. Viking Unst. Lerwick: Shetland Heritage Publications. 156-165.

R ***

Principal author of the excavated structural and depositional sequence, and responsible the interpretation of the turf wall and sprung floor.

Journal Papers

Dockrill, S.J. 1984. A resistivity survey at Tofts Ness, Sanday. *Proceedings of the Society of Antiquaries of Scotland* **114**: 586-88.

R P *

Sole authored paper.

Dockrill, S.J. 1986. Resistivity survey of two settlement sites at Tofts Ness, Sanday, Orkney. *Proceedings of the Society of Antiquaries of Scotland* **116**: 561-582.

R P *

Sole authored paper.

Dockrill, S.J. and Simpson, I.A. 1994. The identification of prehistoric anthropogenic soils in the Northern Isles using an integrated sampling methodology. *Archaeological Prospection* **1**(2): 74–92.

R P ***

Paper initiator and co-author.

Dockrill, S.J., Bond, J.M., Crummet, J.G. and Heron, C.P. 1995. Scatness, Shetland: an Integrated Survey of a Multiperiod Settlement Mound. *Archaeological Prospection* **2**(3): 141–154.

R P **

Paper initiator and lead author.

Simpson, I.A., Dockrill, S.J., Bull, I.D. and Evershed, R.P. 1998. Early Anthropogenic Soil Formation at Tofts Ness, Sanday, Orkney. *Journal of Archaeological Science* **25**: 729–746.

R P ***

Co-author, archaeological expert and contributor to discussion.

Sutherland, T.L., Schmidt, A. and Dockrill, S.J. 1998. Resistivity pseudosections and their topographic correction: a report on a case study at Scatness, Shetland. *Archaeological Prospection* **5**: 229-237.

R ****

Archaeological expert, advisor on site survey and contributor to archaeological context and discussion.

Guttmann, E.B.A., Simpson, I.A. and Dockrill, S.J. 2003. Joined-up archaeology at Old Scatness, Shetland: Thin section analysis of the site and hinterland. *Environmental Archaeology* **8**(1): 17-31.

R P ****

Archaeological expert and facilitator of samples and contributor to archaeological context and discussion.

Guttmann, E.B.A., Dockrill, S.J. and Simpson, I.A. 2004. Arable agriculture in prehistory: new evidence from soils in the Northern Isles. *Proceedings of the Society of Antiquaries of Scotland* **134**: 53-64.

R P ***

Archaeological expert and contributor to archaeological context and discussion.

Dockrill, S.J., Outram, Z. and Batt, C.M. 2006. Time and place: a new chronology for the origin of the broch based on the scientific dating programme at the Old Scatness Broch, Shetland. *Proceedings of the Society of Antiquaries of Scotland* **136**: 89-110.

R P **

Paper initiated by Dockrill who provided much of the archaeological context, discussion, and implications.

Guttmann, E.B., Simpson, I.A., Davidson, D.A., and Dockrill, S.J. 2006. The management of arable land from prehistory to the present: case studies from the Northern Isles of Scotland. *Geoarchaeology* **21**(1): 61-92.

R P ****

Archaeological expert and contributor to archaeological context and discussion.

Guttmann, E.B., Simpson, I.A., Nielsen, N. and Dockrill, S.J. 2008. Anthrosols in Iron Age Shetland: implications for arable and economic activity. *Geoarchaeology* **23**(6): 799–823.

R P ****

Archaeological expert and contributor to archaeological context and discussion.

Dockrill, S.J. and Bond, J.M. 2009. Sustainability and Resilience in Prehistoric North Atlantic Britain: The Importance of a Mixed Palaeoeconomic System. *Journal of the North Atlantic* **2**(1): 33-50.

R P ***

Initiated by Dockrill and co-written with Bond. Responsible for Theoretical archaeological modelling.

Outram, Z., Batt, C.M., Rhodes, E.J. and Dockrill, S.J. 2010. The integration of Chronological and archaeological information to date building construction: an example from Shetland, Scotland, UK. *Journal of Archaeological Sciences* **37**: 2821-2830.

R P ***

Dockrill archaeological expert, responsible for on site advice on sampling and contributor to archaeological context, sampling and archaeological discussion.

Statement Giving the Basis for the Award of the Degree of PhD

Brief Professional Biography

Summary

Dockrill is a Senior Lecturer in Archaeology at the University of Bradford, where his research has focused on the archaeology of North Atlantic Britain. He is an active member of two international research collaboratives, the North Atlantic Biocultural Organisation (NABO) and the Global Human Ecodynamics Alliance (GHEA), in 2010 he became Adjunct Research Professor for the City University of New York (CUNY). Dockrill was an invited member of the NABO International Polar Year research group: *Long Term Human Ecodynamics in the Norse North Atlantic: cases of sustainability, survival, and collapse* (2007-2010; funded by the US National Science Foundation). He has lectured widely on his research, both nationally and internationally, within the context of these research groups (most recently he was invited to contribute a paper at the 2012 Society of American Archaeologist's conference held in Memphis). In 2008 Dockrill co-organised the NABO conference *Archaeological Futures: A Research Agenda for the North Atlantic* held in Bradford. Since 1984 he has led field programmes in Orkney, Shetland and the Faroe Islands.

Dockrill's research has focused on human adaptation, settlement sustainability, economic resilience and the manifestation of power (including development of social hierarchies) in the North Atlantic. Within this research two major interlinking strands have emerged, the first of these being the cultural advancement and social development from the Neolithic to the Late Iron Age in the British North Atlantic, seen for example in the development of stone building

techniques in the Iron Age. The second represents the development of the island landscape/seascape economy and its relationship to both the longevity of settlement sites and to social stratification with the endowment of power through economic control observed from the Neolithic to the Late Norse Period.

Dockrill was first appointed as an Archaeological Technician in 1979, rising to Senior Technician. After the completion of an MPhil degree in 1993, he was appointed as an academic, first as Experimental Officer and in 1995 as Lecturer in Archaeology.

Brief Research History

Dockrill has worked in the Northern Isles, the focus of his research, since 1979 as a Supervisor and Assistant Director at Pictish and Norse sites on the Brough of Birsay, Orkney, and on the multi-period settlement mound at Pool, Sanday, Orkney. In 1984 he was invited, by what is now Historic Scotland, to formulate and direct a research-orientated programme of work on the peninsula of Tofts Ness on the island of Sanday, Orkney. The resulting excavation and field survey was of great importance as it was able to directly link occupation phases of a settlement site to the immediate buried landscapes informing on land usage and management and how this developed from the Neolithic to the Early Iron Age. The question of prehistoric land use formed a research focus for the South Nesting Palaeolandscape Project which ran from 1991 to 1993.

In 1994 the author was asked to formulate and lead the excavations of a broch mound at Scatness, Shetland. This major project, which ran between 1995 and 2006, led directly from the experience gained together with the research

outcomes from the author's previous research in both Orkney and Shetland. Tofts Ness was of particular importance here as it demonstrated the importance of integrating specialists at an early stage to improve interpretation, as highlighted in the paper 'Tofts Ness, Sanday, Orkney; an integrated study of a buried Orcadian landscape' (Dockrill *et al.* 1994).

The Old Scatness Project won the 2002 Virgin Award for 'Best Public Presentation of Archaeology' and regularly featured in the national press, on national television (for example BBC2's 'Landscape Mysteries', and radio documentaries (for example BBC Radio 4's 'Science Now').

Dockrill's current research project, Gateway to the Atlantic, is a collaborative project with Dr Julie Bond (University of Bradford) and Dr Jane Downes (University of the Highlands and Islands). Focusing on the island of Rousay, Orkney, the project is heavily influenced by the archaeological excavation and landscape studies associated with the Tofts Ness Project and the Old Scatness Project. Here issues around long-term sustainability and resilience at an island level, investigating how people (and society) reacted and adapted to climatic and environmental change over time, form the backbone of the research. This project is running under the banner of the recently formed GHEA.

Introduction to the Research

The work presented here is a coherent body of original research undertaken over a number of years. The papers cover a spectrum of subjects, from technique advancement to archaeological theoretical models. The following research aims provide a linkage for the work, as does the geographic focus of

the Northern Isles. In some cases a paper may address several themes such as *sustainability* and *resilience* and *social economic interaction* and *social structure*. The aims are as follows:

- To examine and maximise the interpretive potential of the archaeological evidence by the *integration of specialist techniques*;
- To investigate the archaeological record for evidence of *continuity* and to a greater understanding of *inheritance* both in skills and the management of the landscape;
- To extend the understanding of prehistoric *economic strategies* in the marginal environments of the Northern Isles in order to understand issues of *sustainability* and *resilience* associated with many settlement sequences;
- To enhance the understanding of *social economic interaction* and *social structure* by using the archaeological data and interpretive models derived from it.

Two long-term excavations of multi-period settlement sites form the core of the research publications submitted here. The first was a prehistoric excavation and landscape study, commissioned by what is now Historic Scotland, at Tofts Ness, Sanday, Orkney. The fieldwork was directed by the author in the summers of 1985-1988, with final publication in 2007 (Dockrill *et al.* 2007). The second was the excavation of an Iron Age village and broch, which survived as a settlement site until the 20th century. Funding was linked to an EU Heritage funded project managed by Shetland Amenity Trust, with the excavation being directed by the author for 12 field seasons between 1995 and 2006 (equating to approximately 18 months of continuous fieldwork). These two projects are

linked by their need for an integrated research strategy in the examination of the immediate interface between *site* in this instance *settlement* (structures and middens) and the immediate surrounding landscape forming arable infields.

A common theme amongst much of the author's published work has been an attempt to define, or maximise, the archaeological record through either his own efforts or with the collaboration of others. During the early 1980s the author carried out numerous geophysical surveys on behalf of the Department of Archaeological Sciences for archaeological units and in Scotland for what is now Historic Scotland. During that time archaeological geophysics was in its infancy. Data analysis could only be carried out by hand or using primitive computers, with only simple contouring and dot density being available on specialised machines. Resistivity had proved to be a successful technique for identifying Roman walling and roads as seen in Dockrill's contribution (reporting on the earth resistance survey) at Binchester (Ferris and Jones 1979). However, its potential was unrecognised for Orcadian prehistoric sites such as those seen at Tofts Ness, on the island of Sanday. In 1983 the author carried out an experimental earth resistance survey to test the technique and its potential over part of the most northerly mound, Mound 11, at Tofts Ness (Dockrill 1984). The anomalies registered by this survey indicated the potential for this technique and the author successfully applied for a research grant from the Society of Antiquaries of Scotland for a more extensive survey of Mound 11 in 1984 (Dockrill 1986). This survey, although embarrassingly simplistic by current standards, was of great importance at the time in a number of ways. It saw the first use of the Geoscan RM4 resistivity meter and the first on-site processing using the Epson HX20 microcomputer. The interpretation of the

survey data was of great significance in elucidating the depositional structure of the mound. Areas of low resistance were seen as representing midden, while zones of high resistance within these appeared to represent structural elements. When combined with the visible earthworks and topography, the interpreted earth resistance data were crucial in determining an excavation strategy for Mound 11.

Tofts Ness, Sanday, Orkney

In 1984, Dockrill was invited by what is now Historic Scotland to direct an excavation and field assessment programme on the Tofts Ness peninsula. Mound 11, which was being destroyed by rabbit burrows, cattle scraping and plough encroachment, provided an obvious target for investigation by large-scale excavation, whilst geophysical survey, coring, and smaller excavation trenches provided the opportunity to investigate the wider landscape. In the 19th century the archaeology of the Tofts Ness landscape had been investigated by the local physician Dr Wood. Evidence from this and subsequent recording by Raymond Lamb and the Royal Commission indicated that a pristine prehistoric landscape existed on the Ness, consisting of both funerary and settlement monuments (Lamb 1980). The machair landscape provided the potential for the stratigraphic linkage between mound material and buried soil horizons beyond the mound. The presence of calcareous windblown shell sand interleaving between midden deposits provided the potential for very good bone preservation.

Funding was restricted, so the complete excavation of Mound 11 was not tenable. The subsequent excavation strategy for this mound was informed by

the earth resistance survey and the nature of the contours forming the earthwork. In the northwest corner of the mound, the presence of an Iron Age roundhouse was indicated by exposed wall faces as a result of rabbit burrows and cattle scraping. This walling had been recorded in the 1984 survey (Dockrill 1986, 565). The midden core of what appeared to be the primary mound was excavated in 1985 by two, five metre wide transects extending from the centre of the mound outwards to the east and south. These targeted the midden core and a suspected building, as well as the interface of the mound and buried land surfaces.

In 1986, an area excavation concentrated on the secondary mound element that contained the remains of the partly exposed roundhouse. Again, transects investigated the interface of the mound and the area beyond to the north, west and east. The strategic placement of these transects relied on the geophysical survey work carried out in 1984 and the subsequent excavation allowed the interpretations of the anomalies to be evaluated against the surviving archaeology.

This project, some five field seasons and 19 years of post-excavation to final publication, has provided academic outputs covering all four research aims, outlined above.

The maximisation of the interpretative potential of the archaeological evidence by the *integration of specialist techniques* was crucial to the project from its inception and can be seen in the geophysical survey, environmental and economic sampling, soil science, and chronology.

In addition to the pre-existing earth resistance survey, a magnetic survey was carried out prior to the excavation using a 0.5m Philpot Gradiometer. This was completed by Dr John Gater who was employed to carry out further geophysical survey work as part of the project. One of the biggest problems was that the early geophysical surveys were done ahead of the excavation and the geophysical surveyor was often divorced from the process of excavation and the nature of the underlying record. This was not the case at Tofts Ness and a strong correlation was seen between the anomalies from both of these data sets and the buried archaeology. This was crucial in developing interpretations for the rest of the landscape (considered by Dockrill and Gater 1992). This paper examined the correlation of magnetic data and the excavated archaeology, the wider use of the method in the landscape, the interpretation of different archaeological features within the Shelly Knowe (Mound 8) complex, and the identification of a buried man-made infield in the landscape beyond the standing earthworks. Much of the original magnetic survey work using a Philpot 0.5m fluxgate gradiometer was repeated by Dr John Gater using the next generation of fluxgate gradiometer with built in data logger constructed by Geoscan Research. The higher precision offered by more data points and greater drift stability allowed greater definition of the geophysical survey data. The completed monograph (Dockrill *et al.* 2007) sees the discussion of the geophysical data.

The paper by Dockrill and Gater (1992) led to a slightly different approach in presenting the geophysical survey in the final published monograph (Dockrill *et al.* 2007). Instead of treating the archaeological geophysics as simply another specialist report, it was placed in the relevant sections of the main monograph.

The rationale behind this was to bring the geophysical survey into the mainstream discussion, highlighting its use as part of an integrated package of techniques. This 'toolbox' approach, i.e. using a number of applications and specialist input, provides the potential to extract more data from the archaeological record. This in turn provides the potential to identify collaborative strands within the data that would support or strengthen the interpretive hypothesis. Chapter 4 of the Tofts Ness monograph attempted to provide a 'holistic view' of the landscape and monuments by discussing areas of archaeological interest in context of the topography, geophysical data, and excavation results. In doing so the geophysical surveys were brought into the mainstream of archaeological discussion and rightly in this case the linking element to understanding the landscape.

This 'toolbox' approach, integrating techniques to provide a more holistic interpretive view of the archaeological record, was successfully repeated with other methods, for example in reconstructing the economic context of the settlement sites, and in the understanding of the management strategies associated with arable soils.

It is in the questions surrounding the reconstruction of the palaeoeconomic strategies where this integrated form of analysis is perhaps best observed. In part this was due to the archaeobotanist and archaeozoologist on this project being (unusually) the same person, Dr Julie Bond. This facilitated a joined-up approach to the examination of the economy at Tofts Ness. The author's particular interest lay in the accumulation of midden material responsible for the formation of the mound and the temporal differences in composition between

the Neolithic and Early Iron Age depositions. Added to this was the survival of buried soils with clear signs of cultivation (in the form of physical ard marks and the identification of artefacts and ecofacts present in the midden applied to the soil).

This area formed a focus of the author's research and aspects surrounding the use of magnetic susceptibility to identify arable soils played a substantial part within his MPhil thesis (*The human palaeoecology of Sanday, Orkney, with particular reference to Tofts Ness*, awarded by the University of Bradford in 1993). This was the foundation for further research of buried soils with Dockrill advising Simpson and his PhD student Erica Guttman on further sampling at Tofts Ness and on other sites including the buried soils surrounding the settlement mound at Old Scatness (Dockrill and Batt 2004) and the middens soils at Jarlshof (Dockrill, and Bond 2009).

The theoretical model formed by the MPhil research was developed further into new questions and expanded over the years with the study of Old Scatness and its buried fields. A modified version of the original theoretical model contributed to new considerations of Iron Age power in the discussion of Scatness in *Power over Time* (Dockrill, and Batt 2004). The final monograph publication of Tofts Ness used within a short section of the discussion the modeling from the thesis to highlight the yield potential and importance of six-row barley to the economic resource (Dockrill *et al.* 2007, 387-393).

The use of an integrated approach in order to interpret the palaeoeconomy of Tofts Ness is demonstrated in a paper presented at the Association of

Environmental Archaeologists conference at Cambridge. As a case study Tofts Ness was acclaimed as demonstrating the strength of applying this 'toolbox' technique and highlighting the importance of integration and discussion between specialists. The invited published form of this paper provided a narrative from each of the specialists, here Dockrill's role was one of coordinating the research and setting the context, together with the definition of the research questions and the specific discussion of the spatial differences in the buried soils using magnetic susceptibility and inorganic phosphate as indicators (Dockrill *et al.* 1994).

The 1994 paper (Dockrill *et al.* 1994) provides a benchmark, not only in advocating a multi-strand approach, but in demonstrating the originality (at the time) of each of the specialist approaches, and the enhanced overall understanding achieved from combining them. In particular was Annie Milles' ground-breaking contribution on the taphonomy of the molluscs, in terms of identifying the difference in land use between cereal cultivated fields and pasture by the snail fauna (Dockrill *et al.* 1994, 124). The presence of burnt marine mollusca also demonstrated a complex cycle of the use of seaweed prior to its deposition with ash on to the fields (Dockrill *et al.* 1994, 123). Bond concluded the paper by discussing the issue of taphonomic complexity, seen within the different data strands, in the context of the botanical record (Dockrill *et al.* 1994, 128-131).

The first two research aims, outlined above, continued with the examination of buried soils at Tofts Ness by the author and Professor Ian Simpson from the University of Stirling. Key questions surrounding management strategies and

how these developed over time could be examined at Tofts Ness. The question of the geographical spread of these management strategies stimulated the author to expand on this research in 1991. This resulted in further collaborative research with Professor Ian Simpson in a new fieldwork programme at South Nesting, Shetland, to examine surviving prehistoric arable infields as defined by their field boundaries. This research into the prehistoric management of these buried arable soils resulted in a series of papers. The strength of these papers was again the multi-strand or 'toolbox' approach involving other specialists. The core paper by Dockrill and Simpson (1994), in part an outcome of Dockrill's 1993 M.Phil, begins this sequence of investigation and importantly sets the agenda 'with the aim of interpreting prehistoric arable land-management strategies' (Dockrill and Simpson 1994, 75). This paper examines the archaeological context of the soils in question and the author's contribution to the scientific analysis by examining data obtained from the magnetic susceptibility and the inorganic phosphate analysis. Simpson examined the soils using thin section micromorphology. The discussions and conclusions present not only an interpretive understanding but also a proven case study for the methodology.

The addition of further work on the thin sections of the prehistoric soils identified at Tofts Ness by Simpson and the analysis of free soil lipids by Bull and Evershed built further on this work. The resulting multi-authored paper, published in the *Journal of Archaeological Science*, provided an important milestone in presenting a holistic understanding of the nature of the materials added to these buried, prehistoric soil sequences forming these infield zones (Simpson *et al.* 1998).

The Tofts Ness monograph provided a platform to interpret and understand prehistoric *economic strategies* in the marginal environments of the Northern Isles in order to understand the connected issues of *sustainability* and *resilience*.

The volume provided both cultural and economic data sets, together with interpretive discussion of the post-excavation research, which had continued for many years after the final field season. The results of this research programme have contributed greatly to our understanding of prehistoric *economic strategies* in the marginal environments of the Northern Isles. It argues a case for indigenous and continuous settlement. Subsequent research on soils and middens has indicated that this sequence was not a unique or isolated example and that the concentrated infield agriculture of small plots required sedentary occupation resulting in settlement of a long duration (Dockrill 2007a, 34-38). This model conflicted with the low engagement with arable agriculture and mobile Neolithic suggested in 1991 by Julian Thomas (Dockrill 2007a, 37). As an alternative view, the evidence from the soil management strategies employed at Tofts Ness provides the basis for stability. The anthropogenic additives would become, for future generations living on the site, an inherited landscape asset.

Animal bone from Tofts Ness was highly fragmented through the Neolithic to the Early Iron Age indicating that marrow was important. In the same period of the Neolithic, the evidence from Pool (excavated 13 miles away on the same island between 1983 and 1988 by John Hunter (Hunter *et al.* 2007)) displayed more conspicuous consumption without the need for marrow extraction, rather meat

being taken by muscle stripping leaving bones intact. The range of birds and fish exploited also suggested a more marginal community at Tofts Ness requiring greater risks to be taken for food procurement. Barley was harvested under-ripe perhaps as an insurance strategy (Dockrill 2007a, 38). The importance of barley as a storable commodity that may be exchanged or more importantly stored to offset against a year of poor harvest can be seen by the investment in creating managed infields (Dockrill 2007c, 387-388).

The Mound 11 settlement is interpreted within the discussion of the 2007 monograph as being a daughter or secondary settlement of the Neolithic, infilling the more marginal zones of the landscape. Core to the discussion of the evidence for Tofts Ness was the understanding of *social economic interaction* and *social structure*. The evidence suggests that the occupants are from the poorer end of the social spectrum in the Neolithic and the Early Iron Age. Archaeological evidence of the Neolithic Phases at Tofts Ness contrasts greatly with that of Pool (Hunter *et al.* 2007).

Pottery from Tofts Ness presents for the Neolithic an assemblage of bucket-shaped vessels but without the Grooved Ware decoration found within the Pool assemblage for the same period. The question of social ranking and social access might be asked as Mound 11 at Tofts Ness appears to be a site of significantly lower status. The exclusion of decorated pottery linked to social position might reflect a layer of complexity to Neolithic society which has not been observed before. Exclusion and access linked to social order may represent some form of cast division in Neolithic society (Dockrill 2007c, 384).

It is significant that a linkage to Shetland can be made in the ceramic record for the Early Bronze Age, which is shared by the coarse stone assemblage and the presence of steatite, which is found in the complex Shetland geology (Dockrill 2007c, 384-385). The continuity of settlement into the Early Bronze Age had not been observed prior to the excavation of Mound 11 at Tofts Ness. This continuity, together with the cultural and trade links provided by the presence of steatite, provide strong evidence for contact whose visibility appears to be lacking in the Middle and Late Neolithic.

In the Early Iron Age, Tofts Ness is seen as being key in providing an understanding of *social economic interaction* and *social structure*. Since the 19th century, the excavation of brochs has dominated Iron Age archaeology in North Atlantic Britain. These monumental multi-floored roundhouses reflect status and provide the home and power centre of an elite family supported by a client (under) population. The existence of a client population can be seen in some of the broch villages such as Howe in Orkney (Ballin Smith 1994) and in the author's own recent excavations at Old Scatness in Shetland (Dockrill *et al.* 2010). The roundhouse form (Structure 5) at Tofts Ness is particularly important as it forms one of a group of roundhouse structures excavated in the 1970s and 1980s, which suggested an Early Iron Age precursor to the broch. Perhaps of greater significance is that Structure 5 represented the smallest example and when examined with the economic evidence suggests, as with the Neolithic, that this site was at the lower end of the social spectrum (Dockrill 2007b, 79 and 83). This suggests that the social structures seen in the Middle Iron Age were clearly present in the Late Bronze Age / Early Iron Age.

An economic model was suggested for the occupants of Structure 5 by populating the roundhouse and calculating energy requirements against the potentials from the mixed subsistence base and in particular investigating yield possibilities from intensively managed barley (Dockrill 2007c, 387-393). The model, in its basic form, had formed a major component of Dockrill's 1993 MPhil thesis but the arguments and discussion presented within the 2007 volume are revised within a more concise form, viewing in particular the potential for sustainability even in years of poor harvest. It is interesting to note here that the eventual reason for abandonment is storm related and is due to the massive movement of sand, presumably from an exposed dune system which appears to have covered the site and associated infield and grazing. 'Such a natural disaster would have devalued the economic value of the fields not only in the short term but also in the longer term as the inherited value of manuring was negated' (Dockrill 2007b, 72). It was noted that the occupants had recovered from a slighter, earlier movement of sand, discussed as Phase 5 in the stratigraphic sequence (Dockrill 2007b, 82). This major sand depositional event was subsequently manured and cultivated by the builders of Structure 5. Such movements of sand have taken place in living memory in Sanday with houses and telegraph poles being half buried by sand in a matter of hours (T. Leslie, farmer and then land owner of Mound 11, pers. comm. 1986).

The mixed economy carried out in the Neolithic at Mound 11 provided a marginal example of adaptation and economic resilience, which enabled a model for sustainability to be formulated. In order to test this and further understand the issues of *sustainability* and *resilience* associated with the Tofts Ness sequence, excavations were conducted at Jarlshof, Shetland, directed by

the author in 2004. This formed the basis for a joint paper with Bond entitled 'Sustainability and Resilience in Prehistoric North Atlantic Britain: The Importance of a Mixed Palaeoeconomic System' (Dockrill and Bond 2009). Here, the investigation targeted the primary midden sequence first examined by Childe in 1938. The re-examination of Bronze Age midden sequences at Jarlshof in 2004 provided clear evidence for the cultivation of a sequence of middens (Dockrill and Bond 2009, 40). The resulting palaeoeconomic data from Jarlshof added to the evidence from Tofts Ness which had been further strengthened by Dr Erica Guttmann-Bond who re-excavated some of the anthropological and Neolithic midden sequences identified by the author at Tofts Ness as part of her doctoral research. Here a significant outcome was the identification of signatures indicating the cultivation of midden.

The 2009 paper is regarded as being highly significant in its theoretical model for sustainability (Dockrill and Bond 2009). This paper examines the intensive arable management together with the economic data and reflects on the archaeological evidence for intensive barley production and the other components of the mixed economy. The model utilises the bankable aspect of a good harvest, which could be offset by the storage of surplus against a poor harvest, together with the ability to shift emphasis of out-take on other economic resources in times of scarcity. This was seen, within the model, to enable settlement viability or resilience at times of poor harvest. This model could be used to explain the success of such a delicate and marginal economy over long time periods.

In examining the economy of the Iron Age phase at Tofts Ness and these issues of resilience and sustainability, it became clear that a non-visible cultural dimension must have had an important bearing on the site's success. Whilst excavating on Sanday in the 1980s, a small island where agriculture associated with beef production was the main economic driver, a whole system of exchange still existed. These might take the form of labour exchange perhaps at silage making or haymaking, to equipment exchanges, or a series of favours. In the past such exchanges would have provided an important social underpinning to island life. This network of exchange between individuals and between 'elite' and 'client' populations would be almost totally invisible in the archaeological record. It became apparent in the research for the revised Tofts Ness economic model centred on energy requirement versus energy potential of the resource, that keeping a bull to service the cows would have been an almost untenable drain on grazing and fodder resources (Dockrill 2007c, 387). A more practical solution would be an exchange of goods or labour for the service of a bull. In such circumstances, this second party would most likely be of a higher level of social standing requiring greater wealth in terms of landholding to enable them to hold a bull (*ibid.*). Bulls in the Sanday community of the 1980s were symbolic of prestige and standing amongst rival farmers. This concept, if transferred into an Iron Age social context, would make cattle, and importantly the control of breeding stock, a symbol of power. The service of a bull would provide a mechanism that would reinforce a 'client'-based social hierarchy making the subsistence farmer obligated to the higher status owner of the bull (*ibid.*). Such a basis of exchange, whether goods-based or labour, would form one of the core links or obligations within an 'Elite-Client' relationship. Social stratification based on control of resources might also take

the form of centralisation with the ability to redistribute economic wealth (Dockrill 2007c, 395). Such a system might lead to patronage for labour or tithe, reinforcing the higher status elite within the social system whilst providing a level of security to the lower orders (Nieke 1990, 140-142). The emergence of large (proto-broch style) roundhouses such as Bu (Hedges 1987) and St Boniface (Lowe 1998), which share the same date range, provide structural evidence for complexity and the emergence of an indigenous elite who might be later equated with the broch elite of the Middle Iron Age (Dockrill 2007c, 395).

Old Scatness Broch and Iron Age Village

Introduction to the Research

The experience gained from the study of settlement sites on the Tofts Ness peninsula of Sanday was used by the author to develop the strategy for the investigation of the larger settlement mound at Old Scatness, Shetland. The multi-period site of Old Scatness lies on the western coastline of Dunrossness, on the southern tip of Mainland Shetland. To the west is the Atlantic Ocean, and to the northeast, the Pool of Virkie and the North Sea. Here, a mound containing the remains of a broch had been discovered in 1975 during the construction of an access road to the airport at Sumburgh. In 1995 a programme of excavation commenced as part of a larger heritage project managed by Shetland Amenity Trust. The author was invited to direct the excavation of the site with the initial funding coming from the Regional Development Fund, matched by contributions from many other charities and grant-giving bodies.

The need to maximise the interpretive potential of the archaeological evidence by the integration of specialist techniques underlined the Old Scatness Project. Specialists had been invited into the Tofts Ness Project as soon as opportunities for added research had been identified. At Old Scatness specialist partners had been invited by the author at the research design stage in order to contribute to the research agenda. These included:

- Dr Julie Bond (the Project's Co-director) - palaeoeconomic evidence together with aspects of the material culture;
- Dr Becky Nicholson - fish bone and fishing equipment;
- Dr Cathy Batt - developing the scientific dating programme;
- Dr Gerry McDonnell - archaeometallurgical evidence;
- Professor Ian Simpson (with the author) - examining the soil sequences.

The project was founded on a series of linked research themes (Dockrill and Bond 2010a, 7-9). These are summarised here in a modified form under the following headings as:

- *Site development and chronology*

The dating programme at Old Scatness was based on the integration of techniques responding to research questions generated in the field and sampling during the excavation process. Here the on site presence of our dating specialist, Dr Cathy Batt was crucial. Three scientific dating methods were employed: archaeomagnetic dating of *in situ* fired structures such as hearths; Accelerator Mass Spectrometry (AMS) radiocarbon dating of carbonised plant remains (cereal grains) from secure depositional events and surfaces; Optically Stimulated Luminescence (OSL) dating of the last exposure to light of quartz grains

within the stratigraphic sequence. The application of these methods to targeted chronological problems allowed the reinforcement of dates produced both by a single method and the use of Bayesian statistics on chains of dates (Outram and Batt 2010). This type of dating programme had not been carried out on a site with such longevity before. The use of multiple methods provided an enforceable chronological framework allowing greater interpretation and understanding of questions surrounding the site's past inhabitants, economic development, and cultural identity.

- *Cultural Change*

The provision of the absolute chronology discussed above facilitated the accurate dating of the structural and depositional sequences. This allowed aspects of cultural change to be viewed within a more precise chronological framework with remarkable results. Examination of broch period deposits, for example, have indicated that the Old Scatness broch was constructed between 370 and 200BC confirming the indigenous model for development (Dockrill *et al.* 2006). The implications for this and of Iron Age of Britain are immense. The detailed dating of the cultural interface between that of Pictish and Viking forms the focus for the first of the excavation monographs (Dockrill *et al.* 2010).

- *Economy – landscape/seascape interaction*

An important aspect of the project was to gain an understanding of the economic exploitation both of the surrounding landscape, for arable agriculture, animal husbandry, and other economic resources such as the sea and seashore. Here the on-site contribution of Dr Julie Bond and Dr Rebecca Nicholson formulating the sampling protocols to the

archaeological needs has to be acknowledged. The creation of a robust sampling strategy by Bond and Nicholson provided a framework for the recovery of the palaeoeconomic evidence from the excavated archaeological record and enabled the full potential of the data to be interpreted.

- *Economic continuity, change and intensification*

Economic exploitation, viewed within the long chronological framework that a multi-period site such as Old Scatness can provide, has allowed the study of themes such as continuity, changes in agricultural practice, and intensification in production. This was seen as being vital to the understanding of the site's long-term sustainability and within the chronological framework has enabled the impact of Scandinavian peoples to be viewed.

- *The formation of archaeological deposits and sediments*

This research strand focused on how deposits and sediments have formed at Old Scatness. The theme might be seen as a sub-set of *Economy – landscape/seascape interaction*, and is also interlocked with *Manufacture, trade and contact*. An integrated research programme examining magnetic signatures, carbonised and fossilised organic components, phosphate and soil micromorphology has provided a greater understanding of issues such as fuel exploitation, the identification of compacted surfaces within structures, the formation and management of arable soils, and evidence for deposits associated with ironworking.

- *Manufacture, trade and contact*

Evidence for the manufacture of items involving craft specialisation such as copper alloy casting and ironworking, and imported cultural material such as pottery and Roman glass, indicate evidence for both production and trade.

- *Power, status and social hierarchies in the Mid and Late Iron Age*

The broch and defensive ditch, together with the post-broch village, may be interpreted as indicative of monumentality, suggesting a site of wealth and status. The control of wealth and status within past social systems is an important issue for any interpretation of the excavated archaeological record. The evidence obtained from the site for indicators such as craft specialisation and trade has contributed to the study of past social systems.

The Integration of Specialist Techniques

At every opportunity aspects of the excavation programme were exploited for technique advancement in order to maximise the research possibilities. These included numerous Masters dissertations examining geophysical aspects such as Sutherland's research and Chris Burbridge's research examining the potential for OSL dating the sand and buried soils (both are discussed below in their association with resulting papers). A number of PhD research programmes, either supervised wholly or co-supervised by the author, were also undertaken during the life span of the project. These included Nigel Melton's research into the post-medieval trade and contact of southern Shetland using the evidence from Old Scatness. Amanda Forster's investigations into the Viking steatite trade, which expanded from initial research of the Old Scatness assemblage. Julie Milns' research of the copper

alloy artefacts and material associated with its production (the moulds and crucibles) from Old Scatness informed on the importance of this material in the Mid and Late Iron Age of Shetland. Carl Challinor's examination of Old Scatness pottery for lipids associated with milk production and Louise Brown's examination of lipids for fish contributed to successful completions of a PhD and MPhil respectively. Zoe Outram's research of the Old Scatness chronology by using a 'toolbox' approach to scientific dating methods provided a crucial framework for the archaeological sequence aspects of which are discussed below. Finally, John Summers' successful PhD research into the plant remains, hearths and ovens has provided a greater insight into activity areas within the site. In addition, Erica Guttman-Bond's research at the University of Stirling under Professor Ian Simpson has enabled a greater understanding of middens and soils at Old Scatness and some of its neighbouring sites.

One of the first publications concerning Old Scatness was based on the initial survey of the site. The survey consisted of a topographical survey, with two earth resistance surveys (one at 1m the other at 0.5m probe separation of the mobile (measuring probes) of the twin probe array), and a fluxgate gradiometer survey carried out to define the buried archaeology on the surviving half of the mound (Dockrill *et al.* 1995). This research was carried out during Easter 1995 and maximised the understanding for the nature and extent of the site, the presence of the ditch and new experimental work. The results of the survey heavily influenced the resulting excavation strategy for the summer of 1995 in terms of trench placement. However, the paper was significant in providing a platform for the future discussion of interpretation of the excavated archaeological findings. This was still a very rare occurrence. The role of the

geophysicist was still one of 'provider of data' to inform on the archaeology in advance of the excavation, with comparative studies examining the success of the interpretative diagnoses to the archaeological reality of the underlying deposits.

A new experimental technique, the expanding twin probe array, was used successfully to identify the broch tower within a series of pseudosections (Dockrill *et al.* 1995, 148-151). The further development of this technique, co-supervised by the author as a Masters dissertation in 1996, examined the edge of the mound and the encircling ditch to the west of the village. The results of this research were published as a multi-authored paper (Sutherland *et al.* 1998). Research within these linked themes provided an opportunity to review broch studies and to reflect upon the themes at an early stage with the publication of *Old Scatness Broch, Shetland: Retrospect and Prospect* published in 1998 as an outcome for the first funding phase of the project (Nicholson and Dockrill 1998).

The volume was both reflective of broch studies but also examined various aspects of the emerging new archaeological data from Old Scatness. Howe, which had been totally excavated in the late 1970s and early 1980s (Ballin Smith 1994), had opened up more questions than it answered on the issue of the origins of the broch. Added to this, methods had developed greatly since these excavations in terms of sampling, chronology, and the investigation of the immediate resource base. This made the excavation of a broch settlement with a long sequence of settlement attractive in terms of a 'research laboratory'. Although a more recent and significant broch excavation had taken place at

Scalloway, Shetland (Sharples 1998), it was a rescue excavation carried out in the winter months. It provided an important data set but was excavated in less than perfect circumstances in terms of time and conditions. Excavations at Old Scatness indicated from an early stage that a sequence of buildings could also be consolidated and displayed to the general public alongside the broch.

Chronological Implications

Chronology has been a vital element within the archaeological sequences which have formed much of the author's research in the Northern Isles. The construction of an absolute chronology using scientific techniques is viewed by the author as paramount in providing the potential to examine issues of economic adaptation, and continuity and change associated with climatic and environmental changes in sites with continuous settlement attested by both the depositional build-up of the settlement and the development of surrounding deep anthrosols.

Tofts Ness relied on the radiocarbon dating of samples of bone, which proved problematic due to the lack of collagen in some of the samples. Tofts Ness also highlighted the problems of plateaus within the calibration curve providing a wide date range at the two-sigma level.

The advent of Accelerated Mass Spectrometry (AMS) radiocarbon dating provided the opportunity to use carbonised barley grain, a material representing a single year's growth. Dr Julie Bond directed the palaeoeconomic agenda for Old Scatness and developed the sampling strategy with Dr Rebecca Nicholson from which we would draw material for the majority of the AMS radiocarbon

dates. In the author's formation of the research agenda for the Old Scatness Project the collaborative research with Dr Cathy Batt has been vital in providing an integrated dating strategy. Dr Batt provided her own expertise in providing archaeomagnetic dates of the many hearths at Old Scatness and also initiated an OSL dating programme.

OSL research commenced with Dr Batt supervising Chris Burbidge in a pilot study that formed his Masters research. The author facilitated the study and provided archaeological guidance to the research dissertation, the outcomes of which were published as a paper in *Archaeometry* (Burbidge *et al.* 2001). The doctoral research of Zoe Outram, supervised by Batt and co-supervised in the archaeological and stratigraphic sequencing by the author, proved to be pivotal in the research project. As an undergraduate Outram had gained experience in OSL dating at the Oxford Laboratory with Dr E. Rhodes using Old Scatness samples. Outram's research, combined with the Old Scatness dating programme, culminated in the production of 110 AMS radiocarbon dates, 41 OSL dates and 31 archaeomagnetic dates. This has resulted in extensive chronology chapters in each of the three monographs, including Chapter 4 of *Excavations at Old Scatness, Shetland, Volume 1: The Pictish Village and Viking Settlement* published in 2010 (Dockrill *et al.* 2010).

The chronology provided by these scientific dates has led to a major reconsideration of the North Atlantic Iron Age and in particular the date of broch construction in the paper entitled 'Time and place: a new chronology for the origin of the broch based on the scientific dating programme at the Old Scatness Broch, Shetland' (Dockrill *et al.* 2006). This paper focuses on the

archaeological context of broch studies and existing dating paradigms, then detailing the archaeological context of the samples. The paper finishes with a discussion of the archaeological outcomes and is 'supportive of the indigenous model for development' (Dockrill *et al.* 2006, 107). The implication of this early construction date leads to an important reconsideration of the broch in the context of Iron Age Britain. 'The broch should not be seen as a provincial deviation of the Iron Age, but as a regional adaptation providing the defended homestead of an elite group of the Atlantic Iron Age population' (*ibid.*). Dockrill, with Outram and Batt providing the dating component, principally wrote the archaeological discussion of this paper. Outram and Batt subsequently led on a more scientific paper examining the methodological approach in the *Journal of Archaeological Sciences* (Outram *et al.* 2010).

The Prehistoric Soils

Work examining prehistoric soils continued as part of the programme of excavation at Old Scatness. Here again the integration of geoarchaeological techniques provided data on soil management strategies. The multi-period settlement site, as with Tofts Ness, had provided the opportunity to sample anthrosol sequences buried by windblown sand. At Old Scatness and nearby sites in Shetland, this was enhanced by Erica Guttmann-Bond's PhD research supervised by Simpson and with Dockrill providing the archaeological context, opportunity to sample, and interpretational advice. Guttmann-Bond's research proved successful and enabled the examination of a sequence of middens and floor surfaces at Old Scatness as well as buried or deep soils at the nearby sites of Jarlshof and Clevigarth. A series of joint papers resulted from this programme with the author making a contribution to the archaeological

discussion. These papers can be seen to fall into the themes outlined above, maximising the archaeological evidence, providing a greater understanding of inheritance, and provided the background for the author to extend the understanding of prehistoric economic strategies in these marginal environments (Guttmann *et al.* 2003; Guttmann *et al.* 2004; Guttmann *et al.* 2006; Guttmann *et al.* 2008).

The Excavated Building Forms

A key outcome of the excavation of Old Scatness has been the recording of the building sequence many of which have walls surviving to between 1m and 2.5m. This survival in wall height, the biographic record for each of the buildings held within the walls and piers, together with the re-surfacing of floors and rebuilding of hearths provides a so far unprecedented series of Iron Age buildings, surpassing that of Jarlshof (Hamilton 1956). The excavated archaeological sequence has expanded our perception of the Iron Age as a whole. The evidence from the Old Scatness structural sequence has added many new pieces to the interpretive jigsaw of the North Atlantic Iron Age and its transition to a Norse farming society. The author has written a number of accounts of the archaeological structural sequence: *Northern Exposure Phase 1 of the Old Scatness Excavations* (Dockrill 1998); *Broch, Wheelhouse and Cell: Redefining the Iron Age of Shetland* (Dockrill 2003); *Old Scatness: The First Millennium* (Dockrill *et al.* 2005); *Excavations at Old Scatness, Shetland Volume 1: The Pictish Village and Viking Settlement* (Dockrill *et al.* 2010), the first of a series of three monographs.

Post-dating the broch (to the southwest) a series of buildings dating to the first century BC provided evidence for aisled roundhouses or wheelhouses (Structures 12 and 14). One of these roundhouses parallels the aisled roundhouse at Jarlshof in having a scarcement ledge suggesting an upper floor, possibly a loft. Both structures showed, within the surviving standing dry-stone architecture again over 2m, a complicated biography or life sequence of modifications. These included the construction of a rectangular addition with a large semi-circular hearth with ash boxes and adjoining oven forming a range, suggesting a purpose built cook-house. After these phases of use there were signs of closure and organised infilling of Structure 12 during the first century AD. To the east of the broch a larger oval or egg-shaped building was bisected by a wall and was reused, with several episodes of reconstruction in the early centuries AD.

A tertiary Pictish building within the broch might be taken as an example of the site's longevity. Surviving within the tower to over 2m, a cellular building provided an architectural bridge between aisled wheelhouse and broch construction techniques to the Late Iron Age or Pictish cellular architecture. This indicated that the broch was standing to a significant height at the time of Viking settlement and had been the focus of the settlement for a millennium. This Late Iron Age structure was thought to be too important to demolish and allow excavation of the earlier phases of broch usage. This formed one negative outcome surrounding the excavations at Old Scatness, that the broch floor itself could not be investigated. This was due to the need to display the site to the public; excavation funding for the Scatness Project was focused on the requirement to display *in situ* excavated structures. However, the northern arc

of the broch and northern settlement had been destroyed in 1975 by the construction of a service access road to Sumburgh airport. This access road provided an important strategic cross-section through the mound deposits butting the broch tower, enabling the entire settlement to be viewed in section. This allowed the use of scientific dating techniques to be applied to the stratigraphic sequence. Deposits butting the eastern and western sides of the broch tower, together with the stratigraphic sequence pre-dating the broch and one recognised by the author to be clearly associated with the broch construction were sampled. The results of the dating programme of this northern cross-section formed the key 2006 publication (discussed above) challenging the date for the construction of what may be regarded as a fully-fledged broch (Dockrill *et al.* 2006).

The series of roundhouses with radial divisions formed an important type-set within the structural typology of Iron Age building forms at Old Scatness. Some of these structures contained the corbelled architecture typically associated with wheelhouses. Others, with long piers, suggested the presence of an upper floor gallery or mezzanine, with the piers acting as supports. The early aisled wheelhouse phases of Structures 12 and 14 provided clear parallels with the internal ground plan of the large aisled wheelhouses in the Western Isles. Both Structure 12 and Structure 14 were partially reconstructed during their life history with a rebuilding of part of the outer wall and the infilling of the aisles to form long piers butting the inner wall. At Old Scatness there is evidence to suggest that this redesign coincided with some of these radial buildings having more than a single storey. The aisled roundhouse at Jarlshof (Hamilton 1956) can be confidently added to this group. Such two-storied buildings might only

see the partial flooring of the first floor level with a mezzanine level, or loft, created around the circumference of the roundhouse and supported on the reconstructed piers. This interpretation is supported by the structural survival of a scarcement ledge on the internal circumference wall of Structure 14 from Old Scatness. The aisled roundhouse at Jarlshof again parallels these architectural characteristics seen within the Old Scatness sequence. The occurrence of stairs leading to an upper level in Structure 21 at Old Scatness suggests that this building form continued into the early centuries AD. These earlier buildings at Old Scatness, such as Structure 21, are characterised by the long rectangular forms of piers replacing the aisled form.

Two distinct spatial groupings of buildings dating to the Late Iron Age or Pictish period (AD400-800) have been excavated at Old Scatness. These groups are connected by stone-walled passages. The building forms vary from the wheelhouses, with a radial pattern of cells around the circumference, to lobate and ventral cellular forms. The cellular nature of all three structural forms would aid corbelled roof construction over outlying cells, or the whole structure, or leaving a reduced central area to be roofed by a timber frame supporting a thatch, heather, or turf roof. The long piers of the Middle Iron Age are replaced in the Late Iron Age by forms with a tapering footprint giving an elongated trapezoid or triangular cross-section in plan at its base. Similar buildings with trapezoid or triangular pier footprints were identified at Old Scatness in the later wheelhouses dating to the Pictish or Late Iron Age, for example Structure 6, and with the new piers built within the earlier roundhouse, Structure 11. A relationship in design links the trapezoid piers with the ventral or cellular

architecture seen in Structure 7, the tertiary broch building (Dockrill 2010, 70-71).

Old Scatness provides an important developmental sequence in dry-stone architecture that links the building traditions throughout North Atlantic Britain chronologically. The author has discussed this aspect in detail in several papers: *Broch, Wheelhouse and Cell* (Dockrill 2003); *Old Scatness: The First Millennium AD* (Dockrill 2005). A full discussion of the Late Iron Age or Pictish Village and the Scandinavian (Viking) settlement can be found in Volume 1 of the monograph series (Dockrill *et al.* 2010). The early structures will be discussed more fully in Volume 2 of the Old Scatness excavations (Dockrill *et al.* forthcoming).

When taken phase by phase, the complete archaeological sequence of Iron Age buildings provides a detailed construction history for North Atlantic Britain that provides not only a developmental series, but when studied individually each structure provides a complex narrative, or biography, of modification and adjustments. For the first time, this Iron Age sequence of buildings provides a linkage between two distinctive groups of buildings: the Later Iron Age remains at Jarlshof in Shetland and the wheelhouse traditions of the Western Isles Middle Iron Age. Old Scatness has demonstrated that this apparent mismatch in chronology between the two wheelhouse groups can be explained in terms of the typological development of this structural form. In terms of social usage the work at Old Scatness charts a move away from the large roundhouse structural forms of the Middle Iron Age. These are interpreted as representing domestic buildings whose floor plan suggests communal living (Dockrill 2010, 67-68). The

floor area of these buildings is similar to some of the large roundhouses of southern Britain, which are capable of accommodating large groups, perhaps representing an extended family. In contrast, the Late Iron Age at Old Scatness (and other North Atlantic sites) is characterised by smaller buildings, with a reduced living space for family units and perhaps in some instances the cellular architecture offers private or specialised space for the individual (Dockrill 2003, 93).

Social Economic Interaction and Social Structure

The theme of enhancing the understanding of *social economic interaction* and *social structure* by using the archaeological data and interpretive models is displayed within a key invited paper for the festschrift volume *In the Shadow of the Brochs* dedicated to Euan MacKie (Ballin Smith and Banks 2002). The author's paper, entitled *Brochs, economy and power*, set out to interpret the role of the Northern Isles broch by creating a social economic model for the broch period (c.400BC to AD200) using the new data obtained by the author and collaborating colleagues (Dockrill 2002, 153). Although not chronologically overlapping, data from both the Tofts Ness Iron Age phase and the Old Scatness Iron Age phase were thought relevant. Tofts Ness provided a critical insight into a poor site in a pre-broch period where the social divide of a leading elite group could be seen against the poorer client social grouping. The Old Scatness Broch provided an insight into the higher social order of the elite. Both sites had excellent data recovery and had been excavated to a high research standard.

Within this paper the author suggests that the broch represented a dwelling with multiple floors and defensive / status characteristics acting in a number of roles. Its emergence as a structural form provides a visibility to an elite class in Iron Age society and this might be seen as beginning in the Early Iron Age with substantial roundhouses such as Bu (Dockrill 2002, 159). The form of the broch, combining defensive properties (and these might be seen as control of access) with monumentality, would have symbolically reinforced the social status of the occupier (*ibid.*). This structure is seen, within the context of this paper, as having domestic elements (being the centre of power of a social elite) while the ability to store in upper lofts provides the possibility for centralised control. The structure is seen as being multifunctional and forms the monumental focus for a small community either of village proportions, such as Old Scatness, with an extramural settlement or perhaps in a more defensive location with a more dispersed pattern of supporting client groups (Dockrill 2002, 155).

The paper examines the question of broch numbers and distribution in social economic terms and concludes that they represent a focus of power for an elite but the numbers and close proximity suggest against a concept of chiefdoms or great warlords but a 'more localised elite' class with the broch / broch village as a defensible high status 'substantial house' (*ibid.*). The power base of the broch elite was seen in the centralised control of economic resources and this included storage. Clientage, a system of relationship and patronage and obligation, was seen as underpinning Iron Age society in the North Atlantic region of Britain (Barrett 1982; Nieke 1990). In such a system, the power of the elite is seen by the author as being reinforced and sustained by economic control (Dockrill 2002). In this type of social system, Barrett suggested that

claims of 'inheritance, kinship and social debt' might have run into conflict with the grazing, arable and seashore resource (1982, 214). It is in this potentially competitive system, with the added complication of marginality and a potential for bad years, that promotes raiding. It is this fear from raiding which promotes the construction of effective defences such as the ditch and rampart seen surrounding the broch villages (such as Old Scatness). The combination of monumentality and practical defensive attributes would have served to provide a number of contemporary statements of social power. Brochs and their associated defences may be seen in this model as symbols of wealth, power and strength within an aggressive raiding society. In many instances the broch provides a practical defensible centre controlling route-ways and agricultural land within a society faced by small scale hit and run raiding. The juxtaposed locations of a number of brochs across marine straights and at the head of valley's may reflect a model of strongholds at the edge of territories either acting together in collaboration or independently guarding the sea-lanes or valley floors.

In such a social economic system, central storage and control of barley (whether the whole crop or more likely a proportion taken or given as some form of tithe), together with other economic resources (cattle for example) would have provided a currency. Stored barley together with other dried or smoked foods provide the elite with the powers of redistribution in times of hardship and a tradable / exchangeable wealth. In examining barley, the potential for crop value in the marginal context of the Northern Isles would have enhanced the value of this particular storable commodity. The paper argues that the potential to redistribute stored grain (six row barley) from previous years at times of

stress would provide an important buffer against starvation and would enhance the bounds between the elite overlord and supporting client population. Redistribution would foster the relationships of patronage and obligation (Dockrill 2002, 160-161).

The excavation of the Tofts Ness roundhouse (Structure 5), first led the author to think about the use of loft storage within the space presented by the roof cone (Dockrill 2007b, 77). It seemed that it might have provided an ideal storage environment for smoked and air-dried meat and fish. Grain would also benefit from such a dry environment. The upper levels of the broch tower seemed to the author as being a logical and ideal place to store surplus food commodities within a centrally-controlled economic system (Dockrill 2002, 160). The required control of access and security might help explain the defensive attributes of the broch: the controlled entrance with door checks, and upper floor levels. The role of the broch, either as a village focus as at Old Scatness (and many of the Orcadian examples such as Howe, Gurness, and Midhowe), or as a near isolated tower located in a defended position (such as Clevigarth in Shetland), can be explained by the demands of this role. Control in such a scenario would require resource protection, whether cattle or crops on the ground, from seaward or landward threats making sighting important. Supporting archaeological evidence here was seen as being essential to test the central storage model.

The 2002 paper draws upon the excavation evidence of the Scalloway broch in providing the needed supporting data. The excavation, despite the far from ideal conditions, revealed a significant burning event. The upper levels of the broch

had collapsed with a significant quantity of grain recovered - 10,000 grains came from just a 200 litre sample (Holden 1998, 126). The author holds this evidence as supportive of this model of intensively cultivated and managed infields and of the economic control of grain surplus which can be stored in dry environments for several seasons and used as both a trade / exchange commodity and a potential bankable resource that might stabilise a small community at times of famine. Such a strategy would have the potential to reinforce the client / patron relationship as well as providing a tradable commodity for exchange, trade and tribute (Dockrill 2002, 162).

The dating paper 'Time and place: a new chronology for the origin of the broch based on the scientific dating programme at the Old Scatness Broch, Shetland' (Dockrill *et al.* 2006) has been discussed above in terms of relocating broch construction several centuries earlier and providing support for the indigenous argument outlined within the paper. The paper also has far reaching implications on the theme of *Social economic interaction and social structure* the social system in which the broch is constructed is purely Iron Age response, which is not associated with external catalysts. 'Childe's early observations (1946: 94) on the material culture no longer requires the migration of people to explain the two hundred year discrepancy seen in the artefact assemblage. Instead we need to re-examine the assemblages in a context of regional adaptation that embraces the swift movement of ideas through contact and trade.' (Dockrill *et al.* 2006, 108).

The paper argues that the broch and its inhabitants are core to the British Iron Age, 'the broch should not be seen as a provincial deviation of the Iron Age, but

as a regional adaptation providing the defended homestead of an elite group of the Atlantic Iron Age population. As with the hillfort of the Southern Iron Age it is the multi-strand function of the broch that is of importance' (Dockrill *et al.* 2006 107-108). The broch within this model is seen to serve a 'multitude of functions as the administrative centre of an elite family group within a ranked society with power over a supporting client population' (*ibid.* 108).

Volume 1 of the Old Scatness monograph series provides an important new insight into the Later Iron Age and the Norse period. Perhaps the most significant evidence is that for continuity in the Iron Age and the cultural interface with Scandinavian peoples during the later ninth century. Within the discussion Dockrill (with Bond) interprets the Late Iron Age or Pictish settlement at Old Scatness as representing a rich farming estate occupied by an aristocratic family within a social structure, whose lineage may have gone back to the broch builders (Dockrill and Bond 2010b, 366). The archaeological evidence (the inheritance of construction techniques, agricultural and fishing strategies, together with cultural continuity such as painted quartz pebbles) clearly indicates the continued presence of an indigenous people. The broch at Old Scatness seems to be still of some importance, standing to a significant height and containing the ventral cellular structure noted above. Evidence such as metalworking (copper alloy) indicates a continuation of power and status. Trade networks are indicated by the artefact record with contact as far away as Anglia (modern East Anglia) suggested by a sherd of Ipswich Ware (Dockrill and Bond 2010b, 365). This period must be considered in its temporal context and has been seen by the author as representing a distinct move from a chiefdom-based society associated with the broch 'lords' through the processes

of state formation seen across Dark Age Europe with the emergence in this region of the Pictish Kingdom. The exact nature of linkage between Shetland and the Pictish heartland is not clear, Shetland might have been either a sub-kingdom (client kingdom) *or* that it was part of the mainstream of Pictish culture and kingdom (Dockrill and Bond 2010b, 367). The presence of a Pictish Class I Symbol Stone was seen as demonstrating a strong linkage to the Pictish culture.

A cultural shift is visible in the archaeological record of Early Viking contexts. This is seen within the 2010 volume as being much greater than simply changes in the material culture. The artefacts by themselves can be seen as major indicators of cultural change that also represent fundamental changes in lifestyle. The presence of a phase of alterations to buildings coinciding to changes in both the artefact record and the economic strategies provided a degree of visibility for the arrival of Scandinavian culture. Early Viking contexts demonstrate cultural indicators of change in the form of the appearance of a varied steatite assemblage, and within the economic data the occurrence of flax provides an equivalent indicator. Together these strands of evidence represent underlying changes in social structure (Dockrill and Bond 2010b, 367-369). It is probably not until the eleventh century that the broch tower was demolished and a longhouse structural form was in turn constructed to the west of the broch. An important lesson learnt from the author's first-hand excavation experience as a supervisor on the Brough of Birsay and at Pool (both Orcadian sites spanning this cultural interface) was the need to carefully record 'Native' (Pictish) structure at this interface period. This was an important aspect of the research agenda and the depositional and structural histories provide a new dimension

within our understanding of this transition. The first is that settlement occurs later than first thought and takes the form of estate-taking. There is a significant period of site adaptation by Scandinavian peoples where native buildings are reused. This phase seems longer than first thought, being enough time for a significant number of clearly 'Viking' artefacts to be discarded without thought of conservation.

The author saw a good example of cultural identity embodied in a single artefact and used this to illustrate the physical presence of a Scandinavian people living on the site. The argument is outlined in some detail below to provide an insight into the interpretive argument that demonstrates that this particular artefact represents both a different inherited tradition and implies a difference in boat technology. As a test, the change noted by Nicholson (2010, 165-167) in fish size between Pictish and Viking periods contexts provides compelling supportive evidence to the argument. This artefact, a boat-shaped steatite linesinker (SF1570), came from a context, [071], that was part of an infilling event in Structure 5 a Pictish figure-of-eight cellular building (Dockrill and Bond 2010b, 362-363). This artefact provided the author with clear evidence for a dramatic change in fishing strategy. This form of linesinker would have exploited the fast flowing tideway (roost) around Sumburgh Head. This linesinker differs from other Shetland examples found within the Viking phase of Jarlshof (Hamilton 1956, 114 and 117–118) in being finely carved into what can be considered to be a dynamic boat shape, with a 'prow' and a squared-off 'stern'.

The closest parallel to the linesinker is from a male grave at Marvik, Suldal, in Norway, dated to c.AD900–1000. This ties in well to the date obtained from the

linesinker's depositional context at Old Scatness (*ibid.*). The linesinker had been discarded in the infill of a Pictish building with other steatite artefacts suggesting a purposeful discard. Pictish fishing appears to be shore-based and such fishing equipment is absent in the archaeological record for Old Scatness. The bone assemblage indicates a change in species exploitation between the two cultures with the linesinker providing an insight into a different cultural inheritance in fishing practice (or inherited experience) and boat technology able to take advantage of the fast currents of the roost. This artefact clearly could not represent a trade item used by indigenous peoples; it had to represent the presence of Scandinavian people with a different inherited past. The user was able to exploit their own imported technology and had the inherited skill base to exploit these innovations, which would have been alien to the native Pict (*ibid.*). The impact of the Scandinavian settlement has a radical effect on the archaeological evidence at all levels, structural, cultural, and palaeoeconomic, at Old Scatness. Old Scatness clearly fails to answer all of the questions, however it does provide a redefined chronology, suggesting that this transformation was later than first accepted and that the major reconstruction of the settlement took place after an intervening period. Late changes within Pictish buildings and the careless discard of a significant number of Scandinavian artefacts being associated with the re-organisation of the site and the lowering of the broch tower support this interpretation. The transformation from native to Scandinavian is a picture that is still developing as more sites are excavated.

Summary

The papers forming this body of evidence chart the development of the integration of techniques and approaches that have linked the site to its surrounding landscape and resource potential. The archaeological fieldwork has set standards, and was innovative in bringing both new technology and these standards together. The 1994 earth resistance survey at Tofts Ness used the first commercial Geoscan RM4 instrument and the Epson HX20 to process dot density plots of the data on site, and was the first survey of a complex multi-period settlement mound in North Atlantic Britain. Tofts Ness was also fundamental in understanding prehistoric soil management and interaction with the palaeoeconomy. Integration was still seen within *Whither Environmental Archaeology?* (Dockrill *et al.* 1994) as an aspiration, however it was core to the Tofts Ness Project and formed the core of discussions between the site director and specialist in the planning phase of the Old Scatness Project. In Chapter 4 of the Tofts Ness monograph, landscape archaeology, geophysics, sampling, and scientific analysis come together in the mainstream text rather than in individual specialist reports to provide an understanding of the landscapes surrounding Mound 11.

The papers chart not only developments of new techniques and improved understanding of data but also provide the basis for a greater understanding of resilience, informing on how people lived in the Northern Isles despite its marginality. This also impacts upon the social dimension where building size and form, and the cultural and palaeoeconomic data provide a greater insight into social modelling.

The advancement of low cost integrated colour printing has allowed the integration of many more colour line drawings and colour photographs evidenced in Volume 1 of the Old Scatness monograph series. This is one of the first monographs to take full advantage of this advancement in print technology. The resulting output is clearly an advance on the Tofts Ness monograph published in black and white, and markedly enhances dissemination at all levels by providing greater supporting detail to the narrative text.

Dockrill, together with Bond (both of the University of Bradford), were invited to take an active role in the North Atlantic Biocultural Organisations (NABO) International Polar Year project entitled *Long Term Human Ecodynamics in the Norse North Atlantic: cases of sustainability, survival, and collapse*. As part of this initiative Dockrill was asked by McGovern to lead the NABO research team in the Faroes liaising with Simun Arge (Faroese National Museum) This resulted in Dockrill co-leading an international team alongside Julie Bond, Mike Church (Durham) and Ragnar Edvardsson (Iceland). The excavations at Junkarinsfløtti on the island of Sandoy continued in 2005 and 2006. Dockrill directed the small area excavation of the gable-end of a Norse building (Arge *et al.* 2010). The withdrawal of Ferry connections from the United Kingdom and the Faroes together with Dockrill's mobility problems meant that a personal active involvement in fieldwork was no longer possible after 2006. However, Dockrill continued to advise on fieldwork in the Faroes.

In 2008 Dockrill was invited by Bond to direct the final excavation season of a Norse longhouse at Upper House, Underhoull, Unst (the most northerly of the Shetland Islands). Despite having extensive experience of excavating Viking

and Norse buildings in the Northern Isles the experience at Junkarinsfløtti was vital in being able to interpret the presence of a turf wall and a wooden sprung floor which had been missed by the experienced team in the previous year.

In 2009 Dockrill and Bond were invited by the Regional Archaeologist for Orkney to instigate a new research programme on the Island of Rousay in Orkney. The core aim of this research initiative is to inform on sustainability and reliance strategies in the past at an island level, investigating how people (and society) reacted and adapted to climatic and environmental change over time. This project, using primary sites suffering from coastal erosion, offers a remarkable opportunity to study the long-term effects of climate change and how people survived and adapted, from the first farmers over 5,000 years ago through to the clearances in the 19th century. In addition to adaptation and sustainability, this long time frame enables the study of cultural change as a result of contact and trade. This has been developed as an international field school under the GHEA and NABO international research groups and has been reported in *Current Archaeology* (Dockrill and Bond 2013, 34-40).

A handwritten signature in black ink, appearing to read 'Stephen Dockrill', written in a cursive style.

Stephen Dockrill

References

- Arge, S.V., Edvardsson, R. And Friel, R. 2010. *The Heart of the Atlantic Project: Excavations at Undir Junkarinsfløtti and Á Klettum*. Unpublished report for Føroya Fornminnisav. (www.nabohome.org/uploads/nabo/HoADSRFieldSeason2004-2006.pdf)
- Ballin Smith, B. 1994. *Howe: Four Millennia of Orkney Prehistory*. Society of Antiquaries of Scotland Monograph Series 9. Edinburgh: Society of Antiquaries of Scotland.
- Ballin Smith, B. and Banks, I. (eds.) 2002. *In the Shadow of the Brochs: The Iron Age in Scotland*. Stroud: Tempus.
- Barrett, J.C. 1982. Aspects of the Iron Age in Atlantic Scotland. A case study in the problems of archaeological interpretations. *Proceedings of the Society of Antiquaries of Scotland* **111**: 205-219.
- Bond, J.M. and Dockrill, S.J. 2013. Excavations at Upper House, Underhoull. In Turner, V.E., Bond, J.M. and Larson, A.-C. (eds.). *Excavation and Survey in Northern Shetland 2006-2010*. Viking Unst. Lerwick: Shetland Heritage Publications. 156-165.
- Burbidge, C.I., Batt, C.M., Bailiff, I., Barnett, S.M. and Dockrill, S.J. 2001. The potential for dating the Old Scatness Site, Shetland by Optically Stimulated Luminescence. *Archaeometry* **43**: 589-596.
- Childe, V.G. 1946. *Scotland before the Scots*. London: Methuen & Co.
- Dockrill, S.J. 1984. A resistivity survey at Tofts Ness, Sanday. *Proceedings of the Society of Antiquaries of Scotland* **114**: 586-88.
- Dockrill, S.J. 1986. Resistivity survey of two settlement sites at Tofts Ness, Sanday, Orkney. *Proceedings of the Society of Antiquaries of Scotland* **116**: 561-582.

- Dockrill, S.J. 1993. *The Human Palaeoecology of Sanday, Orkney with Particular Reference to Tofts Ness*. MPhil Thesis. University of Bradford.
- Dockrill, S.J. 1998. Northern Exposure: Phase 1 of the Old Scatness Excavations 1995–1998. In Nicholson, R.A. and Dockrill, S.J. (eds.) *Old Scatness Broch, Shetland: Retrospect and Prospect*. North Atlantic Biocultural Organisation Monograph No. 2, Bradford Archaeological Sciences Research 5. Bradford: Department of Archaeological Sciences. 59–80.
- Dockrill, S.J. 2002. Brochs, Economy and Power. In Ballin Smith, B. and Banks, I. (eds.) *In the Shadow of the Brochs: The Iron Age in Scotland*. Stroud: Tempus. 153–162.
- Dockrill, S.J. 2003. Broch, wheelhouse, and cell: redefining the Iron Age of Shetland. In Downes, J. and Ritchie, A. (eds.) *Sea Change Orkney and Northern Europe in the Later Iron Age AD 300-800*. Angus: The Pinkfoot Press. 83-94.
- Dockrill, S.J. 2007a. Mound 11: the Neolithic and Early Bronze Age. In Dockrill, S.J., Bond, J.M., Nicholson, R. and Smith, A. *Investigations on Sanday, Orkney, Volume 2: Tofts Ness: An Island Landscape Through 3000 Years of Prehistory*. Kirkwall: The Orcadian/Historic Scotland. 13-39.
- Dockrill, S.J. 2007b. Mound 11: the Late Bronze Age and Early Iron Age. In Dockrill, S.J., Bond, J.M., Nicholson, R. and Smith, A. *Investigations on Sanday, Orkney, Volume 2: Tofts Ness: An Island Landscape Through 3000 Years of Prehistory*. Kirkwall: The Orcadian/Historic Scotland. 41-112.
- Dockrill, S.J. 2007c. Discussion. In Dockrill, S.J., Bond, J.M., Nicholson, R. and Smith, A. *Investigations on Sanday, Orkney, Volume 2: Tofts Ness: An*

- Island Landscape Through 3000 Years of Prehistory*. Kirkwall: The Orcadian/Historic Scotland. 381-395.
- Dockrill, S.J. 2010. The Pictish Village. In Dockrill, S.J., Bond, J.M., Turner, V.E., Brown, L.D., Bashford, D., Cussans, J.E., Nicholson, R.A. *Excavations at Old Scatness, Shetland Volume 1: The Pictish Village and Viking Settlement*. Lerwick: Shetland Heritage Publications. 27-75.
- Dockrill, S.J. and Batt, C.M. 2004. Power over time: an overview of the Old Scatness Broch Excavations. In Housley, R.A. and Coles, G. (eds.) *Atlantic Connections and Adaptations: Economies environments and subsistence in lands bordering the North Atlantic*. Symposia of the Association for Environmental Archaeology No. 21. Oxford: Oxbow. 128-137.
- Dockrill, S.J. and Bond, J.M. 2009. Sustainability and Resilience in Prehistoric North Atlantic Britain: The Importance of a Mixed Palaeoeconomic System. *Journal of the North Atlantic* 2(1): 33-50.
- Dockrill, S.J. and Bond, J.M. 2010a. An introduction to the archaeological excavations at Old Scatness. In Dockrill, S.J., Bond, J.M., Turner, V.E., Brown, L.D., Bashford, D., Cussans, J.E., Nicholson, R.A. *Excavations at Old Scatness, Shetland Volume 1: The Pictish Village and Viking Settlement*. Lerwick: Shetland Heritage Publications. 1-25.
- Dockrill, S.J. and Bond, J.M. 2010b. Old Scatness: A Discussion of the Pictish, Viking and Norse Evidence. In Dockrill, S.J., Bond, J.M., Turner, V.E., Brown, L.D., Bashford, D., Cussans, J.E., Nicholson, R.A. *Excavations at Old Scatness, Shetland Volume 1: The Pictish Village and Viking Settlement*. Lerwick: Shetland Heritage Publications. 353-369.
- Dockrill, S.J. and Bond, J.M. 2013. *Rousay: Racing Against Sea and Tide*.

Current Archaeology **275**: 34-40.

Dockrill, S.J., Bond, J.M., Crummet, J.G. and Heron, C.P. 1995. Scatness, Shetland: an Integrated Survey of a Multiperiod Settlement Mound. *Archaeological Prospection* **2**(3): 141–154.

Dockrill, S.J., Bond, J.M., Milles, A., Simpson, I.A. and Ambers, J. 1994. Tofts Ness, Sanday, Orkney: An Integrated Study of a Buried Orcadian landscape. In Luff, R.M. and Rowley-Conwy P.A. (eds.) *Whither Environmental Archaeology?* Oxbow Monograph 38. Oxford: Oxbow Books. 115–132.

Dockrill, S.J., Bond, J.M., Nicholson, R. and Smith, A. 2007. *Investigations on Sanday, Orkney, Volume 2: Tofts Ness: An Island Landscape Through 3000 Years of Prehistory*. Kirkwall: The Orcadian/Historic Scotland.

Dockrill, S.J., Bond, J.M. and O'Connor, T.P. 1998. Beyond the Burnt Mound. The South Nesting Palaeolandscape Project. In Turner, V. (ed.) *The Shaping of Shetland*. Lerwick: Shetland Times Ltd. 61-82.

Dockrill, S.J., Bond, J.M., Turner, V.E., Brown, L.D., Bashford, D.J, Cussans, J.E. and Nicholson, R.A. 2010. *Excavations at Old Scatness, Shetland Volume 1: The Pictish Village and Viking Settlement*. Lerwick: Shetland Heritage Publications.

Dockrill, S.J., Bond, J.M., Turner, V.E., Brown, L.D., Bashford, D.J, Cussans, J.E. and Nicholson, R.A. forthcoming. *Excavations at Old Scatness, Shetland Volume 2: The Iron Age Settlement*. Lerwick: Shetland Heritage Publications.

Dockrill, S. and Gater, J. 1992. Tofts Ness: Exploration and interpretation in a prehistoric landscape. In Spoerry P. (ed.) *Geoprospection in the*

- archaeological landscape*. Oxbow Monograph 18. Oxford: Oxbow Books. 25-31.
- Dockrill, S.J., Gater, J.A. and Simpson, I.A. 2007. Beyond Mound 11: investigations within the Tofts Ness landscape. In Dockrill, S.J., Bond, J.M., Nicholson, R. and Smith, A. *Investigations on Sanday, Orkney, Volume 2: Tofts Ness: An Island Landscape Through 3000 Years of Prehistory*. Kirkwall: The Orcadian/Historic Scotland. 113-141.
- Dockrill, S.J., Outram, Z. and Batt, C.M. 2006. Time and place: a new chronology for the origin of the broch based on the scientific dating programme at the Old Scatness Broch, Shetland. *Proceedings of the Society of Antiquaries of Scotland* **136**: 89-110.
- Dockrill, S.J. and Simpson, I.A. 1994. The identification of prehistoric anthropogenic soils in the Northern Isles using an integrated sampling methodology. *Archaeological Prospection* **1**(2): 74–92.
- Ferris, I and Jones, R. 1980. Excavations at Binchester 1976-9. In Hanson W.S. and Keppie L.J.F. (eds.) *Roman frontier studies 1979: papers presented to the 12th International Congress of Roman Frontier Studies*. BAR International Series 71. Oxford: Archaeopress. 233-254.
- Guttmann, E.B.A., Dockrill, S.J. and Simpson, I.A. 2004. Arable agriculture in prehistory: new evidence from soils in the Northern Isles. *Proceedings of the Society of Antiquaries of Scotland* **134**: 53-64.
- Guttmann, E.B., Simpson, I.A., Davidson, D.A., and Dockrill, S.J. 2006. The management of arable land from prehistory to the present: case studies from the Northern Isles of Scotland. *Geoarchaeology* **21**(1): 61-92.

- Guttmann, E.B.A., Simpson, I.A. and Dockrill, S.J. 2003. Joined-up archaeology at Old Scatness, Shetland: Thin section analysis of the site and hinterland. *Environmental Archaeology* **8**(1): 17-31.
- Guttmann, E.B., Simpson, I.A., Nielsen, N. and Dockrill, S.J. 2008. Anthrosols in Iron Age Shetland: implications for arable and economic activity. *Geoarchaeology* **23**(6): 799–823.
- Hamilton, J.R.C. 1956. *Excavations at Jarlshof, Shetland*. Ministry of Works Archaeological Reports No. 1. Edinburgh: H.M.S.O.
- Hedges, J.W. (ed.) 1987. *Bu, Gurness and the Brochs of Orkney - Part 1, Bu*. BAR British Series 163. Oxford: Archaeopress.
- Holden, T. 1998. Carbonised plant. In Sharples, N. *Scalloway: A Broch, Late Iron Age Settlement and Medieval Cemetery in Shetland*. Oxbow Monograph 82. Oxford: Oxbow Books. 125-127.
- Hunter, J., Bond, J.M. and Smith, A.N. 2007. Investigations in Sanday, Orkney. Volume 1: Excavations at Pool, Sanday. *A Multi-period Settlement from Neolithic to Late Norse Times*. Kirkwall: The Orcadian/Historic Scotland.
- Lamb R.G. 1980. *Sanday and North Ronaldsay: an archaeological survey of two of the north Isles of Orkney*. Edinburgh: RCAHMS.
- Lowe, C. 1998. *Coastal Erosion and the Archaeological Assessment of an Eroding Shoreline at St. Boniface Church, Papa Westray, Orkney*. Stroud: Sutton Publishing.
- Nicholson, R.A. 2010. Fish and fishing from the Pictish to the Norse centuries. In Dockrill, S.J., Bond, J.M., Turner, V.E., Brown, L.D., Bashford, D., Cussans, J.E., Nicholson, R.A. *Excavations at Old Scatness, Shetland Volume 1: The Pictish Village and Viking Settlement*. Lerwick: Shetland Heritage Publications. 156-167.

- Nicholson, R.A. and Dockrill, S.J. (eds.) 1998. *Old Scatness Broch, Shetland: Retrospect and Prospect*. North Atlantic Biocultural Organisation Monograph No. 2, Bradford Archaeological Sciences Research 5. Bradford: Department of Archaeological Sciences.
- Nieke, M. 1990. Fortifications in Argyll: Retrospect and Prospect. In Armit, I. (ed.) *Beyond the Brochs: Changing Perspectives on the Atlantic Scottish Iron Age*. Edinburgh: Edinburgh University Press. 131-142.
- Outram, Z. and Batt, C.M. 2010. Dating at Old Scatness. In Dockrill, S.J., Bond, J.M., Turner, V.E., Brown, L.D., Bashford, D., Cussans, J.E., Nicholson, R.A. *Excavations at Old Scatness, Shetland Volume 1: The Pictish Village and Viking Settlement*. Lerwick: Shetland Heritage Publications. 99-130.
- Outram, Z., Batt, C.M., Rhodes, E.J. and Dockrill, S.J. 2010. The integration of Chronological and archaeological information to date building construction: an example from Shetland, Scotland, UK. *Journal of Archaeological Sciences* **37**: 2821-2830.
- Sharples, N. 1998. *Scalloway: A Broch, Late Iron Age Settlement and Medieval Cemetery in Shetland*. Oxbow Monograph 82. Oxford: Oxbow Books.
- Simpson, I.A., Dockrill, S.J., Bull, I.D. and Evershed, R.P. 1998. Early Anthropogenic Soil Formation at Tofts Ness, Sanday, Orkney. *Journal of Archaeological Science* **25**: 729–746.
- Sutherland, T.L., Schmidt, A. and Dockrill, S.J. 1998. Resistivity pseudosections and their topographic correction: a report on a case study at Scatness, Shetland. *Archaeological Prospection* **5**: 229-237.

Statement outlining the extent to which the publications are based on the candidate's own independent work

The publications are based on archaeological research led by the candidate. The statement setting out the basis for the award provides a detailed contextual background to the research collaborations which have formed the basis for either joint publications or contributions to publications.

Dockrill has been the initiator and lead author or co-author for the majority of papers, book chapters and edited books. The exception to this are the more specialised technique based papers in geophysics (Sutherland et al 1998), dating papers such as Outram *et al.* (2010) and the soils papers led by Simpson and his PhD student Erica Guttmann. In this group of papers Dockrill acted as the archaeological expert for context and archaeological implications and discussion.

For each paper under review within the 'Graded List of Publications' a note follows the bibliographic reference and grading. This note (identifiable by being in a contrasting italic font) summarises the contribution made by Dockrill to that particular published work.

This document (the Graded List of Publications) has been sent to four leading research collaborators; Professor T. McGovern, Professor I. Simpson, Dr Cathy Batt and Dr Julie Bond. Each of these collaborators has been kind enough to confirm the candidate's role in the publication and to comment on his research.

Stephen Dockrill

Stephen Dockrill

Statement providing details of candidate's 1993 MPhil degree

Thesis title: The human palaeoecology of Sanday, Orkney with particular reference to Tofts Ness: An integrated study of the relationship between settlement and infield soil management practices in prehistory.

Awarded: July 1993, University of Bradford

Summary of the research

This thesis examined the evidence for prehistoric land management using magnetic susceptibility to identify modified soils. The thesis referenced Dockrill and Gater 1992, as a published source for the extent of buried soils surrounding the settlement mound on the Tofts Ness peninsula known as Shelly Knowe. Gater's fluxgate gradiometer (magnetic) survey data (not part of the MPhil research) processed for this 1992 publication provided the thesis with a striking example of a settlement mound surrounded by an anthropogenic soil. The thesis explored the significance of these soils to the Early Iron Age occupants of the roundhouse (Structure 5) through modelling the energy requirements for a theoretical family group. The small fields suggested increased yields, which could be corroborated by historical evidence and the research of the late Peter Reynolds at Butser Experimental Site in Hampshire.

Within this energy-related theoretical model the examination of different resources, such as dairy produce and meat intake, barley appeared to provide the major calorific commodity and it was suggested that barley would have had

the potential to provide a surplus in a good year for these Early Iron Age occupants.

MPhil research appearing in publications under consideration

Several specific elements of the research forming the MPhil thesis appeared in later publications and these are identified below.

Magnetic susceptibility data from Tofts Ness forming part of the MPhil research was used within Dockrill and Simpson 1994 and Dockrill *et al.* 1994. Although the data from this research is used within the papers the methodological themes of each are mainly outside that of the MPhil research. The magnetic susceptibility data and discussion also formed a short section in the 'Environment and Economic Investigations' chapter (6.5) of the Tofts Ness monograph (Dockrill *et al.* 2007, 253-255).

The theoretical model relating to the energy and yield potential of six-row barley that formed the core of the MPhil research formed a short section of the discussion chapter of the Tofts Ness Monograph (Dockrill *et al.* 2007, 387-393). This section was viewed as being important in the wider discussion illustrating the significance of intensive 'garden-like' cultivation of six-row barley to the Early Iron Age occupants. The MPhil's calorific model was also re-presented in the chapter *Power over Time* (Dockrill and Batt 2004). It was used there to underpin the importance of barley and the potential for surplus in order to enhance a new central storage model for brochs (Dockrill and Batt 2004, 133-136).

New research directions resulting from the MPhil

After graduation in 1993 the research experience associated with the MPhil led the writer to think about status in much broader terms. In the evaluation of the Tofts Ness excavation data for the publication of the Monograph by Historic Scotland, Dockrill examined in detail other contemporary roundhouses, which were significantly larger than Structure 5 (see 3.2.3 in Dockrill *et al.* 2007). This, when taken with the economic stress visible in the archaeological record, led Dockrill to expand his ideas. Tofts Ness appeared to be distinctly low status in both the Neolithic and the Early Iron Age and a pre-broch social ranking was suggested, with sites such as St Boniface being seen as higher-status settlements (Dockrill *et al.* 2007 394-395).

This work in turn provided a springboard to consider new questions of economic control, central storage and status sites in the Middle Iron Age. This research move was facilitated by an invitation in 1994 from Shetland Amenity Trust to direct an excavation on the Iron Age broch at Old Scatness. Here the identification of an amended soil sequence outside of the Middle Iron Age ditch also allowed Dockrill to extend his interest in land management and link it back to issues of storable surplus and the new questions of control and power. This led Dockrill to produce a number of new theoretical models, such as *Brochs, Economy and Power* (Dockrill 2002), *Power over Time* (Dockrill and Batt 2004) and a redistributive model for sustainability even in bad years (Dockrill and Bond 2009).

The MPhil research can be considered to have been the catalyst for expanding the research both in period (with the shift to the Middle and Late Iron Age) and

in these new themes of resource control and the potential that this gave the elite in terms of economic power.

A handwritten signature in black ink, appearing to read "Stephen Dockrill". The signature is fluid and cursive, with the first name "Stephen" and last name "Dockrill" clearly distinguishable.

Stephen Dockrill

Academic References

Dr Cathy M. Batt

Senior Lecturer, Division of Archaeological, Geographical and Environmental Sciences, University of Bradford

Dr Julie M. Bond

Senior Lecturer, Division of Archaeological, Geographical and Environmental Sciences, University of Bradford

Professor Thomas H. McGovern

Co-ordinator, North Atlantic Biocultural Organisation

Professor Ian A. Simpson

Head, School of Natural Sciences, University of Stirling

6.4.13

STEPHEN DOCKRILL

I am delighted to support Stephen in his submission for a PhD by published works. I have enjoyed working with him over many years and our collaborative work has been very fruitful. I can confirm that the supporting documents are an appropriate reflection of his contribution to our joint work. It has been a pleasure for me to provide specialist input and discussion into projects that he has led. He has successfully taken the contributions from many specialists, myself included, and integrated them into major publications in the field.

Stephen is internationally recognised as a leading academic in the archaeology of the North Atlantic, as demonstrated by his publications, collaborations and grant success. Projects such as the excavations at Old Scatness have become the model for large archaeological projects in the region and are often cited by other academics as best practice. The impact of these projects has been far reaching, and has led them being selected as a REF impact case study.

Stephen has initiated and led key research developments in North Atlantic archaeology and recognition of this work with a PhD by published works would be appropriate and reflect well on the University.

With best wishes,



Cathy Batt
Senior Lecturer in Archaeological Sciences
Archaeological, Geographical & Environmental Sciences of the University of Bradford
(UK)



MAKING KNOWLEDGE WORK

ARCHAEOLOGICAL SCIENCES
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Geographical and Environmental Sciences
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16th April 2013

Stephen J Dockrill - (Submission for PhD by Published Works)

I am pleased to support Stephen in his submission for a PhD by published works. I have worked with Stephen in North Atlantic Britain and the Faroes, in various professional roles over the years as an environmental and palaeoeconomic specialist, excavation supervisor, and in recent years as a project co-director.

Our archaeological collaboration has resulted in a number of papers and publications which have been highly regarded by colleagues working in the North Atlantic. I am very happy to confirm the contribution Stephen has made in his submission to our joint publications. Stephen has initiated a number of large-scale research projects over the years and their success has been due to his ability to widen the scope of each project, to see the big issues behind the archaeology and to enthuse both established specialists and research students.

A handwritten signature in black ink that reads 'J.M. Bond'.

Dr. Julie M Bond



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March 24 2013

Dear Reviewers;

I am very pleased to provide a letter of recommendation and support for Steven Dockrill Senior Lecturer in Archaeology at the University of Bradford, who is applying for a PhD by published works award. I have known Steve for two decades, worked with him on collaborative field projects, conference organization, PhD student supervisions, and multiple grants. He is one of the leaders of North Atlantic archaeology, and is an active participant in the NABO scholarly collaborative and the new GHEA (Global Human Ecodynamics Alliance) network (see www.gheahome.org). I am happy to provide him with my strongest possible professional recommendation without any qualification whatsoever.

In fact, since his actual status in the field is far beyond that of an entry level PhD holder, my recommendation is instead composed with the intent of recommending him for what in our system would be called a “distinguished professorship” and which I think in the UK system would be the equivalent of a named chair or comparable level of distinction. Such a recommendation needs to be based upon published scholarship and long term research commitment, but it also needs to take into account issues of disciplinary leadership, effective doctoral and master’s level student mentoring, and contributions to advances in method and theory in the wider field. I will address these issues briefly, but I would like to point out that Steve’s application proposal is exceptionally modest and while it reflects admirably his generous personality it somewhat understates his full contributions in my opinion.

In terms of **published scholarship**, Dockrill’s teams have become famous for timely and complete monograph length reports that represent both a huge commitment of time and a series of major contributions to knowledge. These major publications provide the richly detailed evidence needed to support hypotheses, provide a solid basic record for further investigation, and reflect the incredibly effective integration of “core” archaeology with specialist work. This integration is a key element in Dockrill’s wider contribution to archaeology and inter-disciplinary research – the effective integration *at all stages* of research of innovative technology and laboratory specialists and the full and effective

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integration of their data into the publications resulting. All too often the full value of archaeological science is wasted when specialists are only engaged in the post-excavation phases of research and when their reports are relegated to appendices scarcely referred to in the main narrative. Dockrill is famous for promoting effective teamwork- from fieldwork through post-ex to publication- and this is a key element in the success in bringing major projects to exemplary publication. Others (including our teams working in Iceland) have directly imitated the organization and approach taken by the Bradford teams working under Dockrill's leadership as we have moved our own projects towards publication. In addition, Dockrill has been exceptionally active and influential in shorter articles have had major impact on both Northern Isles archaeology (re-evaluating the chronology and function of the Brochs within the wider context of Iron Age society) and on the global scale (bringing the Northern Isles into the wider discussions of archaeology and sustainability). Overall the impact of his published scholarship is fully at the level of a senior university professor in all respects. We should all hope to be as productive and influential.

Research commitment: Dockrill has shown decades of commitment to the archaeology and paleoecology of the Northern Isles and the Faroe Islands, with sustained programs of field research for at least three decades of annual field work of the highest standard. His sustained work in the region has contributed greatly to steadily rising standards of field work and spreading best practice, as well as discoveries that have changed our understanding of the region's past. His approach has exemplified Carole Crumley's call for a "longitudinal" research design that concentrates upon a region through time rather than skipping from one world area to another. As she recommends, the deep knowledge and regional focus central to a Historical Ecology approach that sees no period as "post- or pre-interesting" has been a key to Dockrill's successful career in the north. His teams have worked on sites ranging from Mesolithic to WW2 era, and this deep perspective on long term human ecodynamics has clearly informed both his own core contributions in Bronze Age through Late Norse archaeology and his excellent use of ethnographic 17th-19th c data to inform the deeper past. This long term commitment is also reflected in strong personal and professional connections to local scholars, institutions and local communities in the research areas. In Shetland, Orkney, and the Faroes, Dockrill and his teams have been welcomed as friends for season after season of collaboration.

Leadership: Dockrill has shown strong personal leadership in both forming and maintaining interdisciplinary research teams, gaining sustained funding (despite recurring economic hardships) and maintaining Bradford's strong reputation in archaeological science. He has also taken a leadership role within the NABO cooperative, hosting the highly successful 2008 NABO general meeting in Bradford and participating actively in NABO meetings and workshops before and since. He has also been a founding member of the new Global Human Ecodynamics Alliance (GHEA, www.gheahome.org) and played a key role in the 2012 GHEA sessions at the SAA's in Memphis. His leadership has been critical for sustained archaeological research at Bradford, but has also been critical for the wider regional group NABO and now the global effort through GHEA to make the *longue durée* part of the tool box of planners seeking future sustainability.

Mentoring: Dockrill has long been famous not only as one of the very best field archaeologists in the UK, but also as one of the most effective teachers and mentors. He and his teams have run field schools that have trained a generation of international archaeologists now starting their own field projects. In our teams working in Iceland and Greenland, crew who have “had the Steve and Julie experience” immediately stand out from those who haven’t- and they get assigned to the more demanding excavation and recording tasks as a result. We have collaborated in educating CUNY graduate students, many of whom have forged strong professional links to their peers in Bradford and all of whom have hugely benefited from the experience of working with Steve and his teams in Shetland, Faroes, and Orkney. The Old Scatness field manual is an underground classic among field archaeologists, and I use it as a teaching tool in my graduate level field methods course at CUNY. The list of MA and PhD projects sponsored or significantly aided by Dockrill is long, and his full and generous support of graduate students is legendary. If a key responsibility of a professor is effective mentoring of post-graduate students and the fostering of high quality master’s and PhD projects, then it is abundantly clear that Dockrill has more than fulfilled these responsibilities for many years.

It will be clear that I fully support the accomplishment based PhD award to Steve Dockrill, and that I believe that his career and work represent the highest professional standards of our discipline. His professional impact and influence is fully of the standard any University would expect from a senior professor, and Bradford can only benefit from the award of a doctorate by accomplishment and publication. Please don’t hesitate to contact me if there is any additional support I can lend to this great scholar and educator.

Sincerely

Tom McGovern

Thomas H McGovern Prof
Coordinator NABO



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24th March 2013

Stephen Dockrill

I am very pleased indeed to support Stephen in his submission for a PhD by published works. In relation to our co-authored publications I can confirm that the contributions Stephen states in his supporting documents are appropriate and valid. He has initiated and led on key and agenda setting research papers, and in all the papers presented has given critical archaeological contexts to the work.

Stephen is widely regarded one of the finest field research archaeologists in the UK today. His work in the Northern Isles and its wider resonance within the North Atlantic region has been without parallel and has set rigorous and exacting standards that others now endeavour to follow. His archaeological investigations of major sites has provided the foundations for new theoretical frameworks in archaeology, not least in the complex interactions between societies, environmental change and the landscapes that these interactions generate.

Should you require further information I am content to be contacted.

Ian A. Simpson

Professor and Head, Natural Sciences

School of Natural Sciences
www.stir.ac.uk/natural-sciences

Institute of Aquaculture • Biological Sciences • Computing Sciences • Environmental Sciences • Mathematics • Psychology.

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