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HUMANITATS A LA XARXA: MÓN MEDIEVAL

HUMANITIES ON THE WEB: THE MEDIEVAL WORLD

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PhiloBiblon, Information Technology, and Medieval Spanish Literature: A Balance Sheet

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In the congress of the Asociación Hispánica de Literatura Medieval of Granada in 1993 I gave a paper that reviewed the existing computerized tools of interest for our field and offered a list of those that were still needed.[1] Here I shall attempt to update that paper, first summarizing the work on *PhiloBiblon* – what has been done and what remains undone – before returning to the 1993 list.

1. *PhiloBiblon*: History

The history of *PhiloBiblon* is that of a sustained effort to push the 'state of the art' of information technology to make it useful to philology. That history has been recounted a number of times, most recently by Ángel Gómez Moreno and the undersigned (Faulhaber, 2009: 191-200; Faulhaber – Gómez Moreno, 2009: 283-92). The *PhiloBiblon* of today is the creation of a whole team of scholars and technical experts. Perhaps the most important was John Nitti, of the University of Wisconsin, Madison, at one and the same time a computer scientist and a student of medieval Spanish. As a graduate student at Madison in the early 1970s he convinced Professor Lloyd Kasten to computerize the Dictionary of the Old Spanish Language, begun by Kasten's *maestro*, Antonio García Solalinde in 1936, and then created an entire suite of computerized tools

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[1] All online resources were consulted between 4 October and 10 October 2013 (Faulhaber, 1995, I: 93-107).

for this purpose, among them the *Bibliography of Old Spanish Texts*, *BOOST* (now *BETA, Bibliografía Española de Textos Antiguos*), which originally was simply a flat file bibliographical database whose records could contain only ten fields. Perhaps more significant than that is the fact that Professor Nitti was able to convince numerous fellow scholars, including me, of the importance of what he was doing for the future of Spanish philology.

Thanks to Nitti's enthusiasm a very young Ángel Gómez Moreno, at the time an exchange student at Madison, joined me in the *BOOST* project. Then Nitti convinced an American expatriate living in Barcelona, Beatrice Concheff, to take on the *Bibliography of Old Catalan Texts*, *BOOCT* (now *BITECA, Bibliografía de Textos Antics Catalans, Valencians i Balears*). In 1989, just before Concheff's untimely death in 1991, I asked Vicenç Beltran and Gemma Avenoza (Universitat de Barcelona) to continue the project. In 1988 my Berkeley colleague Arthur L.-F. Askins, his former students Harvey Sharrer (University of California, Santa Barbara) and Martha Schaffer (University of San Francisco), and Aida Fernanda Dias (Universidade de Coimbra) teamed up to tackle the corpus of Galician-Portuguese manuscripts and texts in *BITAGAP, Bibliografía de Textos Antigos Galegos e Portugueses*. Over the years a host of colleagues and students have worked on or joined one or the other of these projects.

Working together we gradually went about extending the functionality of what would come to be baptized *PhiloBiblon*. Someone would ask me, 'Why don't we have a field in Biography to allow us to list all of the titles held by a given individual?' Or 'why can't we describe in detail all copies of a given printed edition?' 'Why don't we have fields for codicological elements like text-page format, ruling, catchwords, signatures?' All valuable questions and suggestions – and my response was invariably, 'Why not?' But then would come the problem of turning those suggestions into reality. It has been thanks to a dedicated and ingenious programmer in Berkeley, John May, that we have been able to do this. In 1987 John converted the main frame flat file database into a PC-based relational database. Since then he has attacked with enthusiasm all of our problems and suggestions:

John, can we create a mechanism in order to establish, automatically, the relationship between two individuals in Biography? That is to say, if I indicate in one record that Isabel la Cátolica was the daughter of Juan II, it would save us a lot of time if in Juan II's record we could also indicate automatically that he was her father.

And the answer was always, 'Of course!'

Now, what he almost always forgets to tell me is how long it will take him to program such a mechanism and, since time is money, how much it will cost.

2. *PhiloBiblon*: The New Web Version

PhiloBiblon first appeared on the web in 1997. The format and the functions were unchanged until February, 2011, when a still-not-ready-for-prime time version was released precisely for this symposium. A much-enhanced version was deployed in October of 2011: <http://bancroft.berkeley.edu/philobiblon/>.

The previous version allowed searches of the most varied kind, but the data were always returned in the same form: a list of manuscripts or printed editions containing the search string. The user then had to look at the full text of each entry in turn in order to decide if it contained what he or she was looking for. In the new version (which is multilingual, with the introduction, help, and search screens in Catalan, English, Galician, Portuguese, and Spanish) the user first selects the type of information sought: about a text, a manuscript or printed edition, a secondary reference, a person, or a library; then opens the appropriate search screen and chooses the bibliography of interest, *BETA*, *BITAGAP*, or *BITECA*.

In looking for a particular text, for example, we can search for its Author, Title, Incipit or Explicit, Associated Name (e.g., translator, dedicatee), Date or Place of Composition or Translation, a Subject, or a Keyword Search through all fields. Thus a search for a title word, 'propiedades,' in *BETA* looks like this:
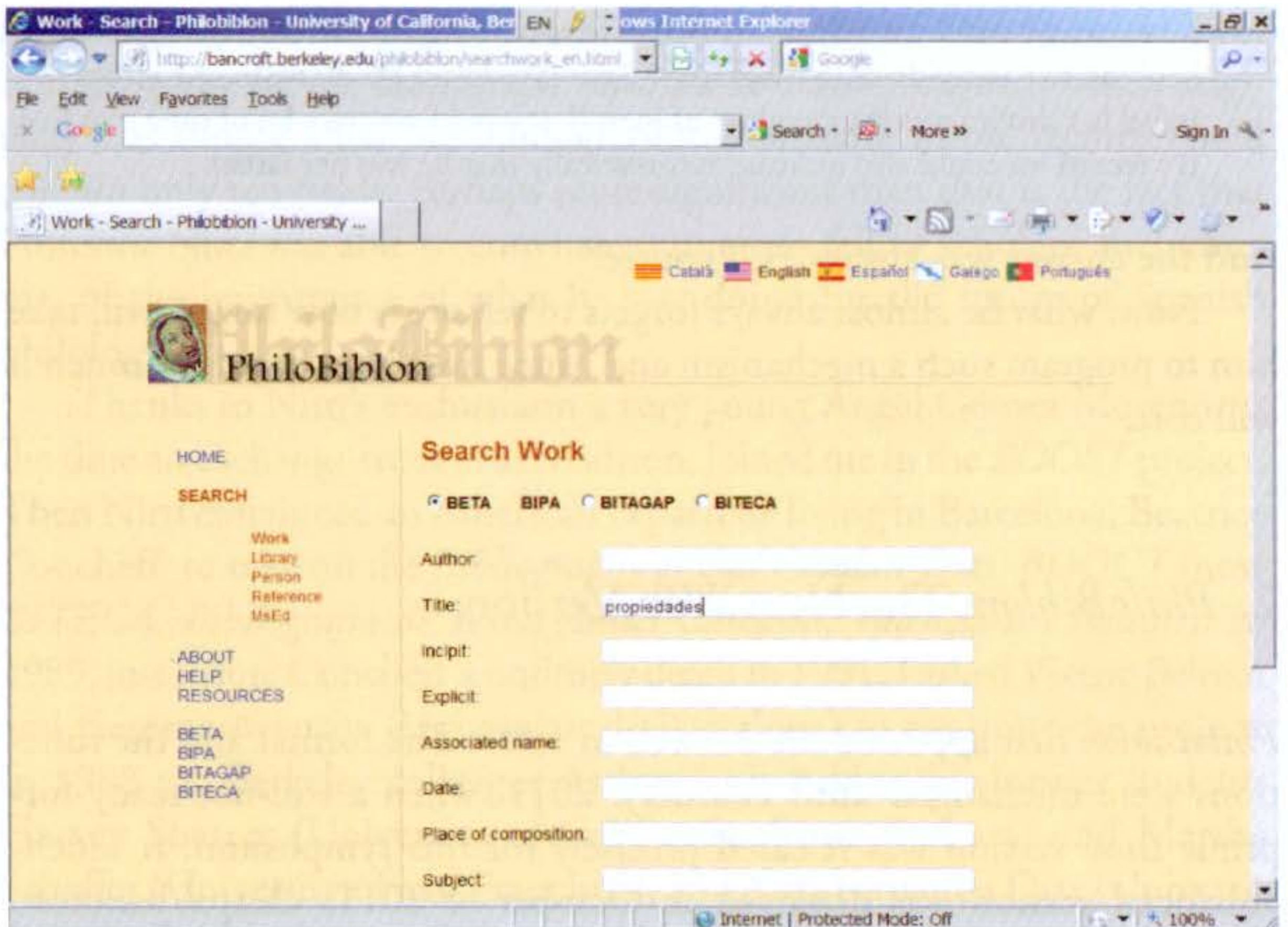
Fig. 1: Search for title containing "propiedades" in *BETA*.

This search finds the following three titles:

> Anónimo, Propiedades del magnánimo y propiedades del magnífico (tr.Anónimo),
> 1500 ca. ad quem texid 2866
> Anónimo, Propiedades del romero, 1500 ca. ad quem texid 1936
> Bartholomaeus Anglicus, Propiedades de las cosas (tr. Vicente de Burgos…), 1494-
> 09-18 ad quem texid 1431

If we select the translation of *De proprietatibus rerum*, we find first a de-
tailed description of the text, with its variant titles, translation date, list of
bibliographical references, and list of witnesses. We can then follow links
to the detailed description of any of these witnesses, such as the edition of
Toulouse: Heinrich Meyer, 18 September 1494, with a list of the 69 known
copies of this edition, ordered by city, holding library, and shelfmark. From
the detailed description we could also jump to the biographical record of
Meyer, which in turn would give us a list of the eight editions of Spanish
texts that he printed between 1486 and 1494, or to the record of any of
the libraries containing a copy of this edition.

This example illustrates one of the great advantages of the new version. It reproduces, insofar as is possible on a web platform, the structure of the underlying database. It allows the user to see all of the relationships between a given record anywhere in the system and all related records. Similarly, a search for a given MS or printed edition returns first a detailed codicological or bibliographical description followed by a listing of the texts it contains along with their incipits and explicits. From each witness the user can link to the master record of the work itself, with the entire list of witnesses.

Such examples could be multiplied endlessly, but in all cases the web version functions in the same way. What the user will discover, however, is that there exist enormous differences in the amount of detail recorded. The compilers of *BITECA*, for example, have provided detailed codicological and bibliographical descriptions and quasi-paleographical transcriptions of incipits and explicits; those of *BITAGAP* have focused primarily on texts and secondary bibliography, with a well-nigh exhaustive list of all medieval Portuguese and Galician texts, both prose and poetry, and the related scholarly and critical studies. The compilers of *BETA* originally focused on *in situ* descriptions of manuscripts written before 1500, especially on those not yet well described in the standard catalogs.

The increasing wealth of both printed and online sources is truly an *embarras de richesse*. On the one hand it is easier than ever to locate descriptions of manuscripts and printed editions and digitized facsimiles on the web, yet a substantial amount of work remains to be done simply to incorporate all these new data systematically. Thus in BETA we have yet to add all of the data from the twenty published volumes of the *Inventario General de Manuscritos* of the Biblioteca Nacional de España. Fortunately thirteen of them are now available on the web in PDF format (<http://www.bne.es/es/Micrositios/Guias/Inventario_Manuscritos/>) The other seven, from MSS/9501 onward, are available through the online catalog (<http://catalogo.bne.es/uhtbin/webcat>). As we add these materials, however, we shall have to change the shelfmarks given in *BETA* to accommodate the BNE's new shelfmark system. Thus, one can no longer locate MS 9501 in the BNE's online catalog by searching just for '9501.' Instead one must search for 'MSS/9501.' (I have remarked in the past that a special circle in hell is reserved for librarians who change shelfmarks.)

3. The Future

The most important task of the compilers of the *PhiloBiblon* bibliographies, still, is to describe original manuscripts and printed editions as completely as possible. Since a detailed codicological description of even a simple manuscript may require as much as three hours of concentrated effort, when time *in situ* is limited the compilers frequently add only the most basic information (shelfmark, date, dimensions, number of leaves, contents) so that the manuscript in question can become the object of scholarly inquiry. More details can then be added on subsequent visits to the library or by other scholars.

When we cannot visit the libraries themselves, we must have recourse to secondary sources, particularly catalogs of manuscripts and printed books. In fact, the original version of *BOOST* was compiled in exactly that way, primarily from the first and second editions of José Simón Díaz, *Bibliografía de la literatura hispánica*, vol. 3 (Madrid: CSIC, 1963-1965). As more and more manuscript catalogs of Spanish libraries became available in print during the 1990s (e. g., Biblioteca del Palacio Real, Biblioteca de la Real Academia Española, Biblioteca Universitaria of Salamanca, Biblioteca de la Fundación Lázaro Galdiano),[2] it was not possible to transcribe manually all of the information in each catalog entry. Now that these catalogs have become available online, we must revisit them, 'cutting and pasting' enormous quantities of new information, 'thickening' the descriptions of manuscripts and editions originally described only summarily while at the same time adding descriptions of new manuscripts.

Additionally there are now significant tertiary bibliographical resources on line, e. g., the *Incunable Short Title Catalog* (ISTC, <http://www.bl.uk/catalogues/istc/index.html>), compiled at the British Library starting in 1980, but based heavily on the *Gesamtkatalog der Wiegendrucke* (*GW*, <http://www.gesamtkatalogderwiegendrucke.de/GWEN.xhtml>), the *Catálogo Colectivo del Patrimonio Bibliográfico Español* (*CCPBE*, <http://

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2   *Catálogo de la Real Biblioteca. Tomo XI: manuscritos 1994-96*; *Catálogo de manuscritos de la Real Academia Española 1991*; *Catálogo de manuscritos de la Biblioteca universitaria de Salamanca 1997-2002*; *Manuscritos españoles de la Biblioteca Lázaro Galdiano 1997*.

www.mcu.es/bibliotecas/MC/CCPB/index.html>) maintained by the Spanish Ministerio de Cultura at the BNE, and, especially, *WorldCat* of OCLC (<http://www.worldcat.org/>), the world-wide cataloguing consortium developed originally in 1971 for universities in the state of Ohio (which explains its name, originally an acronym for the Ohio College Library Center). All of these must be searched systematically to locate copies of printed texts, including those of post-1500 editions.

While *BITECA* and *BITAGAP* enjoy near-exhaustive control of their respective text and manuscript corpora, *BETA* has a long way to go, especially with regard to the medieval lyric. However, because of the existence of the seven magnificent volumes of Brian Dutton's *El cancionero del siglo XV. c. 1360-1520*, which has served as the basis for Dorothy Severin's equally magnificent *Electronic Corpus of 15th Century Castilian* Cancionero Manuscripts (<http://cancionerovirtual.liv.ac.uk>), the need for *BETA* to focus on the medieval lyric has been considerably diminished; yet it would be extremely useful to add these texts to *BETA* precisely in order to connect them to the transcriptions in the *Electronic Corpus* (Dutton, 1990-91).

Sorting out the relationships among texts and witnesses also remains a problem. For example, the *Flos sanctorum* is known in at least five different medieval Spanish versions (BETA texid 1177, 2522, 4632, 4633, and 4638) contained in a total of 21 manuscripts and printed editions. We now understand the basic traditions thanks to the pioneering work of John K. Walsh and B. Bussell Thompson (1986: 17-28) and now to that of Fernando Baños (2003), José Aragüés (2007, 1: 197-215), and, especially, Vanesa Hernández Amez (2006), but the witnesses of each of the various saints' lives must now be added. Similarly, we must disentangle the *maremagnum* of histories and chronicles in the Alfonsine tradition: *Primera crónica general, Estoria de España, Crónica de Castilla, Crónica de veinte reyes, Breve crónica de Castilla, Crónica de los reyes de Castilla, Crónica fragmentaria, Crónica general de 1404, Cronica general vulgata, Crónica general vulgata interpolada, Crónica manuelina interpolada, Crónica ocampiana, Historia dialogada hasta 1288*…. Ramón Menéndez Pidal put this field on a solid footing in 1918, and work on it has progressed steadily, particularly through the efforts of his grandson, the late Diego Catalán (1962, 1992, 1997; Catalán – Jerez, 2005), and Catalán's students, espe-

cially Inés Fernández Ordónez (1992). Nevertheless, we must still assimilate the results of much of this research in BETA (Alfonso X, 1993).

We control the text-witness relationship by assigning to each text a unique identification number, its *texid*. Even if two works are known by identical or near-identical titles, their texids always distinguish them. Thus in *BETA* the *Crónica de Castilla* is texid 1129; the *Breve crónica de Castilla*, texid 4545; and the *Crónica de los reyes de Castilla*, texid 1133. Even if subsequent scholarship determines that the text contained in a given MS is *not* the *Crónica de Castilla* but rather the *Breve crónica de Castilla*, all we have to do is change the related texid in the MS from 1129 to 4545; all else remains the same.

Another method used to identify texts securely is the Text Type. For any given work, we have begun to identify one MS as its exemplar, i. e., the MS to which all other witnesses should be compared to see if they contain the same text. This is not necessarily the best or oldest MS; frequently it is simply the one that was first recorded. For example, there are eight known translations of the *Epistola de gubernatione rei familiaris* attributed to St. Bernard. We have associated each of these texts with one of the manuscripts that instantiates it, i. e., its Text Type.

Finally, perhaps the most difficult problem facing PhiloBiblon is posed by the fact that a database is not a printed book. Once a book has been printed, it is fixed forever. The person who wrote it will die, but the book will live on. It is an ineluctable fact, however, that a computer tool is *not* a printed book, done once and for all the day that it is published. If databases like *PhiloBiblon* or web sites are not maintained, they disappear, sooner or later. And maintaining them takes money: Software must be upgraded; hardware becomes obsolete as new demands are placed on it; programmers must be paid to find and fix bugs. The great libraries of the world have long since realized that the maintenance of online catalogs and digital resources requires substantially greater resources, over time, than their creation. From the beginning we have never had enough money to turn *PhiloBiblon* into the tool that we all want. Programming support has come only from the U.S. National Endowment for the Humanities and from private foundations in the U.S. and Spain. Requests for such support to Spanish government agencies from our Spanish collaborators have always been denied. One such request was turned down because the program was

not using 'Spanish technology,' a response not only profoundly disappointing but inconceivably wrong-headed.

4. Information Technology and Medieval Studies

The great advances in humanities computing have come primarily from business, not from academic institutions or organizations. In spite of the efforts of the pioneers of humanities computing since the 1960s, it was not until IBM's creation of the PC and Apple's creation of the Macintosh and the commercialization of word processors like Wordstar, WordPerfect, and, especially, Microsoft Word that the immense majority of humanities scholars understood the usefulness of the computer, although for most of them it was initially nothing more than a clever typewriter.

Databases like *PhiloBiblon* required the existence of commercial database management software, first developed for mainframe applications, later for the personal computer. But it was not until the commercialization of CD-ROM disks that it became possible to distribute the electronic database itself rather than a printed version, as part of the Archivo Digital de Manuscritos y Textos Españoles (ADMYTE, 1992, 1993).[3] However, all of this changed radically with the invention of the World Wide Web. The WWW started as the initiative of a single individual, Tim Berners-Lee, a computer programmer at CERN in Geneva, now Sir Timothy Berners-Lee. Its development began in 1989. but it wasn't until 1994 with the commercialization of Mosaic (later Netscape) and the creation of the WWW Consortium that the rest of the world began to take notice (*A Little History...*, 2000).

As it happens, I was teaching a humanities computing course for the Department of Spanish and Portuguese at Berkeley during spring semester of 1994. After spending 15 weeks explaining *ADMYTE*, *PhiloBiblon*, and the arcana of digitizing texts, in the last class meeting one of the students, María del Mar Fernández Vega (whose sister worked at CERN and who

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3   An updated version of *PhiloBiblon* was published separately on CD-ROM six years later (PhiloBiblon, 1999).

therefore had inside knowledge), asked me if I was going to talk about the WorldWideWeb. I responded, 'Why? It's not going anywhere.' I could not have been more spectacularly wrong, but neither I nor anyone else understood the impact that the WWW was going to have, an impact that has done nothing but increase over the years.

Now when I seek a book or an article, I do not go to the Berkeley library or consult its online catalog. I 'google' it. More often than not, the book has been digitized by Google, the Internet Archive, or any of a number of other organizations. If I need the bibliographical details I then turn to OCLC's WorldCat. When I search for biographical information, I do not consult a printed monograph or encyclopedia. I perform a Google search: Who was the 5th duke of Alba? Antonio Álvarez de Toledo y Beaumont (1568-1639). It took me less than a minute to find this out – in Wikipedia. Ten years ago it would have taken several days of searching in printed reference works.

But – and it is a big 'but' – are these sources trustworthy? Only time will tell. One thing in their favor is that they are infinitely perfectable.

The examples just given are indications of the massive change that the web has made to the world of scholarship, but until we abandon the fetishism of the printed book we shall not begin to take full advantage of that change. For a specialized field like ours, it is simply incomprehensible that scholarly studies continue to be printed today. One can understand why this should be so for monographs. It is difficult to follow a sustained argument over 400 pages on a computer screen. But editions and bibliographical, textual, or codicological studies – the very stuff of scholarship – should be made available on the web in the first instance.

The reasons for this reluctance to abandon print vary from country to country. In Spain there is one basic reason: the need for scholars to present research in print to advance their careers. Today the Spanish university system *does not* take online scholarship into account in evaluating scholarly merit, a damning indictment of the scleroticism of that system. This is simply perverse. It assumes that rules made twenty years ago, if not longer, are valid today. The question evaluators ought to be asking is this: Why isn't this study or edition available on line? If it *isn't* available on line, it should not count for promotion or advancement. To give examples would be invidious, but a major critical edition presented as a Spanish doctoral dissertation was invaluable to *PhiloBiblon* recently in its online version.

When it was published, the online version was taken down. As a result a study that was accessible to thousands of medievalists all over the world is now restricted to the handful whose libraries happen to purchase it.

In the United States there is considerably less resistance to online scholarship. In the University of California, for example, digital scholarship is evaluated exactly the same way as print scholarship, *ceteribus paribus*. The same criteria of quality apply in both cases. However, in the U.S. there is another danger to scholarship that is possibly even more inimical – Theory. Works of erudition – bibliographical, codicological, textual scholarship – are given short shrift unless they also have a significant theoretical component. In fact, it is virtually impossible to receive a PhD in the United States on the basis of a critical edition of a text, regardless of the importance of the text or the quality of the edition. This is also perverse.

5. Philology and Information Technology Today

So where do we stand today? What sorts of online resources are currently available for the advancement of scholarship? I have already mentioned the numerous online catalogs for manuscripts and printed editions. The comprehensive catalogs of printed books, like *ISTC*, *GW*, and *CCPBE*, serve to locate known extant copies, but in most cases they do not give any details about those copies. For incunabula the *CCPBE* sometimes does, but it is not yet as comprehensive as García Craviotto's *Catálogo general de incunables en bibliotecas españolas* (1989-1990), with the series of appendices prepared by Julián Martín Abad (1991, 1994). *PhiloBiblon* still remains the best source of information about individual copies.

Union catalogs for the localization of medieval manuscripts are primarily national initiatives.[4] Even the best are far from complete. The Portuguese union catalog, *Porbase*, comprises both printed books and manu-

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4   E.g., *Manus online. Censimento dei manoscritti delle bibliotche italiane* (<http://manus. iccu.sbn.it/>), *Manuscripta medievalia* (<http://www.manuscripta-mediaevalia.de>) of the Deutsche Forschungsgemeinschaft, the Swiss *Codices.ch* (<http://www.codices. ch/>), and *Medieval Manuscripts in Dutch Collections* (<http://www.mmdc.nl/static/> site/).

scripts, but to date the vast majority of the latter are from the Biblioteca Nacional de Portugal. Like *Porbase*, the *CCPBE* contains both manuscripts and printed books, but its focus is still very much on the latter. In some respects the *Digital Scriptorium* serves as the online union catalog of manuscripts in U.S. libraries.[5] It has the valuable property of containing sample images of the manuscripts described, but to date it only contains materials from thirty U.S. institutions, some 5800 MS prior to 1550, of which only 49 are in Spanish, three in Catalan, and three in Portuguese. Perhaps the most important of these are the fragments of the early fifteenth-century manuscript of *Amadís de Gaula* in The Bancroft Library (BANC MS UCB 115). To date *PhiloBiblon* again remains the primary bibliographical utility for locating manuscripts of medieval Iberian texts, recording more than 24,000 as of 1 October 2013. Curiously, there are no union catalogs of medieval manuscripts in other European languages comparable to *PhiloBiblon*. In this respect Hispanists enjoy a considerable advantage over other medievalists.

Currently the most useful textual archives for our field are the *Biblioteca Virtual Miguel de Cervantes* (<http://www.cervantesvirtual.com/>) and the *Biblioteca Virtual Joan Lluís Vives* (<http://www.lluisvives.com/>) (originally funded by the Banco de Santander at the Universitat d'Alacant). The medieval texts they contain, until very recently, were digitized from out-of-copyright editions, i.e., prior to 1923; so the quality of the texts is variable in the extreme. Potentially the most useful textual archive is that of Google Books, again a reminder of the importance of commercial ventures. To date Google has digitized millions of books – over two million from the libraries of the University of California alone – in scores of different languages. Out-of-copyright books are made available in their entirety; those in copyright allow the user to see only short passages.

Just as there is as yet no comprehensive digital union catalog of medieval Iberian manuscripts or early printed books, there is as yet no comprehensive archive of digitized medieval Iberian manuscripts. The *Biblioteca*

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5   *Digital Scriptorium* (<http://www.bancroft.berkeley.edu/digitalscriptorium>). Begun originally as a collaboration between The Bancroft Library at Berkeley and Columbia University in 1996, with support from the Andrew W. Mellon Foundation, the *Digital Scriptorium* now functions as a consortium, with Consuelo W. Dutschke (Columbia University) as its Executive Director.

Virtual del Patrimonio Bibliográfico (<http://bvpb.mcu.es>), which represents an attempt to provide a general portal for digital versions of printed books and manuscripts of all periods from some eighty Spanish libraries, contains over 40,000 printed books but just over 2,200 manuscripts drawn from the individual digital image archives of those libraries. Most of the major Spanish and Portuguese libraries, and many smaller ones, have been creating such archives for at least fifteen years, but the results are quite scattered. Each library uses its own criteria in deciding what to digitize; not unexpectedly, the selections tend to favor each institution's national cultural tradition and most important literary texts. The result of this, however, is that some of the most important monuments of medieval Spanish literature are now available in digitized facsimile, such as the *Poema del Cid* (VITR/7/17) and the Toledo MS of the *Libro de buen amor* (VITR/ 6/1) in the Biblioteca Nacional de España's Biblioteca Digital Hispánica (<http://www.bne.es/es/Catalogos/BibliotecaDigitalHispanica/Inicio/ index.html>). The BNE has also invested a considerable amount of effort in digitizing its incunabula. The institutional image archives generally offer only images, not the corresponding textual transcriptions. For medieval Spanish literature the best current example of a text and image archive is the Liverpool *Electronic Corpus of 15th Century Castilian Cancionero Manuscripts* mentioned above. In this case the texts are the result of the transcription efforts of several generations of scholars, beginning with Brian Dutton. It is only recently that the more enlightened libraries have allowed the Liverpool project to pair digital images with the texts themselves. Another fine example of text and image archives is Andrés Enrique-Arias's *Biblia medieval* (<http://bibliamedieval.es/>).

Ironically, the pioneer effort along these lines, *ADMYTE*, with its combination of bibliographical description, transcribed text, and digitized image, is no longer available, primarily due to changes in technology – the unsuccessful effort to convert from the CD-ROM format to web support. Even the legacy version on CD-ROM, released in 1992-1993, is no longer usable on modern PCs, since it requires a version of Windows that Microsoft has not supported for over fifteen years. Many of the ADMYTE texts, but not the images, are now available on CD-ROM from the Hispanic Seminary of Medieval Studies, formerly at the University of Wisconsin, Madison, and now located at the Hispanic Society of America in New York,

along with hundreds of other texts transcribed according to 'the Madison conventions' (*Electronic Texts...*, 1999). These are now being made available on the web as well (<http://www.hispanicseminary.org/index-en.htm>). The first of these is the corpus of prose works of Alfonso X (<http://www.hispanicseminary.org/t&c/ac/index-en.htm>), which served as the basis of the Lloyd A. Kasten/John J. Nitti *Diccionario de la prosa castellana del rey Alfonso X* (3 vols., New York: Hispanic Seminary of Medieval Studies, 2003), the fruit of decades of work on the Dictionary of the Old Spanish Language. The other text corpora now available comprise Spanish medical texts, Spanish legal texts, and Navarro-Aragonese texts.

6. Desiderata

In order to take full advantage of the capabilities of web-based research we need a number of basic tools, all of which I mentioned in my 1992 paper and none of which, twenty years later, are yet available. We also need new ways of organizing our work. The tools are, for the most part, not sophisticated programs. They are repertories and databases that will help scholars to establish the most basic facts about texts and manuscripts: When and where were they written or copied, by whom, and for whom? The more basic information of this sort that we have, the easier it will be to study the medieval Iberian literatures. These tools can be divided into two kinds, databases and text and image corpora, although in some cases the dividing line is almost imperceptible. I refer here specifically to materials of use for the study of the Romance vernacular literatures of the medieval Iberian peninsula, Portuguese, Galician-Portuguese, Leonese, Castilian Aragonese, Catalan, Valencian, and Balearic, treating only tangentially the need for more adequate digital tools for textual analysis or the creation of electronic critical editions:

1. *A complete repertory of extant texts and their witnesses*, a need now almost filled by *PhiloBiblon* and its component bibliographies. To this must be added the list of lost texts, a project magnificently begun, for Castilian, by the late Alan Deyermond (1995). The compilers of

BITAGAP have also added such information when their sources have indicated lost texts in Portuguese or Galician-Portuguese.

2. *Dated and datable texts and manuscripts.* This is the sine qua non in order to be able to match the characteristics of undated manuscripts with those of dated ones. Ancillary repertories of dated and geographically located texts as well as a repertory of dated and datable manuscripts can easily be generated from the materials in *PhiloBiblon.* The Comité Internationale de Paléographie Latine has been compiling *Catalogues de manuscrits datés* since 1959, a project with great merit but which could be vastly improved by digitizing all of its materials and placing them on the web. The *Digital Scriptorium* was designed in part to remedy this need.[6]

3. *Codicological databases.* For well over a century scholars have attempted to categorize, date, and locate manuscripts on the basis of their physical characteristics (e. g., text support, format, number of columns per page and of lines per column, proportions of text page, type of ruling, form and placement of catchwords). Despite that long effort, codicology is still an inexact science, particularly for manuscripts from the thirteenth through fifteenth centuries.

4. *Databases of paper, parchment, ink, and pigments.* There have been sporadic efforts to enlist the aid of our scientific colleagues in the analysis of the characteristics of the material components of medieval manuscripts, using the cyclotron or spectrographic analysis in order to pinpoint the age or origin of those components (Schwab – Stape, 1983; Bliss, 1984; Grim – Allison, 2004). Colleagues who have access to such instruments at their institutions should be encouraged to use them to analyze manuscripts in local libraries.

5. *Repertories of watermarks,* based preferably on beta radiographs (rather than tracings) of watermarks found in dated documents, are of great

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6   For a complete listing of published volumes to date, organized by country – *España brilla por su ausencia* –, see the Comité's website: <http://www.palaeographia.org/cipl/cipl.htm>. An attempt has been made to convert the seven published volumes of dated manuscripts in French libraries into a searchable database, so that, e.g., one can find dated MSS of Spanish origin; but without access to the facsimiles in the original printed volumes the database is not of much use.

use for the purpose of dating manuscripts more precisely. Charles Briquet's *Les filigranes* (4 vols. Paris: Picard/Geneva: Jullien, 1907) has been the classic repertory, so it is a cause for congratulation that the Laboratoire de Médiévistique Occidentale de Paris has begun to digitize it (<http://www.ksbm.oeaw.ac.at/_scripts/php/BR.php>), while the Österreichische Akademie des Wissenschaften has begun to digitize the *Wasserzeichen des Mittelalters* (<http://www.ksbm.oeaw.ac.at/wz/wzma.htm>) and the Landesarchiv Baden-Württemberg has started on Gerhard Piccard's *Die Wasserzeichenkartei im Hauptstaatsarchiv Stuttgart* (17 vols. Stuttgart: Kohlhammer, 1961-97) (<http://www.ksbm.oeaw.ac.at/_scripts/php/PPO.php>).[7] For Spain a digitized version of Oriol Valls i Subirá, *Paper and Watermarks in Catalonia* (Amsterdam: Paper Publications Society (Labarre Foundation), 1970) would be similarly useful. Despite early proposals (Hidalgo Brinquis, 1991), there is as yet nothing available for Spain comparable to the *Watermark Database of the Dutch University Institute for Art History* (<http://www.wm-portal.net/niki/index.php>), although the 2800 images in Gerard van Thienen's *Watermarks in Incunabula Printed in Spain* (<http://www.ksbm.oeaw.ac.at/wies/>) offer a good starting point for such a database.

6. *Paleographical databases.* The classic tool for dating manuscripts, since the days of Mabillon, has been paleographic analysis, one of the basic elements of codicology (Mabillon, 1704-1709). Spain has a long tradition itself, starting with the work of Palomares (Santiago y Palomares, 1984) and Merino (Merino de Jesucristo, 1780) in the eighteenth century but today we still work primarily with the manual of Agustín Millares Carlo and Josefina Mateu Ibars.[8] Given the infancy of true digital paleography, with programs designed to capture and analyze letter forms and abbreviations (Ciula, 2005; Stokes, 2007-2008; *Kodikologie und Paläographie...*, 2009, 2010; *Digital Paleography*, 2011), a digitized version of Millares Carlo would be enormously useful. The

7   For a more comprehensive list see Díaz de Miranda Macías – Herrero Montero (2008).
8   Millares Carlo (1983). Digitized facsimiles of other major works on paleography would also be useful, e.g.: Mateo Ibars – Mateu Ibars (1980-1991); Mateu Ibars (1973-77).

digitized images of his examples could then serve as the *piedras de toque* for the description of the *scripta* used in other manuscripts. There has been a proliferation of script names, many based on French, English, or German practice, which makes it difficult to visualize the formal characteristics of the script. What is the difference between *letra gótica redonda libraria* and *letra gótica redonda híbrida libraria*, for example? Whatever the name used, a reference to, e.g., 'Millares Carlo pl. 9' will show the user explicitly what the script is. As useful as the digitized facsimiles in Millares Carlo are his repertories of letter forms and abbreviations common to a particular script. Although Adriano Cappelli's *lexicon abbreviaturarum* (1st ed. Milan: Hoepli, 1912) is small enough that it can easily be used *in situ*, the *Abbreviationes*™ web site of Olaf Pluta (<http://www.ruhr-uni-bochum.de/philosophy/projects/abbreviationes/index.html>) is even more convenient. although it must be purchased. It would provide a good model for a similar site devoted to the Iberian languages, which could be based initially on López de Toro (1957) and Riesco Terrero (1983).

7. *Tools for image analysis.* The increasing availability of digitized facsimiles of medieval manuscripts has not been accompanied by tools for the manipulation and analysis of those facsimiles. Briefly, it would be enormously useful to have, as part of any digital image library, a suite of tools that would allow for (a) image processing such as that provided in the software built by IBM for the Archivo General de Indias in Seville during the Quinto Centenario project (e. g., increasing or decreasing contrast, sharpening letter edges);[9] (b) image analysis, including recognition and comparison of letter forms, automatic color comparison, automatic line counting, a digital ruler, automatic calculation of the proportions of text pages. Alternatively, such tools could form part of a digital tool kit that could be applied to any image on the computer screen. Such tools would make possible much time-consuming but absolutely necessary codicological work on the basis of digital facsimiles. However, some of them, such as the digital ruler and the automatic color comparison, would require that all color images of manuscripts

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9   For a general description of the project, with copious bibliography, see González (1994).

include as well images of a metric ruler and a standard color bar (e. g., Kodak Q13 and Q14 Color Separation Guide and Gray Scale).

8. *Database of inventories of medieval libraries.* As we gain more control over the location of extant manuscripts with *PhiloBiblon*, it would be extremely useful to have a parallel database built on the basis of the inventories of medieval libraries. In *Libros y bibliotecas en la España medieval* (Research Bibliographies and Checklists, 47 [London: Grant & Cutler, 1987]) – ironically, a printed version of a database –, I listed 666 inventories and extracted basic information about their contents. In the introduction to that work I said: 'Es imprescindible editar estos textos, pero se debe hacer de una manera sistemática, formando así un Corpus Bibliothecarum Medii Aevi Hispanicarum, e identificando los textos' (p. 12). I would modify this suggestion now only by saying that such a corpus should take the form of a web-accessible database that would include an exact transcription of the inventory itself, with each book listed in a separate record, with its identification (if possible), incipit, explicit, and *indices probatoriae.*[10]

9. *Prosopographical repertories.* We not only want to know where and when a text was written or copied, but by whom and for whom. *PhiloBiblon* currently contains over 12,000 biographical records of authors and translators, patrons and owners of manuscripts or early printed books, copyists and printers, secular and regular clergy, royal and municipal officials, members of the nobility, etc. Most of this information, however, is succinct; it can and should be made much more detailed. *Cuestión de tiempo y mano de obra.* In the meantime, much genealogical information has become available on the web, especially for the great noble families (e. g., José Luis García de Paz, *Mendoza poderosos señores. Apuntes históricos y biograficos,* <http://web.uam.es/personal_pdi/ciencias/depaz/mendoza/>; *AbcGenealogia.com,* <http://www.abcgenealogia.com/default.htm>; *Fundación Casa Ducal de Medinaceli,* <http://www.fundacionmedinaceli.org/fundacion/index.aspx>). Nevertheless, it would be enormously useful to have digital facsimiles of the eighty-eight volumes of the *Diccionario heráldico y genealógico de apellidos*

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10 *Indices probatoriae* in Spain turn out to be much more variable than the *secundo folio* listing thought to be standard. See Faulhaber (1984).

españoles y americanos (García Carraffa, 1919-1963) and the five volumes of the *Diccionario de la Historia Eclesiástica de España* (Aldea Vaquero et al., 1972-75; suppl. 1987).[11] Not surprisingly, the crowdsourced Wikipedia, with its more than 3.4 million articles, has proved enormously useful for the most obscure topics, including genealogy and local and institutional history.

7. Digital Editions

During the 1970s and 1980s the holy grail of humanities computing was the computerization of textual criticism, i. e., the creation of printed critical editions based on machine-readable transcriptions of the underlying textual witnesses and their algorithmic manipulation in order to establish the relationships among those witnesses and therefore the text itself. A number of serious efforts were made to develop computerized editorial systems: Wilhelm Ott's TUSTEP (Ott, 2000), Peter Shillingsburg's CASE (Shillingsburg, 2003, 2006), Francisco Marcos Marín's UNITE (Marcos Marín, 1994), and Peter Robinson's COLLATE (*Digital Medievalist*; Robinson, 1989). Of these only UNITE and COLLATE have been used for the edition of medieval Spanish texts, and only COLLATE has been used for the creation of electronic editions. Marcos Marín's edition of the *Libro de Alexandre* (1987) was a wonderful demonstration of the possibilities of UNITE, but it has not been followed up by other scholars. The most successful effort has been Dorothy Severin's use of Robinson's COLLATE software to offer synoptic editions of *cancionero* texts in the *Electronic Corpus of 15th Century Castilian* Cancionero *Manuscripts*.

In 1991 I published an article on textual criticism in the twenty-first century that attempted to define the criteria for a successful electronic edition, as a combination of digital facsimile, near-paleographic transcription, and critical text accompanied by analytical tools and a digital dic-

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11   There now exists an online index of García Carraffa, maintained by the Library of Congress, of the 15,000 family names contained in the entire work (<http://www.loc.gov/rr/hispanic/geneal/index_gc.html>).

tionary. Recently José Manuel Lucía Megías has revisited the problem, but without modifying my conclusions in any substantial way, with the exception of recognizing the possibilities offered by the web 2.0 (Faulhaber, 1991; Lucía, 2010).[12] To date there have been no successful attempts to implement such a comprehensive system of text and tools, although not for want of trying. One of the major obstacles is the necessity of having complete transcriptions of all witnesses, a prohibitive requirement for any long text with multiple witnesses. The second element needed for a true electronic critical edition is a suite of analytical tools. The first really useful set was developed by John Bradley and Lidio Presutti at the University of Toronto in the 1980s, TACT (Textual Analysis Computing Tools) (Lancashire, 1996). Building on that work a team led by Geoffrey Rockwell has developed a more sophisticated web-based version at the University of Alberta, *TAPoR* (Text Analysis Portal for Research, <http://portal.tapor.ca/portal/>) that allows users to locate phrases, words, and morphemes, construct thesauri and concordances, and explore word frequency and statistical analyses.

The advent of social networking tools like Facebook, however, has suggested to scholars and users the idea of 'social editions,' a concept explored by Raymond Siemens in a recent paper (Siemens *et al.*, 2010, esp. §5.2). Siemens points out that the edited text is but one element in a much larger textual system that comprises all of its sources and all of the texts and images that formed part of the author's social and historical milieu, potentially tens of thousands, all of which must be accessible to the user holistically. Most importantly, a social edition would also include the ability to allow an entire community of scholars to organize themselves around the text, prepare alternative editions based on different ecdotic principles, annotate the text exhaustively with both a critical apparatus and explanatory notes, provide links to all of the real and putative source texts and relevant bibliography, and *un largo etc.*

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12   For wide-ranging overviews of the issues around electronic critical editions from various perspectives see Burnard *et al.* (eds.), 2006; Ciula – Stella (eds.), 2006; Robinson, Spring 2005, 2005). Spanish contributions are notably absent.

8. New Forms of Scholarly Organization

Jerry McGann (2010) has cogently argued that the 'elephant in the room' of digital scholarship is sustainability. I referred to the problem above, but *PhiloBiblon* is simply one example of a much wider problem. Not only do social editions like those adumbrated briefly above need secure homes; so too do *all* of the digital resources created over the last fifty years. Most major libraries are taking steps either individually or consortially to provide such homes for the digital materials they create. In the U.S., for example, the HathiTrust consortium (*hathi* means 'elephant' in Hindi, because of the elephant's legendary memory) is a partnership of major research institutions and libraries working to ensure that the cultural record is preserved and accessible long into the future. There are more than fifty partners in HathiTrust, and membership is open to institutions worldwide (<http://www.hathitrust.org/about#>).

To date all of the major research and academic libraries in the U.S. are members; and as of 1 October 2013 HathiTrust included digitized surrogates of almost eleven million books. A similar effort, directed at the creation and dissemination of software for research in the humanities, was Project Bamboo, an international consortium headed by the University of California, Berkeley (<http://www.projectbamboo.org/>).

I am not familiar enough with current activities in Spain to state whether something similar to HathiTrust exists or has been proposed. Clearly, consortia or institutions are needed for the conservation not only of digital texts in the narrow sense but also to serve as centers for ongoing digital work on social editions or projects like *PhiloBiblon*. Spain needs a national center for the conservation and study of all Spanish texts comparable to Frantext at the Université de Nancy (<http://www.frantext.fr/>), part of Analyse et Traitement Informatique de la Langue Française (<http://www.atilf.fr/>) or the Corpus OVI dell'Italiano Antico, (<http://gattoweb.ovi.cnr.it/(S(tzkgav5542k1ui45tpqile55))/CatForm01.aspx>), part of Tesoro della Lingua Italiana delle Origini (<http://tlio.ovi.cnr.it/TLIO/>) of the Istituto Opera del Vocabolario Italiano (<http://www.ovi.cnr.it/>) at the Accademia della Crusca in Florence. Over and beyond text archives homes also need to be found for the sorts of databases described above. It would be enormously useful to have a Spanish mirror site for *PhiloBiblon*, for example.

9. Consequences

The existence of centers and text archives would have several desirable consequences. It might diminish the necessity of seeking grants for the web publication of large-scale research projects. The history of our field is littered with projects left uncompleted because funding agencies refused to support them after an initial grant. More importantly, they would provide a home for digital projects, both finished and in process. Even the materials of unfinished projects should be preserved as the basis for future work. Of course, all such materials should be freely available for research by scholars and students all over the world. The experience of *PhiloBiblon* is instructive. During the month of September, 2011, 533 unique users from forty different countries and 268 different cities, using 28 languages, visited the *PhiloBiblon* website 748 times:

Table 1: Países de origen de los usarios de *Philobiblon* en septiembre de 2011.

Country	Number of Unique Users
Spain	302
United States	122
Portugal	96
Brazil	53
United Kingdom	33
Italy	30
France	15
Argentina, Mexico	12 each
Peru	9
Switzerland	8
Colombia	7
Netherlands	5
India	4
Austria, Belgium, Germany	3 each
Canada, Ecuador, Japan, Puerto Rico, Romania	2 each
Australia, Chile, Finland, Greece, Hungary, Indonesia, Norway, Panama, Singapore, Ukraine, Slovakia, Serbia, Turkey, Venezuela,	1 each

Our experience with *PhiloBiblon* also illustrates something that I learned from John Nitti many years ago: 'Lo mejor es enemigo de lo bueno.' This is a principle that has served us well. Since 1975 *BOOST > BETA > PhiloBiblon* has provided an increasingly more useful service to medievalists all over the world as it has grown in capacity, depth, and detail from the 966 records in *BOOST* to the more than 125,000 records in *PhiloBiblon*. What I have sketched above as desiderata are just that, ideals toward which as a scholarly community we should strive. What is important is not to provide a completely finished product after forty years but rather to make partial results available as soon as possible, and then to continue to improve them.

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