

# Editorial

## Alan Beale

"It is important for all teachers to know what information technology is available for their own and for student use. Classics teachers in particular need to be aware of the danger of appearing old-fashioned; so an appreciation of the power and value of computers, when used in an appropriate way, is necessary."

Thus opens the Information Technology section of Red Book 2, and one must concur. But as the years go by, the task becomes more and more daunting. The array of hardware and software is vast, the choices for a novice bewildering. We have been propelled into a much larger world by the internet and we suddenly live in an international classical environment. But the new resources and the new ideas for teaching that they can engender also offer exciting possibilities. Who can fail to appreciate the value of a resource like Perseus or not be stimulated by the active research opportunities for their pupils? This edition, therefore, seeks to offer some guidance to available resources in the form of reviews, in addition to the articles which I hope will both provide an introduction to the field and a stimulus to develop our own use of IT. JACT is planning further help (see Julian Morgan's article). Julian has been our ever-present guide and mentor in this field and his help both as a contributor and in assembling contributors to this *Review* was as active and energetic as usual. Many thanks, Julian.

*Minimus* has deservedly been prominent in the news recently and is already a major success with 13,000 copies sold to date (1.8.00) and interest growing daily. Primary Latin opens up a whole new front and accordingly sets new challenges. Some of those are being energetically addressed, for instance by grants or the training of a new army of *Minimus* teachers (training days are advertised in the *Bulletin*). Particularly interesting are the partnership schemes such as those in Surrey where secondary teachers are taking their skills into primary schools to deliver *Minimus*. How we as a profession can capitalise on the interest generated and maintain it at secondary level is a question to which we should give serious thought. While *Minimus* is worthwhile as a stand-alone course, it would seem a lost opportunity for any youngster, captivated by the language but living in an area with no secondary Latin, to have no further opportunity to pursue the subject. ICT may be a solution here too. Besides the government's initiative to put Latin on line, there are also local outreach schemes such as that being developed by Gaby Wright in Newcastle to take Latin into other secondary schools where there is some demand but no available staff. Such initiatives need to be fostered and supported by our combined forces if they are to have anything more than a local and temporary effect on the seemingly endless attrition of our subject. *Nolite desperare: nunc est computandum, nunc digito libero pulsandae claves.*

Alan Beale, Central Newcastle High School

## Deadlines & Instructions for Sending Copy

- ◆ *Features & Letters to the Editor* – should be sent to *Joint Features Editor (AUTUMN)*, Mr Alan Beale, c/o JACT Office, Senate House, London WC1E 7HU by the deadline of 23 February 2001.
- ◆ *Book Reviews* – should be sent to *Book Reviews Editor, Mr David Standen*, c/o JACT Office, Senate House, London WC1E 7HU by the deadline stated on the review request, and certainly by 23 February 2001.
- ◆ We appreciate any material that can be sent to the Editors on disk (preferably in RTF or ASCII format) or sent by e-mail. Our e-mail address is: jact@sas.ac.uk or croberts@sas.ac.uk All computer discs will be returned to contributors.

Thank you!

## Things to be Computed

### Julian Morgan

"Computer assisted learning is no longer something exciting, simply because of its newness: it is now an integral part of the curriculum in many subject areas, and after about a ten year presence of microcomputers in schools has become a force to be reckoned with, even by those teachers who may never have viewed it with anything other than suspicion."

I first wrote these words for inclusion in the *JACT Bulletin* of Autumn 1989. They have a certain naivete about them in retrospect, though their sentiment predates much that has been said since, and often by government ministers! Since that time, there have been many more

articles, computer programs, INSET days, area meetings and conferences at home and abroad. The shared experiences and the pace of change, referred to by Rob Latousek in this *Review*, has been hard to keep up with since that early article first appeared.

One thing which has changed significantly is the perception of the first premise. Computer assisted learning is often seen as exciting today, because communications via the Internet, games, simulations, videos and photographs have made it so and because much of today's stimulating software, especially Roman Perseus, offers entirely new ways of looking at the ancient world. The rather smug assertion that excitement formed no part of the process then was wrong on two counts. Firstly, it is rooted in a time when the most exciting thing available was drawn, triangle by

triangle, on graph paper, before being plotted out using coordinates: BASIC was the computing language for those brave enough to venture into programming and the programs of that time certainly look dull set against what is available now. Yet, despite this, students often did find CAL exciting. Secondly, I wonder now in my cynicism to what extent computers really were used then as an integral part of anyone's real-life curriculum.

There are teachers who still view this with suspicion, but they are being dragged off for correction by the government of a new perception. Tony Blair's decision to put computers onto the curriculum and into schools came at a time when complacency had set in for many. I have suspected over the years that there are two kinds of Classics teacher – those keen to embrace new technologies and those keen to avoid them. It seems now, however, that the categories are becoming blurred by the gradual emergence of a third group – those wavering between the two camps and coming to feel that the use of ICT can in fact be very beneficial indeed. With government pressure to the left of them and inspection teams to the right, any survivors of the unwilling are being forced to change their stance too. The gerundive of obligation, computanda, is becoming a reality. And a Good Thing too.

The Millennium encouraged a new appraisal of the situation, providing a most valuable catalyst. As part of this, JACT enjoyed a substantial grant from the DfEE, thanks to the swift action of Geoffrey Williams and Bob Lister, to help us create a new website of which to feel proud (<http://www.jact.org>). This has been designed for all members of the Association and is extremely user-friendly. Our debt to its creator, Andrew Wilson is considerable, as he has managed to put together clearly, simply and effectively, a resource which will be of great benefit.

Computer literate members of JACT are increasing in number and will probably want to skip this paragraph, but if you have not yet dipped your toe in the ICT waters, consider taking two steps in the short term at least. Firstly, spend some time surfing the Internet, something which teachers should feel able to do: make the new JACT website your starting point for this. Secondly, open an email account. This is a fairly easy thing to do and your ICT manager at school will be able to suggest an appropriate way for you to tackle it: it is vital that the uninitiated ask for more experienced for help or progress will not be made. Some management teams have been made to realise this in recent years and if you still feel unsupported you must both voice your discontent and ensure it to be redressed.

Other JACT initiatives are currently underway to bring computing into the mainstream for us all. A Good Practice Guide for the use of information and communications technology in Classics teaching is being prepared for circulation to JACT members early next year. This outlines practical ways in which teachers can move forward with technology, and goes beyond the scope of what we can achieve here.

However, this *Review*, full of ICT features and with a new section dedicated to reporting on software releases, makes an excellent start for now. Computanda columns in the *JACT Bulletin* will continue to provide basic information about courses and new programs, but we intend now to use the *Review* in a more positive way to evaluate computer programs, websites or methodologies as they appear. Your help will be needed to make this work.

Julian Morgan

(Julian can be contacted at 81 High St, Pitsford, Northants, NN6 9AD, [julian@j-progs.org](mailto:julian@j-progs.org).)

## Classical Computing Across The Pond & Beyond

### Rob Latousek

#### *The US-UK Connection*

Little did I know when I spent one wonderful year at the University of Durham that I would one day be able to integrate my fond attachment to the UK with my everyday work. It did seem to be a matter of fortuitous timing when I left the US during our big Bicentennial Year of celebrations (1976) and returned from the UK during the year-long celebration of the Queen's Jubilee (1977). Not only that, but I had the good fortune of getting a student berth on the QE2, which gave me a pleasant introduction to British hospitality on the way over, as well as providing a strong sense of the geographical distance between the two countries. Now that we have the power of the Internet to shrink the world into a small ball of wires with instant access to any part of it, I am constantly reminding myself of the reality of that five-day boat journey "across the pond."

It was not until 1992 that I was able to make my first, nostalgic return trip to Durham and Britain (by plane this time). Ironically, it was that same year that Julian Morgan and I began our first, transatlantic, pre-email correspondence on the topic of "classical computing." He had just finished writing his first computer programs to accompany the GCSE syllabus, and he was preparing a grant proposal to get funding to attend our American Classical League conference at the University of Colorado-Boulder in June 1993. This was to be his first trip to America, and, as it turned out, that conference was to be a watershed in the ACL's interaction with the rest of the world beyond the US.

For a long time we had had our loyal JACT friends showing up regularly to keep us in touch with the latest trends in British teaching of the Classics, and Keith Rose of Cambridge University Press had become a familiar face, at least partly due to the work and encouragement of the late Ed Phinney, an ACL President, CLC editor, and devout Anglophile.

Phinney had also brought more involvement from our Canadian colleagues, also largely through the *Cambridge Latin Course*.

This year, however, the range of foreign participants was distinctly broader, though still mainly limited to English speakers. James Morvillat and Maurice Balme came to talk about the *Oxford Latin Course*. Lister came from Cambridge University. There were others from Australia and New Zealand. Out of a total of 250 attendees, almost all of them were from outside the US, more than double what it usually has been. The significance of the impact of "globalization" on Classics was highlighted by a plenary talk given by Anton van Hooff from Nijmegen University of the Netherlands, but also representing the European EuroClassica organization. The title of his talk was "The Renaissance of the Classics in Eastern Europe."

This was a major shift of attention for the regular attendees of the ACL Institute. I will be the first to admit that Americans, on the whole, can be a fairly isolationist and xenophobic lot. This is one reason why foreign languages have such a hard time getting serious support in our schools. But, of course, the impact of Gorbachev's Perestroika and the falling of the Berlin Wall, when combined with American industry's push for a "global economy," could not help but make Americans realize that the large oceans around them were not going to keep the rest of the world out forever.

#### *The Saving Graces of the Internet*

Coincidentally, this was just about the time that the Internet started being used in a big way for email and, in due course, web sites. It became a pleasure to send to Julian and me, as our correspondence became all the more immediate in comparing notes on software design and class

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implementation. Both of us were acting as the computer coordinator for our respective organizations; and, in a field as relatively small as Classics, which gets even smaller when you focus on computer-assisted instruction, it was immensely helpful to find a colleague who had a similar level of expertise and dedication for this specialty.

Of course, the biggest difference in our situations was that Julian was still teaching on a daily basis, on top of his work on IT "insets" and software development. I had long ago resigned myself to the fact that it was impossible to do both, but here was someone who was managing it, and I was impressed. I was also envious of the chance to see on a daily basis how students were using the software that we were developing. For a long time, my only teaching experience has been of a vicarious style via the software I write, or the infrequent occasions of giving teacher-training workshops at conferences.

### *Consolidation & Obsolescence*

Two of the most significant trends I have noticed occurring worldwide in the computer field are consolidation and obsolescence, and I'd like to discuss the often international impact of these issues for a moment. You will, no doubt, recall the early days of British computing, which depended heavily, especially in the schools, on BBC computers. This was paralleled by American education's early reliance on Apple II computers. Neither of these could talk to each other, nor could they talk to the up-and-coming IBM PCs. When Apple came out with their Macintosh computer in 1984, they made a concerted effort to go more international with it; and they were fairly successful in that regard, largely due to its facile handling of alternate character sets and fonts. However, the isolationist character of its early operating system, which made it more user-friendly by most standards, when combined with its expensive hardware, kept it out of the cost-competitive, international mainstream of computing and the world of large-scale networks.

American schools maintained a long-running relationship with Apple, which had been initiated by the Apple II and extended by special educational pricing and the more accessible interface of the Macintosh. Nevertheless, in the economic crunch of school budgets in recent years, as well as the temporary loss of Apple's "vision" in the early 1990s, the entrenchment of the ubiquitous PCs has deepened. Of course, PCs were really only able to gain their supremacy in education after Microsoft created the Windows interface, based largely on the Macintosh, and started using the handy, little 3.5-inch "floppy" disks, which the Macintosh had also introduced. Apple's new iMacs may have lately rekindled their vision, and only time will tell if this will help it regain its prominence in education.

The real significance of these developments over time is the trend toward consolidation. We now find that Windows-based PCs have become a de facto standard around the world in both corporate and educational environments. Even the Macintosh has been adapted over time to accommodate PC data disks, and it is now possible to run PC software on a Mac using "interpreter" software, such as SoftWindows. In other words, it is now easier than ever to transfer data and documents between almost any computer in the world.

At the same time, the obsolescence of computer hardware and software has accelerated. Just as the power of the main computer microprocessor, or "chip," is still doubling every 18 months, the requirements of new software versions are raised just as quickly, making expensive computer hardware obsolete in just a few years. However, the modular design of some PCs can make it possible to upgrade various parts of a computer over time; and the networking of computers has been encouraged by the fact that only the network's single "server" may need frequent upgrading, while the multiple "client" computers can be treated like "dumb" terminals, with minimal hardware requirements of their own.

Another aspect of software obsolescence has been introduced by consolidation of software publishers, which has decreased their numbers while increasing their average size. Not unlike the current situation among book publishers, this trend encourages the disappearance of minor titles, as larger corporate structures require greater sales to justify keeping

a title in print. Several well-designed CDs on classical topics, such as Microsoft's Ancient Lands and Piranha's Ancient Origins, have gone out of print after a single printing. In this respect, the smaller size of the classical field has had mixed blessings. On one hand, it does not attract major development funding from large publishers; but, on the other hand, it can support a number of smaller publishers, such as J-PROGS and Centaur Systems, who are flexible enough to develop and maintain a variety of titles for smaller audiences.

Finally, the most serious aspect of software obsolescence may be mostly due to hardware obsolescence. As the hardware is upgraded, and the operating system along with it, standards are raised in software quality, and eventually older software will not run on new hardware. It must be rewritten, sometimes almost from scratch, in order to keep it accessible. This, of course, is also becoming more common in book publishing, so that new editions of classroom texts arrive every several years. But the older versions would still be usable – at least, readable – indefinitely. Obsolete software is no longer "readable" at all, except on an obsolete machine in a computer museum.

Once again, classicists can be somewhat grateful for the existence of smaller publishers in our field, who are willing to put the time into updating and rewriting software, whenever necessary, to keep it accessible to as broad an audience as possible. This is a cause in which Julian Morgan and I have been persistent. Most of the material in our software has been upgraded at least once already in the last ten years to keep current with the latest design standards and keep it running on extant machinery.

### *Oxford ICT Conference Fulfills a Dream*

Just six years after that fateful ACL conference in Boulder, Colorado, Julian Morgan had organized an international conference dedicated purely to the topic of "ICT and Classics." This was, indeed, the fulfillment of a dream that he and I had cultivated over the course of our collegial interaction. He had managed to return to America for ACL conferences twice again in the intervening years, becoming an instrumental part of our "Computer Corner" and an active member of the ACL's Committee on Educational Computer Applications, which I chair. Our professional relationship had deepened with contractual obligations to distribute each other's software in our home countries. He designed several, new programs with correlations to the syllabus of our National Latin Exam, and I adapted my most popular programs to the syllabi of several British exam boards (NEAB, OCR, and the Common Entrance Exam).

We still have great dreams of further expanding the US-UK links, as well as extending our outreach in other countries. The British connections to other members of the Commonwealth and American connections to other countries in its hemisphere have already proved useful in initiating this endeavour. I think I can speak for both of us when I say that computers and the Internet have now made us feel like we are almost teaching in the same school or working "virtually" side by side. Helping to extend that experience to others around the world is certainly one of our many dreams.

Rob Latousek  
Madison, Wisconsin, USA

*(Rob Latousek is President of Centaur Systems and Chair of the American Classical League's Committee on Educational Computer Applications. While completing an MA and teacher certification in Latin from Loyola University of Chicago (1982-85), he taught students from 7 to 47 years of age and began his current endeavors in designing and evaluating software and presenting workshops on "classical computing." His semiannual column on computer-based resources for the Classics, called "Random Access," appears in the Classical Outlook; and he updates biannually the Software Directory for the Classics in both print and electronic formats. Most recently, he authored the chapter entitled, "Computamus: We Compute!" in LaFleur's 1998 publication, Latin for the 21st Century.)*

# From Greece to Rome: building a Roman PERSEUS

Gregory Crane

Four years ago, after almost a decade working on Greek Perseus, we turned our attention to the Roman world. We had published the first Perseus CD ROMs in 1992 and, already in 1996, Greek Perseus had begun to attract a great deal of use on the World Wide Web. Students and teachers at various levels had demonstrated their interest, both by direct comments and by actual use of published materials, in having access to as many primary sources, both textual and visual, and supplementary materials (lexica, cataloguing data, essays etc.) as possible. The Perseus Web site had, in fact, emerged as a "wholesale" clearinghouse for integrated primary materials. We found individuals building a wide variety of course materials on top of the foundation laid by Perseus, with courses ranging from middle school to graduate seminars all directing their students to use Perseus in different ways. Support from the National Endowment for the Humanities helped us<sup>1</sup> and two other projects get started. The VRoma Project ([www.vroma.org](http://www.vroma.org)) set out to train US high school teachers. Professor Joseph Farrell's Vergil Project focused its energies on developing (in collaboration with secondary teachers) an electronic "edition" for Vergil.<sup>2</sup> Subsequent support from the NEH will allow us to run seminars for teachers in 2000 and 2001, but in our first years of work we set out to complement the efforts of our sibling projects: participants in VRoma have been able link into sources that we have placed on-line, while the Vergil Project was able to base part of its work on data that we created.<sup>3</sup> Our first priority was to establish a reasonably substantial, well-integrated and open-ended "digital library" for the study of Roman culture. We knew that we would not be able to create a comprehensive collection given the resources and time at our disposal but we felt that we could create something of immediate use that would grow over time. This paper describes where we stand now and where we hope to go.

## Designing for a Digital Environment: Possibilities and Challenges

A great deal of work remains to be done on Roman Perseus but outlines of a coherent digital library are now beginning to emerge. Language stands at the heart of any database of cultural materials - culture and language are so inextricably interwoven that any system that sets to represent a distinct culture must help its users work with its particular language (or languages). But if language is the essential starting point, we also need multimedia materials to document the physical context as well. Such visual materials can include not only still-images but sound, video and emerging tools for virtual tours or 3D representations of objects. Finally, a system faithful to the needs of the domain must integrate various elements together. A simple web site where users can search images and texts constitutes only a first step in this direction.

We are studying the interaction between content and system because each affects the other. In a mature digital library, "books" interact with one another. An electronic historical text (e.g., Cicero's Letters from Caesar's Gallic Wars) can, for example, be combined with an electronic atlas to generate maps of places mentioned in a given text. Figure 1 shows a map automatically generated from within the Perseus Digital Library and plotting places mentioned in Cicero's Letters.<sup>4</sup>

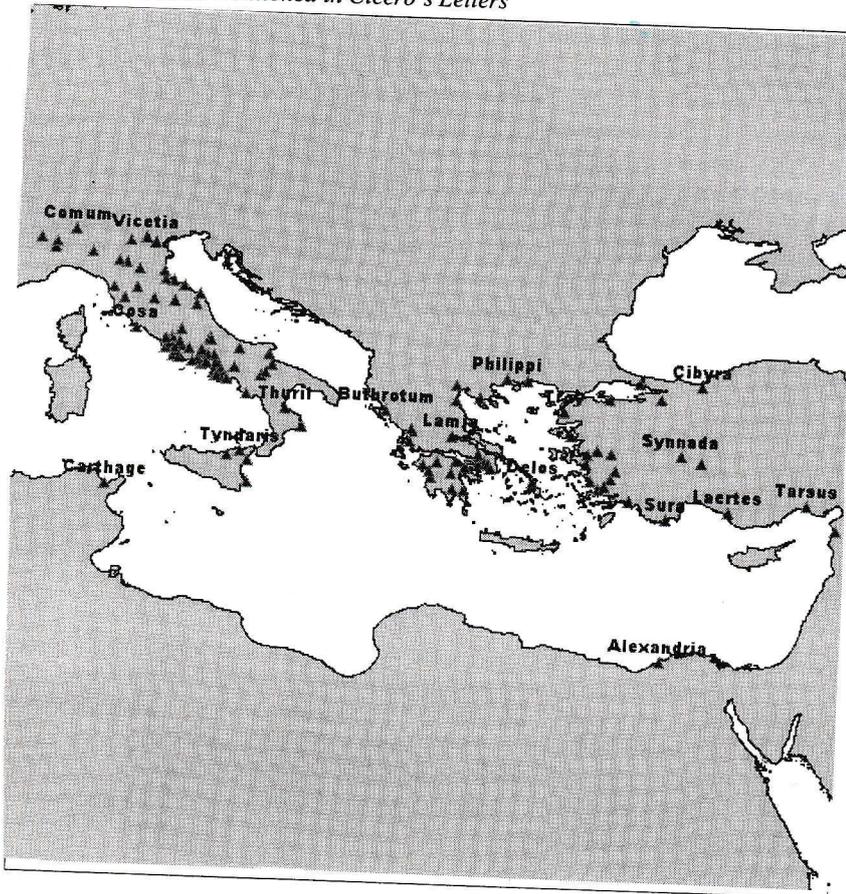
The map (below, left) reflects only an initial effort in a long-range project but the potential of such "visualization techniques" is considerable. Users can zoom in until the names for all sites are visible. They should be able to (but cannot yet) click on sites and call up a list of places in Cicero or Caesar where they appear. It would also be easy, for example, to create an animated version of the above map, plotting in sequence the various places from which Cicero writes or the locations mentioned by Caesar in a given book of the Gallic Wars. Such an animated map would allow the viewer to grasp the shifting geographical focus of a document filled with unfamiliar place names.

The benefits of such interactive tools are not, however, always an automatic by-product of electronic publication. In the case of a text we write for print, we may find that we have missed crucial opportunities that, with relatively little extra effort, we could have exploited. Some of Cicero's most interesting letters describe how Brutus' agents violently extorted money from the people of Salamis in Cyprus (e.g., Cic. Att. 6.1). A digital library system has no certain way to determine whether the Salamis in question is in fact in Cyprus or the much more widely mentioned Salamis near Athens. A clever system can probably use the general context to guess the right Salamis most of the time, but such automated inferences are never perfect. A translator or editor going through a text word by word could, however, resolve such ambiguities without adding appreciably to their task - the labour of editing or translating a text far outweighs the extra labour involved in clarifying such points. Thus with little if any substantial added effort, one could create a text that would work well with an on-line atlas.

Since we as classicists prepare documents for use over a long period of time, it should make little difference to us whether the electronic atlas is available now or ten years from now. If we assume that an on-line atlas is likely to become available at some point in the foreseeable future, then we should think seriously about preparing works accordingly.

There are two problems. First, in some cases we can see how we might change our practice as authors and editors. Every serious electronic edition should, for example, disambiguate places (which Salamis?) and people (which

Figure 1: Places mentioned in Cicero's Letters



Brutus?). This is simply the logical extension to the indices of places and names with which we are all familiar. But creating a system that allows practising editors to encode such information is not easy. We need to assemble "authority lists" (widely recognized ways of distinguishing various people and places) and standard word processors are not set up to facilitate such tagging. We also need to develop our Latin and Greek tools – the "authority lists" that we now have are in English and we currently generate maps from English translations rather than from Latin or Greek source texts. We may thus know what we want to do but then lack the tools needed to accomplish the job.

Second, there are surely other things that radically enhance the value of an electronic edition and that editors could easily do as a part of their work, but we do not yet know what these new features will be. Readers can do different things with electronic texts and these new functions will in turn influence the way in which we structure those texts, but we cannot anticipate them accurately. The only way to make progress is to develop new systems and to see where they take us. Developing a Roman Perseus is thus important not only because of what it lets us do now but also because it provides concrete examples of how we, in creating documents about the ancient world, could take fuller advantage of evolving digital environments.

Those of us who work on particular projects may have our own opinions as to what is and is not valuable. In the end, however, the best designs emerge from communities. A Project such as Perseus can suggest possibilities and make features available, but the response of students and teachers will ultimately shape the "best practices" for electronic resources. We thus need not only to create new ways of working with classical materials but to make these new methods available to the widest possible audience.

### **Roman Perseus 2000**

All cultural digital libraries are (or should be) open-ended and there is no limit to the materials that could be assembled to document the Roman world. In a relatively short development period and with limited resources, one needs to assemble a practical collection of contents within a workable system. We chose as a fundamental principle to concentrate on materials that were diverse in form and that we could make freely available on the Web. The following briefly describes the collection that we assembled. Although the textual and visual components developed in parallel, the order of individual jobs is significant in that it reflects the stages in which we chose to build the collection and thus reflects the priorities with which we worked.

#### *Textual Coverage*

◆ **Latin Morphology:** Since we consider language to be the core of any cultural digital library, we began by developing tools for managing Latin. Since Latin is a highly inflected language, we needed to be able to map inflected forms (e.g. fecerat) to their dictionary entries (e.g., facio). We had a working model for Greek that allowed users to go from inflected form to dictionary entry (e.g., click on fecerat and lookup facio), ask for a dictionary entry and retrieve inflected forms (e.g., ask for facio and retrieve fecerat), and display statistics on usage (e.g., let a user see that facio is fifteen times more common in Plautus than in Horace). We were able to adapt the morphological analyzer developed for Greek to Latin. Our experience in this process confirmed our assumption that Latin morphology was fundamentally simpler than Greek. Most of our effort in this adaptation went into creating a Latin mode for the analyzer that turned off features to deal with phenomena such as accents, dialects, preverbs and other aspects that render classical Greek computationally (as well as intellectually) complex.

◆ **An On-line Latin Lexicon – Entering Lewis and Short:** A morphological analyzer can identify stems and endings and can recognize legal Latin forms (e.g., it can recognize that the stem fec- and ending -erat can, in fact, be combined to make a legal Latin word) but it requires a

database of stems and endings and the larger the database, the more powerful the system. Our second major task in building Roman Perseus was to enter Lewis and Short, not only so that readers would be able to call up its definitions but also and more immediately so that we could "mine" the lexicon for morphological information. We wrote programs that would recognize "inventor, oris, m.," for example, as a masculine third declension noun, breaking the form up for computational purposes into a stem (invent) and ending (-or, -oris). In this way, we were able to develop a database of 44,701 nominal and 16,935 verbal stems.

◆ **Latin Source Texts and English Translations:** Two principles guide our selection of texts. First, we always try to include English translations as well as Latin source texts. Some students may use the translation as "trot" and thus fail to develop their language skills, but many of our most conscientious users are serious researchers – whether students or tenured faculty from outside of classics – work in isolation and need the English translations to verify their translations. Second, we try to provide "depth" of coverage. Rather than providing an overall anthology of Latin, we set out to provide some depth for the first century B.C.

The decision to begin with Lewis and Short had serious implications for the rest of our work. Lewis and Short is famous for its small print and poor legibility. It is also quite large – roughly 4.5 million words and 30 million characters in length. And entering a lexicon is an "all-or-nothing" job. We had to commit almost all of our budget for professional data entry to Lewis and Short. All of the Latin source texts and English translations needed to be scanned with Optical Character Recognition (OCR) software. This proved immensely laborious and the results were not always satisfactory. Ultimately, we were able to acquire very powerful (and expensive) OCR software that produced much better results but only after we had entered the bulk of the Roman Perseus texts.

At present, we have 1.3 million words of Latin, representing works from nine widely read authors: we have the major extant works of Plautus, Suetonius, Vergil, and Catullus; besides these we have Caesar's Gallic Wars, Horace's Odes, Cicero's Orations and Letters, the first ten books of Livy and Ovid's Metamorphoses. We have entered and are preparing for release the lives of Plutarch not already in Perseus. There are tentative plans for adding the Greek source texts, as well as important sources such as Appian and Dio Cassius. There are still major gaps – we do not, for example, have Sallust yet – but the corpus that we have assembled represents a starting point.

◆ **Commentaries:** At present, we have entered and formatted John Connigton's Aeneid, Allen and Greenough's Select Orations of Cicero and Caesar's Gallic War, E. H. Donkin on Cicero's Pro Roscio, Frank Frost Abbott's Selected Letters of Cicero, Merrill's Catullus, Paul Shorey's Horace: Odes and Epodes. All of the preceding commentaries are either now available or in the final stages of preparation. Our goal was both to provide useful information and to give examples of on-line annotation. By putting older commentaries on-line, we developed a framework in which newly created comments could be built.

◆ **Allen and Greenough Latin Grammar:** Our online version of Smyth's Greek Grammar had become very popular. We therefore decided to enter Allen and Greenough's Latin Grammar. Given the complex formatting of A&G, we needed to send this out for professional data entry and were fortunate to receive local support for that task.

◆ **Charlton Lewis, Elementary Latin Dictionary:** A private donation allowed us to enter a smaller lexicon so that students would have an alternative to Lewis and Short. At present, this student lexicon is being prepared for publication on the web.

♦ **Roman Art in the Museum of Fine Arts, Boston:** In parallel to our textual development, we collected 5,700 original images of 781 coins and 327 other objects, including portrait heads, sarcophagi, full-size statues, bronze statuettes, funerary reliefs, mosaics, pottery, glass, jewelry, and architectural fragments. Amy Smith, the Perseus curator for ancient art and archaeology, and Maria Daniels worked closely with the MFA curatorial staff to assemble up-to-date documentation for these materials. The first set of MFA materials – the coins – went on-line as part of Perseus in the spring of 2000. The rest are being prepared for release.

♦ **Site Photography:** We set out to collect a core of images documenting Rome and Italy while beginning a series that began to represent the Roman provinces. Given the time frame and resources at our disposal, we knew that we could not do a thorough survey but we felt that we could create an initial core that could, like the textual materials, grow over time. The following table describes the visual materials collected as part of Roman Perseus:

Images	Location	Photographer
2963	Rome	Maria Daniels
182	Italy	Jacqui Carlon
143	Italy	Amy Smith
635	Italy	Jodi Magness
473	Spain/Portugal	Michael Ramage
375	Croatia	Maria Daniels
232	Jordan	Amy Smith
149	Spain	Al Kaiser
1274	Gaul	Maria Daniels
2545	Turkey	Maria Daniels
55	Greece	Amy Smith

♦ **General Site documentation:** To provide information about Roman (and Greek) sites, we entered the Princeton Encyclopedia of Classical Sites. PECS contains 1.2 million words covering 5,000 entries. In addition, we are preparing Platner and Ashby's Topographical Dictionary of Rome, with coverage of 2,000 topics specific to Rome and its environs.

♦ **Intensive Documentation of Ostia:** As with museum photography, we knew that we could not collect extensive site photography on the scale that had been possible for Greek Perseus. In our earlier work, we had been able to create hundreds of site plans, in some cases linking several phase plans together so that users could view the development of the site sequentially over time. Such coverage was not generally feasible for the first phase of Roman Perseus, but we decided to choose one site that was complex in form and central in importance but that would be manageable. Ultimately, we chose the Roman port city of Ostia, a well-studied and excavated site. Smaller than Pompeii and Herculaneum, Ostia is nevertheless a very large and complex site and provides a crucial window onto Roman social and economic history. At present we are assembling 10,000 images of Ostia into a single virtual tour of the city.

♦ **Geographic Information:** The Perseus Atlas already contains more than 3,000 places from the Greek world. Most of these points were derived from sources with relatively coarse resolution (e.g., c. 1 km). We are preparing to supplement these points with data from other general sources (such as the Getty Thesaurus of Geographic Names) so that we can better represent the western Mediterranean. In addition, handheld GPS units can now provide coordinates that are accurate to within 10 m. We have begun collecting and soliciting these much more accurate coordinates as well. Ultimately, we hope to see an open database of geographic coordinates for classical sites to which many would contribute and which various projects could exploit.

**Overall Integration: Who, What and Where? Harper's Classical Encyclopedia**

The "encyclopedia" in Greek Perseus consisted mainly of very short glosses. We knew that such general information was heavily used and we wanted to expand on what we had. The new OCD3 would be an ideal on-line resource but we wanted at this stage of development to focus on resources that could be made freely available to the widest possible audience. We therefore decided to enter Harper's Classical Dictionary into Perseus to provide basic information for people, places and things in the ancient world. Its 11,000 entries cover a wide range of topics and its 1.7 million words provide a great deal more information than we could assemble in a short period of time. Once Harper's is available on-line, we would be in a good position to update old or add new entries.

**Future Work**

A great deal of fundamental work remains to be done. We need to update and complete some of the work described above. We need a new interface for the Perseus Web site that makes it easier to locate Roman materials when they come on-line. And we have much more to do – there are many commentaries and similar existing print resources to convert to an electronic form. Such work always requires time and labour and needs funding as well (some documents, for example, simply do not lend themselves to OCR and must be sent out for professional (and costly) transcription entry. Raising money to expand our holdings is an on-going challenge).

At the same time, individuals can do much to contribute not only to Perseus but to the on-line resources that all of us in classics can share. We have worked closely with the Stoa Publishing Consortium ([www.stoa.org](http://www.stoa.org)), which is helping classicists develop a variety of new resources, many of which can be added to Perseus itself or to which Perseus can establish links. Contributions range from new commentaries and editions (e.g., Laura Gibbs' work on Suetonius<sup>6</sup>) to students collecting digital images of sites or GPS data as part of class trips.<sup>6</sup>

None of us can really anticipate the effects that new technology will have upon the field of classics, but both our students and we can look forward to challenges as well as opportunities. Our fundamental work remains the same - we need to learn as much about the ancient world as we can and then transmit that to coming generations - but the age in which we live has given us exciting new tools with which to pursue our goals. Technology by itself is never the answer, but it will surely be part of a long-term strategy that promotes the study of classics. Individual projects, however ambitious or modest, all seek to contribute to this larger goal.

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**Postscript**

Some of the resources described (such as the texts, lexicon, Roman coin images and many of the site photographs) are already in place and in use. Users should consult the web site to keep track of other releases. Those in the UK can access the Perseus mirror site at <http://perseus.csad.ox.ac.uk> as well as the main US-based site at <http://www.perseus.tufts.edu>.

**Footnotes:**

- 1 A grant from the *Teaching with Technology Program* at the National Endowment for the Humanities helped us get started. Subsequent support from Tufts University and from the Digital Library Initiative (with major support from NEH and NSF) has allowed us to continue this work.
- 2 See [Farrell, 1999 #1304]; [Farrell, 2000 #1285]
- 3 We contributed an electronic commentary on the *Aeneid*, [Virgil, 1885 #1305], as well as morphological analyses for the words in sections of Vergil.
- 4 Users viewing any page of the English translation to the letters can generate this map by clicking on the "plot sites in this document" link: e.g., <http://www.perseus.tufts.edu/cgi-bin/ptext?doc=Perseus%3Atext%3A1999.02.0022>.
- 5 <http://www.stoa.org/suetonius/>.
- 6 For guidelines, see <http://www.stoa.org/guides/>.

# Collaborative Internet Work with Students in Italian High-School

Licia Landi

A more detailed version of this paper was first presented at the Conference on ICT in Classics in Oxford, 19 July 1999. This paper is an account of personal projects of specific discipline content (Latin literature) as examples of collaborative Internet work with students and focuses on the strategy for technology-based course development.

## Introduction

More than ten years ago I started to change my teaching methods and I had a lot of help from new technology. First of all I realised that the pupils were bored with translating Latin phrases or selections from books of extracts with no logical connection with other activities we were doing. I felt that in traditional teaching, which is according to official programs, there was a type of barrier between the different parts which characterise the study of Latin in the final years of high school: the grammar, the literature and the study (i.e. comprehension and translation) of the most significant authors.

Reading Classic texts is what the learner will be able to do; to read means to understand, to recognise the sense of the key words, to connect the text with other texts by the same author or by others. Reading also means being able to put the text in the context, to notice the language, not as an abstract list of words, but as a means of communication, and finally reading must be something that links the words with everything else to help the pupils understand that Latin was a living language- that belonged to "real" people. The most common approaches to Classics, at the moment, don't do this, and this is something I feel strongly about, which is why I decided to challenge the existing order and try to find a completely new approach.

## Why did I choose to work with multimedia, the Internet and technology?

Eleven years ago I "fell in love" with my little old computer (at that time it was an Apple) and I decided to plan our schoolwork with the aim of including grammar, language, literature and specific texts to be studied in stimulating projects which change every year and for every class. Because of all this, I found myself thinking more and more about how technology could help me achieve my goals and step by step I started integrating into my teaching different kinds of technology working together. I combined the programme I had already chosen to work on with these different types of technology. I was amazed to see the results, right from the start and it made me realise how many different ways of working technology can provide us with. And, of course, this means that there are more ways for us to meet our objectives, which are to increase the pupils' skills and at the same time provide them with attractive, interesting learning situations.

## How do I work? Method and tools

When we start work, we begin by choosing our project, for example Catullus' love poetry, and then we begin to work straight away with electronic texts. There is some material available at school for this (for example we have the PHI 5 CD-ROM) and we have text-retrieval programmes (like Musaios) which we can use to do individual word-searches in a single text, multi-texts searches or advanced searching (for example, with wildcard and Boolean techniques).

Every pupil has to have his personal copy of the electronic text for his homework. S/he'll work with the "find" option on the edit menu either of Works or Word. In this way we can prepare reports about key words; we'll write the reports with the word processor and save it on the hard disk or on floppy disks. We can't legally copy the Latin text from the CD-ROM, so we look for it in the Internet.

## Collecting and collating material

How do I work with my students to help them learn how to organise material independently? We do this in four stages:

- 1 The first step is to read material.
- 2 The second is to understand material and by understand I mean all these things I said before. In this step the pupils work at home to develop and build on the comprehension and discussion work that they've already done in class. This consists of simple lexical searches, key concepts searches, semantic work etc.
- 3 Then we discuss all this work that the pupils have done at home and we draw everything together, designing a basic concept map or, sometimes, more detailed concept maps, each one of these develops a specific key concept, showing its form and the way in which it can be linked to other key concepts.
- 4 The next step is one of individual work where each pupil can decide for themselves how they would organise the material into a database. This is something that each person does at home and then brings back to school where everybody together plans and produces the final group database. Then all that they have to do is to put the information into the final database. This information is not only statistical but includes analytical information which help us in our understanding of the text and of the author. The database, in this way, is very flexible, because, as the pupils discover new threads, they can add new categories, for example, "Catullus' use of different language forms" was one. Another might be: "Greek words in Catullus' poetry".

One of the main advantages of working in groups and at home, is that the pupils are motivated because they are fascinated by technology itself and the technological instruments are a wonderful means to help them develop their own critical skills. Another thing that I consider to be particularly important about this way of working is that the pupils are working actively. When they do their own searches they are setting out on a voyage of discovery, finding out what they are capable of doing by themselves to make the texts come to life. In this way both the text and the authors mean more to them, become part of a real world and not just dry information they have read between yawns in some outdated school books that make the information seem as dry and dusty as the books are themselves. The rule of the teacher here is no longer one of the omniscient information giver that pupils have to listen to without participating actively. Now it's the teacher's job to help the students develop and exercise their own skills, teaching them how to learn for themselves. The teacher is a facilitator, an organiser, a monitor, but no longer the central figure in the group.

## The developing stage

Now we can go on the "developing" stage, perhaps the most interesting step in our work, which consists of classroom management.

We do it in six stages:

- 1 The first phase is to divide the class into groups. Each group is responsible for working and developing the subject assigned to them (for example: the conformist woman and the independent woman in the Roman society; Catullus' use of different language forms; Catullus' poetry: part of an interlinking poetical system).
- 2 The next phase is to find more input for their project by using the electronic texts and the text retrieval programmes to look for (e.g.) the occurrences of a keyword in the same text or in others (e.g. *fides*, *foedus*,

nubere, tenere in Catullus' love poetry) in order to improve their understanding of the word's meaning by comparing the same word in the different contexts.

The group gets more input especially by using search engines in the Internet in the way we discussed before. I'd like to point out to you how stimulating the effects can be when you use the Internet resources in an educational environment. The pupils discover the intellectual pleasure of research when they are involved in a more detailed study to discover new information and to reach a critical understanding. However I wish to underline the dangers of using the Internet too. Sometimes there are mistakes in information, but this type of work is particularly valuable because by comparing different resources and methods the pupils can learn to appreciate some and to leave others. This is the reason why I suggest that every group has to prepare a detailed report about every Internet resource they visited which we discuss later with the class. In this way they develop their critical thinking and take responsibility for their own learning.

3 The groups can also enjoy the discussion lists on the Internet (like Classics, AgoraClass, Telemaco), but they don't actively participate yet, because we haven't got time to do everything. For example, when we were at the beginning of our project about Catullus' poetry we enjoyed the discussion I brought about Clodia/Lesbia in the Classics list that confirmed our assumptions about the woman's identity.

4 The work is accompanied by class feedback discussion; and finally

5 We perfect the concept map, linking the words and the concepts.

6 At this point groups produce their final reports and the analytical cards (for example, about a selection of keywords, or a selection of text passages, or a selection of stylistic expressions). The groups write their reports with word-processors on the floppy disk that they give me.

### Transformation into a hypertext

The final step in our group project is to transform the work done in class into a real hypertext. Even if the project as we planned it is, by its nature, never ending or is a type of work in progress, there comes a point where we have achieved the objectives we set for ourselves and so this work in these reports can now be made into a hypertext, which is the final product.

The first and the main step is to prepare the navigation map, which is a detailed map in which we pick out the links between the pages and choose the hot-words, that enable us to reach another page which is logically connected to the one we are on. In practice the navigation map in an extension of the concept map we prepared before. We also decide whether to highlight the links to the Internet resources we have visited or to catalogue them in a special list.

Then we discuss the hypertext layout that has to be user friendly keeping with the sense of the project and we choose the background sound, the pictures and sometimes the video clips to put in (obviously text is from the group work).

In this phase we work in the computer laboratory of the school. Some stages of development can be done at home, individually or in groups if the pupils have the right tools and software.

### Conclusion

One of the most important things that I want to make clear to you is that working with the Internet and this modern technology has meant more to us than simply an experiment with new equipment. This has allowed us to discover new ways of developing our cognitive skills, new ways of working in groups and developing our communicative skills.

Another important factor in this work is that we published our work on the Internet (<http://members.xoom.com/landi>).

This means that, in our own way, we are contributing to the development of resources of knowledge on the Internet. We too are a small part of a global network that will become an international system of education, where pupils from all over the world will be able to communicate with each other and share the products of their labour, will be able to visit each other's sites, will be able to learn from each other in a global work group. In this case the work means all over the planet.

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