

<p>Institution: University of Oxford</p>
<p>Unit of Assessment: 31</p>
<p>Title of case study: Decoding Our Ancient Past: Writing Tablets from Around the World</p>
<p>1. Summary of the impact</p>
<p>Research by Classicists at Oxford, led by Professor Alan Bowman, on wooden tablets found at Vindolanda, a Roman fort on Hadrian’s Wall, has led to the publication of texts that have contributed greatly to public knowledge of life in Roman Britain. This research has been made available to the public at the British and Vindolanda Museums, and through printed and visual media. It has been particularly important in the teaching of Roman Britain and Latin in schools. Bowman’s collaboration with colleagues in Engineering to develop new techniques, to enable a better reading of the texts of the tablets has received wide publicity, increasing public knowledge of the methods of historical and scientific research. Research by Bowman on a Frisian tablet has also had impact within the Netherlands; in this case providing the benefit of public awareness of the problems of the historical evidence that has been used to construct nationalistic narratives. Jacob Dahl’s application of the technology, developed in Bowman’s project to proto-Elamite tablets from south-west Iran has in turn increased public knowledge of attempts to decipher an unknown script and stimulated public engagement with the research.</p>
<p>2. Underpinning research</p>
<p>The research (a collaboration between a team at Oxford led by Bowman and a team at Durham led by Professor D. Thomas) consisted in the imaging, reading, and interpretation of wooden tablets excavated at the Roman fort at Vindolanda. The tablets were written on fragments of small, thin wooden leaf-tablets with carbon-based ink in the first and second centuries AD; their publication has revealed much new information about life in Roman Britain, involving detailed investigation of the Roman military occupation of northern England. The research has fundamentally changed the way in which we understand Roman frontier strategy and deployment in relation to the era before the construction of Hadrian’s Wall. Particularly distinctive has been the increased knowledge in a number of areas where there was very little evidence before. We now have a detailed understanding of the palaeography of Old Roman Cursive script, and its relation to the development of New Roman Cursive; evidence for the development of Latin language at this vernacular level and its relationship to early development of later vernacular Latin and ‘Romance’ languages; evidence for literary culture on Roman frontier among ‘Romanised’ military personnel from the lower Rhine area; and knowledge of distinctive ways of using wooden tablets as writing material, which has cast light on issues relevant to ‘history of the book’.</p>
<p>The research involves collaboration with the Vindolanda Trust, which is responsible for the tablets’ excavation and conservation, and the British Museum, which is responsible for their curation and display. After excavation and conservation at Vindolanda, by a team led by Robin Birley and subsequently Andrew Birley, the Tablets were brought to the British Museum where they were re-housed in custom-built storage. They were then made available to Bowman and Thomas, who organised sophisticated, cutting-edge imaging of the tablets. Since 1997, collaboration at Oxford between Bowman and Professor Sir Michael Brady of the Department of Engineering Science has been particularly important in advancing the reading of the documents. Bowman and Brady worked together to develop novel advanced image processing and artificial intelligence techniques which enabled Bowman to analyse and read the Vindolanda texts more efficiently. Merging engineering solutions with knowledge gathered from experts in Classics resulted in a prototype system which could intake an image of a Vindolanda text and output a plausible interpretation of the words.</p>
<p>Oxford researchers have applied similar techniques to tablets found elsewhere: Bowman’s research on a stylus tablet from Tolsum in Frisia produced a new text that removed what was thought to be the first mention of a Frisian cow, while Dr Jacob Dahl has used the camera-dome developed for the Vindolanda project to provide improved images of cuneiform tablets to assist in the decipherment of the proto-Elamite writing system. Together with Southampton, Oxford has become a hub for Reflectance Transformation Imaging (RTI) research and implementation, embedding RTI in its teaching and research.</p>

Impact case study (REF3b)

The key researchers are A.K. Bowman: Official Student (Tutorial Fellow) in Ancient History, Christ Church, Oxford (1977-2002); Camden Professor of Ancient History (2002-2010); Principal of Brasenose College (2010-). Other Oxford researchers who have made important contributions are: Dr R.S.O. Tomlin (University Lecturer in Late Roman History); Dr Charles Crowther (Assistant Director, CSAD, Oxford); Dr John Pearce (Research Assistant on the Vindolanda tablets); Dr Ségolène Tarte (Research Assistant at the Oxford e-Research Centre); Dr Jacob Dahl (University Lecturer in Assyriology).

3. References to the research

The key outputs on Vindolanda are:

A.K. Bowman, *The Vindolanda Writing Tablets* (British Museum Press), vol. 2, 1994, with J.D. Thomas and J.N. Adams; vol. 3, 2003, with J.D. Thomas. Available on request.

A.K. Bowman, R.S.O. Tomlin, K.A. Worp, "Emptio bovis Frisica": the "Frisian ox sale" reconsidered', *JRS* 99 (2009) 156-70. In REF2.

A.K. Bowman, J.D. Thomas, and R.S.O. Tomlin, 'The Vindolanda Writing-Tablets (*Tabulae Vindolandenses* IV, Part 1)', *Britannia* 41 (2010), 187-224. DOI: 10.1017/S0068113X10000176

A.K. Bowman, J.D. Thomas, and R.S.O. Tomlin, 'The Vindolanda Writing-Tablets (*Tabulae Vindolandenses* IV, Part 2)', *Britannia* 42 (2011), 113-44. DOI: 10.1017/S0068113X11000109

The development of further application for the RTI technology is discussed in:

G. Earl, A. Bowman, C. Crowther, J. Dahl, et al, 'Reflectance Transformation Imaging Systems for Ancient Documentary Artefacts', *Proceedings of the 2011 international conference on Electronic Visualisation and the Arts* (2011), 147-54. <http://eprints.soton.ac.uk/272357/>

Key research grants:

ADD: Imaging ancient documents, EPSRC, 1998-2000: £180,000

Arts and Humanities Research Board, 1998-2000: £102,000.

Andrew W. Mellon Foundation, 2001-4: £350,000.

JISC-funded VRE for the Study of Documents and Manuscripts, 2007-2009: £180,000.

AHRC-EPSRC-JISC e-Science and Ancient Documents project, Jan. 2008 - Dec. 2011: £341,000.

Reflectance Transformation Imaging, 2010-11 (joint with Southampton and UCL): £230,000.

4. Details of the impact (indicative maximum 750 words)

The significant cultural and pedagogical impact of increased understanding of history derives from Oxford research involving the decoding of ancient writing. It is Bowman's research on the Vindolanda tablets that has been most important in making the history of the Roman frontier in Britain come alive in a new way for a modern audience. This has had a particularly strong local impact at Vindolanda itself (below). Bowman and Tomlin's re-reading of the Frisian tablet had local impact in the Netherlands, contributing to understanding of the slipperiness of national narratives based on tenuous evidence; the tablet they re-edited had had a public image in Friesland because it was thought to provide the first mention of a Frisian cow^[1]. The benefit of increased public understanding has been achieved through a number of modes, in particular: museums (and museum publications), school syllabuses, the internet, and newspaper and television reports.

Improving the Historical Understanding of Museum Visitors

This impact is achieved partly through the display of the Vindolanda tablets at the British Museum. A selection of tablets is prominently displayed in the centre of Gallery 49 (Roman Britain) and also in Gallery 70 (Roman Empire). The tablets have been chosen to represent Vindolanda's varied mixture of private letters and official documents and to include the most important and famous examples. The tablets are widely visited by both UK and non-UK nationals. The British Museum has in recent years been the UK's most popular visitor attraction, with nearly 6 million visitors a year^[1] (though the museum does not keep figures for general visitors to particular galleries). The tablets are widely flagged on the museum's website, where they are listed among the 'Top Ten British Treasures' chosen by museum curators (they were also voted the top treasure by the British public following a TV programme devoted to the treasures). There is also a page on the tablets in the 'Young Explorers' section of the Museum website. The Museum also promotes cultural

understanding of Vindolanda through publishing and selling online and in its shop Bowman's book *Life and Letters on the Roman Frontier: Vindolanda and its People* (1994; revised edition, 2003). This book has sold more than 1,000 copies since the start of 2008.

The key role of Bowman's Oxford team was highlighted in a speech by Ralph Jackson, Curator of Romano-British Collections at the British Museum. This was at the Roman Society's celebration of Bowman's Vindolanda achievements at its June 2011 AGM: 'It is a tribute to the resourcefulness and sheer stamina of both Team Birley and Team Bowman that a) we have so many Tablets and b) their reconstructed texts and translations are available as full editions with commentaries, both in paper-published form by the British Museum Press and Britannia, and online at the Vindolanda Tablets Online and British Museum websites: they are freely available world-wide for public and scholar alike. I think that is an incredible feat of endurance and a terrific success story and no-one has been more indefatigable, tenacious and single-minded than Alan Bowman.'

A particularly significant local impact has also been achieved by the display of tablets at the Vindolanda Museum. Nine tablets (three military documents and six letters) have been on loan to the Museum since March 2011, when it re-opened following a multi-million pound re-development after receiving funding from the Heritage Lottery Fund and ONE North East. It was the opportunity to display a selection of tablets that led the museum to receive this funding. The tablets are on display in a newly constructed exhibition space with an atmosphere controlled environment; they are at the centre of the exhibition, surrounded by other original Roman finds that have been excavated at Vindolanda. Visitor numbers to the museum have increased greatly, rising from 82189 in 2010 to 91849 in 2011. The qualitative feedback the Museum has received from visitors in response to the tablets has been overwhelmingly positive. The fact that many visitors stay locally overnight has greatly boosted the local economy. Patricia Birley, the Director of the Vindolanda Trust, has acknowledged the importance of the tablets as bringing 'a unique angle to both our collection and interpretation'^[ii].

The re-reading of the Frisian tablet also had a local impact, as it was marked by a public conference organised by the Tresoar and Fries Museum in Leeuwarden in April 2009.

Influencing School Teaching

The pedagogical impact of the tablets is shown by the number of school children who are taught about the tablets through visits to the British Museum and the Vindolanda Museum. 9,834 school students and 1,490 adults/teachers accompanying students visited Gallery 49 in the British Museum in the year from June 2011 to June 2012. Following the loan of tablets to the Vindolanda Museum, school visits increased by 15%. The pedagogical impact of Bowman's research is also seen in the use of the Vindolanda tablets in school syllabuses: they are a recommended primary source for AQA Classical Civilisation GCSE, Topic 4H: Archaeology of Roman Britain, and Bowman's *Life and Letters* is the recommended secondary source for this module.^[iii]

The tablets have had a broader pedagogical impact on Latin teaching in primary schools thanks to the *Minimus* textbooks developed by Barbara Bell^[iv]. These popular textbooks introduce school children to Latin through stories about a Vindolanda family and through data known from the Vindolanda tablets. They have been used in about 2,500 primary schools in the UK and have received wide media coverage^[v]. Volume 1 was originally published in 1999 but has continued to sell well with total sales figures of c.127,000 to date. Foreign editions of this resource have also proved popular with a translation into Slovenian published in 2012; these versions are adaptations of the original, but still make use of Vindolanda material. Further resources for teachers and activities for children, expanding on the lives of the Vindolanda family are available on the *Minimus* website. The success of the textbooks led to the creation of 'Minimus the Musical', which was performed in 2010 at schools in Bristol and in July 2012 in schools in Monmouth and London (with a total audience of more than 1000 for two performances). This pedagogical impact is also promoted by the Vindolanda Museum, which has available a 'Minimus Family Quiz', and by a local guide who runs *Minimus*-themed Vindolanda tours^[vi].

Promoting Historical Knowledge through the Internet

Images and texts of the tablets are made freely available through a website

<http://vindolanda.csad.ox.ac.uk/> (first developed in February 2003). The digitization and on-line database project was a collaboration between the Centre for the Study of Ancient Documents

[CSAD] and the Academic Computing Development Team at Oxford University. Bowman's DPhil student Henriette Roued-Cunliffe created an extension to the site in 2010 (vto2.classics.ox.ac.uk), using a web-services query system. The Vindolanda Tablets Online website generates many favourable messages from non-academic users, a collection of which is kept at the CSAD: to give one example, Tom Oatman from San Antonio, Texas, emailed on 9 July 2012 to say that 'I came across the Vindolanda Tablet site while reading a book entitled Eating and Drinking in Roman Britain. I was helping my daughter with a school project on "a day in the life of a plebeian". What a fantastic effort to bring these most interesting artefacts to the online community. I know that they've been online for years, but I had never heard of the Vindolanda Tablets. While helping my daughter with this project I have become enthralled by the Roman Empire. Anyway, just wanted to tell you how absolutely marvellous your site is. Thank you!'^[2] A 55-minute audio podcast by Bowman is freely available at <http://podcasts.ox.ac.uk/vindolanda-tablets-audio>. Bowman's research is also highlighted on the BBC History website, where the article on Vindolanda ends by acknowledging that there is 'no better way to finish than with the comments by Alan K. Bowman, from whose excellent *Life and Letters on the Roman Frontier* most of this has been taken'.^[vii]

Dahl's work was featured on the BBC News website in October 2012 as part of the Knowledge Economy series^[viii]. In the first 24 hours, this article had c. 1.2 million readers and was shared 20,000 times; it was the single most read education story on the BBC website in 2012. It also generated a very large number of emails from readers from a wide range of backgrounds, including people from an Iranian background, linguistics teachers, and the grandson of the Frenchman who found the tablets^[3]. The number of people expressing a desire to get involved with the decipherment led Dahl to set up a website <http://cdli.ox.ac.uk/wiki/proto-elamite>. This is part of the Cuneiform Digital Library Initiative, of which Dahl is co-PI; the wiki educational pages are managed entirely by Oriental Studies at Oxford.

Cultural Impact through Television and Newspapers

Bowman appeared in a BBC2 Timewatch programme 'Hadrian's Wall' which was shown three times on BBC2 in 2008 (26 February, 16 July, 13 August), and on BBC4 on 25 May 2009. There was an interview with Bowman on the tablets, together with a demonstration of the RTI technology in use, in Neil Oliver's *History of Ancient Britain* series (Series 2, programme 4, Age of Romans, broadcast 26 May 2011). The conference on the Frisian tablet also generated local and national newspaper and television reports.

5. Sources to corroborate the impact

Testimony

- [1] Statement from Head of Schools & Young Audiences Education, British Museum
- [2] Statements from Vindolanda Tablets Online website visitors (via CSAD)
- [3] Statements from 22 October 2012 BBC News article readers (via Education Correspondent, BBC News)

Other Evidence Sources

- [i] <http://www.youtube.com/watch?v=QKDS6xfCfbl> [GPTVfriesland local television report]; 2. <http://nos.nl/artikel/86291-gevonden-schrijfplank-blijkt-2000-jaar-oud.html> [Netherlands Broadcasting Foundation report]; 3. http://www.telegraaf.nl/binnenland/3771211/Romeins_schrijfplankje_oudst_bewaarde_tekst_.html [De Telegraaf report]
- [ii] <http://www.pasthorizonspr.com/index.php/archives/03/2011/edge-of-empire-at-vindolanda>
- [iii] AQA GCSE Classical Civilisation <http://store.aqa.org.uk/qual/newgcse/pdf/AQA-4020-W-SP.PDF>
- [iv] B. Bell, *Minimus: starting out in Latin* (Cambridge University Press, 1999); *Minimus secundus: moving on in Latin* (Cambridge University Press, 2004); <http://www.minimus-etc.co.uk/>
- [v] Primary Latin Project: http://www.minimus-etc.co.uk/question_page.htm
- [vi] <http://www.four-wynds-guest-house.co.uk/Catherines-Minimus-Vindolanda-Tour.htm>
- [vii] BBC History: http://www.bbc.co.uk/history/ancient/romans/vindolanda_01.shtml
- [viii] Proto-Elamite: 'Breakthrough in world's oldest undeciphered writing', BBC News website, 22 October 2012 (<http://www.bbc.co.uk/news/business-19964786>)