

Gregory R. Crane

Perseus Digital Library Project
Eaton Hall 134C
Tufts University
Medford MA, 02155
Office: (617) 627-3830
Gregory.Crane@tufts.edu

Department of Classics
Eaton Hall 321

(617) 627-2435

• Status

Adjunct Professor of Computer Science, 2010-
Chair, Department of Classics, 2009-
Winnick Family Chair of Technology and Entrepreneurship, 1998-
Professor, Department of Classics, Tufts University, 1998-
Associate Professor, Department of Classics, Tufts University, 1995-1998
Assistant Professor, Department of Classics, Tufts University, 1992-1995
Associate Professor of the Classics at Harvard University, 1989-1993
Assistant Professor of the Classics at Harvard University, 1985-9
Editor-in-Chief, **Perseus Project**, 1988-
Co-Director, **Perseus Project**, 1986-1988

• Field

Greek and Latin Literature and Civilization
Computer Applications in Research and Education

• Education

1975 *Portsmouth Abbey School, Portsmouth Rhode Island*
1978 *American Academy in Rome, Summer Session (Roman Art and Architecture)*
1979 *B.A., Harvard College (Classics)*
1979 *Goethe Institut, Kochel am See in Bavaria (German Language)*
1985 *PhD in Classical Philology, Harvard University*

• Honors

1977 *Lowell Prize for Excellence in Greek*
1978 *Bowdoin Prize for Latin Composition*
1978 *Phi Beta Kappa*
1979 *Knox Fellowship*
1979 *Richardson Prize for excellence in Greek and Latin*
1979 *Graduated Summa Cum Laude*
1984-5 *Whiting Fellow in the Humanities*
1998 Honored for outstanding achievements as a Tufts faculty member
1998 Christopher Columbus Discovery Award

2001 Vannevar Bush Award for Best Paper, *Joint Conference in Digital Libraries* 2001.

• **Teaching Experience**

The Concept of the Hero in Hellenic Civilisation (spring of 1981), Classics 97 (Sophomore tutorial in Greek and Latin, 1981-1982, fall of 1983) covering selections from Lysias, Euripides' *Medea*, Sallust's *Catiline*, Horace's *Satires*, Cicero's *Pro Caelio*, the *Amores* of Ovid; Intensive Greek (summer of 1982); *Chaucer's Prose* (English 218, spring of 1984); Introductory Greek, Hellenistic Poetry (Fall of 1985); Introduction to Homer, Greek Orators (Spring of 1986); Intermediate Greek Prose Composition (Fall of 1986, 1988), Thucydides (Fall of 1986); Survey of Fifth Century Greek Literature (Greek Language, Spring of 1987, 1989); Introduction to Greek Tragedy (Greek Language, Fall 1988); Classical Greek Literature and Fifth Century Athens (Course in the Literature section of the Harvard Core Curriculum (Spring 1989, 1991, 1992, enrollment: c. 90 students); Greek Lyric Poetry; Pindar and Aeschylus (Seminar); Representing and Exploring Culture: Case Studies in Ancient Greece and Precolumbian Mesoamerica (fall 1990); Greek Society and Culture (fall 1991); second year Greek (fall 1992); Greek Comedy (fall 1992: c. 90 student); first year Greek (1993/1994); Intro to Greek Literature (fall 1993: c. 50 students); Greek Tragedy (spring 1994: c. 60 students); Greek Science (spring 1995); Thucydides (spring 1995); Greek Drama (fall 1995: c. 50 students); Greek 1 (fall 1995); Greek 2 (spring 1996); Greek Drama (fall 1996); Greek 1 (fall 1996); Advanced Greek (spring 1997); Seminar: Delphi and Olympia (spring 1997); Seminar: Literary Texts and the World Wide Web (fall 1998); Greek 1 (fall 1998); Cicero (spring 1998); Greek 1 (fall 1998); Thucydides and International Relations (fall 1998); Greek 2, Thucydides (spring 1999); on leave (fall 1999), The Ancient World in Popular Media (spring 2000); Cicero (fall 2000); Homer (spring 2001); Plato (fall 2001); Technology and Cognition: Case Studies in the Humanities, with Professors Rob Jacob, computer science, and Holly Taylor, psychology, (spring 2002); Hellenistic Poetry (fall 2002), Vergil (spring 2003), intermediate Greek (fall 2003), History in a Digital Age (spring 2004); Sallust and Tacitus (fall 2004); Community driven collections (Spring 2005); Thucydides (fall 2005); Greek Historiography (spring 2006). Seminar on Christian vs. Classical thought (2009, 2010); Reading Greek for Greek-less readers (fall 2010). Information retrieval (for Computer Science: Spring 2011)

• **Articles and Reviews**

- 1) "Three Notes on Herodas," *HSCP* 90 (1986) 85-90.
- 2) "Tithonus and the Prologue to Callimachus' *Aetia*," *ZPE* 66 (1986) 269-278.
- 3) "The *Odyssey* and Conventions of the Heroic Quest," *CA* 6 (1987) 11-37.
- 4) "Bees without Honey, and Callimachean Taste," *AJP* 108 (1987) 399-403.
- 5) "The Laughter of Aphrodite in Theocritus, *Idyll* 1," *HSCP* 91 (1987) 161-184.
- 6) "Clay Balls and Compact Disks: Some Political and Economic Problems of New Storage Media," *Favonius*, *Suppl.* 1 (1987) 1-6.
- 7) "From the Old to the New: Integrating Hypertext into Traditional Scholarship," *Proceedings of Hypertext '87* (North Carolina 1987) 51-56.
- 8) "Redefining the Book: some preliminary problems," *Academic Computing*, February 2 (1988) 6-11, 36-41.
- 9) "*Elpis* in Pindar *Ol.* 13.83," *Mnemosyne* 41 (1988) 117-118.

- 10) "A Perseus Sampler," with Kenneth Morrell, Elli Mylonas, and Neel Smith, in *The Apple Learning Disc; A HyperCard Collection for Education*, ed. Tim Oren (Apple Computer, 1988).
- 11) "Pastoral 'Realism' and the Fifth Idyll of Theocritus," *TAPA* 118 (1988) 105-120.
- 12) "Creon and the 'Ode to Man' in Sophocles' *Antigone*," *HSCP*.92 (1989) 103-116.
- 13) "Extending the Boundaries of Instruction and Research," *T.H.E. Journal: Technological Horizons in Education*, Macintosh Special Issue (1988) 51-54.
- 14) "Computers and Research in the Classics: the Evolution of the Electronic Library," in *Classics: A Discipline and Profession in Crisis?*, ed. Phyllis Culham and Lowell Edmunds (University Press of America 1989) 117-131.
- 15) "A Change of Fashion, and Euripides *Medea* 190-203," *Mnemosyne*. 43 (1990) 435-438.
- 16) "Ajax, the Unexpected and the *Trugrede*," *Classical Philology* 85 (1990) 89-101
- 17) "Challenging the Individual: the tradition of HyperMedia Databases" *Academic Computing*. January 4 (1990) 22-23, 31-38.
- 18) "Formats of Print and Questions of Culture: *HyperMedia* and Scholarly Publishing", *Scholarly Publishing*. 21 (1990) 131-155.
- 19) "Ancient Materials, Modern Media: Shaping the Study of Classics with Hypertext", (with Elli Mylonas) in *Hypermedia and Literary Studies*, ed. George Landow and Paul Delaney (MIT Press 1991) 205-220.
- 20) "Standards for a Hypermedia Database: Diachronic vs. Synchronic Concerns", *Proceedings for the "Hypertext Standardization Workshop", held at the National Institute of Standards, January 16-18, 1990*.
- 21) "Composing Culture: The Authority of an Electronic Text," *Current Anthropology* 32 (1991) 293-311.
- 22) review of P. B. Manville, *The Origins of Citizenship in Ancient Athens* (Princeton 1990) in the *Bryn Mawr Classical Review* 2.1 (1991) 31-35.
- 23) "Hypermedia and the Study of Ancient Culture" *IEEE: Computer Graphics and Applications*., 11 (1991) 45-51.
- 24) "Power, Prestige and the Corcyrean Affair in Thucydides 1," *Classical Antiquity* 12 (1992) 1-27.
- 25) "Aristotle's Library: Memex as Vision and Hypertext as Reality," in *From Memex to Hypertext: Vannevar Bush and the Mind's Machine*, ed. James Nyce and Paul Kahn (Academic Press 1991) 339-352.
- 26) review of Leslie Kurke, *The Traffic in Praise: Pindar and the Poetics of Social Economy* (Cornell 1991) in the *Bryn Mawr Classical Review* 2.5 (1991) 294-297.

- 27) "Generating and Parsing Classical Greek," *Literary and Linguistic Computing* 6 (1991) 243-245.
- 28) with Elli Mylonas, Kenneth Morrell and Neel Smith, "The Perseus Project: Data in the Electronic Age." in J. Solomon and T. Worthen (eds.), *Computing and the Classics*. University of Arizona Press.
- 29) Articles for the Perseus encyclopedia on "Homer", "Aeschylus", "Pindar", "Sophocles", "Herodotus", "Thucydides", "Plutarch", "Pausanias", and "the Library of Pseudo-Apollodorus" (c. 40 pages total; submitted to outside editorial review before inclusion).
- 30) "Fear and Pursuit of Risk: Corinth on Athens, Sparta and the Peloponnesians (Thucydides 1.68-71, 120-121)," *TAPA* 122 (1992) 227-256.
- 31) "Stimulating Reflective Thinking in the Classics -- A Role for Hypermedia," in *When Lectures Fail: Educational Computing in the Humanities*, edd. J. Johnston and B. Kozma (National Center for Research to Improve Teaching and Learning, Ann Arbor, Michigan 1992) 17-29 [republished in *The Electronic Classroom: A Handbook for Education in the Electronic Environment* (Learned Information 1995) 53-62].
- 32) "Politics of Consumption and Generosity in the Carpet Scene of the Agamemnon," *Classical Philology* 88 (1993) 117-136.
- 33) "Evaluating Complex Systems and Processes: Methods and Results from the Perseus Project," with Gary Marchionini, *ACM Transactions of Office Information Systems* 12 (1994) 5-34.
- 34) "What is Perseus? What is it not? Comments on the BMCR review of Perseus 1.0," *Bryn Mawr Classical Review* 3.6 (1992) 497-502.
- 35) review of Thomas Figueira, *Athens and Aigina in the Age of Imperial Colonization* (Baltimore and London 1991) *Bryn Mawr Classical Review* 4.10 (1993) 30-35.
- 36) response to P. Keyser, review of B. Frischer in *Bryn Mawr Classical Review* 3.2 (1992), with Dee Clayman and Donald Guthrie, *Bryn Mawr Classical Review* 4.10 (1993) 75-81.
- 37) "The Prosperity of Tyrants: Bacchylides, Herodotus and the Contest for Legitimacy," *Arethusa* 29 (1996) 57-85.
- 38) review of Robert Hariman, *Political Style: The Artistry of Power*. Chicago: University of Chicago Press, 1995. Pp. 259. ISBN 0-22-631630-0, *Bryn Mawr Classical Review* 7.1 (1995) 30-36.
- 39) "Libraries, Old and New, and the Possibilities of the New Technology," in the *Proceedings of the Dartmouth Institute for Advanced Studies '95* (Birkhäuser 1995) 9-17.
- 40) "Building a Digital Library: the Perseus Project as a Case Study in the Humanities," *Proceedings of the 1st ACM International Conference on Digital Libraries* (1996) 3-10.

- 41) "Oikos and Agora: Mapping the Polis in Aristophanes' *Wasps*," in *The City as Comedy: Society and Representation in Athenian Drama*, ed. Gregory Dobrov (UNC Press 1997) 198-229.
- 42) "The Perseus Project and Beyond: How Building a Digital Library Challenges the Humanities and Technology," *D-Lib*, January 1998.
<http://www.dlib.org/dlib/january98/01crane.html>
- 43) "Beyond LSJ: An Open-Ended Database on Classical Greek," in the proceedings for "The Lexicography of Ancient, Medieval and Modern Greek," a conference at Thessaloniki in November 1997.
- 44) "New Technologies for Reading: the Lexicon and the Digital Library" *Classical World* 92 (1998) 471-501.
<http://hdl.handle.net/10427/57004>
- 45) review of John Chadwick. *Lexicographica Graeca: Contributions to Greek Lexicography*. (Oxford: Clarendon Press, 1996), *American Journal of Philology* 120 (1999) 636-639.
- 46) "Greek Literature," (7,500 words) – entry in Microsoft *Encarta* (CD ROM Encyclopedia).
- 47) "Aeschylus," (800 words) – entry in Microsoft *Encarta*.
- 48) "New technology and new roles: the need for corpus editors," Gregory Crane and Jeffrey A. Rydberg-Cox; Proceedings of the fifth ACM conference on digital libraries, 2000, Pages 252 – 253.
<http://hdl.handle.net/10427/57002>
- 49) "The Perseus Project: A Digital Library for the Humanities," with David A. Smith and Jeffrey Rydberg-Cox, *Literary and Linguistic Computing* 15 (2000) 15-25.
- 50) "Extending a Digital Library: Beginning a Roman Perseus," the *New England Classical Journal* 27.3 (2000) 40-60.
- 51) "From Greece to Rome: Building a Roman Perseus," in the *Journal of the Association of Classics Teachers* (2000).
- 52) "Designing Documents to Enhance the Performance of Digital Libraries: Time, Space, People and a Digital Library on London," *D-Lib Magazine* 6 (2000). <http://www.dlib.org/dlib/july00/crane/07crane.html>
- 53) "The Symbiosis between Content and Technology in the Perseus Digital Library," with Brian Fuchs, Amy C. Smith, and Clifford E. Wulfman. *Cultivate Interactive* issue 2 (2000). <http://www.cultivate-int.org/issue2/perseus/>
- 54) "Knowledge Management in the Perseus Digital Library," with Jeffrey A. Rydberg-Cox, Robert F. Chavez, David A. Smith, Anne Mahoney Ariadne 25 (2000). <http://www.ariadne.ac.uk/issue25/rydberg-cox/>
- 55) "The Case of Plataia: the Start of a World War and an End of History" in *War and democracy: a comparative study of the Korean War and the Peloponnesian War* (New York 2000), David R. McGann and Barry S. Strauss, editors.

- 56) "Commercial Digital Libraries and the Academic Community: How New Firms Might Develop New Relationships between 'Publisher' and Higher Education," *D-Lib Magazine*, 7.1 (2001).
<http://www.dlib.org/dlib/january01/crane/01crane.html>
- 57) "Drudgery and Deep Thought: Designing Digital Libraries for the Humanities," with members of the Perseus group. *Communications of the ACM*, May 2001. <http://www.perseus.tufts.edu/Articles/cacm2000.pdf>
- 58) "From Side-Line to Specialization: the Rise of Computational Humanities," proceedings of *Innovative Structures in Basic Research*, Conference of the Max Planck Society at Ringberg Castle, October 4 -7, 2000.
<http://xserve02.mpiwg-berlin.mpg.de/ringberg/Talks/crane/powerpoint/index.htm>
- 59) Crane, G., D.A. Smith, and C. Wulfman. *Building a Hypertextual Digital Library in the Humanities: A Case Study on London*. In *JDCL 2001: The First ACM+IEEE Joint Conference on Digital Libraries*. 2001. Roanoke, VA, USA: ACM Press. <http://hdl.handle.net/10427/57008>
- 60) "The Perseus Project and the Problems of Digital Humanities," *Standards und Methoden der Volltextdigitalisierung*, Trier, Germany, Mainz Academy (2002) 28-38.
- 61) "In a Digital World, no Book is an Island: Designing Electronic Primary Sources and Reference Works for the Humanities. *Creation, Use and Deployment of Digital Information*." L. Breure and A. Dillon, Lawrence Earlbaum Associates: 2005.
- 62) "Classics and the Computer: an End of the History," chapter in *Companion to Digital Humanities*, Susan Schreibman, Ray Siemens and John Unsworth, editors. Malden, Massachusetts: Blackwell Publishers, 2004, 46-55.
http://www.digitalhumanities.org/companion/view?docId=blackwell/9781405103213/9781405103213.xml&chunk.id=ss1-2-4&toc.depth=1&toc.id=ss1-2-4&brand=9781405103213_brand
- 63) "Cultural Heritage Digital Libraries: Needs and Components," *Proceedings of ECDL 2002, European Conference on Digital Libraries*, Rome, September 2002, 626-637. <http://hdl.handle.net/10427/57006>
- 64) "Editions and the Digital Library: Designing Editions that Talk to One Another," *Electronic Textual Editing collection* (co-sponsored by the Text Encoding Initiative and the MLA Committee on Scholarly Editions, to be published by the MLA in 2003), John Unsworth, Katherine O'Brien O'Keefe and Lou Burnard, co-editors.
- 65) "Integrating Harvesting into Digital Library Content," with Anne Mahoney and David Smith, *Proceedings of JCDL 2002 (ACM/IEEE Joint Conference on Digital Libraries)*. <http://hdl.handle.net/10427/57022>
- 66) "Emerging Language Technologies and the Rediscovery of the Past," with Kalina Bontcheva, forthcoming in the *Journal of Digital Libraries*
- 67) "Towards a Cultural Heritage Digital Library," *Joint Conference on Digital Libraries*, 2003, 75-86. <http://hdl.handle.net/10427/57009>

- 68) "Philology in an Electronic Age," forthcoming in a volume on the future of the Greek lexicon.
- 69) "Geo-referencing in Historical Collections," D-Lib Magazine, May 2004.
<http://www.dlib.org/dlib/may04/crane/05crane.html>
- 70) "History, Memory, Place and Technology: Plato's Phaedrus Online" in *Structures of Participation in Digital Culture* (2007), edited by Joe Karaganis and Natalie Jeremijenko
- 71) "Surrogates for Physical Artifacts: The 3D Vase Museum: a New Approach to Context in a Digital Library," with Horn-yeu Shiao, Robert J. K. Jacob, in *Joint Conference on Digital Libraries*, 2004
- 72) "Digital libraries settling the score: 10 years hence and 10 before: Digital libraries settling the score: 10 years hence and 10 before," panel with Ed Fox et al, at Joint Conference on Digital Libraries 2004.
- 73) "Finding a catalog: Generating analytical catalog records from well-structured digital texts," with David Mimno and Alison Jones, *Joint Conference on Digital Libraries*, 2005.
- 74) "No book is an island: designing electronic primary sources and reference works for the humanities," in H. van Oostendorp, Leen Breure, Andrew Dillon, eds, *Creation, Use, and Deployment of Digital Information*, (Erlbaum 2005) 11-26.
- 75) "Reading in the Age of Google: Contemplating the future with books that talk to one another," in *Humanities*, September/October 2005, Volume 26/Number 5. <http://www.neh.gov/news/humanities/2005-09/readingintheage.html>
- 76) "Hierarchical Catalog Records: Implementing a FRBR Catalog," with David Mimno and Alison Jones, D-Lib October 2005.
<http://www.dlib.org/dlib/october05/crane/10crane.html>
- 77) "The Perseus American Collection 1.0," technical report, with Alison Jones.
<http://hdl.handle.net/10427/42680>
- 78) D-Lib Magazine, March 2006, guest-editor.
<http://www.dlib.org/dlib/march06/03contents.html>
- 79) "What do you do with a million books?" D-Lib Magazine, March 2006.
<http://www.dlib.org/dlib/march06/crane/03crane.html>
- 80) "Text, Information, Knowledge and the Evolving Record of Humanity," with Alison Jones, D-Lib Magazine, March 2006.
<http://www.dlib.org/dlib/march06/jones/03jones.html>
- 81) "The Perseus Digital Library 19th-Century American Collection," in D-Lib Magazine, March 2006. <http://www.dlib.org/dlib/march06/03featured-collection.html>
- 82) "The Challenge of Virginia Banks: An Evaluation of Named Entity Analysis in a 19th-Century Newspaper Collection." In Proceedings of the 6th ACM/IEEE-CS joint conference on Digital libraries, Chapel Hill, North

- Carolina, June 2006 (nominated for the Vannevar Bush Award for Best Paper). <http://hdl.handle.net/10427/42691>
- 83) “Quantifying the Accuracy of Relational Statements in Wikipedia: A Methodology,” with Gabriel Weaver, Barbara Strickland and Alison Jones, In *Proceedings of the 6th ACM/IEEE-CS joint conference on Digital libraries*, Chapel Hill, North Carolina, June 2006,
- 84) “Beyond Digital Incunabula: Modeling the Next Generation of Digital Libraries,” in *Proceedings of the 10th European Conference on Advanced Technology for Digital Libraries* (September 2006).
<http://hdl.handle.net/10427/36131>
- 85) “The Design and Use of a Latin Dependency Treebank” with David Bamman, in *TLT 2006: Proceedings of the Fifth International Treebanks and Linguistic Theories Conference*, pages 67-78, Prague Czech Republic, (September 2006). <http://hdl.handle.net/10427/42684>
- 86) “Philology in an Electronic Age.” With David Bamman and Alison Babeu, Forthcoming in *Greek Lexicography after Liddell and Scott*, 2007.
<http://hdl.handle.net/10427/42688>
- 87) “ePhilology: When the Books Talk to Their Readers.” with David Bamman and Alison Babeu, *Blackwells Companion to Digital Literary Studies*, eds. Ray Siemens, Susan Schreibman (2007).
<http://hdl.handle.net/10427/36132>
- 88) “A New Generation of Textual Corpora: Mining Corpora from Very Large Collections.” With Gordon Stewart and Alison Babeu, in *JCDL '07: Proceedings of the 2007 conference on Digital Libraries*, pp. 356-365 (New York, NY, USA: ACM, 2007). <http://hdl.handle.net/10427/14853>
- 89) With David Bamman and Alison Babeu. “eScience and the humanities.” *International Journal on Digital Libraries*, 7 (October 2007): 117-122.
<http://hdl.handle.net/10427/42690>
- 90) With Alison Babeu, David Bamman, Robert Kummer, Gabriel Weaver “Named Entity Identification and Cyberinfrastructure.” *Proceedings of the 11th European Conference on Research and Advanced Technology for Digital Libraries (ECDL 2007)*, pages 259-270.
<http://hdl.handle.net/10427/42681>
- 91) With David Bamman “The Latin Dependency Treebank in a Cultural Heritage Digital Library.” *Proceedings of the Workshop on Language Technology for Cultural Heritage Data (LaTeCH 2007)*. Prague, Czech Republic: Association for Computational Linguistics, June 2007, 33-40.
<http://www.aclweb.org/anthology-new/W07/W07-0905.pdf>
- 92) With Robert Chavez, Alison Jones, Adrian Packel, Anne Sauer, Gabriel Weaver. “Services Make The Repository.” *Journal of Digital Information*, 8 (2), 2007. <http://journals.tdl.org/jodi/article/view/195/179>
- 93) With David Bamman, Marco Passarotti, Savina Raynaud. “Guidelines for the Syntactic Annotation of Latin Treebanks.”
<http://hdl.handle.net/10427/42682>

- 94) eCulture, Cyberinfrastructure, Virtual Research Environments and the Cultural Heritage of the Maghreb. In *Implementing a Maghreb Digital Library for Education, Science & Culture, Morocco*: Co-sponsored by the Moroccan Ministry of Higher Education & the Fulbright Academy of Science & Technology, 2007-01. <http://hdl.handle.net/10427/42689>
- 95) Customizing Collections: Presentation given at Google in May 2007. <http://video.google.com/videoplay?docid=-2531449911006352868>
- 96) With David Bamman, Marco Passarotti. "A Case Study in Treebank Collaboration and Comparison: Accusativus cum Infinitivo and Subordination in Latin." In *Prague Bulletin of Mathematical Linguistics*, December 2008. <http://ufal.mff.cuni.cz/pbml/90/art-bamman-et-al.pdf>
- 97) With David Bamman. "The Logic and Discovery of Textual Allusion." In *LaTeCH (Language Technology for Cultural Heritage Data) 2008*, Marrakech Morocco : LREC 2008, 2008-06. <http://hdl.handle.net/10427/42685>
- 98) With David Bamman. "Building a Dynamic Lexicon from a Digital Library." In *Proceedings of the 8th ACM/IEEE-CS joint conference on Digital libraries*, pages 11-20, Pittsburgh, Pennsylvania: ACM Digital Library, 2008-06. <http://hdl.handle.net/10427/42686>
- 99) "Repositories, Cyberinfrastructure and the Humanities." In *EDUCAUSE Review Magazine*, 43 (6), 2008. <http://connect.educause.edu/Library/EDUCAUSE+Review/RepositoriesCyberinfrastr/47451>
- 100) With David Bamman, Francesco Mambriani. "An Ownership Model of Annotation: The Ancient Greek Dependency Treebank." In *TLT 2009: Proceedings of the Eighth International Workshop on Treebanks and Linguistic Theories Conference*, Milan Italy: Northern European Association for Language Technology (NEALT), 2009-11. <http://hdl.handle.net/10427/70399>
- 101) With Matteo Romanello, Federico Boschetti. "Citations in the Digital Library of Classics: Extracting Canonical References by Using Conditional Random Fields." In *NLPIR4DL: Workshop on Text and Citation Analysis for Scholarly Digital Libraries held at the ACL-IJCNLP 09*, Suntec Singapore: Association for Computational Linguistics, 2009-08. <http://aye.comp.nus.edu.sg/nlpir4dl/NLPIR4DL10.pdf>
- 102) With Andrea Ernst-Gerlach. "Identifying Quotations in Reference Works and Primary Materials." In *Proceedings of the 12th European Conference on Research and Advanced Technology for Digital Libraries (ECDL 2008)*, pages 78-87, Aarhus Denmark : Springer Verlag, 2008-09. <http://www.springerlink.com/content/7626500277722t16/>
- 103) With Federico Boschetti, Matteo Romanello, Alison Babeu, David Bamman. "Improving OCR Accuracy for Classical Critical Editions." In *Proceedings of the 13th European Conference on Research and Advanced*

- Technology for Digital Libraries (ECDL 2009)*, pages 156-167, Corfu Greece: Springer Verlag, 2009-09. <http://hdl.handle.net/10427/70402>
- 104) With Matteo Romanello, Federico Boschetti, Monica Berti, Alison Babeu. "Rethinking Critical Editions of Fragmentary Texts By Ontologies." In *ELPUB 2009: 13th International Conference on Electronic Publishing: Rethinking Electronic Publishing: Innovation in Communication Paradigms and Technologies*, pages 155-174, Milan, Italy: 2009-07. <http://hdl.handle.net/10427/70403>
- 105) With Matteo Romanello, Monica Berti, Alison Babeu. "When Printed Hypertexts Go Digital: an Index-driven Approach to the Automatic Markup of Text Quotations." In *Hypertext 2009: Proceedings of the 20th ACM Conference on Hypertext and Hypermedia*, pages 357-358, Torino, Italy: ACM Digital Library, 2009-07. <http://hdl.handle.net/10427/70404>
- 106) With Monica Berti, Matteo Romanello, Alison Babeu. "Collecting Fragmentary Authors in a Digital Library (Greek Fragmentary Historians)." In *Proceedings of the 9th ACM/IEEE-CS joint conference on Digital libraries*, pages 259-262, Austin, Texas : ACM Digital Library, 2009-06. <http://hdl.handle.net/10427/70401>
- 107) With David Bamman. "Structured Knowledge for Low-Resource Languages: The Latin and Ancient Greek Dependency Treebanks." In *Text Mining Services 2009*, Leipzig, Germany : Springer Verlag, 2009-03. <http://hdl.handle.net/10427/70400>
- 108) With Brent Seales, Melissa Terras. "Cyberinfrastructure for Classical Philology." In *Digital Humanities Quarterly*, 3 (1), 2009. <http://www.digitalhumanities.org/dhq/vol/003/1/000023.html>
- 109) With Alison Babeu, David Bamman, Thomas Breuel, Lisa Cerrato, Daniel Deckers, Anke Lüdeling, David Mimno, Rashmi Singhal, David Smith, Amir Zeldes. "Classics in the Million Book Library." In *Digital Humanities Quarterly*, 3 (1), 2009. <http://www.digitalhumanities.org/dhq/vol/003/1/000034.html>
- 110) With Christopher Blackwell. "Conclusion: Cyberinfrastructure, the Scaife Digital Library and Classics in a Digital Age." In *Digital Humanities Quarterly*, 3 (1), 2009. <http://www.digitalhumanities.org/dhq/vol/003/1/000035.html>
- 111) With David Bamman. "Computational Linguistics and Classical Lexicography." In *Digital Humanities Quarterly*, 3 (1), 2009. <http://www.digitalhumanities.org/dhq/vol/003/1/000033.html>
- 112) With Alison Babeu, David Bamman, Lisa Cerrato, Rashmi Singhal. "Tools for Thinking: ePhilology and Cyberinfrastructure." In *Working Together or Apart: Promoting the Next Generation of Digital Scholarship: Report of a Workshop Cosponsored by the Council on Library and Information Resources and The National Endowment for the Humanities*, Washington, D. C. United States: Co-Sponsored by: Council on Library and

- Information Resources National Endowment for the Humanities, 2009-03.
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- 113) “Thucydides and the Reinvention of the Edition.” forthcoming.
- 114) “Changing technologies and the reinvention of the past in the present.” To be published in *Leadership in Science and Technology: A Reference Handbook*.
- 115) “From Subjects to Citizens in a Global Republic of Letters,” in *Going Digital: Evolutionary and Revolutionary Aspects of Digitization*, ed. Karl Grandin, Nobel Symposia, pp. 246-265 (2011).
http://www.cfvh.kva.se/svenska/forskning/NS147Abstracts/NS147_Crane.pdf
- 116) “Give us editors! Re-inventing the edition and re-thinking the humanities.” In *Online Humanities Scholarship: The Shape of Things to Come*, University of Virginia : Mellon Foundation, 2010-03.
<http://cnx.org/content/m34316/latest/>
- 117) With David Bamman, “The Ancient Greek and Latin Dependency Treebanks,” in: Caroline Sporleder, Antal van den Bosch and Kalliopi Zervanou (eds.), *Language Technology for Cultural Heritage* (Springer, 2011).
<http://nlp.perseus.tufts.edu/docs/latech.pdf>
- 118) With David Bamman, “Measuring Historical Word Sense Variation,” in: *Proceedings of the 11th ACM/IEEE Joint Conference on Digital Libraries (JCDL 2011)*. <http://www.perseus.tufts.edu/publications/bamman-11.pdf>
- 119) With David Bamman, David Smith, “Extracting 2000 Years of Latin from a Million Book Library,” *Journal of Computing and Cultural Heritage*, forthcoming.
- 120) With David Bamman, Alison Babeu, “Transferring Structural Markup Across Translations Using Multilingual Alignment and Projection,” in: *Proceedings of the 10th ACM/IEEE Joint Conference on Digital Libraries (JCDL 2010)*. Winner, Best Paper Award.
<http://hdl.handle.net/10427/70398>

• Major Scholarly Works

The Perseus Greek and Latin XML Corpus (on-going): a major revision and expansion of the Greco-Roman sources within Perseus. This has included development of new techniques for acquiring and structuring textual sources at scale and has built upon support from Mellon, Google, the National Endowment for the Humanities, the Cantus Foundation and other sources. As of March 2011, the corpus contains 7.5 m words of Greek and 6.5 million words of Latin.

Editor, with Melissa Terras, *Digital Humanities Quarterly* (DHQ: Winter 2009): (<http://www.digitalhumanities.org/dhq/vol/3/1/>). This issue included 13 peer reviewed articles with contributions by 31 authors. I was lead or co-author on 3 of the articles. This collection not summarized the state of the

art in what is arguably the most advanced area of digital humanities but also laid out a road map for future development within the field.

Editor, *D-Lib Magazine* (March 2006), *A Special Issue on Digital Library Evolution*: <http://www.dlib.org/dlib/march06/03contents.html>. This collection was one of the first to probe the implications of very large digital collections for teaching and research in the humanities.

The Perseus 19th-Century American Collection (2006):

<http://www.perseus.tufts.edu/hopper/collection.jsp?collection=Perseus:collection:cwar> This included both a 55 million word corpus of XML encoded source materials on the US Civil War and other historical topics (<http://www.dlib.org/dlib/march06/03featured-collection.html>) as well as a 10,000 line named entity identification system optimized for historical materials (<http://www.perseus.tufts.edu/~gcrane/americancoll.12.2005.pdf>). This is corpus edition, combining editorial labor on more than 300 books and a suite of automated methods developed in conjunction with these materials.

Platform Independent Perseus (4 disk CD ROM set: Yale University Press, 2000).

Thucydides and the Ancient Simplicity: the Limits of Political Realism (University of California Press, 1998), 342 pages +index.

<http://publishing.cdlib.org/ucpressebooks/view?docId=ft767nb497;brand=eschol>

Perseus 1.0: Sources and Studies on Ancient Greece (Yale University Press, 1992)

Winner, Best Social Sciences Curriculum Innovation in History, 1992 EDUCOM Software award.

Finalist, 1992 Computerworld Smithsonian Awards

Finalist, 1992 in the International Interactive Multimedia Competition

The Blinded Eye: Thucydides and the New Written Word (Rowman and Littlefield, 1996) 258 pages + index.

Perseus 2.0: Sources and Studies on Ancient Greece (4 disk CD ROM set: Yale University Press, 1996).

The World Wide Web version of the Perseus Digital Library

(<http://www.perseus.tufts>) 1994-. [This is an on-going and expanding publication. As of fall 2005, traffic on this site had reached 15,000,0000 pages views to 500,000 users per month.]

Calypso: Backgrounds and Conventions of the Odyssey (Athenaeum, 1988).

R. B. Rutherford, rev., *Greece and Rome* 36 (1989) 230-231.

W. Moskalew, rev., *Classical World* 83 (1990) 529-530.

G. Binkhorst, rev., *Mnemosyne* 45 (1992) 403-405.

• Invited Papers and Presentations

1983: The Medieval Colloquium, Harvard University (October); The Johns Hopkins University (October); The University of Cincinnati (November); American Philological Convention (December)

- 1984: The Classical Association of New England (April); Aiken Computational Laboratory, Harvard University (May)
- 1985: The University of Chicago (May); UCLA (May); American Philological Convention (December).
- 1986: Xerox PARC (September); Countway Library, Harvard Medical School (October)
- 1987: Lehigh University (February); Princeton University (April); Universität Zürich (October); Hypertext '87, University of North Carolina at Chapel Hill (November); University of Texas at Austin (November); Society for Biblical Languages, Computer Activities Panel, Annual Convention (November); American Philological Association Convention (December)
- 1988: CALICO, Panel on Language Instruction (February); Portsmouth Abbey School (April); ASCENT, conference on Interdisciplinary Applications of Computers, Albany NY (April); IBM ACIS Conference (June); Apple University Consortium (July); International Interactive Computer Society, Boston Chapter (September); Enhancing Classical and Biblical Scholarship Through Computer Technology, Georgetown University (October); The Johns Hopkins University (November); Society for Biblical Languages, Annual Convention (November).
- 1989: Society for Scholarly Publishing, Washington DC (May); Macademia, Brown University (June); Smithsonian Institution (December)
- 1990: National Institute for Standards, Conference on Hypermedia (January); Office of Information Technology Lecture Series, Harvard University (April);
- “Hypermedia and the Redefinition of Education” Keynote Speaker, *Hypermedia Conference '90*, Ball State University, (October 1990)
- “The New Philology: the Dynamic Reconstruction of Antiquity,” in *New Ways of Recovering the Past*, an NEH sponsored seminar series at the Johns Hopkins Medical Institutions (April 1991).
- “The Archaeologist in an Electronic World,” Providence Chapter of the AIA, Brown University (October 1991).
- “Hypermedia and Education,” Keynote Speaker, University of Notre Dame, Information Technology Fair (January 1992).
- Introduction to exhibition, "The Social Context of Greek Art," Fogg Art Museum, Harvard University: Cambridge, MA (April 1992).
- Panelist, LITA (Library Information Test Association) Third National Conference: Denver, CO (September 1992).
- Respondent on a panel discussing the use of Perseus in the classroom, Conference on Language Instruction: Louisville, KY (April 1993).
- “Thucydides and the Invention of History,” Holy Cross College (November 1993).
- “Ancient Greek Society and Electronic Tools,” a two hour seminar at the Association of American Colleges Convention (January 1994).

- “Hypertext and the Humanities,” a forty minute talk at “Beyond Gutenberg: Hypertext and the Future of the Humanities,” a conference held at Yale University (May 1994).
- “Introduction to Perseus 2.0,” a two hour seminar at a conference of Canadian Learned Societies at Calgary (June 1994).
- Presenter and participant in an NSF sponsored workshop, *Digital Libraries in Science and Technology Studies* (October 1994).
- “Humanistic pedagogy and electronic technology,” Project Director Conference, Fund for the Improvement of Post-Secondary Education (October 1994).
- “Text and Transmission: Computing in the Humanities,” Baylor University (March 1995).
- “The Limits of Realpolitik”, New England Colloquium on Ancient History, Holy Cross College (April 1995).
- A Paper on Digital Libraries in the Humanities at the Dartmouth Institute of Advanced Graduate Studies Conference on Multimedia Computing (May 1995).
- A Paper on Plataia, at “the Peloponnesian and Korean Wars: a symposium offered at the Wilson Center” (June 1995).
- “Educating Citizens for Cyberspace,” at a Conference on Cyberspace at Wake Forest University (February 1996).
- “Digital Libraries in the Classics” at Digital Libraries ‘96 (March 1996).
- “Hannah Arendt and her Greeks,” Northwestern (April 1996).
- “Future of Humanities Computing,” Northwestern (April 1996).
- Respondent to a panel on Perseus and learning at the Kentucky Foreign Language Learning Conference (April 1996).
- Invited speaker at a two day workshop at Holy Cross on new standards for scholarly publication in an electronic environment.
- Presented “the Materiality of the Multimedia Text” at a plenary session of *Attending to Technology*, a conference held at the University of Maryland, College Park (November 1996).
- Organizer for a panel on “Electronic Tools for the History of Science,” at the November 1996 History of Science Society Meetings in Atlanta.
- “An Electronic LSJ 9 and the Future of Greek Lexicography,” presented at the 1996 APA/AIA convention at New York.
- “Literary Texts in an Electronic Environment,” Notre Dame, January 1997.
- “Thucydides and the Ideologies of Athenian Imperialism,” Holy Cross, March 1997.
- “Electronic Technology and the Work of Scholars,” Princeton, June 1997.
- “When books talk to one another: Intertextuality in an Electronic Environment,” *Scholarly Publication and Communication in an Electronic Environment* (University of Toronto, September 1997).

- “Historical Perspectives on the Book and Information Technology,” MIT, October 1997.
- “Beyond LSJ,” Thessaloniki, November 1997.
- Organized “Electronic Publication and the History of Science,” an NSF sponsored, two day workshop at Tufts University, December 1997.
- Presider, panel on ancient historiography, APA/AIA meetings, December 1997.
- “Electronic Publication and the Future of Scholarship,” University College London, February 1998.
- “The Philologist on Mars: Language and the world of modern media,” King’s Collge, London, February 1998.
- Keynote speaker at the New Tools for Teaching and Research workshop, a weeklong program for graduate students in the humanities from Princeton and Cornell, June 1998.
- "Digital Libraries and the Humanities," Penn (March 1999)
- "An Electronic Variorum Shakespeare," Shakespeare Association (April 1999)
- "Electronic Publication and the Future of Humanities Scholarship" Max Planck Society special conference at Elmau (June 1999).
- "Classics and Computing, Keynote Address," Conference on Classics and Technology, St. Anne's College, Oxford (July 1999).
- "The Electronic Bolles Archive," London (September 1999).
- "Perseus Project Overview," NSF Project Directors Meeting (October 1999).
- "A Digital Library for the Humanities," the University of Kentucky at Lexington (October 1999).
- "Searching and Analyzing Greek Text," SBL/AAR (Boston November 1999).
- "The Perseus Project," Boston Library Association (Northeastern, December 1999).
- "The New Variorum Shakespeare Series in an Electronic Environment," Modern Language Association (December 1999).
- "Men in the Ancient Greek World," Museum of Fine Arts Boston (January 2000).
- "Libraries, Digital and Print," Furman University (February 2000).
- "Information as Commodity," Mellon Seminar, Furman University (February 2000).
- "Electronic Technology and Shakespearean Scholarship," Penn, (February 2000).
- Keynote speaker at the Coalition for Networked Information, Spring meeting in Washington, DC, March 2000.
- Dartmouth College Library, May 2000
- Library of Congress, May 2000
- Dibner Institute, MIT, May 2000
- DLI2/JISC Join Meeting, Stratford on Avon, June 2000
- CNI/JISC Meeting, Stratford on Avon, June 2000
- Electronic Cultural Atlas Initiative, London, June 2000

Reflection and Intervention, a workshop at the Max Planck Institute for the History of Science, Berlin, June 2000.

Joint Korean/US Workshop on the development of Digital Libraries, sponsored by the National Science Foundation, San Diego, August 2000.

Ringberg Castle, Max Planck Society, Germany. October 2000.

University of Mannheim, Germany, October 2000.

Henderson Lecture, UNC Chapel Hill, October 2000.

University of Virginia, December 2000.

University of California, Irvine. February 2001

University of California, Los Angeles. February 2001

Plenary Speaker, NERCOMP, Worcester MA. March 2001.

ABCD-Technology in Education, Harvard School of Education (February 2002)

Plenary speaker, Five College Conference on Transforming Practice through Technology Umass, Amherst (March 2002)

Dibner Institute for the History of Science and Technology (March 2002)

Rolde Lecture., Brandeis (March 2002)

EC/NSF Project Conference, Rome, Italy (March 2002)

University College London, School of Library, Archive and Information Science (March 2002)

Holy Cross Thucydides (April 2002)

Portsmouth Abbey School, (April 2002)

MIT (April 2002)

University of Illinois, Graduate School of Library and Information Science, Champaign/Urbana (May 2002)

Dartmouth College (May 2002)

Cambridge, UK (July 2002)

Pisa, Italy, Delos Summer School (July 2002)

Rome, Italy, ECDL (September 2002)

National Academy of Sciences, Washington DC (January 2003)

Dibner Institute/MIT (March 2003)

Tex A&M "Humanities and Information Technology" (April 2003)

NSF Workshop to plan a post digital library research agenda (June 2003)

NSF Workshop on US/Indian Collaboration in Digital Library Research (June 2003)

IMLS Workshop on Digitization (Plenary address) (August 2003)

Keynote Address to the National Science Digital Library meeting (October 2003)
Hellenic Foundation (November 2003).
“Towards a Cultural Informatics,” Carnegie Mellon University (March 2004)
“Classics in a digital age,” University of Montreal (April 2004)
“Towards a Cultural Informatics: Defining a Space between Computer Science and the Humanities, UCLA (May 2004)
Plenary panel concluding Joint Conference on Digital Libraries (June 2004)
“Data Mining in classical studies,” Archaeological Institute of America, Annual Meeting (January 2005).
“Libraries in an age of Networked Information,” Furman College, (March 2005)
“Libraries in an age of Networked Information,” Mass Library Association, (May 2005)
“Reading in the age of Google,” National Endowment for the Humanities (June 2005)
“The whole world a library,” Case Western Reserve (October 2005)
January 2008, UIUC, Mellon Conference on High Performance Computing
February 2008, Princeton, Mellon IT retreat
March 2008, UKY, Workshop on Digital Humanities
April 2008, University of Cairo, Talk (in Arabic) on Digital Humanities
May 2009, Tufts, Two workshops on the study of Arabic
May 2008, Leipzig, eAqua meeting
June 2009, Tufts, Workshop on Wikipedia and university research
June 2009, Stockholm, Nobel Seminar on Mass Digitization
October 2009, Rome, Visiting Professor at the University of Rome Tor Vergata
December 2009, Pasadena, Liberty Fund seminar
December 2009, Washington DC, NEH, Invited Presentation
December 2009, NYC, Mellon Workshop on Arabic and Greek
German Archaeological Institute, Berlin, March 2010
Emory University, March 2010
University of Virginia, March 2010
Transnational Studies, Tufts University, March 2010
Thucydides conference, April 2010
Canadian Classical Association, Quebec City, May 2010
Electronic Cultural Atlas Initiative, Fudan University, Shanghai, May 2010

City University of Hong Kong, May 2010

Coalition for Networked Information, Edinburgh, July 2010

Humanities research and the practices of intelligence agencies, Council for Library and Information Resources, Washington, DC, July 2010

Digging into Data Workshop, Mount Allison University, New Brunswick, August 2010

Networks and Network Analysis for the Humanities, NEH Institute for Advanced Technology in the Digital Humanities UCLA, August 2010

Workshop on Computational Humanities, German Computer Science Society, Leipzig, September 2010

Leipzig, Department of Computer Science, December 2010

Workshop on Integrating Archaeological and Linguistic Data, Cologne, December 2010

• Grants and Joint Projects

May 1985, Grant from the Dean's fund for innovative teaching to support software development, \$6,000.

July 1985, Equipment grant from the Xerox University Grant Program worth approximately \$150,000, not including full service and support costs.

September 1985 - present, **Isocrates**, a joint study project on CD ROM technology with the *Institute for Research in Information and Scholarship at Brown*, approximately \$25,000 of equipment, along with hardware/software support.

January 1986, Mellon Grant for Colloquia on Computers and the Humanities, \$1,000.

June 1986, Director's Grant from the Annenberg/CPB Project, \$15,000.

1987-1988, Grant for Developmental Phase of **Perseus** from Annenberg/CPB, \$520,000.

1987-1988, A New Course in Intermediate Classical Greek, from the Consortium for Language Learning and Instruction, \$7,000.

1987-1989, **Prodicus**, a Parser for Classical Greek (with Janet Murray of the Athena Foreign Language Project), from the Consortium for Language Learning and Instruction, \$63,000.

1987, Equipment Grant from Apple Computer, \$30,000.

1988, Equipment Grant from Apple Computer, \$30,000.

1988, *Pandora*: the **TLG** on a Macintosh, an application development project supported by Apple Computer, \$15,000.

1988-1989, "**Perseus**, first Edition," supplementary funding for **Perseus** from Apple Computer, \$48,000.

- 1989-1993: “**Perseus**: Phase II,” from the Annenberg/CPB Project, \$1,985,000.
- 1989: \$15,000 from Apple Computer for designing the User Interface for Perseus
- 1989: *Pandora*: the **TLG** on a Macintosh, an application development project supported by Apple Computer, an additional \$10,000 from Appple Computer.
- 1990-91: “The **Perseus** Project at Harvard University: Evaluating the Use of Interactive Technology to Study Classical Greek Literature and Civilization”, \$9,800 from President Derek Bok.
- 1991: \$10,000 from Apple Computer to evaluate the impact of the Perseus system and interface on learning
- 1991: \$40,000 from the NEA to support intensive photography of vases at four American museums.
- 1991: \$27,500 from the NEA to support the development of illustrated articles on major Attic painters and styles.
- 1992: \$34,900: Grant from the NSF to plan for a database on ancient science.
- 1993: \$200,000: Grant from the Getty Grant Program for developing a Visual Database of Archaic and Classical Greek Sculpture.
- 1994: \$200,000 in outright funds and \$50,000 in matching funds offered as a two-year grant by the NEH for building a lexicographic database of ancient Greek and in particular for putting the Liddell Scott Jones Greek-English Lexicon on-line.
- 1994: \$500 from FRAC, Tufts University, for editorial work on *The Blinded Eye*.
- 1994: \$450,000 from the National Science Foundation as a three-year grant to expand Perseus to include Ancient Science.
- 1995: \$215,000 from the NEH’s new Teaching with Technology Program. We were among 12 of 300 applicants awarded support.
- 1996: \$50,000 from Mellon to continue our work on electronic Greek lexicography.
- 1996: \$3,000 from the Tufts Provost’s Office to work on the Marlowe WWW Edition.
- 1996: \$1,000 from FRAC to work on the Marlowe WWW Edition.
- 1997: \$240,000 from the Fund for the Improvement of Postsecondary Education.
- 1997: \$300,000 from NEH to begin work on a new database on Greek Language.
- 1997: \$30,000 from NSF for a Workshop on Electronic Publication in the History of Science.
- 1997: \$21,000 from the Berger Family Fund for a seminar for Librarians on SGML.
- 1998: \$5,000 from the Tufts Provost’s Office to work on an electronic New Testament and Josephus.
- 1998: \$27,000 from the Modern Language Association to develop a prototype for a new Electronic Variorum Shakespeare edition.
- 1999: \$41,000 from Berger Family Fund for the Electronic Bolles Archive.

- 1999: \$280,000 from the Max Planck Society for the development of Archimedes, a digital library on the history of mechanics.
- 1999: \$2,750,000 from the DLI-2 program.
- 2000: \$20,000 from the Tufts University Selective Excellence Program.
- 2000: \$100,000 from the Max Planck Society for the development of Archimedes, a digital library on the history of mechanics.
- 2001: co-Principal Investigator for *The Archimedes Project: Realizing the Vision of an Open Digital Research Library for the History of Mechanics* (\$450,000), a collaborative project of the NSF and its German equivalent, the DFG, which provided a matching \$450,000.
- 2002: \$75,000 from the NSF National Science Digital Library to plan an NSDL collection on the history of science.
- 2002: co-Principal Investigator on *Cultural Heritage Language Technologies* (\$500,000), a joint project of the NSF and EU (which provided a matching 550,000 Euros).
- 2002: \$22,000 from the NSF to pay for the US half of a joint EU/NSF working group on “Emerging Language Technologies and Rediscovery of Past.”
- 2002: \$250,000 from the NSDL for a services grant to provide automatic linking and authority list management services
- 2003: \$250,000 from the Institute for Museum and Library Services to develop, in conjunction with the University of Richmond, named entity services for Civil War Newspapers.
- 2005: \$50,000 from the Mellon Foundation: “What do you do with a million books?”
- 2006: \$430,000 from the Department of Education to develop a reading environment for Arabic.
- 2007: \$50,000 Mellon Foundation: Classics in the Million Book Library
- 2007: \$285,000 from NEH: The Dynamic Lexicon: Cyberinfrastructure and the Automatic Analysis of Historical Languages.
- 2007: \$471,000 from the Mellon Foundation: The CyberEdition Project: Workflow for Textual Data in Cyberinfrastructure
- 2007: \$350,000 from NEH and IMLS: Scalable Named Entity Identification in Classical Studies
- 2008: \$240,000 (with Imperial College London) from NEH and JISC for PhiloGrid.
- 2008: \$580,000 from the Cantus Foundation for Building a Greek Treebank.
- 2009: \$50,000 (with Humboldt University) from NEH/DFG workshops.
- 2009: \$300,000 (with UMass Amherst): Mining A Million Books
- 2009: \$20,000 from IMLS (with CLIR.org): An infrastructure for Classics
- 2009: \$100,000 from DiggingintoData.org (from NEH)
- 2010: \$40,000 Google Digital Humanities Award.
- 2010: \$175,000 from NEH for our part in the DFG/NEH Hellespont Project

- 2010: \$140,000 from the Mellon Foundation for a Greco-Roman project with Harvard University
- 2010: \$45,000 from NSF to host workshops in Germany and China
- 2010: \$75,000 from the Mellon Foundation to work on Project Bamboo
- 2011: \$50,000 Tufts Collaborates award: Visualizing the circulation of ideas across language, culture, and space.
- 2011: \$360,000 from IMLS (with JHU and UIUC): Libraries and Transformation of the Humanities.
- 2011: \$250,000 from NEH for summer institute on Working with Text in a Digital Age.

• **Professional Service**

- Member, Program Committee, *Hypertext '87*, University of North Carolina, November 1987.
- Member, Program Committee, *Teaching with Hypertext*, Bowdoin College, August 1988.
- Reviewer and Panelist, NEH, Reference Works, 1987-.
- Reviewer, for various classical journals.
- Member, Classical Association of New England, Committee for Classical Computing
- Member, Computer Activities Committee, American Philological Association, 1990-93
- Chair, Computer Activities Committee, American Philological Association, (1992-94).
- Member, Committee on Non-Print Publications, American Philological Association, (1992-4).
- Member, Committee on Intellectual Property, a task force established by the AAU.
- Member, Program Committee, EdMedia '96.
- Invited participant at an NSF workshop to plan what is now the National Science Digital Library, 1998.
- Panelist, NSF National Science Digital Library, 1999
- Member, A&S Computer Facilities and Usage Committee, 1993-2000, 2001-
- Co-Chair, A&S Computer Facilities and Usage Committee, 1997-2000
- A&S Representative on the university wide Information Technology Council (ITC), 1997-
- A&S Representative on the Academic Affairs Subcommittee of the ITC, 1997-
- Workshop participant, EU/NSF working group on Digital Libraries, San Cassiano, Italy, June 2001.
- Panelist, NSF ITR program, 2002
- Program Committee, Joint Conference on Digital Libraries, 2002

Program Committee, Joint Conference on Digital Libraries, 2002
 Program Committee, European Conference on Digital Libraries 2002
 Program Committee, European Conference on Digital Libraries 2003
 Steering Committee, Coalition for Networked Information, 2001-2003
 Co-Chair, EU/NSF Digital Library Working group on “Emerging Language Technologies and the Rediscovery of the Past.”

- **Languages**

Experience in speaking French, Italian and German. Reading knowledge of Latin and Greek, with some knowledge of Hebrew, Old French and Hittite. Two years Sumerian; three years of Akkadian.

- **Programming Languages**

Extensive experience with the C Programming language and the Unix operating system; substantial experience programming in *Lisp*.

- **Computer Experience**

Editor-in-Chief **Perseus Project**, 1988-

Co-Director **Perseus Project**, 1986-8

Coordinator for the Harvard Classics Computer Project, 1982-7.

- **Major Software Projects**

The Harvard Classics Computing Project Retrieval Package, distributed by special arrangement and as part of the *Isocrates Project*, sponsored by the *Institute for Research in Information and Scholarship (IRIS)* at Brown University (1986).

The HCCP Retrieval Package has been installed and used at Brown University, Harvard University, Johns Hopkins, Pomona College, the University of California at Berkeley, Santa Cruz, Santa Barbara (MS DOS version), and Los Angeles, the University of Chicago, the University of Cincinnati, and the University of Zurich. The HCCP Package is a scholarly tool that made the **TLG** available to many departments which could not, for various reasons, acquire a dedicated Ibycus System and that, over the course of 1982 to 1986, roughly doubled the number of scholars who could use the **TLG**.

When the **TLG** first began to distribute Greek texts, we at Harvard needed to develop software that would allow us to manage that information on the systems that were available to us. At the time, however, we had access to relatively little standard software for full text retrieval, and such software as was generally suitable (such as the Unix *Refer* Package) were designed for the English language. Basic computational techniques such as “hashing,” for example, worked well for relatively uninflected languages such as English and French, but were much less effective in Greek, where a single dictionary entry could generate close to a thousand different forms. Furthermore, the **TLG** itself contained many idiosyncracies (e.g. words broken by hyphenation, fragmentary words from papyrus fragments, complex systems of “chapter and verse” references) which compounded the linguistic problems. And, of course, we had at that time access to no ready-made tools for such basic problems as displaying or printing Greek.

Developed continuously over a period of four years from the summer of 1982 until the summer of 1986, the HCCP Package consisted of two parts. First, a series of programs were designed that built inverted indices for the tens of millions of words in the database and that could cope with the peculiarities of the material. Second, a series of programs were created that allowed users to retrieve and manipulate information from the database. These were created as Unix

utilities so that the advanced user could recombine them and thus had great flexibility in defining sophisticated operations on the material retrieved. “Shell scripts” were, however, also created that allowed the novice user to begin working the database immediately. Data extracted from the **TLG** could also be saved in various formats (including *MS Word* and *Nota Bene*) so that users could download the Greek to their own personal computers.

The final package consisted of approximately 23,000 lines of C programming code (ca. 350 single spaced pages). I was responsible for its overall design and implementation, and wrote approximately 20,000 lines of the code. The entire package was ported to various flavors of Berkeley 4.1-3 Unix and of AT&T’s System V, and has been used with hardware configurations such as AT&T Minicomputers, DEC VAX Computers, the IBM RT PC (under both AIX and Berkeley 4.2 Unix), the Pixel Supermicro, Pyramid Microcomputers, and Sun Workstations. Randall Smith of UC Santa Barbara ported segments of the package to MS DOS and thus allowed users to search the **TLG B Disk** with IBM AT PCs and compatibles.

Morpheus 1.0: a system for parsing Greek Morphology (Perseus Project 1988).

I began work on this system at Harvard in 1984-5, building prototypes in C and then in *Franz Lisp*. In the summer of 1985, Bernard Frischer of UCLA and I secured funding from our respective institutions to pay for subsequent work. Neel Smith, then a graduate student at Berkeley, used this funding to hire Joshua Kosman as a programmer. Together Smith and Kosman experimented with the problems of analyzing Greek Morphology and ultimately produced *Morpheus*, a basic parser for Attic Greek, and a library of routines, written in the C Programming Language, that handled basic features of Greek morphology.

In January of 1987, I assumed responsibility for creating a more elaborate morphological system, one that could handle a variety of dialects and that was sensitive to many of the irregularities of the language. Development work was carried out on an IBM PC RT until July of that year, at which time the work was transferred to the Macintosh. The current development environment is Lightspeed C.

Morpheus 1.0 is the first stage of a system that will be augmented over the course of the next several years. The current version can recognize many different peculiarities of Greek morphology (e.g Ionic but not Attic, arbitrary conglomerations of preverbs, etc.). *Morpheus* analyses words by matching stems and inflections, and then checking these against its knowledge of Greek morphology.

Morpheus is a basic tool, and will serve a variety of needs. We currently plan to use it in the following ways. 1) *Morpheus* can recognize that a form such as βιβλία is correct, while βίβλια is a mistake, and it can thus help introductory students learn the complexities of Greek morphology. 2) *Morpheus* will ultimately allow a scholar to search the **TLG** for all instances of a given word by simply requesting its dictionary form: thus, a scholar could retrieve the form ἦνεγκον by asking for φέρω, even though these forms do not at all resemble each other. 3) While analyzing a word, *Morpheus* recognizes many peculiarities of Greek morphology: in parsing the Laconian form nikāhaw, *Morpheus* recognizes that the intervocalic sigma has turned into a rough breathing. This fact can then be stored in a database, and the scholar could, for example, subsequently request to see “all Laconian inscriptions dated to the fifth century in which a rough breathing has replaced invocalic sigma.”

Three factors limit the current version of the system. First, though the database of Greek inflections is substantial (c. 10,000 at the most recent count), this database is a project in its own right and must itself be extended. Second, *Morpheus* cannot recognize that κλάζει, for example, is a verb (rather than a dative singular noun) unless it knows that “κλάζ-” is an v class verb stem, but it currently has only a limited database Greek stems. Thus, although *Morpheus* can analyze any form from the Hansen and Quinn introduction to Greek, and from sample passages of Homer, Herodotus, Theocritus and a Laconian inscription, its database of stems and irregular forms must be extended before it can be applied more generally. Third, the only way in which to expand and perfect *Morpheus* is to apply it to more and more Greek, and this in turn depends upon the expansion of its subsidiary databases.

Morpheus has evolved into a fairly substantial system: between 8,000 and 10,000 lines of C Programming Code (ca. 120 to 150 single spaced pages) have been added to the 2,000 lines of general routines and datastructures that were available in January 1987.