

**Spotlight on the Digital Case Study**

# Digital in the Undergraduate History Curriculum

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**Adam Crymble**

**Digital History Research Centre**

**University of Hertfordshire**

In partnership with 

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## Background

The University of Hertfordshire prides itself on being the UK's leading business-facing university. This is about more than working with business partners: it embraces the attitude and ethos pervading the university of ambition and enterprise in a friendly, collegiate environment. The aim is to ensure all students are inquisitive and able to find new solutions to new and difficult issues.

This culture pervades the humanities as well as other aspects of the university's research and teaching activity. For the History department, it is not just about learning what happened, but how and why it happened, and why history matters to us. Hence while the department covers all aspects of world history from 1500 to the present day, cutting-edge training in digital history developed by the Digital History Research Centre is an important part of what it has to offer to undergraduate students as well as post-grads.

## What were the problems/issues your institution is trying to solve?

The use of digital methods in historical research is now well established, and part of the common diet for graduate students. However ways of introducing such approaches and their benefits to undergraduates are less well developed. Some might say the methods involve a grasp of computing skills which would be a diversion from training in the basic skills of doing history, and the foundations of historical knowledge, which are the proper aims of undergraduate history.

However it would be foolish to ignore that undergraduates do use digital methods to undertake traditional tasks in their study of history, often strategically and in ways which do not always enhance their understanding. It seems at least possible that by harnessing the familiarity of students with digital technology, and introducing techniques derived from digitally-based historical research, history students can be led into a more productive relationship to use digital technology for the study of history, as well as being introduced to methods which are at the forefront of the discipline today. The aim, therefore, was to explore how this could be done and with what success.

A related issue is identifying what resources are needed to teach digital history at undergraduate level and what skills staff would need.

## What did you implement to address the issues(s)?

The approach taken was progressive over the three years of the undergraduate curriculum.

In **year 1** the problem was that most students entering university have never known a pre-Internet world and rely heavily on online search when completing their essays, but they lack the training to be critical about the search process. This gives undue weight to



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whatever a search turns up. Moreover as a methodological approach it leaves students with the impression that there is an 'answer' to be found, when often tutors want students to instead understand a body of records through wider targeted reading.

Online searching as a method requires keywords. Yet historians, like other scholars, should be problematizing the keywords they use.

These issues were addressed in a module of around 80 first-year students studying the relationship between Britain and Africa c.1750-2000. Students were challenged to identify fifty (50) historical trials in the *Old Bailey Online* database that contained a mention of a person of sub-Saharan African descent, which would be later used for an essay on black experience in eighteenth-century London.



The *Old Bailey Online* was chosen because it contained relevant historical materials, but it was also a keyword searchable digital archive, which had already been reliably transcribed into digital format. The assignment was challenging because in order to succeed students had to use advanced search techniques and perseverance to find references to 'black' people in a database full of other uses of the term 'black' (black dogs, the Black Boy public house, etc.).

Two learning outcomes were set:

**Intended Learning Outcome 1:** build an awareness in students that the first thing you find isn't necessarily representative of what you could find, and encourage thorough searching of a database rather than the quick dipping in to find something quotable.

**Intended Learning Outcome 2:** introduce students to the idea of building a dataset of relevant search results, which challenges the notion that history assignments are always essay-based.



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For the assignment, students were asked to submit a spreadsheet containing the trial reference and a brief description of how they knew the entry was relevant.

Reference Number	Year of Trial	How we know this is relevant
t17790707-8	1779	Prisoner is described as a 'Black Woman'
t17771203-21	1777	The Victim is described as a 'Negro'
t17770910-96	1777	The Victim is described as a 'Negro'
t17761016-23	1776	The Prisoner is described as having a 'swarthy complexion'
t17760221-30	1776	A 'Black' person described pursuing the prisoner
t17751206-16	1775	A 'Black' person stole a silver watch
t17750426-32	1774	A 'Negro' was accused of highway robbery
t17740907-4	1774	A 'Black' person was accused of stealing food
t17731208-74	1773	The prisoner is described as a 'Black Man'
t17720715-39	1772	The Prisoner is described as having a 'very swarthy face'.
t17701024-62	1770	A 'Negro' is accused of theft
t17700221-44	1770	The witness is described as a 'Black Man'
t17700912-41	1770	A 'Black' person is acquitted of theft
t17690906-13	1769	The witness is described as a 'Black Man'
t17690510-32	1769	The witness is described as a 'Black woman'
t17690510-32	1769	The prisoner is described as 'a Black'
t17680907-69	1768	A 'Black' person is acquitted of theft

#### Example results from the Old Bailey Online

This was a task students could complete successfully. Cognitively it involved students coming to an understanding of digital archives and the basic idea of a dataset, while going beyond basic searching to get results which were difficult to find. In many cases this resulted in better essays than students in previous years because they started with a larger set of relevant study materials from which they could draw.

With the availability of reliable datasets such as *Old Bailey Online* such activities become feasible at this level of study. However it does require that the teacher is able to find the answers beforehand so that entries can be marked without checking each one individually. In this instance the students found 16 results in addition to the 517 previously found by the lecturer.

With **year 2** students the use of digital methods was explored to encourage a broader understanding of how historical knowledge is constructed. While the writing of essays remained the main way through which students express their understanding of history, this normally means the summarising, quoting and the comparison of secondary sources. The opportunity digital methods provide is to show students how it is possible make historical discoveries through the interrogation of data and even to construct new knowledge. In this case the learning outcomes were set as:

**Intended Learning Outcome 1:** awareness that quotes are not the only way of knowing in history.

**Intended Learning Outcome 2:** You *can* do digital analyses.



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To achieve this a group of 17 students worked on two complementary tasks. The first of these involved linking together two sets of historical records to look for correlations. In this case, they compared the weather in eighteenth century London to the number of people entering the workhouse on a given day. Students were asked to determine if poor weather exacerbated poverty and drove up need amongst those living on the breadline.

Weather tables were available for London during the period 1786-1836, and digital copies were available online, but not in a machine-readable format that could be used in digital analyses.

METEOROLOGICAL TABLE for April, 1786.											
Height of Fahrenheit's Thermometer.						Height of Fahrenheit's Thermometer.					
D. of Month.	8 o'cl. Morn.	Noon	11 o'cl. Night.	Barom. in. pts.	Weather in Apr. 1786.	D. of Month.	8 o'cl. Morn.	Noon	11 o'cl. Night.	Barom. in. pts.	Weather in Apr. 1786.
Mar.	0	0	0				0	0	0		
26	41	44	32	29,67	snow showers	11	34	44	39	29,98	fair
27	31	44	32	29,86	snow showers	12	35	46	39	30,17	fair
28	30	38	32	30,14	fair	13	43	56	42	30,12	fair
29	36	41	36	30,31	cloudy	14	48	58	52	30,14	fair
30	37	40	39	30,3	cloudy	15	51	60	50	30,16	fair
31	39	43	40	30,18	cloudy	16	48	62	55	30,18	fair
1	41	43	40	30,14	cloudy	17	49	57	47	30,24	fair
2	41	48	45	29,76	fair	18	45	58	43	30,12	fair
3	42½	58	44	29,74	fair	19	47	57	50	29,96	fair
4	41	53	49½	29,55	showery	20	51	56	52	29,8	fair
5	46	56	41	29,54	fair	21	53½	63	55	29,76	showery
6	42	55½	46	29,6	fair	22	53	63	53	29,9	fair
7	46	48½	45	29,62	showery	23	53	60	53	30,09	showery
8	41	45	33	29,4	heavy rain	24	53	62	54	30,1	showery
9	35	38	32	29,56	fair	25	51	55	50	30,03	cloudy
10	23½	41	36	29,72	fair	26	48	52	45	29,94	heavy rain

W. CARY, Mathematical Instrument-Maker, opposite Arkwright Street, Strand.

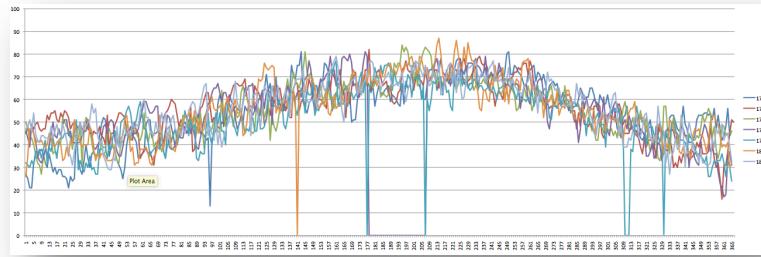
Digitized by Google

W. CARY, Mathematical Instrument-Maker, opposite Arundel-street, Strand.

Weather Table London, *Gentleman's Magazine* (1786) © Google Books

The first task, therefore, was for students to collaborate to transcribe these data. Each student was given a different set of 36 tables, representing three years of weather observations. In the three-hour workshop they collectively managed to transcribe 182,630 points of data, and the results were shared among the whole class. Plotting these points on a graph allowed students to find periods of extreme temperature, which gave them a means of testing the hypothesis that abnormally cold weather would lead to greater numbers of people seeking help from the workhouse.





**Temperature plotted by year using the data transcribed by the class**

Date of Admission	Number of Paupers
1786-01-02	8
1786-01-03	6
1786-01-04	10
1786-01-05	9
1786-01-07	7
1786-01-09	2
1786-01-10	11
1786-01-11	10
1786-01-12	3
1786-01-13	6
1786-01-14	4
1786-01-15	1
1786-01-16	7
1786-01-17	4
1786-01-18	7
1786-01-19	2
1786-01-20	2
1786-01-21	5
1786-01-23	4
1786-01-24	4
1786-01-25	3
1786-01-26	5

**'Pauper Lives' data, by Jeremy Boulton and Leonard Schwarz**

Students then compared the abnormally cold/warm days to known numbers of paupers entering a west-London workhouse. Students made use of the 'Pauper Lives' dataset by Jeremy Boulton and Leonard Schwarz, which contained this information.

From this work the group concluded that paupers appear to have waited out periods of extreme cold, and entered the workhouse in greater numbers on the days immediately following a few days of poor weather. This was a novel finding.

As a result students learnt how they could use analysis to construct historical knowledge for themselves, rather than just rely on the knowledge of others, and indeed





led to the creation of entirely new knowledge. It also trained students in teamwork and in basic numeracy skills.

The task requires the lecturer to find data which could be transcribed (weather records) and a relevant data set that can be linked (workhouse entry registers). It also relies on the students being prepared to engage in the laborious task of transcription without rebelling, which they will do if they understand why the task is part of the historical research process.

The second assignment for this group was to produce digital maps of historical data. In this case, they plotted the county of origin of students attending the University of Oxford during the seventeenth century, looking for interesting patterns or changes over time that could form the starting point of an essay. Students used a digital copy of the *Alumni Oxonienses*, a series of 60,000 mini-biographies that were compiled in the 19<sup>th</sup> century and that have been transcribed into machine readable text by *British History Online*. These mini-biographies usually include details on the county of origin; however it is impossible to see patterns in the records in their textual form. Mapping is an obvious way to get a visual representation.

## Horrobin-Hyte

Pages 748-784

[Alumni Oxonienses 1500-1714](#). Originally published by University of Oxford, Oxford, 1891.

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Citation: BHO  
'Horrobin-Hyte', in *Alumni Oxonienses 1500-1714*, ed. Joseph Foster (Oxford, 1891), pp. 748-784. *British History Online* <http://www.british-history.ac.uk/alumni-oxon/1500-1714/pp748-784> [accessed 4 May 2016].

## Horrobin-Hyte

Horrobin, John	student of <b>Christ Church</b> 1561, B.A. 12 Dec., 1561, M.A. 17 Jan., 1564-5, rector of Doddescombsleigh, Devon, 1564. See Foster's <i>Index Eccl.</i>
Horrobin, John	s. William, of Bolton, co. Lancaster, pleb. <b>Brasenose Coll.</b> , matric. 15 Feb., 1632-3, aged 17; B.A. 20 Oct., 1636, M.A. 2 July, 1639.
Horrockes, James	s. William, of Toxteth Park, co. Lancaster, pleb. <b>Brasenose Coll.</b> , matric. 5 Dec., 1623, aged 16, B.A. 29 Jan., 1626-7.
Horsey, Edmund	of Devon, pleb. <b>Balliol Coll.</b> , matric. 27 April, 1610, aged 19; B.A. from <b>Broadgates Hall</b> 14 Feb., 1613-14.
Horsey, (Sir) George	of Dorset, militis fil. <b>Trinity Coll.</b> , matric. 18 May, 1604, aged 16, of Clifton and Melcombe Horsey, Dorset (s. Sir Ralph), knighted at Whitehall 10 Feb., 1631, or 16 Feb., 1618. [5]

### Keyword highlight

Find on this page.

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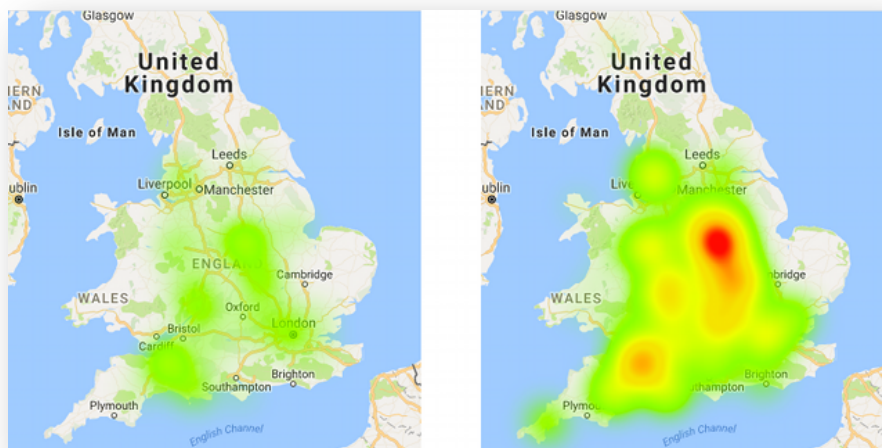
### 'Alumni Oxonienses', *British History Online*

The students were given a copy of the mini-biographies in spreadsheet format, which had been downloaded and structured by the lecturer before class. The students then learned how to extract the mappable information (county names). This is known as data cleaning, and is a prerequisite to nearly all digital analyses. This involved following a tutorial published in the *Programming Historian* 'Using Gazetteers to Extract Keywords from Free-Flowing Texts', which makes use of the Python programming language for targeted data extraction. Students then chose distinct subsets of students that they thought would highlight interesting historical phenomena that could form the basis of an essay (for example, students attending specific colleges, or attending in the years immediately before and after the English Civil War),



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The data could then be plotted on maps, using mapping software (Google Fusion Tables was the software used because it is fairly intuitive for students who have not previously performed digital mapping tasks), enabling comparisons to be made, such as the origins of students who attended Lincoln College during the Civil War and the Restoration:



**Lincoln College 1649-59**

**Lincoln College 1660-1714**

When writing up their findings, students could therefore draw comparisons and assess the impact of Oxford's position as a royalist stronghold during the Civil War on student recruitment, for example. Students gained an understanding of spatial analysis and developed their visual interpretation skills. Above all, an exploratory approach to data was further encouraged. This could be replicated with any set of open access machine-readable text. If working with page scans, these would first need to be transcribed.

For **year 3** students the task is to help students to begin to see themselves not as users of historical knowledge created by others, but as creators in their own right. Working with a small group of eight students the focus was therefore on adding value to historical records that had already been digitised. Students learned the principles of digital archive building and thinking about the needs of users, and considered what a digital environment can add to the discipline of history.

To undertake this, students needed historical records to work with. The records chosen were the medical examination books of the Chelsea Hospital in the early 19<sup>th</sup> century. These books contained the demographic details, service history, and an injury report of every soldier returning from overseas during the Napoleonic Wars. Photographs of these ledgers are available in PDF format from the National Archives, meaning the records have already been digitised, but only in a way that allows them to be read remotely, rather than digitally analysed.





Examination of Invalid Soldiers on <i>Monday the 13 day of April 1864</i>										
Regiments.	Names.	Age.	Quarter Master Sergeant	Serj. Major	Serj.	Corp.	Private.	India Service. East. West.	Total Service.	Rate per Day.
<i>28<sup>th</sup> Foot.</i> <i>1<sup>st</sup> Batt.</i>	<i>John Roberts</i>	<i>57</i>					<i>18<math>\frac{1}{2}</math></i>	<i>4</i>	<i>19<math>\frac{1}{2}</math></i>	<i>1<math>\frac{1}{3}</math><sup>d</sup></i>
<i>4<sup>th</sup> Foot.</i> <i>1<sup>st</sup> Batt.</i>	<i>Arch<sup>d</sup> Morrison</i>	<i>23</i>					<i>1<math>\frac{1}{2}</math></i>		<i>5<math>\frac{1}{2}</math></i>	<i>4<math>\frac{1}{2}</math><sup>d</sup></i>
<i>2<sup>nd</sup> Life Guards</i> <i>1<sup>st</sup> Batt.</i>	<i>George Jepp</i>	<i>44</i>					<i>20<math>\frac{1}{2}</math></i>		<i>20<math>\frac{1}{2}</math></i>	<i>1<math>\frac{1}{2}</math></i>
<i>5<sup>th</sup> Dragoon Guards</i>	<i>John Aston</i>	<i>25</i>					<i>6<math>\frac{1}{2}</math></i>		<i>6<math>\frac{1}{2}</math></i>	<i>6<sup>d</sup></i>

### Chelsea Pensioner Admission Books (W0116, TNA)

The first step was to transcribe these records into machine-readable text. This task was outsourced by the lecturer to professional transcribers in India. The results were then given to the students in spreadsheet format. It was known that, given the difficulties of transcribing from the handwritten photographed records, the data with which the students were presented would be messy and need much work.

The students were challenged to find ways to add value to these records. The emphasis was on reusability, quality control, sustainability, and audience needs, leading to the creation of archives that could facilitate new research. Students responses differed: the most prolific student both corrected the transcriptions and added 16 additional columns of information to each entry, which deployed a range of different skills:

Type of added value	Underlying Skill
Corrected transcriptions	(quality control)
Added a new column listing the injured body part so all 'arm' injuries could be found by sorting the spreadsheet	(adopted a limited vocabulary of tags)
Added the geo-coordinates for the soldier's parish of origin	(calculated a value from raw data)
Provided a definition of the soldier's occupation	(linked data from an external source)

As a result, students developed an understanding of standards and good practice in constructing digital archives, had to think about audience needs, understood how to link data, and appreciated the virtues of the patience required if such detailed work is to yield results. The outcome was the creation of publishable quality datasets (or sometimes, nearly so) that could facilitate new knowledge in a number of fields. A possible future development would be to work with the students to consider the issues of actual publication, through the National Archives or elsewhere, although as this is student-owned work the control remains with them.

This exercise could be replicated with any already-digitised set of historical records that is appropriately licensed for re-purposing and re-sharing outputs.



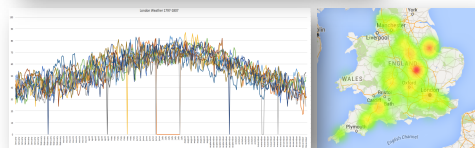
## What was the outcome?

What emerges from these pilots is a stepped approach to integrating digital history into the undergraduate curriculum:

## The Digital Curriculum

Reference Number	Year of Trial	How we know this is relevant
1 17790707-4	1779	Prisoner described as 'Black woman'
3 17771203-21	1777	Victim described as 'Negro'
4 17770910-96	1777	Victim Described as 'a Black'
5 17761016-23	1776	Prisoner described as having 'swarthy complexion'
6 17760201-30	1776	A 'Black' described as 'turning the prisoner'
7 17751206-16	1775	Victim described as 'a Black'
8 17750426-32	1775	A 'Black' stole a silver watch
9 17740907-22	1774	'Negro' accused of highway robbery

First Year: finding the tough stuff



Second Year: stop quoting!

Geo co-ordinates	Occupation	Occupation definition
51°03'43.2"N 0°19'30.0"W	[N/A]	[N/A]
52°55'19.0"N 1°28'33.0"W	[N/A]	[N/A]
53°40'48.4"N 1°29'31.2"W	[N/A]	[N/A]
53°50'42.0"N 0°25'37.2"W	[N/A]	[N/A]
54°08'20.4"N 0°47'31.2"W	[N/A]	[N/A]
55°50'47.9"N 4°25'25.1"W	[N/A]	[N/A]
55°51'28.8"N 4°15'32.4"W	[N/A]	[N/A]
57°09'09.4"N 2°06'36.0"W	[N/A]	[N/A]
54°02'49.2"N 2°48'03.6"W	Shipwright	[Unable to Find]
51°12'26.3"N 2°39'06.8"W	Labourer	A person who performs physical labour, usually as a me
52°45'50.4"N 2°53'31.2"W	Labourer	A person who performs physical labour, usually as a me
53°51'38.9"N 9°17'55.7"W	Labourer	A person who performs physical labour, usually as a me
54°49'48.0"N 7°28'12.0"W	Labourer	A person who performs physical labour, usually as a me
55°58'44.6"N 3°36'37.9"W	Labourer	A person who performs physical labour, usually as a me
[N/A]	Labourer	A person who performs physical labour, usually as a me
54°52'12.0"N 4°26'20.4"W	Shoe maker	A person whose trade it is to make shoes.
54°25'00.0"N 6°36'00.0"W	Blacksmith	A smith who makes and repairs iron articles by hand.
55°50'47.9"N 4°25'25.1"W	Blacksmith	A smith who makes and repairs iron articles by hand.

Third Year: adding value

However, implementing such a curriculum is not without challenges. One such challenge is to find data for students to work with that is in appropriate formats, openly downloadable and licensed for reuse and sharing. Moreover, lecturers need the digital skills to identify and to prepare the data that is needed, as well as being able to teach the skills that students need to learn.

The outcome to be gained for students is not just in technical ability. They also experience cognitive growth from 'searching for an answer rather than understanding' to becoming themselves creators of knowledge. Students learn for themselves the potential for digital tools not only to enable advanced analyses which would otherwise be impossible, but to save a great deal of time in extracting many forms of data from large archives. Students can demonstrate their ability to apply these skills to the discipline through the traditional method of writing essays.

However there are a range of obstacles that need to be overcome to successfully use these techniques in teaching:

- The need for the data to be on the scholar's own computer in order to perform some of the most valuable and deep analysis.
- The reality that the process of extracting (whether transcribing or 'scraping') data can be substantial and tedious.



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- The need for researchers and students in the humanities to familiarise themselves with basic programming and numeracy skills, which is not only a training need but also needs a shift in academic culture.
- To apply these methods teaching staff need good technical skills which currently many lack.
- Access to suitable raw data, appropriately licensed.

Over time, this approach of integrating new skills within the historical material is likely to be further developed so that it becomes part of the student's toolkit - part of being a historian. By letting them keep one foot in their comfort zone (e.g., letting them write an essay about their findings) students tend to be willing to experiment a bit more. It's when they think their grades are at risk that they start to push back.

As for the reaction of students themselves, some love it and pursue the new skills into their future work and dissertations, and some aren't so keen. But that's the case with anything.



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## List of resources used

- British History Online <http://www.british-history.ac.uk>
  - The *Alumni Oxonienses* 1500-1714 page is <http://www.british-history.ac.uk/alumni-oxon/1500-1714>
- Chelsea Pensioner Admission Books (W0116, TNA) <http://discovery.nationalarchives.gov.uk/details/r/C14324>
- Google Fusion Tables <https://support.google.com/fusiontables/answer/2571232>
- London weather tables 1786 - 1836, in the *Gentleman's Magazine*, available on Google Books <http://books.google.co.uk>
- Old Bailey Online <https://www.oldbaileyonline.org>
- Pauper Lives in Georgian London and Manchester <http://research.ncl.ac.uk/pauperlives/>
- The Programming Historian <http://programminghistorian.org>
  - The tutorial on *Using Gazetteers to Extract Sets of Keywords from Free-Flowing Texts* is at <http://programminghistorian.org/lessons/extracting-keywords>
- University of Hertfordshire History Department <http://www.herts.ac.uk/apply/schools-of-study/humanities/subject-areas/history>
  - Adam Crymble's Home Page [http://researchprofiles.herts.ac.uk/portal/en/persons/adam-crymble\(5ec2eba0-4549-4ce7-8911-eda3126c2315\).html/](http://researchprofiles.herts.ac.uk/portal/en/persons/adam-crymble(5ec2eba0-4549-4ce7-8911-eda3126c2315).html/)

