12-4547-cv

United States Court of Appeals

for the

Second Circuit

AUTHORS GUILD, INC., AUSTRALIAN SOCIETY OF AUTHORS LIMITED, UNION DES ECRIVAINES ET DES ECRIVAINS QUEBECOIS, ANGELO LOUKAKIS, ROXANA ROBINSON, ANDRE ROY, JAMES SHAPIRO, DANIELE SIMPSON, T.J. STILES, FAY WELDON, AUTHORS LEAGUE FUND, INC., AUTHORS' LICENSING AND COLLECTING SOCIETY, SVERIGES FORFATTARFORBUND, NORSK FAGLITTERAER FORFATTERO OG OVERSETTERFORENING, WRITERS' UNION OF CANADA, PAT CUMMINGS, ERIK GRUNDSTROM, HELGE RONNING, JACK R. SALAMANCA,

Plaintiffs-Appellants,

(For Continuation of Caption See Inside Cover)

ON APPEAL FROM THE UNITED STATES DISTRICT COURT
FOR THE SOUTHERN DISTRICT OF NEW YORK

JOINT DEFERRED APPENDIX
Volume 3 of 5 (Pages A-561 to A-837)

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Attorneys for Plaintiffs-Appellants

(For Continuation of Appearances See Inside Cover)

v.

HATHITRUST, CORNELL UNIVERSITY, MARY SUE COLEMAN, President, University of Michigan, MARK G. YUDOF, President, University of California, KEVIN REILLY, President, University of Wisconsin System, MICHAEL MCROBBIE, President, Indiana University,

Defendants-Appellees,

NATIONAL FEDERATION OF THE BLIND, GEORGINA KLEEGE, BLAIR SEIDLITZ, COURTNEY WHEELER,

Intervenor Defendants-Appellees.

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ALLISON M. SCOTT ROACH
JOSEPH M. BECK
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TABLE OF CONTENTS
(Public Version)

Page

Page

Page

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[1] The Transcript from the Deposition of T.J. Stiles, dated May 31, 2012 is attached as Exhibit 3 to the Rosenthal Declaration and the Transcript from the Deposition of Pat Cummings, dated May 22, 2012 is attached as Exhibit 1 to the Rosenthal Declaration.

Page

Page

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Attorneys for Defendants

UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF NEW YORK

DECLARATION OF NEIL R. SMALHEISER IN SUPPORT OF DEFENDANTS' MOTION FOR SUMMARY JUDGMENT

I, Neil R. Smalheiser, pursuant to 28 U.S.C. § 1746, hereby declare as follows:

1. Since August, 1996, I have been a faculty member in the Department of Psychiatry, University of Illinois at Chicago, in which I teach courses and conduct research on neuroscience and information science. Currently I am Associate Professor with Tenure. I submit this declaration in support of the defendant libraries' (the "Libraries") motion for summary judgment. Unless otherwise noted, I make this declaration based upon my own personal knowledge.

2. I received a Bachelor of Arts degree in Mathematics from the University of Iowa in 1974 and received my MD-PhD in Medicine and Neuroscience from the Albert Einstein College of Medicine in 1982.

3. I have worked in the field of text mining since 1991. "Text mining" is the use of technology to identify and extract new pieces of information from the enormous amount of knowledge available in large bodies of text. While text generally is written for people to read, text mining does not involve reading the text; instead, it uses text in digital form as data to be analyzed and processed through algorithms, which are sets of instructions or rules applied—usually by a computer—to compute a result.

4. Text mining can be applied to many different types of uses, such as retrieving and classifying documents; identifying new, interesting or particularly controversial findings; or identifying new emerging trends. In different contexts, the techniques of text-mining can be put to a variety of uses, including identifying influential experts (thought leaders) in a particular subject, predicting civil unrest in third world countries, or tracking the emergence of infectious disease outbreaks or terrorist cells.

5. A simple example of these many uses of text mining is as follows: Assume a historian discovers an unpublished manuscript of a play written in absurdist style—he suspects that it may have been written by Edward Albee or Harold Pinter. A text mining approach to this question might be tackled by collecting all of the known works of Edward Albee digitally and tabulating all of the words and phrases and punctuation marks used therein. Besides counting their individual frequencies, they can also be classified in different aggregate ways—e.g., counting the frequencies of proper names, active verbs, mentions of geographical locations, or calculating the average difficulty of the text in terms of the grade level required to understand it. This creates an overall profile of Edward Albee, and the same can be done for the known works of Harold Pinter. The profile of the unpublished manuscript is compared to the profiles of Edward Albee and Harold Pinter—if it is very similar to Albee and not to Pinter, this would

provide evidence that Albee is the likely author. If not very similar to either, this would suggest that some other author entirely may be responsible for writing it.

6. In fact, I understand that a professor at Vassar College, Donald Wayne Foster, used a form of text mining to identify Joe Klein as the writer of "Primary Colors," a thinly veiled exposé of President Clinton's 1992 run to the presidency which was originally published anonymously.

7. As I will discuss in more detail below, my personal experience in text mining has mostly been in the biomedical field. However, text mining processes and methods could be employed to conduct research over digital textual material of virtually any subject matter to discover new relationships, trends, correlations, and other information that may not be recognized through manually reading the texts, or that may only become apparent upon analysis of such a vast dataset that it would be virtually impossible to realize through reading.

8. I have published more than 90 peer-reviewed publications, of which more than 20 concern text mining. I have received five research grants for text mining from the National Institutes of Health (NIH) and private foundations. I have been a member of the program committee of many international conferences on medical informatics, am a member of eight journal editorial boards, and have been in leadership roles in prominent professional societies including the American Medical Informatics Association, Association for Computing Machinery, American Society of Information Science and Technology, and Society for Neuroscience. I have served on numerous grant review panels for NIH and the National Science Foundation (NSF). Attached as Exhibit A is a true and correct copy of my most recent curriculum vitae.

9. I have been asked by Kilpatrick Townsend & Stockton LLP to describe certain of the types of research that can be performed using a digital repository of works such as the repository of works offered by the Libraries through the HathiTrust Digital Library ("HDL").

10. In working on this assignment, to date, I have read and/or referred to the HathiTrust website at hathitrust.org.

The Emerging Field of Text Mining

11. The studies of one of my mentors, Dr. Don Swanson, during the period 1986 to 1993 were an early impetus for the development of automated text mining research processes and their application in the biomedical field. Dr. Swanson developed the technique of combining separate statements, found in separate works, together to form new statements that represent new scientific hypotheses.

12. For example, suppose the statement "A affects B" appears in one work, and the statement "B affects C" appears in another work. These two works may have been published in different years by different authors, in different medical sub-fields, and no one person may have even read both of them. However, juxtaposing and viewing both statements together, one may well infer the possibility that "A affects C," and that statement might be novel and potentially represent an important scientific discovery.

13. Dr. Swanson used this type of procedure to propose several significant medical hypotheses that were subsequently tested and confirmed clinically. For example, he proposed that fish oil supplementation would ameliorate Raynaud's syndrome[1] and that magnesium

[1] Swanson DR. Fish oil, Raynaud's syndrome, and undiscovered public knowledge. Perspect Biol Med. 1986 Autumn;30(1):7-18. Raynaud syndrome is a disorder, believed to be the result of decreases in the blood supply to parts of the body, that causes pain to and discoloration of the fingers, toes, and other areas. In some cases, the effects can be more significant, including necrosis and gangrene.

supplementation would ameliorate migraine headaches.[2]

14. Dr. Swanson's early studies employing this technique were carried out by hand, reading numerous articles and identifying patterns. While a researcher might be able to identify a few "A – B – C" correlations of this type manually by reading articles or other texts, Dr. Swanson and I quickly realized that through computers it is possible to search through thousands of articles to identify a large number of potentially new scientific hypotheses. Such automated search processes carry the hope of discovering correlations that individuals could not discover without computers.

15. Dr. Swanson and I created one such computer program together, called Arrowsmith,[3] which was designed to consider data in the bibliographic records for biomedical articles in medical databases (e.g. the PubMed database[4]), and which given a topic A, would identify topics C that were likely to be related to it, on the basis that both topic A and topic C have some relationship to common topic B. Arrowsmith used article bibliographic records to identify these "A – B – C" correlations where no articles explicitly mentioned A and C together.

16. Arrowsmith operated by first running searches for a topic A (e.g., Huntington's Disease) and retrieving the bibliographic records for all articles that discuss that topic. Next, it created a list of all of the terms included in the titles of those articles, and these terms were treated as the B items that had a relationship to topic A and might serve as a link to identifying

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[2] Swanson DR. Migraine and magnesium: eleven neglected connections. Perspect Biol Med. 1988 Summer;31(4):526-57.

[3] Swanson DR, Smalheiser NR. An interactive system for finding complementary literatures: a stimulus to scientific discovery. Artificial Intelligence 1997; 91: 183-203.

[4] The PubMed database consists of bibliographic data concerning ~20 million biomedical articles (including author names, title, abstract, affiliation, Medical Subject Headings, etc.). (No full-text articles are contained within the PubMed database.) Public users can query the PubMed database freely at http://pubmed.gov, or can apply for a relatively unrestricted license to download the entire database and manipulate the data locally on their own computers.

new topics C that had not previously been identified as related to topic A. The program ran searches for these B items and retrieved the bibliographic records for all the articles that discussed each one, creating a number of B article sets. Arrowsmith then created lists of all of the terms in the titles of each B article set, and the terms in these lists became the C items. To exclude from the results any A – C connections that may have been mentioned within the articles themselves, the program deleted from the lists of C items any terms that also appeared in the titles of the articles retrieved with the searches for topic A. Then the program ranked the remaining C items by potential relevance, according to the number of different B article sets in which they appeared (the more different B items that resulted in identifying a particular C item, the higher the possibility that the C item shared a relevant connection with the initial topic A). As a result, Arrowsmith provided a ranked list of items that may have been related to a topic but that were not identified in the existing medical literature as being related to that topic.

17. Using such a procedure, I identified a particular class of molecule called "microRNAs" as particularly likely to be involved in Huntington's Disease, and this prediction was confirmed by subsequent research in this field.

18. In the years since we first designed and implemented the "Arrowsmith" technology we have improved upon it and made modifications to it that have enabled new discoveries.

19. For example, during the time period 2008, I was engaged in writing a review article on microRNA regulation[5] and became interested in assessing whether "phosphorylation," a common modification of proteins that regulates their function, might be involved in regulating the formation of microRNAs. At the time of my analysis, many proteins had been reported to

[5] Smalheiser NR. Regulation of mammalian microRNA processing and function by cellular signaling and subcellular localization. Biochim Biophys Acta. 2008 Nov; 1779(11): 678-681.

interact with microRNAs, and in separate studies many proteins were known to be phosphorylated, but no one had investigated directly whether phosphorylation was responsible for regulating microRNAs.

20. I hypothesized that microRNAs (topic A) were meaningfully linked to phosphorylation (topic C), and using a modified version of the Arrowsmith program, I sought to make a list of proteins (the B items) that were candidates to mediate this connection. I used the Arrowsmith system to carry out two searches of the PubMed database (one on microRNAs and one on phosphorylation), to collect all of the titles in each set of articles, and to identify all of the words and phrases that were shared in common in both sets. The Arrowsmith system then filtered the list of words and phrases to identify the names of proteins, and then ranked the proteins according to their likely relevance (using an algorithm that we developed). The result was a shortlist of proteins that represented good candidates for further study of their possible action in regulating microRNAs by virtue of their phosphorylation.

21. The analyses described above could not reasonably be carried out manually. Not only is it necessary to use computers in order to conduct the searches of thousands of articles identified in each set (A and C), but we needed to carry out statistical modeling based on many searches in order to create a quantitative model that could predict which B items are most likely to be relevant.

22. Automated text mining continues to evolve at a remarkable pace. As more full-text becomes accessible and technology advances, increasingly these techniques focus on the full text of books and other texts, both in the general domain of digitized books (as illustrated by the example of assessing authorship of a manuscript in Paragraph 5, above) and in the biomedical domain.

The HathiTrust Digital Library and HathiTrust Research Center

23. As described in the examples above, because of the scale on which it is conducted and the complexity of the algorithms applied, a great deal of valuable text mining research cannot be carried out manually, but requires large databases of digital textual material that can be processed by computers.

24. I understand that the HDL is a shared database of over ten million digitized volumes, many of which had not previously existed in digital form, from the library collections of major research universities.

25. I believe that the HDL, as a large database of widely varied digital textual material, presents an opportunity for valuable educational and scholarly text-mining research to be conducted in a broad range of subjects and disciplines. Indeed, the same text mining techniques described above could be used to identify previously unknown trends, correlations, and relationships from information contained in the different books in the HDL.

26. I understand that the HathiTrust, through the HathiTrust Research Center, is exploring ways of enabling research similar to the text mining research conducted by myself and others as described above.

27. In my opinion, the HDL corpus is amenable to many of the same types of text mining analyses set out above. For example, scientists have developed algorithms and visualization tools designed to analyze digital text and detect "bursts," which are sudden increases in data, and in the context of text mining, refer to sudden increases in appearance or usage of a word or topic. These tools have been used by researchers in the science community to identify major research topics and to trace research topic trends.[6] Similar algorithms and tools

[6] Mane KK, Börner K. Mapping topics and topic bursts in PNAS. Proc Natl Acad Sci U S A. 2004 Apr 6;101 Suppl 1:5287-90.

could be applied to the corpus of the HDL, or perhaps to a topic- or time-period-based subset of that corpus that is particularly relevant to a researcher's goals, and used to identify "bursts" or other trends in usage of specified words over time (or between different categories of published works). This type of information could provide new insight valuable to the scholarly work done in variety of subject areas, including history, political science, linguistics, literature, anthropology, sociology, philosophy, and economics.

28. For instance, I understand based on my review of information available through the HathiTrust website that Ronnie Lipschutz, a professor in the Politics Department at the University of California, Santa Cruz, is currently utilizing software text analysis techniques to document the usage of terms and concepts related to human rights in Jane Austen's novels. A resource like the HDL could allow other researchers to conduct similar research with respect to 20th century literature or other types of works not believed to be in the public domain.

29. In summary, I believe that the range of text mining analyses that can be performed on the in-copyright material in the HDL corpus are substantial, and can be beneficial for the public good.

30. I have not provided testimony as an expert in any cases in the last four years.

31. My consulting rate to review material, participate in conference calls, and to prepare this declaration is $200/hour.

I declare under penalty of perjury under the laws of the United States that the foregoing is true and correct.

Date: June 26, 2012

Neil R. Smalheiser, MD, PhD

EXHIBIT A

CURRICULUM VITAE

NAME: Neil R. Smalheiser, MD, PhD

POSITION: Associate Professor (with tenure), Department of Psychiatry, as of 8/15/08; Adjunct Associate Professor, Department of Anatomy & Cell Biology; Member, Psychiatric Institute, University of Illinois at Chicago (9/96 - present).

ADDRESS:
Department of Psychiatry, UIC Psychiatric Institute M/C 912
1601 W. Taylor Street, room 525
Chicago, IL 60612
Phone: 312-413-4581; fax 312-413-4569; neils@uic.edu.

EDUCATION

University of Iowa, Iowa City, IA, (major: mathematics)	B. A. with Honors	1974
Albert Einstein College of Medicine, New York, NY (PhD in Neuroscience)	MD-PhD	1982

PREVIOUS EMPLOYMENT

University of Chicago, Chicago, IL, Department of Pediatrics: Intern, Postdoctoral Fellow, Instructor, and Assistant Professor 1982-1996.

University of Illinois at Chicago, Chicago, IL. Department of Psychiatry, Research Assistant Professor and Assistant Professor 1996-2008.

LICENSURE

Licensed physician, State of Illinois 1983 – present.

MEMBERSHIPS IN PROFESSIONAL ORGANIZATIONS

American Association for the Advancement of Science; American Medical Informatics Association; American Society for Information Science and Technology; Associate, Behavioral and Brain Sciences; Association for Computing Machinery; International Brain Research Organization; International Society for Neurochemistry; The RNA Society; Society for Neuroscience.

ACADEMIC HONORS AND FELLOWSHIPS

Ford Future Scientists of America Regional Award, 1968.
National Merit Finalist, 1971.
B. P. O. Elks Scholarship, 1971.
Honors Scholarships, University of Iowa, 1971-1973.
Phi Beta Kappa, 1972.
Graduation with Honors and with High Distinction, 1974.
NIH Medical Scientist Training Program Fellowship, 1974-1981.
NIH NRSA individual postdoctoral training award, 1984-1985.
Schweppe Foundation career development award, 1987-1990.
Andrew W. Mellon Foundation Fellow, 1988-1989.

1. TEACHING ACTIVITIES

- Instructor, Anatomy/Cell Biology 523, Biology of microRNAs and other Small RNAs, graduate seminar series, 2006, 2009, 2011. (created this course and taught solo).
- Instructor, Honors College core course 134, The Process of Scientific Discovery, 2010 (created this course and taught solo).
- Laboratory supervisor in Medical Neuroanatomy course for 1st year medical students 1997-2005.
- Lecturer in Neuroscience seminar series for psychiatry residents (have lectured on developmental neurobiology) 1999-present.
- Lecturer in Introduction to Biological Psychiatry course for PGY-1 psychiatry residents 2006-2010.
- Lecturer in Biological Sciences 582, graduate course on Experimental Methods in Modern Neuroscience. (have lectured on antibody methods, RNA interference, microRNAs and informatics) 2000-2004; 2008; 2010, 2011.
- Lecturer in Anatomy/Cell Biology 520, graduate course on Synaptic Structure and Function (2000, 2001).
- Lecturer in Biological Sciences 286, Biology of Brain (lectured on neurobiology of schizophrenia) (2001, 2002).
- Lecturer in GCLS 502, Molecular Biology, core course for UIC graduate students, lectured on microRNAs (2007-present).
- Lecturer in CS 582 - Information Retrieval, graduate course for UIC computer science students, January 2012.
- Lecturer in Graduate course at UIUC, Graduate School of Library and Information Science, “Literature Based Discovery”, October 2008.
- Organizer and lecturer in 3 day workshop at UIC, “Informatics Tools for Discovery and Collaboration,” 9/03, 9/04.

- Supervisor of undergraduate students in Biological Sciences 299 and 399 and volunteer research rotations. Logan Grewal, 1998. Mauli Verma, 1999. Rima Patel, 2002 (now a graduate student at UIC School of Public Health). Cristina Floreani, 2003 (now a MD-PhD student at UIC in Anatomy/Cell Biology). Atena Lodhi, 2004.
- Sponsor of high school students, Illinois Math and Science Academy, Student Inquiry and Research Program: Kinga Wilewska, 2004-2005. Kyle Schirmann, 2006-2007. Matthew Liu, 2007-2008.
- Mentor of Honors College undergraduate students, 2009-present.
- Sponsor of postdoctoral fellows:
  Marc Weeber, PhD, 2001-2002, now working in industry (Knewco, Inc.).
- Supervisor of graduate research assistants:
  Wei Zhou, 2002-2008. Wei obtained the best results (out of 30 entries nationwide) in the 2006 Genomics TREC competition. Now working at Ingenuity Systems, Inc.
  Wei Zhang, 2002-2006. Now working at Microsoft.
  Giovanni Lugli, PhD, 2001-present, Research Specialist in Health Sciences in my laboratory. With my support and encouragement, he is now enrolled in the Neuroscience Training Program as a PhD candidate at UIC, while continuing to work full-time in my laboratory. His thesis project concerns localization and processing of microRNA precursors within mature forebrain neurons; successfully defended his thesis on 5/19/11.

- Member of PhD thesis examination committee:
  Wei Zhou, 2008.
  James Gocel, 2009.
  Sachin Moonat, 2009.
- Professional mentoring:
  - Vetle Torvik, PhD, 2001-2008, was Research Assistant Professor in my laboratory. He is developing his own line of research concerned with analyses of collaboration behavior of MEDLINE authors, and was recipient of a Summer Faculty fellowship at the National Center for Supercomputing Applications, working under Noshir Contractor. Vetle is now Visiting Assistant Professor at UIUC. Using the Author-ity author name disambiguation dataset developed at UIC, he successfully wrote a NSF grant proposal to merge Author-ity with a disambiguated US Patent database (with Lee Fleming, Harvard Business School, dual PI), beginning in 2010.
  - Carole L. Palmer, PhD. Dr. Palmer is Associate Professor at UIUC. I invited her to undertake the study of information-seeking behavior in the Arrowsmith field testers, which has developed into a NSF-funded 3 year grant that she directed.
  - Ramin Homayouni, PhD. Dr. Homayouni is Associate Professor at University of Memphis, where he now chairs the Bioinformatics Program. I assisted his informatics efforts during the period when he was a subcontract PI on my Arrowsmith grant.

- Hong Yu, PhD. Dr. Yu is Assistant Professor at University of Wisconsin-Milwaukee. I have been assisting her in writing R01 grants (am listed as a subcontract PI on an upcoming grant of hers submitted in March 2007) and in finding biologists to collaborate with in the development of biology-oriented information retrieval systems.
- Larissa Nonn, PhD. Dr. Nonn is Assistant Professor at UIC who studies the involvement of microRNAs in prostate cancer. I contributed a letter of support for her successful NCI Transition Career Development Award (K22).

- Department of Anatomy & Cell Biology, member of PhD thesis advisory committee for Paul Kim.
- Faculty Medical advisor for William Ruzicka, Anita Seibold.
- Participant in Medical and MD-PhD admissions interviews.
- Member, MD/PhD Program training faculty, Neuroscience PhD program and Biomedical Neuroscience training program, and the Graduate College.
- Fellow, UIC Honors College, 2009-present.

CURRICULUM DESIGN ACTIVITIES

Advisory Committee Member for The Scientific Communications Initiative, 2006-2009. This is a NSF-funded curriculum grant in bioinformatics centered at the Graduate School of Library and Information Science at University of Illinois Urbana-Champaign. PIs are Carole Palmer and P. Bryan Heidorn. The Scientific Communications Initiative is developing a biological informatics masters degree program for Scientific Communication Specialists (SCS). Unlike most existing educational programs in bioinformatics, the SCS program takes a broad view of biology and informatics to train professionals to bridge arenas of information technology development in the biological sciences. Other advisory committee members are chosen nationally from a variety of institutions including the American Museum of Natural History, the Smithsonian Institution, the Missouri Botanical Garden, the Peabody Museum at Yale, and the Biomedical Informatics Research Network.

INVITED PRESENTATIONS

<u>Invited Presentations at International Conferences since 1996:</u>

- Lecturer, Green College Thematic Lecture Series on Creativity, University of British Columbia, Vancouver, Canada, January 2002. This is a University-wide event inviting distinguished visitors from around the world, and the lectures are collected and published in book form by University of Toronto Press.
- Organizer, workshop on Informatics, Intl. Congress for Schizophrenia Research, Colorado Springs, March 2003.
- Organizer, workshop on “Informatics for Neurochemists,” Intl. Soc. Neurochemistry meeting, Hong Kong, August 2003. (Meeting cancelled because of SARS epidemic.)

- Organizer, technology panel on MicroRNAs and RNA Interference in the Nervous System, Asian-Pacific Society for Neurochemistry Biennial Meeting, Hong Kong, February 2004.
- Speaker, panel on “Mining the Literature to Promote Biomedical Discoveries” at Medinfo [International Medical Informatics Association triennial meeting], San Francisco, September 2004.
- Plenary speaker and session chair, 8th International Conference on Discovery Science, Singapore, October 2005.
- Discussant, First Monday FM10 Openness Conference, Chicago, May 2006.
- Speaker, Workshop on Scholarly Databases & Data Integration, Bloomington, IN, August 2006.
- Discussant, Pacific Symposium on Biocomputing, Maui, HI, January 2007.
- Speaker, T-FaNT 07 (Tokyo Forum on Advanced NLP and Text Mining), Tokyo, Japan, March 2007.
- Co-organizer, workshop on Fragile X protein/microRNA pathways in neurons, International Society for Neurochemistry biennial meeting, Cancun, August 2007 (meeting canceled due to Hurricane Dean).
- Chair and speaker, symposium on Non-coding RNAs and Synaptic Plasticity, International Society for Neurochemistry biennial meeting, Athens, Greece, August 2011.
- Speaker, International Congress of Human Genetics, Oct. 11 - 15, 2011, Montreal, session on "Functional genomics of long non-coding RNA in mammalian systems.”

Invited Presentations at National Conferences since 1996:

- Speaker, Society for Neuroscience Satellite Meeting on the Human Brain Project, November 2002.
- Organizer, panel session on Literature-Based Discovery, Am. Soc. For Information Science and Technology, Washington, DC, October 2003.
- Speaker, Short Course on Bioinformatics, Society for Neuroscience meeting, New Orleans, LA, November 2003.
- Speaker, symposium on RNA interference at the Am. Soc. Neurochemistry annual meeting, NYC, August 2004.
- Speaker, Cambridge Healthtech Institute conference on RNA Interference, San Francisco, June 2005.
- Speaker, panel on “"Enabling Biomedical Research with Literature Access and Mining: Progress and Challenges," American Medical Informatics Association annual meeting, Washington, DC, October 2005.
- Speaker, panel on “Literature-based Discovery,” American Medical Informatics Association annual Spring Congress, Phoenix, AZ, May 2006.
- Panelist, NIH Knowledge Environments for Biomedical Research (KEBR) Conference, Bethesda, Maryland, December 2006.

- Speaker, meeting on Unique Identifiers for Authors/Contributors sponsored by CrossRef, Washington, DC, February 2007.
- Speaker, Cambridge Healthtech Institute conference on microRNA in Human Disease & Development, Boston, MA, March 2007.
- Speaker, PubMed Plus conference, sponsored by the Society for Neuroscience, St. Louis, MO, June 2007.
- Participant, NSF Biomedical Informatics workshop, Portland, OR, December 2007.
- Speaker, Symposium on Computational Approaches to Creativity in Science, Stanford, CA, March 2008.
- Participant, IARPA M^2 Conference on Technical Discovery, Extraction and Organization, Northbrook, IL, October 2008.
- Speaker, Cambridge Healthtech Institute conference on microRNA in Human Disease & Development, Boston, MA, March 2009.
- Speaker, panel: Beyond (simple) Reading: Strategies, Discoveries, and Collaborations, Am. Soc. For Information Science and Technology, Vancouver, BC, November 2009.
- Participant, "Integrating, Representing, and Reasoning over Human Knowledge: A Computational Grand Challenge for the 21st Century," August 7-14, 2010, at the Snowbird Ski and Summer Resort Conference Center, hosted by the Institute for Computing in Science (ICiS).

Invited Presentations within UIC since 1996:

- Dept. of Anatomy & Cell Biology, 1996.
- College of Medicine, MD-PhD Training Program, March 2005.
- Honors 201 Seminar, "Networks in Life Sciences," March 2006.
- Autism Study Group, February 2009.
- Panel on Open Access journals, Daley Library, October 2009.
- Frontiers of GI Research Conference, February 2012.

Invited Presentations at other Universities since 1996:

- Northwestern Univ. Medical School, 1996.
- Univ. Florida at Gainesville Dept. of Pharmacology, 1996.
- Chicago Institute for Neurosurgery and Neuroresearch, 1996.
- Second Intl. Oxidative Stress and Brain Damage Symposium, 1997.
- UIUC, Graduate Library and Information Sciences School, 2001.
- UIUC, Beckman Institute, 2002.
- Stanford Univ., Division of Child and Adolescent Psychiatry, November 2002.
- Tennessee Bioinformatics Consortium, March 2004.
- Michigan State Univ., Dept. of Pharmacology and Toxicology, September 2004.
- RIKEN Biological Resource Center, Tsukuba, Japan, October 2005.

- University of Wisconsin-Milwaukee, Medical Informatics program, February 2007.
- Chicago Biomedical Consortium, RNA Symposium, June 2007.
- Chicagoland RNA Club, Feburary 2008.
- Merck Serono (Research Knowledge Management), Geneva, Switzerland and Darmstadt, Germany, June 2008.
- Harvard Business School, Science-Based Business Initiative Seminar, February 2009.

2. RESEARCH ACTIVITIES

RESEARCH GRANTS
(active grants are indicated in bold)

- NIH NRSA individual postdoctoral training award, National Eye Institute, 1984-1985. Smalheiser, N. R., PI.
- Block Fund grant (University of Chicago), 1986. Smalheiser, N. R., PI.
- Brain Research Foundation grants, 1984-1987, 1993. Smalheiser, N. R., PI.
- Dysautonomia Foundation grants, 1986-1988. Smalheiser, N. R., PI.
- March of Dimes Basil O'Connor Starter Scholar award, 1987-1989. Smalheiser, N. R., PI.
- March of Dimes, "Laminin as a molecular and genetic probe of neurites," 1990-1992. Smalheiser, N. R., PI.
- NIH FIRST award, "Molecular and cellular basis of cranin's action on neural cells," 1988-1992. Smalheiser, N. R., PI.
- Scottish Rite Schizophrenia Research Program, "Heat shock protein 60 serum antibodies in schizophrenia," 1993-1994. Smalheiser, N. R., PI.
- NIH Program Project, "Biological basis of mental retardation," National Institute for Child Health and Human Development, 1992-1995. Schwartz, N. B., PI (I was Project P.I. of Project #2).
- Office of Naval Research, "ARROWSMITH Analysis of Biomedical Innovation and Discovery," 1999-2000 ($50,000 direct costs). We were specifically invited to write this application by the ONR. Smalheiser, N. R., PI.
- NIH R03, "Circulating Reelin and Psychosis Vulnerability," National Institute of Mental Health; 9/00-8/02. ($50,000 direct costs per year for 2 years). Smalheiser, N. R., PI.
- National Alliance for Autism Research, "Circulating Reelin and Autism Spectrum Disorder," 7/01-6/03 ($45,000 direct costs per year for 2 years). Smalheiser, N. R., PI.
- NIH R01, "Arrowsmith Data Mining Techniques in Neuro-Informatics," 6/01-5/07. Human Brain Project grant, co-funded by NLM and NIMH. Funded on the first submission. (This is a large grant representing a multi-instititutional consortium of six

sites, of which UIC is the home site. The overall budget is $500,000 direct costs per year for five years.) Smalheiser, N. R., PI.

- NIH R21, "RNAi-Mediated Gene Suppression in the Adult Mammalian CNS," National Institute of Drug Abuse; 9/30/02-9/30/05 ($100,000 direct costs per year for 2 years, currently on no-cost extension). This is a CEBRA grant funded by NIDA for "cutting-edge" innovative high-risk, high-payoff investigations. Funded on the first submission. Smalheiser, N. R., PI.
- NIH R21, "Author Name Disambiguation in Medline," National Library of Medicine; 1/15/05 – 6/30/08. $125,000 direct costs per year. Funded on the first submission. This is an effort to disambiguate authors (many different people may have the same last name, first initial). We will assign all articles in Medline in clusters according to the individuals who wrote them. Smalheiser, N. R., PI.
- NIH R01, "Function of FMRP in the mouse olfactory system," National Institute of Deafness and Other Communications Disorders; 07/01/03 – 06/30/08 Larson J., PI (N. Smalheiser, co-I, 10% effort). $175,000 direct costs per year for five years. This is a grant to study the role of the fragile X mental retardation protein in olfactory perception and memory.
- High Q Foundation, "Literature-Based Discovery Techniques to Identify Novel Huntington Disease Modifiers, Treatments or Targets", 8/15/07 – 2/14/08, Smalheiser, N. R., PI., $24,000 direct costs.
- NIH R21, "Validating microRNA Analysis in Human Postmortem Brain" (Y. Dwivedi, N. Smalheiser, dual PIs). National Institute of Mental Health, 7/1/07 – 6/30/09, $125,000 direct costs per year for 2 years requested. Funded on the first submission.
- Stanley Medical Research Institute proposal, "Prefrontal Cortex microRNAs in the Stanley Neuropathology Consortium," Smalheiser, N. R., PI, $75,000 per year for 2 years. 8/1/08-7/31/11.
- **NIH R01, LM010817-01, "Text Mining Pipeline to Accelerate Systematic Reviews in Evidence-Based Medicine," Smalheiser, N. R. and Cohen, A.M., dual PIs. This is a multi-institutional consortium encompassing 4 sites, of which UIC is home site. About $442,000 direct costs per year for 4 years. 9/30/2010 – 9/29/14. Funded on the first submission.**
- **Alzheimer's Association, IIRG-11-202853, "Plasma microRNAs as biomarkers for Alzheimer disease," Smalheiser, N. R., PI. 11/1/11 – 10/30/14. total $200,000 direct costs.**
- **Dept. of the Army – USAMRAA, "Cellular Basis for Learning Impairment in Fragile X Syndrome," Larson, J. R., PI. 04/01/2012 - 03/31/2015. $750,000 direct costs per year for 3 years. My role is co-Investigator.**
- **University of Illinois at Chicago CCTS-0512-03, " Plasma Small RNAs as Biomarkers for Pediatric Bipolar Disorder", Dwivedi, Y., PI. 5/1/12 – 4/30/14. $30,000 direct costs per year for two years. My role is co-PI.**

Pending Proposal:
NIH/NIA P01, Innovation in an Aging Society, Bruce Weinberg, PI.
Title: Innovation in an Aging Society
Agency: National Institute on Aging
Total Direct Cost Year 1: $998,013; Total Cost Year 1: 1,419,245; Total Direct Cost for 5 Years: 5,318,371; Total Cost for 5 Years: $7,686,358. Dates: 12/1/12 – 11/30/17
My role is co-Investigator.

About half-a-dozen proposals planned in the coming year:
NIH, Brain Research Foundation, Simons Foundation – grants on depression, autism, small RNAs, plasma microRNA biomarkers.

INVENTIONS AND COMMERCIALIZATION

Developer of two monoclonal antibodies against cranin (dystroglycan) that were licensed commercially by Chemicon.

Co-developer, with Don R. Swanson (Univ. of Chicago), of ARROWSMITH, a computer-assisted strategy for information retrieval.

Co-developer, with Vetle Torvik, of Author-ity, which utilizes a new monotone Boolean method of data mining. The Author-ity database is a resource that disambiguates author names for papers in MEDLINE. Licensed to NIH (NCBI) in 2009. Licensed to LnxResearch in 2009. Other licenses pending.

Co-developer, with Vetle Torvik, of ADAM, a database of abbreviations in Medline that includes both acronyms and non-acronyms.

Developer of WETLAB, an open source electronic notebook programmed in JAVA.

Co-developer, with Vetle Torvik, of Anne O'Tate, which facilitates summarization, drill-down and browsing of PubMed search results.

Co-developer, with Vetle Torvik, of a novel quantitative model to measure the type and amount of implicit information linking two sets of articles. Licensed to Merck Serono in 2008.

Press Coverage:
Profiled in *The Scientist* 12: 12-13, 1998.
Profiled in *Science* magazine 310: 1401, 2005.
Mentioned in an editorial in *Nature* magazine 440: 1090, 2006.
Genetic Engineering & Biotechnology News (http://www.genengnews.com/) rated the Arrowsmith Project website "Excellent" in their Best of the Web: Reference" list, December 2007.
Profiled/interviewed in *Biomedical Computation Review* 4: 16-27, 2008.

Mentioned in a news feature in *Nature* magazine 463: 416-418, 2010.
In addition, I have been interviewed as an expert source to comment on my own or others' work for various online news stories (e.g. *Nature*, Medicine Online, The Discovery Channel, *The Scientist*, *Biomedical Computation Review*, MyScienceWork, etc.)

PEER REVIEWED PUBLICATIONS (name is in bold if senior author)

A note on journals:
The publications span numerous specialties both within biomedical research and information sciences, and recording impact factor is misleading because different fields vary significantly in the impact factor of their leading journals. However, Journal of Biological Chemistry is the most important journal in the field of biochemistry; PNAS is one of the top 5 general-interest scientific journals; Artificial Intelligence is the leading journal in its field; Archives of General Psychiatry is the #2 journal in psychiatry; Trends in Neurosciences has the highest impact factor in neuroscience; Journal of the American Society for Information Science and Technology is the most prestigious journal in information science; JAMIA has the highest impact factor in medical informatics; The New England Journal of Medicine is the leading general-interest journal in medicine; PLOS Biology is the leading general-interest open access journal in biology; and Trends in Genetics is one of the top journals in genetics. Annual Review of Information Science and Technology is the most prestigious review journal in its field. Finally, note that the lab generally presents 2-4 abstracts at meetings each year; however, they are not listed in this curriculum vitae because they are not mature publications.

A note on author order:
We follow the convention of many biomedical laboratories, in which the person who acquires the primary data in a study and prepares the figures and tables is listed as first author. Often, but not always, this person is also the one who wrote the first draft of the paper. Other authors are listed in order of their relative contributions, except the PI who is generally listed last. This does not imply that the PI has a relatively minor role or is listed as a courtesy.

A note on open access:
Since the launching of PubMed Central, BioMed Central and Public Library of Science, my policy has been to publish articles in open access journals whenever possible.

1. Smalheiser, N. R. and Crain, S. M. (1978) Formation of functional retinotectal connections in co-cultures of fetal mouse explants. Brain Res. 148: 484-492.

2**. Smalheiser**, N. R., Crain, S. M., and Bornstein, M. B. (1981) Development of ganglion cells and their axons in organized cultures of fetal mouse retinal explants. Brain Res. 204: 159-178.

3**. Smalheiser**, N. R., Peterson, E. R., and Crain, S. M. (1981) Neurites from mouse retina and dorsal root ganglion explants show specific behavior within co-cultured tectum or spinal cord. Brain Res. 208: 499-505.

4**. Smalheiser**, N. R., Peterson, E. R., and Crain, S. M. (1981) Specific neurite pathways and arborizations formed by fetal mouse dorsal root ganglion cells within organized spinal cord explants in culture: a peroxidase labeling study. Dev. Brain Res. 2: 383-396.

5**. Smalheiser**, N. R. (1982) Positional specificity tests in co-cultures of retinal and tectal explants. Brain Res. 213: 493-499.

6. **Smalheiser**, N. R., Crain, S. M., and Reid, L. M. (1984) Laminin as a substrate for retinal axons in vitro. Dev. Brain Res. 12: 136-140.

7**. Smalheiser**, N. R. and Crain, S. M. (1984) Radiosensitivity and differentiation of retinal ganglion cells within fetal mouse explants in vitro. Dev. Brain Res. 13: 159-163.

8**. Smalheiser**, N. R. and Crain, S. M. (1984) The possible role of "sibling neurite bias" in the coordination of neurite elongation, branching, and survival. J. Neurobiol. 15: 517-529.

9**. Smalheiser**, N. R. and Schwartz, N. B. (1987) Cranin: a laminin binding protein of cell membranes. Proc. Natl. Acad. Sci. USA 84: 6457-6461.

10**. Smalheiser**, N. R. and Schwartz, N. B. (1987) Kinetic analysis of 'rapid onset' neurite formation in NG108-15 cells reveals a dual role for substratum-bound laminin. Dev. Brain Res. 34: 111-121.

11. Schwartz, N. B. and Smalheiser, N. R. (1989) Biosynthesis of glycosaminoglycans and proteoglycans. In: Neurobiology of Glycoconjugates, ed. R.U. and R.K. Margolis, Plenum Press, NY, pp. 151-186.

12**. Smalheiser**, N. R. (1989) Morphologic plasticity of rapid-onset neurites in NG108-15 cells stimulated by substratum-bound laminin. Dev. Brain Res. 45: 39-47.

13**. Smalheiser**, N. R. (1989) Analysis of slow-onset neurite formation in NG108-15 cells: implications for a unified model of neurite elongation. Dev. Brain Res. 45: 49-57.

14**. Smalheiser**, N. R. (1989) Altered cell shapes in mouse 3T3 fibroblasts treated with 5'-deoxy, 5'-methyl thioadenosine: relation to morphogenesis of neural cells. Dev. Brain Res. 45: 59-67.

15**. Smalheiser**, N. R. (1990) Neuronal growth cones: an extended view. Neuroscience 38: 1-11.

16**. Smalheiser**, N. R. (1990) Cell attachment and neurite stability in NG108-15 cells: effects of 5'-deoxy, 5'-methyl thioadenosine (MTA) compared with laminin, kinase inhibitor H-7, and Mn^{2+} ions. Dev. Brain Res. 51: 153-160.

17**. Smalheiser**, N. R. (1990) Cell attachment and neurite stability in NG108-15 cells: What is the role of microtubules? Dev. Brain Res. 58: 271-282.

18. **Smalheiser**, N. R. (1991) Role of laminin in stimulating rapid-onset neurites in NG108-15 cells: relative contribution of attachment and motility responses. Dev. Brain Res. 62: 81-89.

19. Pomeranz, H. D., Sherman, D. L., Smalheiser, N. R. and Gershon, M. D. (1991) Expression of the immunoreactivity of a neurally related cell surface laminin binding protein by neural crest-derived cells migrating to and within the gut: relationship to the formation of enteric ganglia. J. Comp. Neurol. 313: 625-642.

20. **Smalheiser**, N. R. and Collins, B. J. (1992) Characterization of a novel set of membrane antigens associated with axonal growth. I: Biochemical and functional studies. Dev. Brain Res. 69: 215-223.

21. **Smalheiser**, N. R. and Collins, B. J. (1992) Characterization of a novel set of membrane antigens associated with axonal growth. II: Expression in the chick central nervous system. Dev. Brain Res. 69: 225-231.

22. **Smalheiser**, N. R., Collins, B. J., and Sharma, S. C. (1992) Characterization of a novel set of membrane antigens associated with axonal growth. III: Expression in the regenerating goldfish optic nerve and tectum. Dev. Brain Res. 69: 277-282.

23. **Smalheiser**, N. R. and Rossulek, M. (1992) Morphometric and time lapse analyses of rapid-onset neurites stimulated by cycloheximide in NG108-15 cells. Int. J. Dev. Neurosci. 10: 467-472.

24. Landis, C. A., Collins, B. J., Cribbs, L. L., Sukhatme, V., Bergmann, B., Rechtschaffen, A., and **Smalheiser**, N. R. (1993) Expression of EGR-1 in the brain of sleep-deprived rats. Molec. Brain Res. 17: 300-306.

25. **Smalheiser**, N. R. (1993) Monensin-sensitive cellular events modulate neurite extension on laminin: an example of higher order regulation of cell motility. Cell Motil. Cytoskel. 24: 256-263.

26. **Smalheiser**, N. R. (1993) Acute neurite retraction elicited by diverse agents is prevented by genistein, a tyrosine kinase inhibitor. J. Neurochem. 61: 340-343.

27. **Smalheiser**, N. R. (1993) Cranin interacts specifically with the sulfatide-binding domain of laminin. J. Neurosci. Res. 36: 528-538.

28. **Smalheiser**, N. R. and Swanson, D. R. (1994) Assessing a gap in the biomedical literature: magnesium deficiency and neurologic disease. Neurosci. Res. Commun. 15: 1-9.

29. **Smalheiser,** N. R. and Ali, J. Y. (1994) Acute neurite retraction triggered by lysophosphatidic acid: timing of the inhibitory effects of genistein. Brain Res. 660: 309-318.

30**. Smalheiser**, N. R. (1994) Three good things about "bad" science. Perspect. Biol. Med. 38: 58-60.

31**. Smalheiser**, N. R., Dissanayake, S. and Kapil, A. (1995) Regulation of neurite outgrowth and retraction by phospholipase A_2-derived arachidonic acid and its metabolites. Brain Res. 721: 39-48, 1996.

32**. Smalheiser**, N. R. and Kim, E. (1995) Purification of cranin, a laminin binding protein. Identity to dystroglycan and reassessment of its carbohydrate moieties. J. Biol. Chem. 270: 15425-15433.

33**. Smalheiser**, N. R. (1996) Proteins in unexpected locations. Molec. Biol. Cell 7: 1003-1014.

34. Belkin, A. M. and **Smalheiser**, N. R. (1996) Localization of cranin (dystroglycan) at sites of cell-matrix and cell-cell contact: recruitment to focal adhesions is dependent upon extracellular ligands. Cell Adhes. Commun. 4: 281-296.

35**. Smalheiser**, N. R. (1996) The importance of parametric approaches in the analysis of cell behavior. Perspect. Biol. Med. 40: 60-65.

36**. Smalheiser**, N. R. and Swanson, D. R. (1996) Indomethacin and Alzheimer's disease. Neurology 46: 583.

37**. Smalheiser**, N. R. and Swanson, D. R. (1996) Linking estrogen to Alzheimer's disease: an informatics approach. Neurology 47: 809-810.

38. Swanson, D. R. and Smalheiser, N. R. (1997) An interactive system for finding complementary literatures: a stimulus to scientific discovery. Artif. Intell. 91: 183-203.

39. Peng, H. B., Ali, A. A., Daggett, D. F., Rauvala, H., Hassell, J. R., and **Smalheiser**, N. R. (1998) The relationship between perlecan and dystroglycan and its implication in the formation of the neuromuscular junction. Cell Adhes. Commun. 5: 475-489.

40**. Smalheiser**, N. R. and Swanson, D. R. (1998) Calcium-independent phospholipase A_2 and schizophrenia. Arch. Gen. Psychiat. 55: 752-753.

41**. Smalheiser**, N. R. and Swanson, D. R. (1998) Using ARROWSMITH: a computer-assisted approach to formulating and assessing scientific hypotheses. Computer Meth. Prog. Biomed. 57: 149-153.

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44**. Smalheiser**, N. R. (1998) Conserved amphipathic helices near the N-terminus and C-terminus of the alpha subunit of cranin (dystroglycan). Cell Adhes. Commun. 6: 401-404.

45. Swanson, D. R. and Smalheiser, N. R. (1999) Implicit text linkages between Medline records: using Arrowsmith as an aid to scientific discovery. Library Trends 48: 48-59.

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48**. Smalheiser**, N. R. and Collins, B. J. (2000) Coordinate enrichment of cranin (dystroglycan) subunits in synaptic membranes of sheep brain. Brain Res. 887: 469-471.

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51**. Smalheiser**, N. R. (2001) Predicting emerging technologies with the aid of text-based data mining: the micro approach. Technovation 21: 689-693.

52. Swanson, D. R., Smalheiser, N. R. and Bookstein, A. (2001) Information discovery from complementary literatures: categorizing viruses as potential weapons. J. Am. Soc. Information Sci. Technol.52: 797-812.

53. Kim, H.M., Qu, T., Kriho, V., Lacor, P., Smalheiser, N., Pappas, G. D., Guidotti, A., Costa, E. and Sugaya, K. (2002) Reelin function in neural stem cell biology. Proc. Natl. Acad. Sci. USA 99: 4020-4025.

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56. **Smalheiser**, N. R. (2003) Linking investigators: A centralised linking facility for data sharing and coordination of samples in banks. EMBO Reports 4: 108–110.

57. Dong, E., Caruncho, H., Liu, W.-S., Smalheiser, N. R., Grayson, D. R., Costa, E. and Guidotti, A. (2003) A reelin-integrin receptor interaction regulates Arc mRNA translation in synaptoneurosomes. Proc. Natl. Acad. Sci. USA 100: 5479-5484.

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61. **Smalheiser**, N. R. (2003) Bath toys: a source of gastrointestinal infection. New Engl J Med. 350: 521.

62. **Smalheiser**, N. R. and Torvik, V. I. (2004) A population-based statistical approach identifies parameters characteristic of human microRNA-mRNA interactions. BMC Bioinformatics 5:139.

63. Torvik, V. I., Weeber, M., Swanson, D. R. and **Smalheiser**, N. R. (2005) A probabilistic similiarity metric for Medline records: a model for author name disambiguation. J. Am. Soc. Information Sci. Technol. 56: 140-158.

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73. Zhou, W., Yu, C., Smalheiser, N., Torvik, V. and Hong, J. (2007) Knowledge-intensive Conceptual Retrieval and Passage Extraction of Biomedical Literature. Proc. 30th Ann. Intl. ACM SIGIR Conf. on Research & Development on Information Retrieval(SIGIR'07), pp. 655-662, 2007, Amsterdam, Netherlands (this conference was peer-reviewed and had overall 18% acceptance rate).

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88. **Smalheiser, N. R.**, Lugli, G., Rizavi, H., Torvik, V. I., Turecki, G. and Dwivedi, Y.(2012) MicroRNA Expression is Down-Regulated and Reorganized in Prefrontal Cortex of Depressed Suicide. PLoS ONE 7: e33201.

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94. **Smalheiser, N. R.** (2011) Literature-based discovery: beyond the ABCs. J. Am. Information Sci. Technol. 63: 218-224.

95. **Smalheiser, N. R**., Lugli, G., Thimmapuram, J., Cook, E. H. and Larson, J. (2011) Mitochondrial small RNAs that are up-regulated during olfactory discrimination training in mice. Mitochondrion 11: 994-995. doi:10.1016/j.mito.2011.08.014

96. **Smalheiser, N. R.** (2012). The search for endogenous siRNAs in the mammalian brain. Exp. Neurol 235: 455-463.

97. Lugli, G., Larson, J., Demars, M.P. and **Smalheiser, N. R**. (2012) Primary microRNA precursor transcripts are localized at postsynaptic densities in adult mouse forebrain. J. Neurochem., submitted.

98. Shu, L., Lin, C., Meng, W., Han, Y., Yu, C. T., Smalheiser, N. R. (2012) A framework for entity resolution with efficient blocking. 13th Intl. Conference on Information Reuse and Integration (IRI), in press.

Manuscripts in preparation:

Smalheiser, N. R. and Manev, H. (2011) A case of opportunistic discovery: analysis and an aesthetic principle.

Smalheiser, N. R., Larson, J. and Dwivedi, Y. (2011). Global shifts in microRNA expression in mammalian brain: methodology, mechanisms and biology.

Smalheiser, N. R. (2011). From genome browser to text browser: a public platform to support multi-scale text annotation, corpus sharing, information retrieval and knowledge discovery.

INVITED BOOK CHAPTERS

Smalheiser, N. R. (2005) The Arrowsmith project: 2005 status report. Discovery Science 2005. Lecture Notes in Artificial Intelligence vol. 3735, eds. A. Hoffmann, H. Motoda, and T. Scheffer, pp. 26-43, Springer-Verlag Press, Berlin. (Invited lecture at the

8th International Conference on Discovery Science / 16th International Conference on Algorithmic Learning Theory (Singapore, October 2005), published as a book chapter.)

Smalheiser, N.R. and Torvik, V. I. (2006) Complications in mammalian microRNA target prediction. In "MicroRNA: Protocols", ed. S.-Y. Ying, in the series "Methods in Molecular Biology', published by Humana Press, pp. 115-127.

Smalheiser, N. R. and Torvik, V. I. (2008) Models of microRNA-target coordination. In "microRNAs: From Basic Science to Disease Biology", ed. K. Appasani, Cambridge University Press, pp. 221-226.

Smalheiser, N. R. and Torvik, V. I. (2008). The place of literature based discovery in contemporary scientific practice. In "Literature-Based Discovery", ed. P. Bruza and M. Weeber, Springer Press, pp. 13-22.

Lugli, G. and **Smalheiser, N. R.** (2011). Preparing Synaptoneurosomes from Adult Mouse Forebrain. In MicroRNA: Protocols, part of the series Methods in Molecular Biology published by Humana Press. Submitted.

BOOKS AND JOURNAL SPECIAL ISSUES EDITED OR CO-EDITED

Tiffany C. Veinot, Ümit V. Çatalyürek, Gang Luo, Henrique Andrade, Neil R. Smalheiser (Eds.): ACM International Health Informatics Symposium, IHI 2010, Arlington, VA, USA, November 11 - 12, 2010, Proceedings. ACM 2010, ISBN 978-1-4503-0030-8.

Andrade, H. and Smalheiser, Neil R. (eds.): Journal of Medical Systems special issue, 2011.

SCIENTIFIC CORRESPONDENCE, EDITORIALS AND BOOK REVIEWS

Smalheiser, N. and Philipson, L.(1984) Alternative medicine. New Engl J Med 310: 791.
Smalheiser, N. (1984) More on the Medical College Admission Test. New Engl J Med 311(12): 803.
Smalheiser, N. (1988) Means to immortalize neural cells. Trends in Neurosci. 11: 307.
Smalheiser, N. R. (1990) Young scientists and the future. Science 249: 1486-1487.
Smalheiser, N. R. (1992) Teaching the Human Genome Project as a case study. J. College Science Teaching. 22: 7.
Smalheiser, N. R. (1994) review of Evolution without Selection: Form and Function by Autoevolution. Perspect. Biol. Med. 37: 312-313.
Smalheiser, N. R., De Groote, S. L. and Case, M. M. (2009) Open-access publishing: a new path. J. Biomed. Discovery Collaboration 4: 6.

JOURNAL COVERS

Cell Adhesion & Communication 5: (6), 1998.
Cerebral Cortex 9: (8), 1999.

PUBLIC WEB-DEPOSITED DATABASES

Smalheiser, N.R. and Torvik, V.I. (2004) A statistical approach predicts human microRNA targets. Genome Biol. 5: P4. http://genomebiology.com/2004/5/2/P4.

Zhou, W., Torvik, V. I. and **Smalheiser, N. R.** (2007) A database of terms in MEDLINE abstracts that co-occur frequently and share the same semantic category. Deposited on the Arrowsmith website.

PROJECT-RELATED PUBLICATIONS (supervised but was not a co-author)

Zhou, W. and Yu, C. (2005) Experiment report of TREC 2005 Genomics track ad hoc retrieval task. *The Fourteenth Text REtrieval Conference (TREC 2005) Proceedings*, Baltimore, MD. Technical report, http://ir.ohsu.edu/genomics/.

Swanson, D. R. (2006) Atrial fibrillation in athletes: Implicit literature-based connections suggest that overtraining and subsequent inflammation may be a contributory mechanism. Med. Hypotheses 66: 1085-1092.

Swanson, D. R. (2008) Running, esophageal acid reflux, and atrial fibrillation: a chain of events linked by evidence from separate medical literatures. Med. Hypotheses 71: 178-185.

Swanson, D. R. (2011) Literature-based resurrection of neglected medical discoveries. J. Biomed. Discovery Collab., in press.

TECHICAL REPORTS (not peer-reviewed)

Zhou, W., Yu, C., Torvik, V. I. and Smalheiser, N. R. (2006) A concept-based framework for passage retrieval in Genomics. *Fifteenth Text REtrieval Conference (TREC 2006) Proceedings*, Baltimore, WA.

Torvik, V. I., Smalheiser, N. R. and Weeber, M. (2007) A simple Perl tokenizer and stemmer for biomedical text. Posted on the Arrowsmith website to accompany the Biomedical Stemmer and Tokenizer tool.

FORMAL RESEARCH COLLABORATORS SINCE 1996 (shared active grants, were co-authors on published papers, or submitted research grant applications together)

Hong Kong University of Science and Technology, Department of Biology, Hong Kong
Benjamin Peng

Imperial College London, Department of Biological Sciences, London, UK
Anne Dell

Maryland Psychiatric Research Center, Baltimore, MD
Robert McMahon, William T. Carpenter

McGill University, Montreal, Canada
Gustavo Turecki

Ohio State University
Bruce Weinberg (plus multi-institutional collaborators on his program project)

Oregon Health and Science University, Portland, OR
Aaron Cohen, Marian McDonagh

Stanford University, Division of Child and Adolescent Psychiatry
Allan Reiss

State University of New York – Binghamton
Weiyi Meng

Univ. California-San Diego, National Center for Microscopy and Imaging Research
Maryann Martone, Guy Perkins, Diana Price

University "Campus Bio-Medico", Laboratory of Molecular Psychiatry, Rome, Italy
Antonio Persico, Flavio Keller

University of Chicago
Don Swanson, Abraham Bookstein, Yves Lussier, Andrey Rzhetsky

UIC, Department of Anatomy and Cell Biology
Orly Lazarov

UIC, Department of Biological Sciences
Arnold Kaplan, Thom Park

UIC, Department of Communication
Steve Jones

UIC, Department of Computer Science
Clement Yu, Bing Liu, Philip S. Yu

UIC, Department of Medicine
Larissa Nonn

UIC, Department of Pharmacy Administration
Bruce Lambert

UIC, Department of Psychiatry
Erminio Costa, John Davis, Yogesh Dwivedi, Robert Gibbons, Dennis Grayson, Alessandro Guidotti, John Larson, Hari Manev, Rudmila Manev, George Pappas, Kiminobu Sugaya, John Sweeney, Vetle Torvik, Tolga Uz.

UIC, Department of Psychology
Michael Ragozzino

Univ. IL-Urbana Champaign, Beckman Institute
Michael Gabriel

Univ. IL-Urbana Champaign, Graduate School of Library and Information Sciences
Chip Bruce, Carole Palmer, P. Bryan Heidorn

University of Indiana at Bloomington, School of Library & Information Science
Katy Borner, Ying Ding

University of Nottingham, UK
Clive Adams
University of Tennessee at Memphis, Center for Genomics and Neurobiology
Elissa Chesler (now at Oak Ridge Natl. Labs), Ramin Homayouni (now at U of Memphis), Rob W. Williams

University of Wisconsin at Milwaukee, Department of Health Sciences
Hong Yu

3. SERVICE ACTIVITIES

ADMINISTRATIVE ACTIVITIES

Reviewing for NIH Study Sections: (including neuroscience, drug abuse, bio-computing and informatics programs)

- BISTI National Centers for Excellence in Bio-Computing Special Emphasis Panels, 4/01, 9/01, 3/02.
- Neuroinformatics Special Emphasis Panel (Human Brain Project), 9/01, 12/04.

- National Library of Medicine Special Emphasis Panels 3/03, 4/04.
- Molecular, Cellular, and Developmental Neuroscience Integrated Review Group 7/04.
- NIDA CEBRA Award review 9/04; R21/33 review 5/09.
- Challenge grants 2009.
- NCRR Centers (COBRE and RCMI), 2009; P41, 2011.
- National Library of Medicine Technology Review Panel (ARRA contracts), 8/04.
- National Center for Complementary and Alternative Medicine (NCCAM), 2/12.
- NSF Smart Health & Well Being Type 1 EXP Panel in the Information & Intelligent Systems Division (IIS), 6/12.

Reviewing for other funding agencies:

- National Science Foundation (programs on Developmental & Cellular Neuroscience and Genes & Genome Systems).
- US Army Medical Research and Materiel Command.
- Department of Health, U. K.
- US-Israel Binational Science Foundation.
- Israel Science Foundation; Basic Science Foundation (Israel Academy of Sciences and Humanities).
- University of Liège, Belgium.
- Alzheimer's Association.
- Autism Speaks.
- Research Grants Council (RGC) of Hong Kong.
- Kentucky Commercialization Fund.
- Netherlands Genomics Initiative (Horizon programme).
- Research Fund "Medizinische Forschungsförderung Innsbruck" of Innsbruck Medical University.
- Parkinson's Disease Society (UK).
- Prinses Beatrix Fonds, The Netherlands.
- India Alliance (Wellcome).
- Medical Research Council (MRC), UK.
- Netherlands Organisation for Scientific Research (NWO).

Leadership positions in National Organizations:
American Medical Informatics Association:
Ethical, Legal & Social Issues Working Group Chair-Elect/Chair/Past Chair 2003-2007.
Knowledge Discovery and Data Mining Working Group Chair-Elect, will proceed as Elect/Chair/Past Chair 2008-2011.

Scientific Program Committee, 2012.

Society for Neuroscience:
Neuroinformatics Committee, member, 2009-2010.

Association for Computing Machinery (ACM):
Special Interest Group on Health Informatics (SIGHIT), Vice Chair, 2011-2013.
Member, ACM Health Informatics Task Force, 2011- present.

American Society for Information Science and Technology (ASIST):
Committee on Communications and Publications, Co-Chair, 2011-present.

Member of Program Committee for International Conferences:

- The 17th European Conference on Machine Learning and the 10th European Conference on Principles and Practice of Knowledge Discovery in Databases, September 18-22, 2006, Berlin, Germany.
- **B**io**C**re**A**t**I**v**E** - Critical Assessment for Information Extraction in Biology Conference, April 23-25, 2007, October 7-9, 2009; Madrid, Spain. 2011, TBA.
- Pacific Symposium for Biocomputing, Hawaii, HI, January 4-8, 2008.
- IDAMAP: Intelligent Data Analysis in bioMedicine And Pharmacology, Verona, Italy, 2009; Washington, DC, 2010; Pisa, Italy, 2012.
- Intelligent Systems for Molecular Biology Conference, Boston, July 9-12, 2010.
- ACM 1st International Conference on Health Informatics, Washington, DC, November 11-12, 2010. Program Committee co-Chair for Medicine.
- EFMI (European Federation for Medical Informatics) Special Topic Conference, Lasko, Slovenia, April 14-15, 2011.
- 7th Conference of the Austrian Computer Society (OCG) Workgroup: Human-Computer Interaction & Usability Engineering (HCI&UE), Graz, Austria. November 25-26, 2011.
- 1st International Conference on Health Information Science, Beijing, China, April 8-10, 2012.
- Medical Informatics Europe (MIE) Conference, Pisa, Italy, August 26-29, 2012.
- HI-BI-BI, International Symposium on Network Enabled Health Informatics, Bio-Medicine and Bioinformatics, Istanbul, Turkey, 27-28 August, 2012.
- Program co-Chair, The First International Workshop on the role of Semantic Web in Literature-Based Discovery, IEEE International Conference on Bioinformatics and Biomedicine (BIBM), Philadelphia, October 4-7, 2012.

Membership on Editorial Boards and Advisory Boards:

- Founding Editor-in-Chief, *Journal of Biomedical Discovery and Collaboration*. Published by BioMed Central, 2005-2008; hosted by University of Illinois, 2009-present. This peer reviewed, open access journal has the unique goal of bringing together three different groups of researchers in a common forum for the first time: namely, laboratory investigators, informatics researchers who make tools to enhance

discovery and collaboration, and social scientists who study scientific practice. The Editorial Board includes internationally known leaders in each of these 3 disciplinary areas, including deans, department chairmen, named professors, program/center directors, and a Nobel laureate.

- *Biology Direct*. Open access, BioMed Central. Editorial board member, 2005-present.
- *PLOS ONE*. Open access, Public Library of Science. Editorial board member, 2011-present.
- *Frontiers in Neuroinformatics,* Frontiers Research Foundation. Open access. Editorial board member, 2007- present.
- *Biomedical Informatics Insights*, Libertas Academica. Open access. 2007-present.
- *Health Information Science and Systems (HISS).* Biomed Central, open access. 2011-present.
- *Network Modeling and Analysis in Health Informatics and Bioinformatics*. Springer, 2012-present.
- *Health Systems*, Palgrave Macmillan, 2011-present.
- *Transactions of the IL State Academy of Science*. Editorial Board member and Chair, Science, Mathematics and Technology Education Division, 1994-1996.
- Member, Technical Advisory Board for "VIVO, Enabling National Networking of Scientists," 2009-present. This is a NIH-funded multi-institutional consortium (Mike Conlon, Univ. of Florida, PI) that will use Semantic Web-enabled technologies to facilitate querying and collaboration across disciplines and institutions.

Ad Hoc Reviewer:

- *Neuroscience and Psychiatry Journals*:

Behavioral and Brain Sciences; Brain Research; Cardiovascular Psychiatry and Neurology; Cellular and Molecular Neurobiology; The Cerebellum; Journal of Cerebral Blood Flow and Metabolism; Journal of Neurochemistry; Journal of Neuroscience; Journal of Neuroscience and Behavioral Health; Journal of Neuroscience Research; Molecular Psychiatry; Nature Reviews Neuroscience; Neuropharmacology; Neuroreport; Neuroscience; Neuroscience Research; Restorative Neurology & Neuroscience; Trends in Neurosciences.

- *Other Biomedical Journals:*

Acta Histochemica; Biochemical Journal; Biochemical Pharmacology; Biochimica et Biophysica Acta (BBA) – Gene Regulatory Mechanisms; BMC Developmental Biology; BMC Genomics; BMC Systems Biology, Briefings in Functional Genomics and Proteomics; Cell Research; Cellular & Molecular Biology Letters; Experimental Cell Research; International Journal of Biochemistry & Cell Biology; IUBMB Life; Journal of Biological Chemistry; Journal of Cell Biology; Journal of Clinical Investigation; Journal of Heredity; Life Sciences; Mechanisms of Aging and Development; Mobile Genetic Elements; Molecular Biology and Evolution; Nature Communications; Nature Structural and Molecular Biology; Nucleic Acids Research; Oncogene; PLOS Computational Biology; PLOS One; Proceedings of the National Academy of Sciences

USA; Proceedings of the Society of Experimental Biology and Medicine; RNA; Trends in Genetics; Wiley Interdisciplinary Reviews: RNA.

- *Informatics Journals:*

Annual Review of Information Science and Technology; Bioinformatics; BMC Bioinformatics; BMC Medical Informatics and Decision Making; Frontiers in Neuroinformatics; IEEE/ACM Transactions on Computational Biology and Bioinformatics; Information Processing & Management; Journal of the American Society of Information Science & Technology; Journal of Biomedical Informatics; Journal of Medical Internet Research; Neuroinformatics.

- *Multi-Disciplinary and Humanities Journals:*

Isis; Issues in Integrative Studies; Perspectives in Biology and Medicine; Synthese.

- *Conferences and Books:*

American Medical Informatics Association; Medinfo (International Medical Informatics Association); MIE (European Federation for Medical Informatics, EFMI); American Society for Information Science and Technology (ASIST). Blackwell Press (for a book on scientific discovery and one on exosome biology); EFMI Special Topic Conference.

Service for NIH Office of Neuroinformatics

Leader of Human Brain Project Working Group on Data Mining, 2005-present.

University of Illinois at Chicago Service Involvement:

- UIC Faculty Senate Academic Freedom and Tenure Committee, 2013.
- Ad hoc reviewer, Campus Research Board.
- Reader, Phi Beta Kappa nominations.
- Coordinator, multi-college UIC-UIUC Visiting Speaker Program, sponsored by the UIC Humanities Laboratory 2001-2002.
- Member, Dept. of Communication faculty search committee, 2002.
- Director, Corner for Collaborative Informatics, 2002 – present.
- Member, Chancellor's Committee on LBGT Issues, 2004-2005.
- Member, UIC Health Informatics Task Force, 2002- 2006. This is an inter-college committee that reported to Dean Tate.
- Member, Clinical and Translational Science Award (CTSA) Informatics Working Group, 2006-present. UIC received a CTSA planning grant in September 2006, and this multi-college working group was charged with planning and implementing informatics activities to support a CTSA grant application in January 2008 (which received funding).
- Affiliated member, Project Biocultures.
- Department of Psychiatry Review Committee for research involving human subjects, 2008, 2009.

Service for Industry

- Consultant to System Biosciences (SBI), 1616 North Shoreline Blvd., Mountain View, CA.

- Consultant to Acidophil, LLC, 2330 West Joppa Road, Suite 330, Lutherville, MD 21093.

COMMUNITY ACTIVITIES

Rider, Twin Cities-Chicago AIDS Ride, 1998.
Member, Lincoln Elementary School PTO Technology Committee (Oak Park, IL) 2000-2001.
Finisher, Chicago Marathon, 2004, 2006.
Invited speaker, Seminar for Scholars, Niles West High School, Niles, IL, March 2009.

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Attorneys for Defendants

UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF NEW YORK

THE AUTHORS GUILD, INC., ET AL., Plaintiffs, v. HATHITRUST, ET AL., Defendants.	Case No. 11 Civ. 6351 (HB)

DECLARATION OF FAITH C. HENSRUD IN SUPPORT OF DEFENDANTS' MOTION FOR SUMMARY JUDGMENT

I, Faith C. Hensrud, pursuant to 28 U.S.C. § 1746, hereby declare as follows:

1. I am the Provost and Vice Chancellor for Academic Affairs at the University of Wisconsin Superior, in Superior, Wisconsin. I submit this declaration in support of the defendant libraries' motion for summary judgment. Unless otherwise noted, I make this declaration based upon my own personal knowledge.

2. The University of Wisconsin Superior ("UW Superior") is part of the University of Wisconsin System. The University of Wisconsin System is comprised of 26 separate campuses, with one or more libraries located on each campus.

3. As Provost and Vice Chancellor for Academic Affairs, my responsibilities include oversight of the academic mission of UW Superior, as well as serving as the Chief Operating Officer of UW Superior. In my role as Provost, various faculty report to me, including the Director of UW Superior's campus library, known as the Jim Dan Hill Library (the "JDH Library").

4. The JDH Library's general collection contains approximately 200,000 volumes. I have been advised by the JDH Library's Director that this includes approximately 149,000 books and 1,038 periodical titles (all of the periodicals include multiple volumes). As of June 19, 2012, this entire collection, plus an undetermined number of other works, were housed in the basement of the JDH Library on the UW-Superior Campus.

5. As Provost of UW Superior, I am acutely aware of the fragility of the books in our collection. Books naturally deteriorate over time or are vulnerable to sudden loss as a result of fire, theft, vandalism and flood.

6. In yet another reminder of the threats faced by libraries, the JDH Library very recently suffered a significant loss – one that we are still attempting to quantify – as a result of flooding.

7. Just last week, on June 19 and 20, Superior, Wisconsin experienced extraordinarily heavy rains. According to published reports, the Duluth-Superior area received over nine inches of rain in less than 24 hours. Attached as **Exhibit A** is a true and correct copy

of a National Weather Service webpage reporting 8.15 inches of rain in Superior alone over this time period.

8. The heavy rains led to severe flooding throughout Superior and surrounding areas. The Governor of Wisconsin declared a state of emergency in the region. Attached as **Exhibit B** is a true and correct copy of a representative news article reporting this announcement.

9. UW Superior experienced flooding in sixteen separate buildings on its campus, and the total damage to UW Superior's campus is estimated to exceed $15 million.

10. This flooding took out electrical power and was so severe that building transformers and even emergency backup generators were rendered inoperable. We were unable to operate sump pumps in any of these buildings.

11. Many of UW Superior's buildings suffered some degree of water damage, but the JDH Library was hit particularly hard. More than **eight feet** of water flooded the lower level of the library, in which the library's general collection is stored.

12. Each and every work in the JDH Library's entire general collection – approximately 200,000 volumes of books and periodicals – was affected by the flood waters or moisture from the flood. The floodwaters reached as high as the sixth shelf of each seven-shelf bookcase. Attached as **Exhibits C through E** are true and correct copies of representative news articles reporting on the flooding

13. Below are some representative photographs of the damage to the works in the JDH Library:


QUIET
FLOOR


EMC

14. To deal with the flooding, UW-Superior retained a disaster recovery firm, BMS Cat, that specializes in water damage restoration due to floods, hurricanes and other disasters, with a particular focus on document recovery (*see* http://www.bmscat.com). They acted quickly

to stabilize the JDH Library collections on the first and second floors through the use of portable generators, dehumidification units, and air conditioners. They then began to pump the floodwater from the library and work to save as many books as possible. Removing the library's floodwater took over four days with pumps operating constantly and at full speed.

15. We are in the process of removing all books and other materials from the basement level of the library. With the assistance of the disaster recovery team, we have the ability to freeze and then freeze-dry a portion of the books that were not too damaged to be restored. Below is an image of just some of the works that have been boxed for shipping to the freeze-drying facility in Fort Worth, Texas, and which have already been frozen and are currently maintained in cold-storage facility in Superior, Wisconsin:

16. Many works have been damaged so severely that they cannot be saved through the freeze-drying process. The number of such works increases each day as we remove more of the flooded collection from the JDH Library.

17. It is currently unclear as to whether the damaged books can be preserved, and what condition they will be in even if they can be saved. Estimates as to the percentage of books that are damaged change every day as more books are removed from the Library. As of June 28, a very rough estimate is that at least 25-30% of the books in the collection, and approximately 70% of the periodicals, are unrecoverable, and this number is only likely to increase as we continue to assess the damage.

18. I have been advised by the Director of the JDH Library that the flooded collection included books on Native American and Wisconsin history and, although we do not yet know for certain, some of these may have been unique to UW Superior and not owned by other University of Wisconsin libraries. It is also possible that some percentage of the JDH Library's out-of-print works may also have been lost, but we have not yet been able to confirm this.

19. The inventory of total damage will not be complete for some time, until we can understand for certain what is recoverable and what has been permanently destroyed. For those works that cannot be preserved (and, as necessary, adequately restored), the JDH Library may have lost its print copy forever.

20. As I sign this declaration, the JDH Library building remains temporarily closed, and the fate of the flooded books remains uncertain. We have shipped 10 boxes of books to the freeze-drying facility in Texas as a "test pallet," which is expected to return to the UW Superior campus in approximately three weeks. At that time we will examine the books to determine the effectiveness of the restoration process, and determine whether or not to send the remainder of the frozen books to Texas for the same process.

21. This incident underscores the value of the steps libraries take to preserve books including, most notably, the extraordinarily valuable steps taken by the HathiTrust project to protect against the type of loss we suffered last week.

I declare under penalty of perjury under the laws of the United States that the foregoing is true and correct.

Date: June 28, 2012

Faith C. Hensrud

Faith C. Hensrud

EXHIBIT A

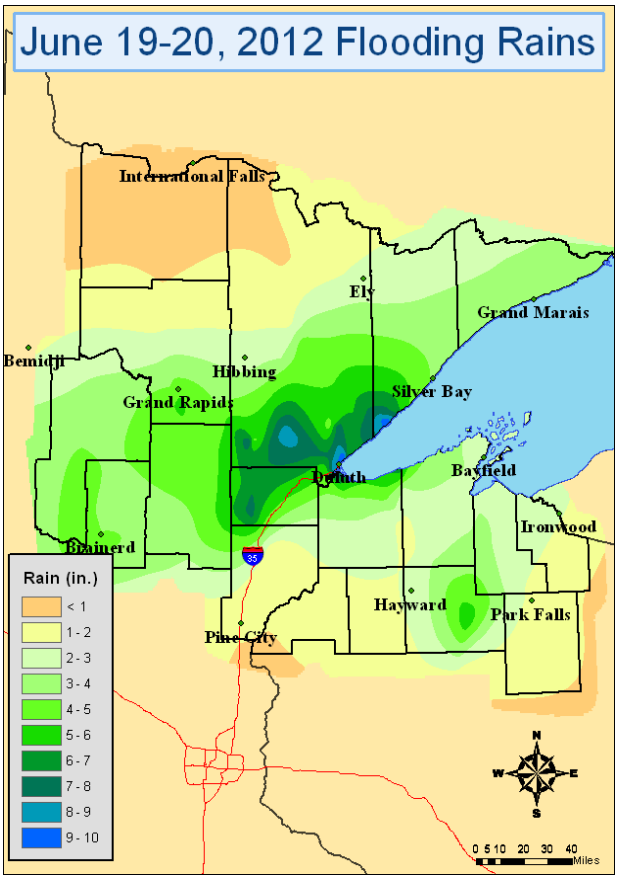
National Weather Service Weather Forecast Office

Duluth, MN

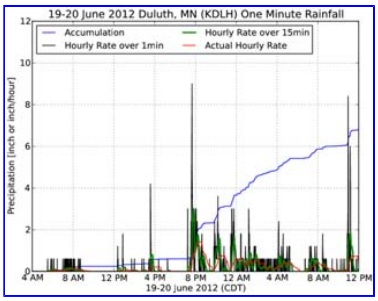
Navigation

Home Flood Products Photos Rain Reports

This map is a graphical representation of the precipitation reports that we received from off duty weather service employees, cooperative observers, and trained spotters. Both the map and the table of values below are preliminary values as of 3:30 pm Friday afternoon, and will be updated as needed.



The following graphic was created by Daryl Herzmann at Iowa State University/Iowa Environmental Mesonet.



Rain (in)	Location	ST	County
10.10	4 NE Duluth	MN	St. Louis
9.93	Two Harbors	MN	Lake
9.49	5 NE Duluth	MN	St. Louis
9.00	2 SW Duluth	MN	St. Louis
8.87	Alborn	MN	St. Louis
8.52	2 WSW Duluth	MN	St. Louis
8.15	Superior	WI	Doulgas
7.95	5 NW Two Harbors	MN	Lake
7.84	1 SE Floodwood	MN	St. Louis
7.58	Kettle River	MN	Carlton
7.41	4 E Island Lake	MN	St. Louis
7.31	Hermantown	MN	St. Louis
7.24	Duluth International Airport	MN	St. Louis
6.11	3 E Wright	MN	Carlton
6.00	9 WSW Port Wing	WI	Douglas
5.95	14 SSW Brimson	MN	St. Louis
5.75	Winter	WI	Sawyer
5.30	6 S Grand Rapids	MN	Itasca
5.15	Castle Danger	MN	Lake
5.05	Proctor	MN	St. Louis
5.03	5 S Pequot Lakes	MN	Crow Wing
4.82	5 NW Two Harbors	MN	Lake
4.78	Grand Rapids	MN	Itasca
4.70	7 SE Grand Rapids	MN	Itasca
4.68	Brainerd	MN	Crow Wing
4.68	3 E Floodwood	MN	St. Louis

National Weather Service
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EXHIBIT B

Northland's NewsCenter: News, Weather, Sports | NBC, CBS, MyNetworkTV, and The CW for Duluth MN / Superior WI

Print this article

Gov. Walker Declares State Emergency in Northwest Wisconsin

Originally printed at http://www.northlandsnewscenter.com/news/nw-wisconsin/Walker-Duffy-Kick-Off-Visit-to-Superior-160378945.html

By KBJR News 1
June 26, 2012

Superior, WI (Northlands NewsCenter)
-- Wisconsin Governor Scott Governor Walker has declared an emergency for most areas in Northwest Wisconsin. This includes the City of Superior, Douglas, Bayfield, and Ashland Counties.

Walker and U-S Congressman Sean Duffy were led by representatives from northwest Wisconsin through saw of the hardest hit homes, soaked and wrecked in last week's flood.

The governor saw only a fraction of the devastation but says it was enough to move him to declare a state of emergency.

Some basements in Superior saw feet of flood water after creeks, rivers, and streams overflowed their banks following Wednesday's torrential rains.

Tuesday, City and County officials outlined the extent of damages, and ultimately, what they believe they need from the federal government. They said they hoped to get federal assistance for the extensive damage suffered in the area, and they were hoping for help from the leaders.

"Seeing it is devastating. Most of the things in their basement are totally destroyed and a good chunk of their living room and add-on among others were destroyed. That's a huge disaster no matter what the declaration," said Wisconsin Governor Scott Walker Tuesday in Superior, after seeing the damage.

"It's catastrophic for all the families in the community that are experiencing water damage. You have memorabilia lost, plus this massive finical loss," said Wisconsin Congressman Sean Duffy.

Despite the extent of damage Governor Walker says federal funding is not a sure thing.

"There is a distinction at the federal level in terms of a presidential declaration, we don't appear to have that level in Wisconsin that they do in Minnesota with Duluth's," said Walker.

Wisconsin residents can improve the odds however, by documenting every inch of damage.

"There is an analysis that's done in regard to the dollar amount and the number of homes and they can commute whether the state or the feds can come in and help," said Duffy shortly after touring a flood damaged home.

"Pass that information on because the more the cities, the counties, and the state get that information, the more options we'll have available to us," said Walker to a group at the Salvation Army in Superior.

With some 540 basements sustaining significant damage every dollar will help.

"I encourage everyone that has experienced damage in this storm to make sure that officials know about that damage can be commuted in regard to FEMA," said Congressman Duffy.

Lawmakers are working with city and county officials in an attempt to get every possible type of disaster assistance. Both the Superior and Douglas County's website's have forms to document flooding damage.

People are also strongly encourages to take pictures to go with the documentation.

Zach Vavricka

Bio - Facebook - Twitter - E-Mail

EXHIBIT C

wdio.com

Superior WI
WDIO.com

UWS Flood Damage Estimated at $15 Million | News

Title (Max 100 Charaters)

UWS Flood Damage Estimated at $15 Million

Submitted by Jon Ellis (/profile/46665/jon-ellis) , WDIO Assistant News Director
Friday, June 22nd, 2012, 9:21pm

Topics: News (/news/news) , Schools (/news/schools) , Weather (/news/weather)

Topics: News (/news/news) , Schools (/news/schools) , Weather (/news/weather)

Top Superior Stories

Health

(/news/health/51025-walker-wis-wont-act-health-care-ruling)
Walker: Wis. Won't Act on Health Care Ruling (/news/health/51025-walker-wis-wont-act-health-care-ruling)

People

(/news/people/51023-new-vice-president-student-affairs-northland-college)
New Vice President of Student Affairs at ... (/news/people/51023-new-vice-president-student-affairs-northland-college)

News

(/news/nev
-uws-flood-damage-estimated-15-million
UWS Flood Damage Estimated
Million (/news/news/50956-uws-flood-d
estimated-15-million)

Upcoming Events near Superior

(/h/events?ct=d&evid=249560879)

Ladies of the Canyon: Songs of Joni Mitchell, Carole King,

Floodwaters rose eight feet in the basement of UW-Superior's Jim Dan Hill Library, destroying thousands of books. (Photo supplied by UWS)

Officials say the UWS campus was the hardest hit flooding area in Douglas County.

The University estimates damage at $15 million campus-wide, $3 to 5 million at the University Library alone. other buildings there was severe infrastructure damage, especially to the heating system.

"It was like watching a river coming in and you knew that there was nothing you could do," said Chancellor R

Most of the buildings are now open but the basements are closed off. The university says they plan to repair

Photos supplied by Sen. Bob Jauch

Mama Cass... (/h/events?

ct=d&evid=249511206)

Jun 29, 7:30PM

Lake Superior Big Top Chautauqua
(/h/events?ct=d&vid=244579343)

EXHIBIT D

Northland's NewsCenter: News, Weather, Sports | NBC, CBS, MyNetworkTV, and The CW for Duluth MN / Superior WI

Print this article

$15 Million in Flood Damages at UWS

Originally printed at http://www.northlandsnewscenter.com/news/local/15-million-in-Flood-Damages-at-UWS-160266365.html

By KBJR News 1
June 25, 2012

Superior, WI (Northland's NewsCenter) --- Officials at the University of Wisconsin-Superior say the damage estimates from last weeks storms may top $15,000,000. campus wide.

University employees and contractors continue to clean and repair campus buildings damaged by flooding. The Jim Dan Hill Library, Old Main and the heating plant sustained the worst damage, according to Chancellor Renee Wachter.

Some administrative and faculty offices have been moved to temporary locations. Anyone needing to reach campus administrators or faculty is encouraged to check the University website and use e-mial when possible.

Al Miller, the UWS media relations spokesperson, said most university buildings suffered some sort of water damage, mostly from water accumulating on lower levels.

BMS Cat, a catastrophe recovery company out of Illinios, has been working since Thursday to recover as many damaged books and documents as possible in the Library.

Wachter says campus officials are still assessing what must be done and prioritizing tasks, but hope to have repairs completed before fall semester begins.

In an e-mial sent to students today, Wachter said the residence halls are operational with summer camps underway and students living in the halls, and The Yellowjacket Union and Marcovich Wellness Center are both open for business.

Summer classes are running as scheduled

EXHIBIT E

Superior TELEGRAM

Published June 27, 2012, 07:00 AM

UWS recovers slowly from flooding

On the University of Wisconsin-Superior campus, books damaged by flooding at the Jim Dan Hill Library will get a cool make

By: **Superior Telegram**, Superior Telegram

On the University of Wisconsin-Superior campus, books damaged by flooding at the Jim Dan Hill Library w

They will be freeze-dried in freezer trucks and come back as good as new, according to UWS spokeswoma

Early estimates indicate that about 75 percent of the collection — 150,000 books and an unknown number drying process. The company contracted for the procedure is on retainer with the Library of Congress, Willi

The collection of books cannot be moved to a different section of the library. Due to the structure of the buil but the basement, Williams said.

Barstow Hall is up and running, although it is currently using a generator to deliver electricity. A new transfc back to that over the weekend, Williams said.

Old Main has been reopened but there is no access to the flood-damaged basement. Passers-by can expe out of Old Main and the library over the next few days, Williams said.

The UWS power plant remains shut down. The full extent of damage to the building is not known. The heat campus buildings. Flood water is still being cleaned out from the power plant, Williams said. But the bigges possible damage to the pipes that run from the plant to other campus buildings.

The current shut-down is not affecting the campus because hot water is being provided by backup boilers,

Tags: news, uws, education

UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF NEW YORK

THE AUTHORS GUILD, INC., et al.,	:	
Plaintiffs,	:	
- against -	:	Index No. 11 Civ. 6351 (HB)
HATHITRUST, et al.,	:	
Defendants.	:	

EXPERT REPORT OF PROFESSOR DANIEL GERVAIS

I, Daniel Gervais, declare the following:

A. INTRODUCTION AND BACKGROUND

1. I have been retained by Plaintiffs as an expert on issues of intellectual property, and, in particular, the collective licensing of copyrights and related rights. I am familiar with the facts set forth below.

2. I am the FedEx Research Professor of Law at Vanderbilt University Law School and Director of the Vanderbilt Intellectual Property Program. My educational background is set forth as part of my curriculum vitae, which is attached here to as Exhibit A. The materials that I reviewed in preparing this report, in addition to those cited herein, are listed on Exhibit B. Cases in which I have been retained and testified as an expert in the last four years are listed in Exhibit C. I am being compensated for my time at the rate of $400 per hour.

3. I am an expert in the field of intellectual property law. I have taught intellectual property law at various institutions in the U.S., Europe, and Canada. I have edited or contributed to 33 books related to intellectual property and have written on intellectual property law for journals around the world, including the *Journal of the Copyright Society of the USA* (my article

won the Charles B Seton Award in 2002-03), *Columbia Journal of Law & the Arts, Fordham Law Review, Cardozo Arts & Entertainment Law Journal, European Intellectual Property Review*, *American Journal of International Law*, *Chicago-Kent Law Review*, *Vanderbilt Journal of Technology and Entertainment Law* and the *Journal of Intellectual Property Law*. I have been cited in a decision by the Supreme Court of the United States (*Golan v. Holder*, 2011), and in decisions by many other courts. A recent article was republished in *Intellectual Property Law Review* (2011) as one of the best intellectual property articles of 2010.

4. One of my special interests is in "collective management" of copyright, meaning how aggregations of individual copyrights are legally protected, licensed, and marketed. In January 2011, I gave the keynote talk at an event on collective management of copyright organized by the Kernochan Center for Law, Media and the Arts at Columbia Law School. An updated version of my presentation was published under the title "The Landscape of Collective Management."[1] In addition, I authored the first chapter of "Collective Management of Copyright: Theory and Practice in the Digital Age," a 2010 book of which I served as the editor.

5. Prior to my teaching career, I served as Head of the Copyright Projects Section at the World Intellectual Property Organization ("WIPO"). In that capacity, I was asked to help establish new, or improve the functioning of existing, Collective Management Organizations ("CMOs") in various countries around the world.

6. I also served as Deputy Secretary General of the International Confederation of Societies of Authors and Composers, the largest association of copyright collectives in the world; and as Vice-President of Copyright Clearance Center, Inc. ("CCC"), based in Danvers, MA,

[1] 24:4 COLUM-VLA J. L & ARTS 423-449 (2011), *available at* http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1946997.

during which time I was also Deputy Chair of the International Federation of Reprographic Rights Organizations ("IFRRO"), a worldwide association of CMOs, specializing in reprography (photocopying and digital reproduction of printed content). I have spoken at over 130 academic, professional and other conferences and events, discussing various issues related to intellectual property, including copyright law of the United States, international copyright law and the TRIPS Agreement.

7. I also serve as Editor-in-Chief of the *Journal of World Intellectual Property,* published by Wiley-Blackwell, a division or affiliate of John Wiley & Sons (New York).

B. MY OPINION

8. It is my understanding that the Defendants, themselves or in conjunction with Google, Inc. ("Google"), have engaged in a project to scan books in their library collections and that the resulting shared digital repository contains approximately 10 million digital volumes, a significant number of which are protected by copyright. My further understanding is that neither Defendants nor Google have obtained the permission of authors or other copyright holders whose works have been scanned. As part of this project, which I will refer to below as the Google Library Project, Google has provided the Defendants with digital copies of Plaintiffs' works as well as works by others. In terms of how Defendants are using the digitized works, my understanding is that they have been or potentially may be made available to users of various university libraries and others in a number of different ways. In addition, my understanding is that if Defendants determine that a work is in the public domain in the United States, it may be made available to anyone in the United States. Moreover, pursuant to Defendants' currently suspended "Orphan Works Program," online access to works determined by Defendants to be "orphans" will made available to students, faculty and visitors of the university library holding

print copies of the book.

9. I have been asked my opinion whether (a) collective management systems provide a market-based mechanism by which libraries could compensate authors and rightsholders in exchange for a license to mass digitize and make various uses of copyrighted books in their collections, and (b) unrestricted and widespread conduct of the type described above will harm the development of such systems. As I discuss in greater detail below, in my opinion, the answer to each of these questions is the affirmative. In light of the fact that some of the Plaintiffs are foreign-based, I have been asked to consider the above questions from an international perspective.

10. I believe that if Defendants' digitization and use of copyrighted works is found not to be fair use or otherwise exempt from the rights of copyright owners set forth in the Copyright Act, the market will intervene and one or more CMOs will license the scanning, use and display of copyrighted works such as those copied as part of the Google Library Project. In fact, as discussed further below, the CCC and similar CMOs presently license the same general type of copyrighted content as the material copied through the Google Library Project.

11. Moreover, the type of copying involved in this case (mass digitization of library books) is already licensed in a number of other countries, in some cases involving agreements between Google and rightsholders. This point underscores the fact that there are alternatives to Defendants' (and Google's) unilateral decision to digitize copyrighted works.

12. Collective management is already used for many categories of content creators and for many types of copyright uses, including online uses. The value of copyright to authors and other rightsholders is often monetized not in individual transactions (authorizing a specific use of one or more specific works) but in licensing their rights in aggregated form, as part of a

"repertory" of works or rights. This allows markets for those repertoires of works and rights to form and to operate, allowing access to and uses of copyrighted material while compensating creators for their work. Collective licensing markets have often developed in response to new technologies and uses and would likely develop for digital uses of books unless widespread copying of entire books is permitted as a fair use, thus discouraging the development of such collective licenses.

13. I support the creation of digital repositories. I believe that making books and other copyrighted works available online is desirable both for authors and users. Technologically, it is likely that in the future most types of copyrighted content will be exploited online in one form or another. In fact, I believe that it is likely to become a major form of access to content. It may also facilitate access by people with disabilities.

14. The critical question here is whether the rights of authors and other copyright holders to license and/or be compensated for what is likely to become a major form of use of their works should be taken away by Defendants or by others, who claim a right to copy and use copyrighted works without permission from and without compensation to rightsholders.

15. A collective licensing system to license online uses of digitized books would compensate those who created and published the content and whose ability to earn a living often depends on being able to monetize online uses. The actual scope of the uses could be taken into account in determining appropriate rates and licensing terms could evolve to follow technological evolution and market changes. Collective management solutions can be applied to manage this type of licensing transaction, as the existence of successful similar collective systems demonstrates.

16. Conversely, allowing libraries to scan and make a variety of uses of print books still in copyright without compensation will significantly reduce the compensation available to authors and other copyright holders.

17. It is my opinion that a collective management system, probably one requiring that rightsholders opt their works in to participate in collective management, would likely develop here if some or all of the Defendants' uses are found not to be fair. Further, it is my opinion that, if conduct such as the Defendants' is permitted and becomes widespread, this can be expected to harm or impede the development of such a collective management model.

C. BASES FOR THE OPINION

(1) The Emergence and Basic Operations of Copyright Management Organizations

18. Collective management reportedly emerged around 1777 in France, when authors of theatrical plays formed an association to license their plays. In the United States, collective management developed as technology and markets made possible the widespread and dispersed infringement of copyrights. Indeed, broadcasters were considered "pirates" until their use of music was licensed by performing rights organizations ("PROs"). ASCAP, BMI and SESAC are the three PROs identified as such in 17 U.S.C. §101. The first PRO, the American Society of Composers and Publishers ("ASCAP"), was formed in 1914.

19. Collective management provides a number of advantages in licensing uses of copyrights. CMOs are a single-source for the licensing of specific uses, thereby eliminating the need for individually-negotiated licenses from each copyright owner. By reducing the transaction costs associated with enforcing, on the one hand, and licensing, on the other, they help convert widespread infringement into markets. This benefits both authors and users.

(2) Collective Management in the Copyright Act

20. The Copyright Act regulates CMOs in the United States in a variety of ways. For example, PROs are named in section 101. Section 115 establishes a compulsory license for making and distributing phonorecords. When Congress determines that certain uses are desirable but should be subject to a payment to authors, Congress may establish a compulsory license. By interpreting statutes, courts also play an important role in defining uses which should be subject to license.

21. The case of *Herbert v. Shanley Co.*, 242 U.S. 591 (1917), provides a good example of a situation in which infringement preceded the establishment of a working collective licensing system. In that case, the Supreme Court interpreted a provision of the Copyright Act of 1909, which prohibited any unauthorized public performance of music that was done "for profit." Writing for the Court, Justice Holmes broad defined what constitutes "for profit":

> The defendants' performances are . . . part of a total for which the public pays, and the fact that the price of the whole is attributed to a particular item which those present are expected to order, is not important. It is true that the music is not the sole object, but neither is the food, which probably could be got cheaper elsewhere. The object is a repast in surroundings that to people having limited powers of conversation or disliking the rival noise give a luxurious pleasure not to be had from eating a silent meal. If music did not pay it would be given up. If it pays it pays out of the public's pocket. Whether it pays or not the purpose of employing it is profit and that is enough.

22. The Court thus helped foster a market for public performance licenses that ASCAP and now the other PROs provide.

23. In the Digital Performance Right in Sound Recordings Act of 1995 (the "1995 Act"), Congress enacted a limited digital public performance right for sound recordings, contained in 17 U.S.C.§114. Congress then provided a compulsory license for non-interactive transmissions that do not enable a member of the public to receive, on request, a transmission of a particular sound recording or a program specially created for the recipient. 17 U.S.C.

§114(d)(2), (f)(2) (2009); *see also Bonneville Int'l Corp. v. Peters*, 347 F.3d 485, (3d Cir. 2003) (affirming Copyright Office's decision to require a compulsory license for simultaneous transmission of a radio station's broadcast through the Internet). The 1995 Act also tasked the U.S. Copyright Office to designate a CMO to administer the license, which it did, naming SoundExchange, Inc.[2]

24. The 1995 Act did not follow the same model that applies to ASCAP and BMI. Instead, Congress opted for a more specialized and modern form of regulation of collective management. Under this new regulatory model, the Act gave the Library of Congress (of which the Copyright Office forms a part) the authority to set rates and licensing conditions. The 1995 Act also set a distribution key according to which SoundExchange distributes 50% of the revenues to the sound recording copyright owners, 45% to the featured artists, and 5% to an independent administrator to distribute to non-featured artists and vocalists. Licensing rates are set by Copyright Royalty Judges appointed by the Librarian of Congress for six-year terms. 17 U.S.C. §§ 801-805.

(3) The Copyright Clearance Center

25. A different, voluntary model emerged when the CCC was formed in 1978 as a New York not-for-profit corporation in the wake of the effective date of the 1976 Copyright Act on January 1, 1978. Publishers and authors register their works with the CCC and set the fee for use of their works in CCC's several per-use license services. CCC also offers annual repertory licenses in both the business and academic markets. For the year ended June 30, 2011, CCC reported payments to right holders in excess of $171 million. *See* http://annualreport.copyright.com/management-summary-financial-data.

[2] *See* 17 U.S.C. § 114(g)(2); Notice of Designation As Collective Under Statutory License filed with the Licensing Division of the Copyright Office in accordance with Copyright Office regulation 270.5(c), 37 C.F.R. § 270.5(c).

26. CCC is a specific type of CMO, usually referred to as a Reprographic Rights Organization ("RRO"). The International Federation of RROs, which is a membership organization consisting of 81 members from around the world (including CCC), has been in existence since 1980.

27. RROs exchange repertoires, which means that an RRO in country A will allow an RRO in country B to license works belonging to authors and publishers in country A to users in country B, and vice versa. These agreements are usually referred to as Reciprocal Representation Agreements. See www.ifrro.org.

28. According to its website, CCC licenses business users, under one or more of its repertory or per-use licenses, the right to photocopy an article from a newspaper, magazine, book, journal, research report or other published document; e-mail an online article or PDF; post digital content on their corporate web sites, intranets and extranets; print out web-based and other digital content onto paper and overhead slides; republish content in a newsletter, book or journal; and scan printed content into digital form when an electronic version is not readily available. *See* www.copyright.com. For academic institutions, again under one or more of its repertory or per-use services, CCC licenses the right to photocopy material from books, newspapers, journals and other publications for use in coursepacks and classroom handouts; use and share information in library reserves, interlibrary loan and document delivery services; post and share content electronically in e-reserves, course management systems, e-coursepacks and other e-learning environments; distribute content via e-mail or post it to their intranets, Internet and extranet sites; and republish an article, book excerpt or other content in their own books, journals, newsletters and other materials. *Id.*

(4) Other Collective Management Organizations

29. Today, CMOs in the United States license: (a) musical works (primarily the three PROs and Harry Fox Agency which licenses the reproduction of musical works); (b) sound recordings and the artists' performances they contain (e.g., SoundExchange); and (c) photocopying and digital reprography (e.g., CCC), to name the most well-known organizations. In addition, a form of collective management is used to collect and distribute residuals to certain actors, directors and screenwriters by the audiovisual guilds. In fact, Google acquired a CMO called Rightsflow, Inc., in December 2011. Rightsflow pays "royalties […] to songwriters and publishers all around the world."[3]

30. CMOs typically operate as follows: Once established (sometimes an authorization is required to operate as a CMO, as was the case for SoundExchange), a CMO needs the authority to license a repertory of works, performances or recordings and/or to collect a license fee. The authority may be granted by law, as when a compulsory or statutory license is in place, or by contracts with individual right holders or other CMOs. With that authority, a CMO can license and/or collect fees on the basis of rates (also known as "tariffs"). Those rates may be set by a governmental authority such as by the legislative branch as in provided for in Section 115 of the Copyright Act or by the Judiciary Branch, such as the federal judges operating as rate courts under the ASCAP and BMI consent decrees.[4] At other times, the rates are set by rightholders, as is the case with CCC.

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[4] *See, e.g., United States v. Am. Soc'y of Composers, Authors and Publishers*, No. 41-1395, 2001 WL 1589999 (S.D.N.Y. June 11, 2001); Michael A. Einhorn, *Intellectual Property and Antitrust: Music Performing Rights in Broadcasting*, 24 COLUM.-VLA J.L. & ARTS 349, 361 (2001).

31. Having thus obtained the authority to license and/or collect fees, the CMO generally will proceed to sign agreements with users that provide for the collection of license fees and usage data. For example, radio stations (broadcasters) provide logs (often in digital form) of the recordings they used to the PROs in an agreed format. While a radio station may use computer logs to report the recordings used, for other types of users (hotels, bars, restaurants), it is difficult to require 100% reporting. Sometimes statistical surveys are used instead. For example, a number of (representative) users may be surveyed for a specific period of time, and the data thus gathered will then be extrapolated to the class of users concerned using statistical regressions and other similar models.

32. The CMO will process such data and apply them to distribute the funds to copyright holders.[5] Identification data (metadata) is generally used to match usage data reported by users or generated by the CMO to specific works, recordings or performances and the right holders therein.

33. I believe that if the Defendants' uses are not determined to be fair uses, the market will provide a collective licensing system for the types of uses that the Defendants have been making so that they would not have to negotiate a transactional license for each book or other work they wish to use. Congress may also help foster the development of this licensing system through new legislation. Such an approach would compensate those who created and published the content and whose ability to earn a living increasingly depends on monetizing online uses.

[5] Payment to foreign copyright holders often is done through local CMOs in each territory on the basis of a contract usually referred to as a Reciprocal Representation Agreement. Worldwide databases of identification data have been created by CISAC and IFRRO. This allows their members to identify foreign works, performances and recordings licensed to them under those reciprocal representation agreements.

(5) Collective Management and the Digitization of, and Mass Access to, Books Throughout the World

34. Often after a new form of use has emerged, collective management systems are established to license uses that have been found to be desirable but are unauthorized. The purpose of collective management is not to put roadblocks in the utilization of works but rather to reconcile the needs of users and authors, to ensure that copyright rights are duly reflected in new forms of use that do not constitute fair uses or are otherwise exempt. Using collective management, users can obtain licenses with limited transaction costs (such as the annual licenses granted by the PROs and by CCC) or at least a single interlocutor. CMOs can also aggregate usage data to protect the privacy of individuals and the confidentiality of institutional and business users.

35. A number of other countries have adopted a licensing approach to the mass digitization of books, each with a mechanism for some direct or indirect compensation to copyright holders. In fact, while many of the major trading partners of the United States—nations bound by essentially the same international copyright rules—have found the mass digitization of books that are no longer commercially available to be desirable, I am not aware of any country that has concluded that mass digitization of copyrighted works should be completely exempted from all copyright obligations including the need to compensate authors and other copyright holders for these mass uses of their works.

36. On the European level, a number of developments are relevant. On June 8, 2012, the Council of the European Union adopted a "final compromise text" of the "Proposal for a Directive of the European Parliament and of the Council on certain permitted uses of orphan works." http://register.consilium.europa.eu/pdf/en/12/st10/st10953.en12.pdf. A "directive," once adopted by the Council and Parliament, may be defined as a set of legislative instructions sent by

the European Union authorities to the 27 member States of the European Union to implement the directive in their national law. Failure to implement the Directive by a member State may be referred to the Court of Justice of the European Union.

37. As the title of the proposed Directive indicates, its purpose is to allow certain uses of "orphan works," defined in draft recital 3 and article 2(1) of the June 8, 2012, proposal as subject matter "protected by copyright or related rights and for which no rightsholder is identified or, even if identified, is not located after a diligent search." *Id.*

38. A number of policy statements contained in the proposed text strike me as quite persuasive and relevant to the issues in this case. Some of the main ones for the purposes of this report are:

(a) Recitals 1 and 10, which recognizes that libraries, and other and institutions in Europe are engaged in large-scale digitization of their collections or archives; that technologies for mass scale digitization of print materials and for search and indexing enhance the research value of the libraries' collections; and that the "creation of large online libraries facilitate electronic search and discovery tools which open up new sources of discovery for researchers and academics that would otherwise have to content themselves with more traditional and analog search methods." *Id.*;

(b) Recital 3b, which provides that "[c]opyright is the economic foundation for the creative industry, since it stimulates innovation, creation, investment and production. Mass digitization and dissemination of works is therefore a means of protecting Europe's cultural heritage. Copyright is an important tool for ensuring that the creative sector is rewarded for its work" *Id.;* and

(c) Article 6, which provides that the organizations mentioned above may

make a work available and make a copy if it "only in order to achieve aims related to their public interest mission, notably preservation, restoration and the provision of cultural and educational access to works and phonograms contained in their collection"; and further that "Member States shall provide that a fair compensation is due to rightholders that put an end to the orphan status of their works and other protected subject matter." *Id.*

(d) Article 1(2c), which provides that the Directive "does not interfere with any arrangements concerning the management of rights at national level." *Id.* This is meant, I believe, to allow Nordic countries that already have a collective management system in place for mass digitization of books to continue to apply such systems. Those systems are discussed in greater detail below.

39. Finally, the proposed Directive provides that libraries and other institutions may partner with commercial partners to digitize and make available the content via ***c***ontractual arrangements but provides that "the agreements should not impose any restrictions on the beneficiaries of this Directive as to their use of orphan works and should not grant the commercial partner any rights to use or control the use of the orphan works." (recital 18). *Id.*

40. The proposed directive is built on a notion of documented "diligent search" to determine whether a copyrighted work is "orphaned." This notion is explained in arts. 3 and 4 of the June 8 text. *Id.* A similar notion (qualifying search) was contained in the proposed legislation in the United States entitled the "Orphan Works Act of 2008." In her testimony before Congress concerning this Bill and the issue of orphan works more generally, then United States Register of Copyrights Marybeth Peters said that her office "recommended a framework whereby a legitimate orphan works owner who resurfaces may bring an action for 'reasonable

compensation' against a qualifying user."[6]

41. At the national level, a number of European nations have already taken or plan to take similar measures. For example, France adopted a Law on "unavailable twentieth century books" according to which books published in France before 2001 and not commercially available can be digitized by the French National Library. A collective management system is part of the law. Jointly managed by authors and publishers, it is an "opt-out" system in the sense that copyright holders are presumed to be part of the system unless they choose not to, in which case they must notify the CMO entrusted with the management of the system.

42. Google and French organizations representing authors and publishers recently struck a deal to allow Google to scan books and use the digital copies under license from major French publishers, including Hachette Livre and La Martinière.[7]

43. Several Nordic countries have been using a form of collective management often referred to as "extended collective licensing" ("ECL"). Under ECL systems, a voluntary system is typically established by a CMO to license a particular use of a category of protected content (for example, radio broadcasting of musical works, or photocopying and digital reproduction of parts of books and articles by and within corporate entities). After a "substantial number" of right holders for said category of content have voluntarily opted into the system, the law changes the system from an opt in to an opt out for all remaining right holders (this constitutes the

[6] Statement of Marybeth Peters, The Register of Copyrights, before the Subcommittee on Courts, the Internet, and Intellectual Property, Committee on the Judiciary, United States House of Representatives, 110th Congress, 2nd Session, March 13, 2008, *available at* http://www.copyright.gov/docs/regstat031308.html.

[7] See http://www.nytimes.com/2012/06/12/technology/french-publisher-group-strikes-deal-with-google-over-e-books.html?_r=1.

"extended" element of the ECL regime). The determination of whether the "substantiality" threshold has been reached is generally made by a designated governmental authority.

44. A number of Nordic countries, including Sweden (home of Plaintiff the Swedish Writers' Union) and Norway (home of Plaintiff the Norwegian Non-Fiction Writers' and Translators' Association), have adopted or have announced plans to adopt an ECL model for the mass digitization of books and some other types of content. Those plans recognize the value of mass digitization and the creation of digital repositories, but with a mechanism to compensate authors and other rightsholders for the use of their works.

45. Sweden's government has put forward an ECL-based proposal to allow for mass digitization to create the Swedish Digital Library. A Memorandum of Understanding has been signed by the Swedish Writers' Union, the Swedish Publishers' Association, the National Library of Sweden and the Visual Arts Copyright Society in Sweden. [8]

46. In Norway, the National Library is in the process of digitizing the complete national literary heritage, not limited to works that are no longer protected by copyright.[9] Rights were cleared through an agreement between KOPINOR (the RRO for Norway) and the National Library.[10] The protected material can be viewed but not downloaded or printed.[11] In exchange for granting these rights as part of the ECL system, the library pays NOK 0.56 per page

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[8] *See* http://www.slideshare.net/EuropeanaConnectWP4/swedens-digital-library-ecl-a-flexible-modelof-rights-clearance

[9] http://www.nb.no/bokhylla (informal translation provided by Jan Terje, Counsel for NFF.

[10] The agreement is available at http://www.nb.no/pressebilder/Contract_NationalLibraryandKopinor.pdf.

[11] *Id.* § 4.

(approximately $0.09) per year.[12] This model is supported by legislation on ECL, namely sections 16a, 17, 17a, 17b, 36 and 38a of the Norwegian Copyright Act.[13]

47. Denmark was the first Nordic country to use ECL to allow certain digital uses of text, starting in 1998. In 2002, it adopted a provision allowing public libraries to clear rights in relation to digital reproduction of copyright protected works for interlibrary loans and the reproduction of short excerpts.[14] A subset of Danish libraries, namely research libraries, concluded an agreement in 2004 with the Danish RRO, CopyDan, to license those uses.[15]

48. Orphan works legislation was also enacted in Canada, home of Plaintiffs The Writers Union of Canada and the Quebec Union of Writers (UNEQ). Section 77 of the Canadian Copyright Act (RSC 1985, c C-42, s 77 (Can.)) permits the Copyright Board of Canada to issue licenses to users whose reasonable efforts to locate a copyright holder have been unsuccessful. The Board sets a price for each permitted use, which compensation is generally directed to a designated CMO.

49. A number of other countries have similar systems. In India, the Copyright Board may issue a license to "publish [an orphan work as defined in the statute] or a translation thereof in the language mentioned in the application subject to the payment of such royalty and subject to such other terms and conditions as the Copyright Board may determine."[16]

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[12] *Id.* § 7. Conversion rate provided on June 21, 2012 by www.oanda.com.

[13] http://www.kopinor.no/en/copyright/copyright-act.

[14] Danish Copyright Act, § 16(b).

[15] Tarja Koskinen-Olsson, *The Nordic Countries*, in COLLECTIVE MANAGEMENT OF COPYRIGHT AND RELATED RIGHTS 2d ed (D Gervais ed.) §§ 2.5 and 5.2 (2010).

[16] Copyright Act 1957 (India) s 31A.

50. In Japan, the Commissioner of the Agency for Cultural Affairs may issue a license to use a work when the identity of the copyright holder "is unknown or for other [similar] reasons."[17]

51. In Korea, the "Minister of Culture, Sports and Tourism as prescribed by Presidential Decree" may determine the remuneration payable to use a work "where any person, despite his considerable efforts in accordance with the criteria prescribed by Presidential Decree, cannot identify the owner of author's property rights."[18]

52. The United Kingdom has a provision limited to orphan performances, but a number of proposals to have licensed for orphan works are under consideration.[19] For instance, a May 2011 report by Professor Ian Hargreaves requested by Prime Minister David Cameron entitled "Digital Opportunity: A Review of Intellectual Property and Growth" ("Hargreaves Report") recommends that "the Government should legislate to enable licensing of orphan works. This should establish extended collective licensing for mass licensing of orphan works, and a clearance procedure for use of individual works."[20]

53. In all of the examples set forth above, there is a mechanism for payments to be made for use of digitized materials, with compensation to individual rights holders.

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[17] Copyright Act of Japan (Act No. 48 of May 6, 1970, as last amended by Act No. 121 of 2006), §67. Translation at http://www.wipo.int/wipolex/en/.

[18] Copyright Act of 1957 (Korea) (Law No. 432, as last amended by Law No. 9625 of April 22, 2009). Translation at http://www.wipo.int/wipolex/en/.

[19] Copyright, Designs and Patents Act 1988 (UK) s 190 (UK Act 1988). See also Orphan Works and Orphan Rights: A Report by the British Screen Advisory Council (BSAC) Working Group (July 2011), available at http://www.bsac.uk.com/policy-papers.html;

[20] http://www.ipo.gov.uk/ipreview-finalreport.pdf.

CONCLUSION

54. Allowing practices such as the mass copying of millions of in-copyright books is very likely to thwart the development of collective management systems for the digital uses of books that authors and publishers would otherwise likely develop, join or license others to develop.

Dated: June 28, 2012

Daniel Gervais, Ph.D.

EXHIBIT A

Daniel Gervais – ***Curriculum Vitae***

CURRICULUM VITAE

Daniel J. Gervais

PART I – EMPLOYMENT & HONORS

a) CURRENT POSITION

FedEx Research Professor of Law
Co-Director, Vanderbilt Intellectual Property Program
Vanderbilt University Law School

b) EDUCATION

- Doctorate, University of Nantes (France), 1998
  - *magna cum laude* ("*très honorable*")
- Diploma of Advanced International Studies, Geneva (Switzerland), 1989
  - *summa cum laude* ("*très bien*")
- LL.M., University of Montreal, 1987
- Computer science studies University of Montreal, 1984-1985
- LL.B. (McGill University/University of Montreal), 1984
- D.E.C. (Science, Jean-de-Brébeuf College, Montréal), 1981

c) PREVIOUS EMPLOYMENT & OTHER ACADEMIC EXPERIENCE

- Acting Dean, Common Law Section, University of Ottawa (Feb-Jul 2006 and Sep-2007-July 2008)
- University Research Chair, Common Law Section, University of Ottawa (2006-2008)
- Vice-Dean, Research, Common Law Section, University of Ottawa (2003-2006)
- Full Professor, Common Law Section, University of Ottawa (2005-2008)
- Associate Professor, Common Law Section, University of Ottawa (2001-2005)
- Vice-President, International, Copyright Clearance Centre, Inc., Massachusetts, USA, 1997-2000
- Consultant, Organization for Economic Cooperation and Development (OECD), Paris, 1997
- Assistant Secretary General, International Confederation of Societies of Authors and Composers (CISAC), Paris, 1995-1996
- Head of Section, World Intellectual Property Organization (WIPO), Geneva, 1992-1995

- Consultant & Legal Officer, General Agreement on Tariffs and Trade (GATT/WTO), Geneva, 1990-1991
- Lawyer, Clark, Woods, (Montreal), 1985-1990

Visiting professorships:

- Gide Loyrette Nouel Visiting Chair, *Institut d'études politiques de Paris* (Sciences Po Law School), Feb.-Apr. 2012
- Visiting Lecturer, Washington College of Law, American University, June 2011
- Visiting Professor, *Université de Liège* (Belgium), March 2010 and 2011
- Visiting Professor, *Université de Strasbourg* (Centre for International Intellectual Property Studies (CEIPI), France), Nov.-Dec. 2009 and March 2012
- Visiting Professor, *Université de Montpellier*, France (Feb. 2007 and Apr. 2008)
- Visiting Professor, Univesity of Haifa (2005)
- 2004 Trilateral Distinguished Scholar-in-Residence, Michigan State University, Detroit College of Law (April-May 2004)
- Visiting Scholar, Stanford Law School, Feb-Apr. 2004
- Visiting Professor, DEA (graduate) program, Faculty of Law, University of Nantes, France (May 2003)
- Visiting Professor, Faculty of Law, Graduate program in intellectual property (DESS), Centre universitaire d'enseignement et de recherché en propriété intellectuelle (CUERPI), *Université Pierre Mendès-France* (Grenoble II), France
- Visiting Professor, Faculty of Law, University of Puerto Rico (June-July 2002--instruction in Spanish and English)
- Lecturer, Institute for Information Law, Faculty of Law, University of Amsterdam, Postdoctoral Summer Program in International Copyright Law (every year since 2000; last in July 2011)

d) HONORS

- FedEx Research Professorship, Vanderbilt University Law School (2011-2012)
- Ontario Research Excellence Award (ex PREA), 2005[1]
- Charles B. Seton Award, 2003 (see under "Articles in English" below)
- Quebec Bar 1985. Finished first ex aequo out of 600+ candidates—received all available awards, including:
  - Quebec Bar Award
  - Quebec Young Bar Award
  - Paris Bar Prize
- Two Excellence Awards, Faculty of Law, University of Montreal, 1984

e) OTHER RELEVANT INFORMATION

1. Editor-in-Chief, *Journal of World Intellectual Property*, peer-reviewed, published by Wiley-Blackwell (2006-)
2. Member, Editorial Board, *WIPO-WTO Colloquiums for Intellectual Property Teachers*

[1] Of the 64 awards in that round, only one to a Law Professor.

3. Member, Executive Committee, International Association for the Advancement of Teaching and Research in Intellectual Property (ATRIP) (2011-)
4. Member, Advisory Board, Digital Library Project Advisory Board (Berkeley) (2011-)
5. Panelist, UDRP, WIPO Arbitration and Mediation Center
6. International editor, *Journal of Intellectual Property Law & Practice* (Oxford Univ. Press) (2005-2008)
7. Member of the Law Society of Upper Canada (Ontario Bar) and of the Bar of Quebec
8. Languages: English, French, Spanish. German (functional). One year of Mandarin.

ACADEMIC EVENTS

- Speaker, Chicago IP Colloquium, Loyola Law School, Chicago, April 17, 2012
- Participant, Workshop "Intellectual Property at the Edge," Columbia Law School, April 13, 2012
- Panelist, Fordham International Intellectual Property Law & Policy Conference, New York, April 12, 2012
- Speaker, Faculty of Law, University of Nantes, Nantes (France), March 23, 2012
- Speaker, European and International IP Center (CEIPI), Strasbourg (France), March 19, 2012
- Speaker, IP Colloquium, Washington University, St. Louis, Feb. 27, 2012
- Speaker, Canada-Israel Israeli Canadian Workshop on Copyright Law Reforms & Developments, The Hebrew University Of Jerusalem, Feb. 20 -21, 2012
- Moderator, Vanderbilt Intellectual Property Association/Hyatt Fund event, Lockdown on Password Sharing, Feb. 1, 2012
- Moderator, 2011-2012 Symposium of the Vanderbilt Journal of Entertainment and Technology Law (JETLaw), Copyright & Creativity: Perspectives on Fixation, Authorship, & Expression, Jan. 27, 2012
- Moderator & organizer, Melbourne-Vanderbilt Global Debate, Vanderbilt Law School, Nashville, November 15, 2011
- Speaker, IP Colloquium, Indiana University Maurer School of Law, Bloomington, IN, November 3, 2011
- Speaker, Copyright in a borderless online environment Symposium, Thoresta Herrgård, Bro, Sweden, October 27-28, 2011
- Speaker, International Law Weekend, Intellectual Property Law in National Politics and International Relations, New York, NY, Oct. 21-22, 2011
- Panelist, American Intellectual Property Law Association (AIPLA), Annual Meeting, Washington DC, October 20, 2011
- Speaker, Golan v. Holder Roundtable, Harvard Law School, September 23, 2011
- Moderator, Max-Planck Institute Workshop on Economic Partnership Agreements of the EU: A Step Ahead an International IP Law?", Frauenchiemsee, Germany, June 26-28, 2011
- Keynote speaker, 39e Colloque annuel International de l'AFEC, Stretching borders: How far can Canada Go?, Montpellier, France, June 15-17, 2011
- Moderator, Vanderbilt University Law School Program, Beijing, China, May 21, 2011
- Moderator and panelist, 19th Annual Conference on Intellectual Property Law & Policy, Fordham University Law School, New York, April 28-29, 2011
- Chair, Invitation-only Intellectual Property Workshop, Canadian International Council, Ottawa, March 31-April 1, 2011
- Moderator, Patent Unrest, Vanderbilt Law School. February 24, 2011
- Keynote speaker, Annual Symposium of the Kernochan Center for Law, Media & the Arts, Columbia Law School, New York, January 28, 2011

- Speaker, Intellectual Property Institute of Australia (IPRIA), University of Melbourne, Australia, December 13, 2010
- Speaker, Trade, Intellectual Property and the Knowledge Assets of Indigenous Peoples: The Developmental Frontier, Victoria University, Wellington, New Zealand, December 8-10, 2010
- Speaker, Computer Programs and TRIPS, TRIPS@10 Conference, Columbia University, November 16-18, 2010
- Speaker, International Law Weekend, American Branch of the International Law Association, Fordham Law School, New York, October 22-23, 2010
- Speaker, Bits Without Borders conference, Michigan State University, East Lansing, MI, September 25-26, 2010
- Speaker, World Trade Forum, Bern, Switzerland, September 3-4, 2010
- Speaker, Copyright @ 300, UC Berkeley School of Law, Berkeley, CA, April 9-10, 2010
- Speaker, The Statute of Anne 300 Birthday, Cardozo Law School, New York, March 24-25, 2010
- Panelist, Access to Knowledge (A2K) conference, Yale Law School, February 12-13, 2010
- Speaker, IUS COMMUNE, Reinventing the Lisbon Agreement, Maastricht University, The Netherlands, November 26, 2009
- Speaker, The Lisbon Agreement, CEIPI (Université de Strasbourg, France), November 17, 2009
- Keynote speaker, Signifiers in Cyberspace: Domain Names and Online Trademarks Conference, Case Western Reserve University, Cleveland, Ohio, November 12, 2009
- Speaker, Beyond TRIPS: The Current Push for Greater International Enforcement of Intellectual Property, American University (Washington College of Law), November 5, 2009
- Speaker, Intellectual Property Developments in China: Global Challenge, Local Voices conference, Drake University, Des Moines, Iowa, October 15-16, 2009
- Speaker, University of Hong Kong, June 12-13, 2009
- Speaker, Conference on 100th Anniversary of the 1909 Copyright Act, Santa Clara University, April 27, 2009
- Panelist, Fordham International Intellectual Property law & Policy Conference, Cambridge, England, April 15-16, 2009
- Participant, University of Cambridge-University of Queensland Copyright History Roundtable, Cambridge, England, April 15, 2009
- Commentator, Vanderbilt Roundtable on User-Generated Content, Social Networking & Virtual Worlds, Nashville, November 14, 2008
- Distinguished Finnegan Lecturer, Washington College of Law, Washington, D.C., October 18, 2008
- Panelist, International Law Weekend, New York, October 16, 2008
- Speaker, IP Speaker Series, Cardozo Law School, September 22, 2008
- Lecturer, Intellectual Property Research Institute of Australia (IPRIA), Melbourne, June 3, 2008
- Speaker, International Conference on Patent Law, University of New Zealand, Wellington, May 29-30, 2008
- Speaker, Law School of National Taiwan University, March 21, 2008
- Commentator, EDGE Project Conference on Intellectual Property and Development, Hong Kong, March 17-18, 2008
- Speaker, Cardozo Law School Conference on Harmonizing Exceptions and Limitations to Copyright Law, New York, March 30-31, 2008
- Panelist, Fordham Conference on International Intellectual Property Law & Policy, New York, March 27-28, 2008
- *Rapporteur*, International Literary and Artistic Association Biennial Congress (ALAI), Punta del Este, Uruguay, Oct. 31 – Nov. 3 2007
- Speaker, Vanderbilt University, Nashville, Tennessee, Oct. 16-17, 2007. "Collective Management of Copyright in North America", (conference organized in cooperation with WIPO)
- Speaker, University of South Carolina, Columbia, SC, October 12, 2007 "The Future of Copyright Law"

- Panelist, Fordham University Conference on International Intellectual Property Law & Policy, New York, April 12-13, 2007
- Speaker, Dean's lectures on intellectual property, George Washington University School of Law, Washington D.C., March 13, 2007
- Speaker, UCLA Conference on the WIPO Development Agenda, Los Angeles, March 9-11, 2007
- Speaker, International Conference on Impact of TRIPS: Indo-US Experience. NALSAR University of Law, Hyderabad (India), Dec. 15-16, 2006
- Speaker, International intellectual property conference, University of Chicago-Kent, October 12-13, 2006
- Speaker, Study days of the International Literary and Artistic Association, Barcelona, June 18-21, 2006
- Moderator, Fourteenth Annual Conference on International Intellectual Property Law & Policy, New York, April 20-21 2006
- Speaker, University of Michigan, Ann Arbor. Intellectual Property & Development, April 14 2006
- Speaker, Michigan State University College of Law (MSU), East Lansing, The International
- Intellectual Property Regime Complex, April 7-8 2006
- Roundtable participant, Vanderbilt University Law School, Nashville, Tennessee. Private International Law and Intellectual Property Law: Theory and Practice, March 24-25, 2006
- Panelist, Federalist Society, Annual Lawyers Convention. Washington, D.C., November 2005
- Panel Chair, Annual meeting of the International Association for the Advancement of Teaching and Research in Intellectual Property (ATRIP), Montréal, July 11-13, 2005
- Lecturer, Institute of European Studies, Macau (IEEM), Advanced IP course (25 June-1 July 2005)
- Lecturer, Advanced IP conference, Macau, June 27-30, 2005
- Speaker, Conference on the Relationship between international and domestic law McGill University, June 15-16, 2005
- Speaker, Conference on the Collective Management of Copyright, Oslo, May 19-21, 2005
- Keynote speaker, Conference of the Department of Justice on intellectual property and Internet Law, Ottawa, April 21, 2005
- Keynote speaker, LSUC Annual Communications Law Conference, Toronto, April 8-9, 2005
- Speaker, Law & the Information Society Conference, Fordham University, New York, April 6-7, 2005
- Panelist, Fordham International Intellectual Property Law & Policy Conference, New York, March 31-Apirl 1, 2005
- Speaker, Shanghai 2004: Intellectual Property Rights and WTO Compliance. University of East China, Shanghai, China, Nov. 24, 2004
- Speaker, "The Internet: A Global Conversation" Conference, University of Ottawa, Oct. 1-2, 2004
- Lecturer, Office for Harmonization in the Internal Market (Trade Marks and Designs). Alicante (Spain), July 2004
- Organizer and Speaker, Rethinking Copyright Conference, University of Ottawa, May 20-21, 2004
- Panelist, American Intellectual Property Lawyers Association (AIPLA), Dallas TX, May 13-14, 2004
- Speaker , 2004 Computers Freedom & Privacy Conference, Berkeley, California Apr. 20-23, 2004
- Speaker, Intellectual Property, Sustainable Development & Endangered Species Conference. Detroit College of Law, Michigan State University, March 26-27, 2004
- Speaker, Securing Privacy in the Internet Age Symposium, Stanford Law School, March 13-14, 2004
- Keynote speaker, "US Copyright Office Comes to California" Conference, Hastings College of Law, San Francisco, CA, March 3, 2004
- Speaker, Global Arbitration Forum, Geneva, Switzerland, Dec. 4-5, 2003
- Panel Chair and Speaker, "Copyright and the Music Industry: Digital Dilemmas", Institute for Information Law, Amsterdam, July 4-5, 2003. Topic: "Collective Rights Management & the Future of Copyright"
- Conference Fellow, "International Public Goods and Transfer of Technology under a Globalized Intellectual Property Regime" Conference, Duke Law School, Raleigh, NC, USA, Apr. 4-6, 2003

- Speaker, Roundtable on questions arising out of the intersections of technology and questions of social justice, University of Ottawa, March 28, 2003. Topic: "Democracy, Technology and Social Justice" (available at commonlaw.uottawa.ca)
- Speaker, Conference of Copyright Law Association of Japan (CLAJ), Tokyo, Dec. 7, 2002. Topic : "Transactional Copyright: Licensing Tailored Uses"
- Speaker, Facultés universitaires de Saint-Louis, Belgique, May 25-26 2002. Topic : «De l'œuvre à l'auteur »
- Speaker. Institutions administratives du droit d'auteur, colloquium organized by the Université de Montréal, Montreal, Oct. 2001. Topic : « La gestion collective au Canada : fragmentation des droits ou gestion fragmentaire »
- Speaker, Annual Meeting of the International Literary and Artistic Association (ALAI International), Columbia University, New York, 2001. Topic: " Rights Management Systems"
- Lecturer, Swedish School of Economics and the Finnish IPR Institute, Helsinki, Finland, 2000. Topic: "Copyright and Electronic Commerce", lecture presented to graduate students
- Speaker, Fordham University Conference on International Intellectual Property, New York, April 2001. Topic "Electronic Commerce and Copyright"
- Speaker, Fordham University Conference on International Intellectual Property, New York, April 2000. Topic: "The TRIPS Agreement After Seattle"
- Speaker, Ohio State University, Columbus, Ohio, 2000. Topic: "Digital Licensing of Copyright"
- Speaker, Fordham University Conference on International Intellectual Property, New York, April 1999. Topic: "Digital Distance Education: Exemption or Licensing?"
- Speaker, Fordham University Conference on International Intellectual Property, New York, April 1999. Topic: "An Overview of TRIPS: Historical and Current Issues"

g) PUBLIC LECTURES & NON-ACADEMIC EVENTS

- Speaker, The Copyright Office Comes to Music City, Nashville, TN, April 26, 2012
- Panelist, ABA IP Section, Annual Meeting, Crystal City VA, March 29, 2012
- Speaker, Practising Law Institute, New York, March 28, 2012
- Speaker, Gide Loyrette Nouel, Paris (France), March 14, 2012 ("Non Traditional Trademarks")
- Speaker, Leadership Music, Nashville, TN, March 9, 2012
- Moderator, Canadian International Council conference on Innovation ("Right and Rents"), Ottawa, October 5-7, 2011
- Chair and Speaker, Canadian International Council Workshop on Innovation, Ottawa, March 31 and April 1st, 2011
- Speaker and session leader, High-level (Ministerial) Forum on Intellectual Property for the Least-Developed Countries, WIPO, Geneva, July 24-25, 2009
- Moderator, Copyright Counseling, Management, and Litigation Law Seminar, Seattle, WA, April 26-27, 2009
- Speaker, Annual Meeting. Commission on Intellectual Property, International Chamber of Commerce, Cambridge, England, April 17, 2009
- Keynote speaker, Asian Copyright Seminar, Tokyo, Japan, February 25-27, 2009
- Speaker, International Copyright Institute, Washington DC, Nov. 28, 2006
- Speaker, International Trademark Association, Trademarks Administrators Conference, Crystal City, Virginia, September 19-20, 2006

- Speaker, General Assembly of the National Association of Publishers (ANEL), Montréal, September 14, 2006
- Speaker, Federalist Society Annual Lawyers Convention, Washington D.C. November 2005.
- Keynote speaker. InSIGHT, Old Mill Inn, Toronto, September 2005. Topic: "Copyright Reform in Canada"
- Speaker. Canadian Institute, , Montréal, 5-6 June, 2005
- Speaker, Canadian Bar Association, Montreal, Nov. 9, 2004. Topic: "Recent developments in Canadian copyright law"
- Speaker, Peer-to-Peer Luncheon speech, The 45th Circuit, Ottawa Centre for Research and Innovation (OCRI), Oct. 5, 2004. Topic: "Peer-to-Peer File-Sharing"
- Speaker, Luncheon conference, ALAI Canada, Toronto, Sept. 13, 2004. Topic: "The Supreme Court decision in *SOCAN v. Can. Ass'n of Internet Providers*"
- Lecturer, International Copyright Institute, Washington, D.C., May 5, 2004. Topic: "Collective management of copyright"
- Speaker, Biannual Canadian Bar Association/Law Society of Upper Canada Communications Law Conference, Ottawa, April 23-24, 2004. Topic: "The Supreme Court decision in *CCH v. Law Society of Upper Canada"*
- Speaker, Association pour l'avancement des sciences et des techniques de la documentation (ASTED), Annual Meeting, Gatineau, Quebec, Nov. 7, 2003. Topic : "Copyright Exceptions and Librarians"
- Keynote speaker, International Conference on National Copyright Administrative Institutions, Ottawa, Oct. 8-10, 2003. Topic: "Status Report on Internet Tariffs"
- Panelist, Intellectual Property Institute of Canada (IPIC), Annual Meeting, Halifax, Sept. 19, 2003. Topic: "Technical Protection Measures and Copyright"
- Speaker, North American Workshop on Intellectual Property and Traditional Knowledge, Ottawa, Sept. 7-9, 2003. Topic: Traditional Knowledge and Intellectual Property: The Issues"
- Speaker, Association des juristes d'expression française de l'Ontario (AJEFO), Ottawa, June 21, 2003. Topic: Law & Technology
- Speaker, Editors Association of Canada, Ottawa, June 15, 2003. Topic : "A Walk Through the Copyright Labyrinth"
- Keynote speaker, Computer Assisted Language Instruction Consortium (CALICO), Ottawa, May 22, 2003. Topic : "Copyright, Copyleft, Copywrong?"
- Speaker, Expert Roundtable on Transactions in Intellectual Property, Amsterdam, May 17-18, 2003. Topic: "Fragmentation of Copyright and Rights Management"
- Speaker, "The 45th Circuit" (OCRI), Ottawa, Apr. 1, 2003. Topic : "Emerging Issues in Digital Rights Management"
- Speaker, Information Highways Conference, Toronto, March 24, 2003. Topic : Digital Rights Management : Balancing Creators Rights and User Interests"
- Speaker, Literary and Artistic Association (ALAI Canada), Montreal, Oct. 22, 2002. Topic : « La gestion collective es-elle en crise? »
- Instructor, World Trade Organization (WTO), Nairobi, Sept. 2002. Topic: The TRIPS Agreement after Doha"
- Instructor, World Trade Organization (WTO), Casablanca, Sept. 2002. Topic: "The TRIPS Agreement After Doha"

- Speaker, Literary and Artistic Association (ALAI Canada), Montreal, May 7, 2002. Topic: « La décision de la Cour suprême dans l'affaire *Galeries d'art du Petit Champlain Inc. c. Théberge* »
- Instructor. International Copyright Institute (Washington, D.C.), Nov. 2000 and Nov. 2001. Topic: "Collective Management of Copyright in the Digital Age"
- Speaker. Annual Meeting of the International Trademark Association (INTA), Denver, CO, USA, May 2000. Topic: "The TRIPS Agreement: Implementation and Dispute Settlement Issues"
- Speaker, New York Bar (NYCLA), 2000. Topic : "Current Rights Clearance Issues"
- Speaker, Society of Scholarly and Professional Publishers (SSP), Boston, Mass., 1999. Topic: "Copyright Licensing Issues"
- Speaker, Canadian Writers Union Conference, Toronto, 2000. Topic: "Copyright Management in the Digital Age"
- Speaker, Heritage Canada Roundtable on Copyright Management, Ottawa, 1999. Topic: "Copyright Management: US Practices"
- Speaker, International Publishers Association (IPA) Congress, Tokyo, Japan, 1998. Topic: "Copyright, Publishing in the Face of Technological Change"
- Speaker, Marché international du multimédia (MILIA), Cannes, France, 1995. Topic : "Droit d'auteur et multimédia"
- Speaker, Chilean Book Fair, Santiago, Chile, 1999. Topic: "El papel de las sociedades de derechos reprográficos y de la IFRRO"
- Speaker, Sydney Bar, NSW, Australia, 1996. Topic: "Intellectual Property and Technology"
- Speaker, Congress of the International Publishers Association, Barcelona, Spain, 1996. Topic: "Online Copyright Licensing"
- Speaker, Pan African Film Festival (FESPACO), Ouagadougou, Burkina Faso, 1994. Topic: "Protection of Intellectual Property in Film"
- Speaker, Chambre française du commerce et de l'exportation (CFCE), Paris, 1990. Topic : "TRIPS: Le point à dix semaines de Bruxelles"

h) Publications [2]

i) Summary

[2] Where possible, titles are hyperlinked. *See also* http://bit.ly/tsGP0y.

ii) Detailed description

Books (authored)

1. INTELLECTUAL PROPERTY: THE LAW IN CANADA, 2d ed. (Carswell, 2011) --with Prof. Elizabeth Judge, 1223 p.
2. L'ACCORD SUR LES ADPIC: PROPRIÉTÉ INTELLECTUELLE À L'OMC (Larcier, 2010), 733 p.
3. THE TRIPS AGREEMENT: DRAFTING HISTORY AND ANALYSIS, 3rd ed. (Sweet & Maxwell, December 2008), 785 p.
   - **Cited by the Supreme Court of the United States (majority opinion) in Golan v. Holder (2011)**
4. LE DROIT DE LA PROPRIETE INTELLECTUELLE, (Yvon Blais, 2006). 702 pages--with Professors Elizabeth Judge and Mistrale Goudreau
5. INTELLECTUAL PROPERTY: THE LAW IN CANADA (Carswell, 2005), with Prof. Elizabeth Judge
6. THE TRIPS AGREEMENT: DRAFTING HISTORY AND ANALYSIS, 2ND ed. (Sweet & Maxwell, June 2003). 590 p.
7. THE TRIPS AGREEMENT: DRAFTING HISTORY AND ANALYSIS. (Sweet & Maxwell, 1998). 444 p.
8. LA NOTION D'ŒUVRE DANS LA CONVENTION DE BERNE ET EN DROIT COMPARÉ. (Librairie Droz, 1998). 276 p.

Books (edited)

1. COLLECTIVE MANAGEMENT OF COPYRIGHT AND RELATED RIGHTS, 2nd ed. (Kluwer Law International, 2010) 495 p.
2. INTELLECTUAL PROPERTY, TRADE AND DEVELOPMENT (Oxford Univ. Press, 2007). 564 p.
3. COLLECTIVE MANAGEMENT OF COPYRIGHT AND RELATED RIGHTS (Kluwer Law International, 2006), 464 p.

Book chapters[3]

1. **R** *The TRIPS Agreement*, in MAX PLANCK ENCYCLOPEDIA OF PUBLIC INTERNATIONAL LAW (*forthcoming*)
2. **R** *Traditional Innovation and the Ongoing Debate on the Protection of Geographical Indications*, INTELLECTUAL PROPERTY AND INDIGENOUS INNOVATION (PETER DRAHOS AND SUSY FRANKEL, EDS) (*forthcoming*)

[3] R= double-blind refereed publication.

3. *The International Legal Framework of Border Measures in the Fight against Counterfeiting and Piracy*, ENFORCEMENT OF INTELLECTUAL PROPERTY RIGHTS THROUGH BORDER MEASURES (2D ED., OLIVIER VRINS AND MARIUS SCHNEIDER EDS.). Oxford Univ. Press (*forthcoming*)
4. *Adjusting Patentability Criteria to Optimize Innovation: A Look at China and India*, GLOBAL PERSPECTIVES ON PATENT LAW (MARGO BAGLEY AND RUTH OKEDIJI, EDS). Oxford Univ. Press (*forthcoming*)
5. *The TRIPS Agreement and Climate Change,* in RESEARCH HANDBOOK ON INTELLECTUAL PROPERTY AND CLIMATE CHANGE (JOSHUA SARNOFF, ED.) (*forthcoming*)
6. *Copyright, Culture and the Cloud*, in BITS WITHOUT BORDERS (SEAN PAGER & ADAM CANDEUB, eds.) (*forthcoming*)
7. *Country Clubs, Empiricism, Blogs and Innovation: The Future of International Intellectual Property Norm-Making in the Wake of ACTA,* TRADE GOVERNANCE IN THE DIGITAL AGE (MIRA BURRI AND THOMAS COTTIER, EDS). Cambridge University Press, 2011 (*forthcoming*)
8. *TRIPS Articles 10; 63-71*, in CONCISE INTERNATIONAL AND EUROPEAN IP LAW, 2D ED. (THOMAS COTTIER AND PIERRE VÉRON, EDS). Kluwer Law International, 2011, pp. 38-42 and 168-186
9. *User-Generated Content and Music File-Sharing: A Look at Some of the More Interesting Aspects of Bill C-32*, in FROM "RADICAL EXTREMISM" TO "BALANCED COPYRIGHT": CANADIAN COPYRIGHT AND THE DIGITAL AGENDA (MICHAEL GEIST, ED., Irwin Law, 2010)
10. *Of Silos and Constellations: Comparing Notions of Originality in Copyright Law*, *in* INTELLECTUAL PROPERTY PROTECTION OF FACT-BASED WORKS (ROBERT F. BRAUNEIS, ED, Edward Elgar, 2010) 74-106—coauthored with Professor Elizabeth Judge;
    - Also published as an article (see below)
11. *Policy Calibration and Innovation Displacement*, *in* DEVELOPING COUNTRIES IN THE WTO LEGAL SYSTEM (JOEL TRACHTMAN, AND CHANTAL THOMAS, EDS.) (Oxford Univ. Pr., 2009) 363-394;
12. *TRIPS 3.0*, *in* THE DEVELOPMENT AGENDA: GLOBAL INTELLECTUAL PROPERTY AND DEVELOPING COUNTRIES (NEIL W. NETANEL, ED) 51-75. (Oxford Univ. Pr., 2009)
13. **R** *A Uniquely Canadian Institution: The Copyright Board of Canada*, *in* A NEW INTELLECTUAL PROPERTY PARADIGM: THE CANADIAN EXPERIENCE (YSOLDE GENDREAU ED). (Edward Elgar, 2009)
14. *TRIPS Article 10; Articles 63-71*, *in* CONCISE INTERNATIONAL AND EUROPEAN IP LAW (THOMAS COTTIER AND PIERRE VÉRON, EDS). (Kluwer Law International, 2008), 39-42 et 153-170
15. *Intellectual Property and Human Rights: Learning to Live Together*, *in* INTELLECTUAL PROPERTY AND HUMAN RIGHTS (PAUL TORREMANS, ED). (Wolters Kluwer, 2008) 3-24
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2. *Trente ans de droit d'auteur à la Cour suprême du Canada*, 21 :2 CAHIERS DE PROPRIÉTÉ INTELLECTUELLE 419-448 (2009)
3. *Propiedad intelectual y derechos humanos: aprendiendo a vivir juntos,* 3:5 REVISTA IBEROAMERICANA DE DERECHO DE AUTOR (2009)
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4. Roberston c. Thomson Corp. : *Un commentaire sur le droit des pigistes à la lumière de l'intervention de la Cour suprême du Canada*, 3 :2 REVUE DE DROIT & TECHNOLOGIE DE L'UNIVERSITÉ D'OTTAWA/UNIVERSITY OF OTTAWA LAW & TECHNOLOGY JOURNAL, 601-614 (2006)*;*
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6. **R** *Essai sur la fragmentation du droit d'auteur : Deuxième partie* 16 *CAHIERS DE PROPRIÉTÉ INTELLECTUELLE* 501-536 (2004);
7. **R** *Être au parfum: La protection des marques olfactives en droit canadien,* 15 *CAHIERS DE PROPRIÉTÉ INTELLECTUELLE 865-904*(2003);
8. **R** *Essai sur la fragmentation du droit d'auteur : Première partie*, *15 CAHIERS DE PROPRIÉTÉ INTELLECTUELLE* 501-536 (2003);
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10. ***The Realignment of Copyright in Canada*. Twelfth National Conference on Communications Law, Toronto, April 7, 2005 (51 pages)**
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18. *E-Commerce and Intellectual Property: Lock-it Up or License?, in* 6 INTERNATIONAL INTELLECTUAL PROPERTY LAW AND POLICY. (New York: Juris, 2001). ch. 87-1
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26. « Gestion des droits », *in* ACTES DU COLLOQUE LES AUTOROUTES DE L'INFORMATION : ENJEUX ET DÉFIS », HUITIÈMES ENTRETIENS DU CENTRE JACQUES CARTIER RHÔNE-ALPES. (Lyons: Université de Lyon-2, 1996)
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- *Le Droit du Commerce Électronique*. (*V. Gautrais, ed.).* (Montréal, Thémis, 2002. 709 pp.), reviewed at 33 REVUE GÉNÉRALE DE DROIT 489-505 (2003)

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1. *Fair Dealing, the Three Step test and Exceptions in the Canadian* Copyright Act, Report commissioned by Industry Canada, November 2007
2. *Application of an Extended Licensing Regime in Canada: Principles and Issues Related to Implementation*. Department of Canadian Heritage, July 2003*
3. *Collective Management of Copyright and Neighboring Rights in Canada: An International Perspective.* Department of Canadian Heritage, August 2001*
4. *Intellectual Property Practices in the Field of Biotechnology*. Report published by the Trade Directorate, Organization for Economic Co-operation and Development (OECD), Paris 1999. Document No. TD/TC/WP(98)15/FINAL.(23 pages)

5. THE LAW AND PRACTICE OF DIGITAL ENCRYPTION. (Amsterdam: University of Amsterdam, 1998). (64 pages)

6. *ECMS: The Policy Issues*, *in* IMPRIMATUR CONSENSUS FORUM. 21/22 NOVEMBER 1996. (London: Imprimatur, 1996).

EXHIBIT B

Daniel Gervais – Materials Considered

In addition to the materials cited in my declaration, I have considered the following documents:

1. The Government Response to the Hargreaves Review of Intellectual Property and Growth;

2. Amazon.com's Kindle Direct Publishing Terms and Conditions, Last Updated February 9, 2012;

3. Amazon.com's *Search Inside! Publisher Sign-up*, from http://amazon.com/gp/html-forms-controller/SITB_Pub_Signup_Form;

4. The Amended Settlement Agreement entered into by the parties to the lawsuit *The Authors Guild, Inc., et al. v. Google Inc., et al.*, No. 05 Civ. 8136 (DC) (S.D.N.Y.);

5. Documents produced by Plaintiffs Norsk Faglitterær Forfatter- og Oversetterforening (The Norwegian Non-Fiction Writers and Translators Association) as AG0004039-4074;

6. Documents produced by Plaintiffs of Sveriges Författarförbund (The Swedish Writers' Union) as AG0004393-4431; and

7. Documents produced by Plaintiffs The Writers' Union of Canada as AG0004432-4433.

EXHIBIT C

Daniel Gervais – Prior Testimony at Trial or Deposition

Proceeding	Court	Reference	Context	Year	On behalf of
Authors Guild v. Google Inc.	United States District Court, Southern District of New York	No. 05 Civ. 8136 (DC)	Deposition	2012	Plaintiff
Elsevier B.V. v. UnitedHealth Group, Inc.	United States District Court, Southern District of New York	784 F. Supp. 2d 286	Filed Report	2011	Plaintiff

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UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF NEW YORK

THE AUTHORS GUILD, INC., ET AL., Plaintiffs, v. HATHITRUST, ET AL., Defendants.	Case No. 11 Civ. 6351 (HB)

DECLARATION OF JOHN WILKIN IN SUPPORT OF
DEFENDANTS' MOTION FOR SUMMARY JUDGMENT

I, John Wilkin, pursuant to 28 U.S.C. § 1746, hereby declare as follows:

1. I am an Associate University Librarian at the University of Michigan ("Michigan") and also serve as the Executive Director of HathiTrust, which, as is explained in more detail below, is the name of a service provided by Michigan. I submit this declaration in support of the defendant libraries' (the "Libraries") motion for summary judgment. Unless

otherwise noted, I make this declaration based upon my own personal knowledge or, where specifically noted, based upon Michigan's business records.

2. As Associate University Librarian for Library Information Technology, I am responsible for, among other things, the online catalog and related technologies for the University Library which is physically spread over numerous buildings and individual libraries (collectively, the "University Library").[1]

3. My duties include ensuring the University Library has the necessary technological infrastructure and networked systems to support the library's core mission and services. I have served in this role since June 1, 2002.

4. On June 1, 2012, I assumed responsibility for many of Michigan's publishing activities, including the University of Michigan Press and digital publishing operations.

5. Prior to my current role and responsibilities, I served as the Head of the Digital Library Production Service at Michigan, a position that I held since 1996. In that role I was responsible for campus- and internet-wide Michigan-hosted digital collection services.

6. I have continuously (with the exception noted below) served in various roles in Michigan's library since graduating with a Masters in Library Science from the University of Tennessee in 1986 (with the exception of 1992 through 1994 during which time I served as Systems Librarian for Information Services at the University of Virginia).

7. I have served as the Executive Director of HathiTrust since 2008. In that role, I am responsible for the service's operations, development, budget and the measures taken to ensure the security of the works within the HathiTrust digital library.

[1] As used in this declaration, and unless otherwise noted, the term "University Library" does not include certain other libraries at Michigan including Bentley Historical Library, Clements Library, Kresge Business Administration Library, Law Library, Thompson Library (Flint) and Mardigian Library (Dearborn), among others.

A. The University Library

8. Consistently ranked as one of the top ten academic research libraries in North America, the University Library, which, as a part of a non-profit organization dedicated to learning, is open to students, faculty and the general public, makes available an extraordinary array of resources and services.

9. The University Library holds more than 8 million bound volumes housed in a number of physical locations across the Michigan campus. All of the various libraries at Michigan, including the law and business school libraries, hold more than 11 million volumes.

10. Last year, in fiscal year 2011, the University Library hosted nearly 4 million patron visits.

B. The Core Function of Academic Libraries Such as the University Library

11. In order to place HathiTrust in context, it helps to have some background regarding the basic functions of the University Library, indeed all academic libraries:

- We buy works for academic and scholarly pursuits;
- We curate, maintain, and preserve those works;
- We help scholars and students identify works pertinent to their pursuits; and
- We make those works available and accessible consistent with applicable law.

12. We have been performing these functions for nearly 175 years.

(i) Acquisition of Works

13. Academic libraries such as the University Library acquire works to satisfy anticipated future demand by University Library patrons. When a work is requested by many patrons, and we find ourselves maintaining a waiting list for that work, we will often try to purchase additional copies.

14. Last year, in fiscal year 2011, Michigan's libraries spent more than 24 million dollars on library materials and the vast majority of these sums were spent acquiring new works. Although state appropriations for the university consistently decrease, the University Library's spending for acquisitions continually increases.

15. We spend millions of dollars each year on obtaining access to electronic resources: we spend approximately 12 million dollars[2] per year in order to acquire the right to display the full text of works (most of which are in-copyright) to library patrons.

16. While I discuss this point in greater detail below, it bears emphasis that our digitization efforts, including those associated with the HathiTrust Digital Library ("HDL"), do not diminish our acquisitions of in-copyright material (digital or otherwise). Each year, we spend millions of dollars to license the right to display the text of copyrighted works and to acquire new books. Moreover, ***no portion of in- copyright materials is displayed to patrons through the HDL*** (except to students, faculty and staff with certified print disabilities—please see Section J, ¶¶ 100-106, below for a description of this service). In other words, the HDL is not a substitute, in any respect, for our acquisitions of in-copyright material (whether print or digital).

17. There are a number of reasons why academic libraries spend such enormous sums on acquisitions *every year*. Academic libraries acquire works not just for current students and faculty, but also for future generations.

18. Librarians cannot reliably predict which works may be of scholarly interest in ten, fifty, or one hundred years. This is one reason why the University Library acquires an extraordinarily broad range of materials on every conceivable subject.

[2] This figure includes expenditures by all campus libraries because many such licenses are jointly negotiated or funded for the campus as a whole.

19. Indeed, it is not unusual to hear scholars express pleasant surprise (and relief) to discover that we have a particular work in our collection. Such statements are a testament to our efforts to acquire and preserve a breathtaking number of works. We do so because of the mere *possibility* that a particular work on a seemingly obscure topic may be valuable to a future student or scholar.

20. The imperative that academic and research libraries acquire a broad range of material for future scholarship is magnified by the fact that the library can have no assurance that a work will remain available after it is first published. Indeed, most works go out of print after the initial print run and once that print run is sold out, it can be difficult if not impossible to obtain copies of the work.

21. As a result, academic libraries typically acquire works very shortly after they are published—even before a definite scholarly need has surfaced—and they need to purchase a sufficient number of copies of each work to accommodate anticipated user demands; otherwise, the library may not be able to buy the work later. This is particularly true for books published outside of the United States, for example in developing countries, and most journal issues are out of print soon after the initial issue is distributed.

(ii) Preservation

22. Books, in their physical form, are inherently subject to damage, deterioration and loss. This is particularly true for books published between 1850 and 1990—approximately three-quarters of our entire collection—because books published during this time period were generally published on paper with high acid content.

23. Paper with high acid content degrades far more quickly than paper with low acid content. This is because the fibers that comprise paper degrade when acid meets the moisture in

the air. In what is referred to as an "acid hydrolysis reaction," the paper fibers are repeatedly split into smaller fragments so long as the source of acid remains in the paper. This process, in fact, produces more acid and the degradation accelerates in a downward spiral.

24. As a result, books that are more than 160 years old—that typically were published on rag cotton paper, which is relatively more durable—are usually in far better condition than books that are less than 50 years old.

25. As of 2004, Michigan estimated that about half of its collection—approximately 3.5 million books—was printed on paper with high acid content, *i.e*. on paper that is particularly vulnerable to deterioration and, ultimately, loss.

26. Prior to the digitization project at issue in this proceeding, *the process of searching the University Library's immense collections to identify deteriorating books took so long that, by the time we identified the most imperiled books from the millions potentially at risk, it was often too late and the books had disintegrated or were unusable*.

27. Our earliest, independent efforts to preserve deteriorating books through digitization were also severely limited by the length of time it took us to digitize them. Indeed, books were deteriorating so rapidly that, even if we could have instantly identified all of the books in our vast collections that were on the brink of deterioration (as noted above, this is an impossible task), we still could not have digitized the collection in time to preserve the content of the works.

28. Indeed, the University Library was the industry leader in the average number works digitized per year. However, we were only capable of independently digitizing approximately 5,000 books per year, which was but a small fraction of the imperiled works within our collection.

29. In other words, prior to asking Google to digitize our collections, we were losing the race to save significant portions of the library's works.

30. Gradual disintegration is not the only threat to books in the academic libraries. Loss from theft, vandalism, fire, and floods presents an ever-looming threat.

31. Hurricane Katrina devastated Tulane University's Howard-Tilton Memorial Library. I understand from published reports that its basement floor (approximately the size of a football field) flooded with over eight feet of water, destroying 90% of the 500,000 volumes in one of the library's collections.

32. Library destruction has not been limited to acts of nature. The most famous example of a loss of a library is probably the destruction of the Library of Alexandria, but millions of volumes have been destroyed in libraries during the World Wars, and the collection of the National Library in Sarajevo lost over 1 million volumes due to shelling in the 1990's.

(iii) Helping Scholars Identify Works of Potential Interest

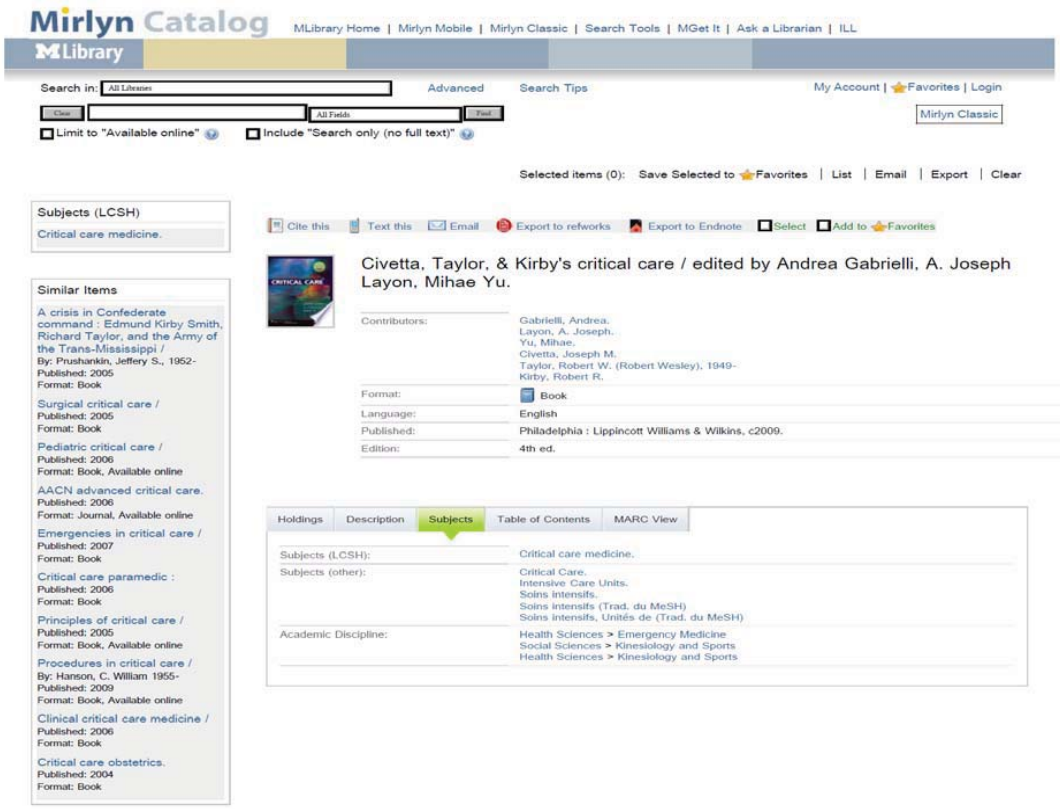
33. Importantly, libraries aid scholars in the identification of relevant works. The immense collections housed by academic libraries such as the University Library would be significantly diminished without reliable and efficient search methods and related technology.

34. Until relatively recently, most searches of a library's collection relied on a physical card catalog. Each card contained limited information concerning a particular work, including its title, author, publication date and publisher and limited information concerning the work's subject matter.

35. In order to automate cataloging, libraries began to share the work of creating bibliographic description in the 1960's. As part of these efforts, libraries created the Research Libraries Group and the Online Computer Library Center (OCLC), a non-profit organization that

developed and maintained Worldcat, the largest online public access catalog (OPAC) in the world. This paved the way for the creation of online catalogs in the 1970's.

36. While converting the physical card catalog to a digital one empowered users to perform broader searches, those searches were still limited to *the work's basic bibliographic data*, such as author, title, subject, etc., as illustrated in the following screen shot from Michigan's online catalog:



37. Even with the advent of the online catalog such as depicted above, the actual content of the works remained closed to searches. Accordingly, a work that contained information of great importance to a researcher would not be discoverable by that researcher unless the work's title, subject headings, or other limited bibliographic data happened to contain certain key words or other evidently pertinent information.

(iv) Making Works Available Pursuant to Our Understanding of Applicable Law

38. One of the most basic functions of the University Library—indeed all academic and research libraries—is lending books and other materials to patrons. Further, the University Library makes works available in a variety of other ways:

- We make copies of works in order to provide equal access to those works to students, faculty, and staff who have certified print disabilities;
- We reproduce and distribute works that are in the public domain; and
- We reproduce and distribute works pursuant to Section 108 of the Copyright Act in the event that a work is lost, damaged, deteriorating, or stolen and a replacement copy cannot be obtained by the University Library at a fair price.

C. The University Library's Early Digitization Efforts

39. Starting in the mid 1980's, the University Library, like many leading academic and research libraries, began investing in the equipment necessary to convert works from print to digital format.

40. We took this significant step because we recognized that, in the decades to follow, basic library functions would increasingly require computing technology.

41. For example, as summarized above, one of the most critical missions served by libraries such as the University Library is the preservation of works for future generations. It was for this reason that in the late 1980's we began converting at-risk materials to digital format. We knew that by digitizing such works we were ensuring that they would be available for future scholarly pursuits even in the event that the work in physical form was lost and we could not find a replacement copy at a fair price.

42. As noted above (¶¶ 22-29), while we sought to preserve at risk works through digitization, we found that given the enormous size of our collections we could not digitize and,

thereby, preserve deteriorating works quickly enough. In fact, during this time period I understand that we lost irreplaceable volumes which, as a result, have vanished from the academic and cultural landscape.

43. The University Library's early efforts at digitization also allowed for an increased, though still very limited, number of works to be made more readily accessible to those with certified print disabilities, and allowed for some improved search functionality across the digitized works. A truly comprehensive solution, however, required large-scale digitization that the University Library could not possibly accomplish on its own.

D. Google's Involvement in Michigan's Digitization Efforts

44. Prior to Google's involvement in our digitization efforts, at our then rate of scanning, it would have taken us more than 1,000 years to digitize the University Library's then over 7 million volumes.

45. In 2002, we began speaking with Google about its interest in digitizing Michigan's entire library collections in less than a decade.

46. In late 2004, we entered into an agreement with Google under which Google would convert hardcopy books from Michigan Library collections to a digital format and provide digital copies of those books to Michigan. Attached as **Exhibit A** is a true and correct copy of Michigan's current agreement with Google concerning this project.

47. In return for giving Google access to books in the University Library collection, Google was required to give the University Library a digital copy of the works digitized by Google. We bargained for this right because it was important to us that we had the right to control our own uses and satisfy one or our primary missions of providing specialized services to the blind or other persons with disabilities. We knew that by maintaining control over our own

digitized copies of our collection we could ensure that students and faculty with print disabilities had access to works within the HDL on par with their non-disabled peers.

48. Our aim in working with Google was to digitize as much of the University Library as possible.[3] If we digitized only select portions of our collections we would not have accomplished our goals.

49. For example, if we limited the project solely to works known to be in the public domain, we would have continued to lose books presumed to be in-copyright to inevitable disintegration and decay and, potentially, to theft, vandalism and natural disaster or calamity.

50. Further, digitization held the promise of providing students and scholars with print disabilities immediate access to our print collections on par with the access afforded other library patrons. That promise would have been largely unrealized if we had limited digitization to the public domain.

51. Finally, *from the very outset of the project our goal was to offer scholars a better, more comprehensive way to search for and discover pertinent works within the collection*. If we only allowed such searches over the portion of works known to be in the public domain, roughly 75% of the library's collections would have been excluded. A search tool that excluded 75% of our collections would be of significantly less value to students and scholars seeking to identify the works most relevant to them.

52. While Michigan was the first academic library to work with Google in connection with what would become the "Google Book Project," it is my understanding that Google ultimately partnered with a number of other universities and research libraries. For example, I am aware that in addition to the defendants named in this lawsuit, Google worked with such

[3] In certain instances, rights holders availed themselves of an opt-out program offered by Google in connection with its digitization of works. In those situations, our digital collection does not include such works.

universities as Harvard University, Stanford University, Oxford University, Columbia University, Princeton University, the University of Virginia, and the University of Texas at Austin, among others. The benefits to society—in preserving books, making them accessible to people with print disabilities, and enabling people to find them—increased significantly with each institution that digitized books from its collections.

E. The Formation of HathiTrust

53. In 2008, Michigan formed HathiTrust, named for the Hindi word for elephant, "hathi." The "hathi" prefix is intended to evoke the qualities of memory, wisdom, and strength symbolized by elephants.

54. The concept underlying the formation of HathiTrust was (and is) simple. It makes no economic or functional sense for each research library to maintain its own digitized collection of works. Rather, we believe that by working together and pooling resources we can better serve our common goals of collecting, organizing, securing, preserving and, consistent with applicable law, sharing the record of human knowledge.

55. Accordingly, pursuant to the HathiTrust mission, participating members combined their digitized collections in order to provide more secure, long-term storage for the works, more comprehensive research and discovery tools, improved access to works in the public domain and improved access to works for students and faculty with print disabilities. Michigan runs the HDL as a service not only for the benefit of Michigan but also for the benefit of all participating institutions and, indeed, all users of the HathiTrust website located at www.hathitrust.org.

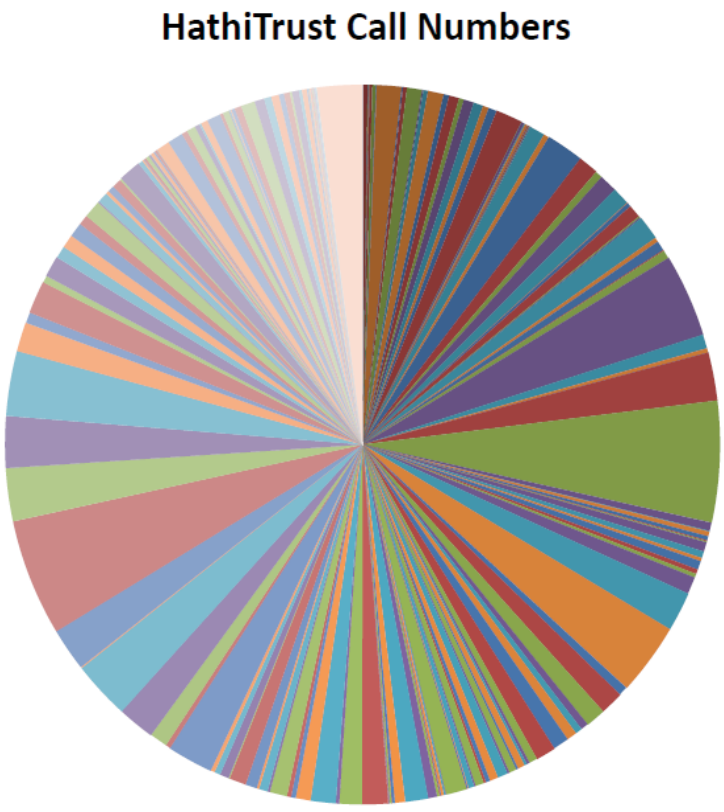
56. There are currently more than sixty institutions participating in HathiTrust, including Michigan, and membership is open to institutions worldwide. Attached hereto as **Exhibit B** is a true and correct copy of participating members as of today.

F. The Composition of the HathiTrust Digital Library ("HDL")

57. The combined corpus of the HDL now totals more than 10 million works and is growing every day.

58. While the HDL corpus contains a very large number of works, we have a significant amount of information regarding the general composition of the corpus.

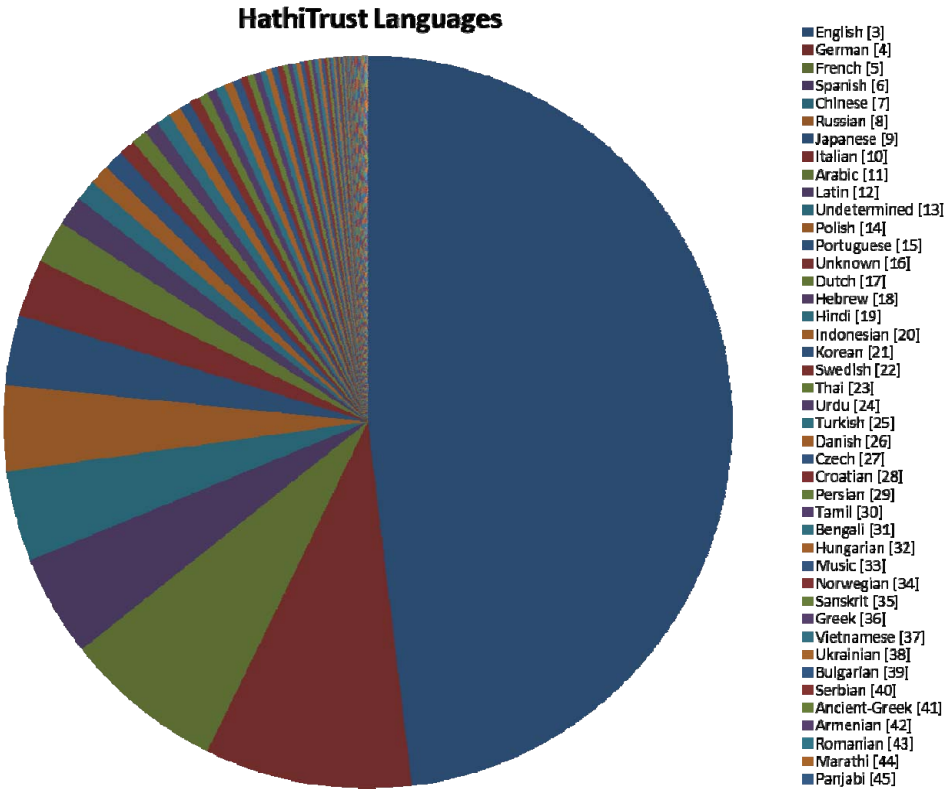
59. For example, an analysis of the Library of Congress call numbers of works provides an overview of the subject matter of the works found in the HDL:



Legend follows on next page.

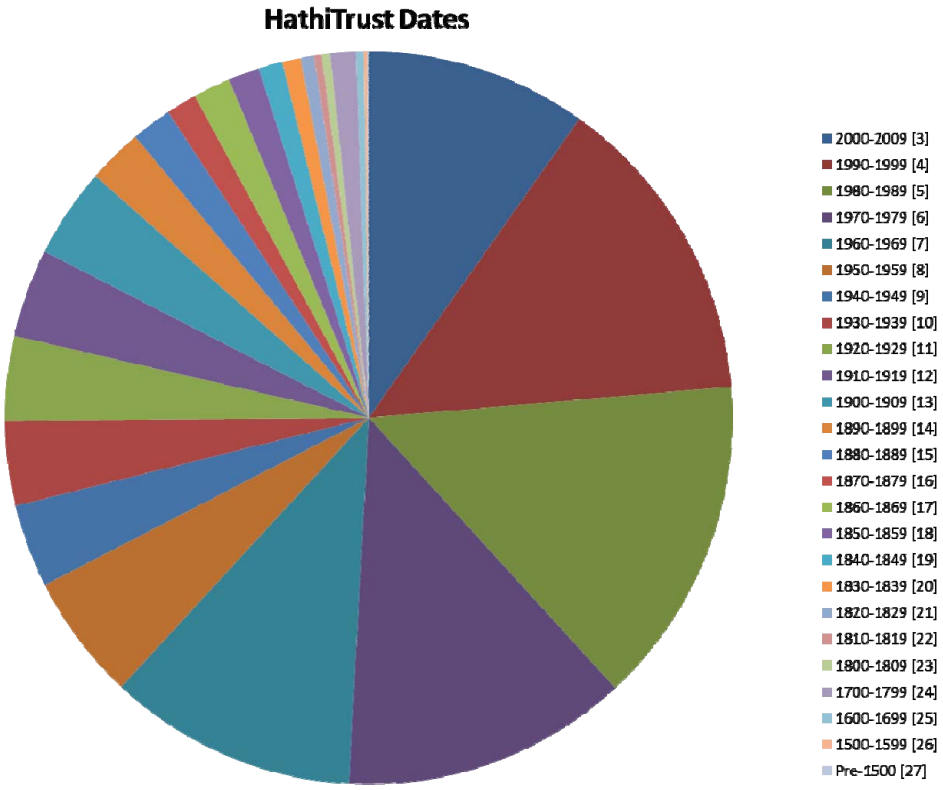
- A - General Works [2]
- AG - Dictionaries...[5]
- AN - Newspapers [8]
- AY - Yearbooks. Almanacs.[11]
- BC - Logic [14]
- BH - Aesthetics [17]
- BM - Judaism [20]
- BR - Christianity [23]
- BV - Practical Theology [26]
- CB - History of Civilization [29]
- CE - Technical Chronology. Calendar [32]
- CR - Heraldry [35]
- D - History General [38]
- DC - History of France-Andorra-Monaco [41]
- DF - History of Greece [44]
- DJ - History of the Netherlands [47]
- DP - History of Spain - Portugal [50]
- DS - History of Asia [53]
- DX - History of Gypsies [56]
- G - Geography; Anthropology; Recreation [59]
- GC - Oceanography [62]
- GN - Anthropology [65]
- GV - Recreation; Leisure [68]
- HB - Economic theory; Demography [71]
- HE - Transportation and communications [74]
- HJ - Public Finance [77]
- HQ - Family; Marriage; Woman; Sexuality [80]
- J - General legislative & executive papers [83]
- JF - Political instit. & public admin - Gen'l [86]
- JL - Political instit. & pub. admin-Canada; etc.[89]
- JS - Local government. Municipal govt [92]
- JZ - International relations [95]
- KDK - Law (United Kingdom and Ireland [98]
- KG - Law (Latin America-Mex. & C. Amer....)[101]
- KL - Law (History of law-The ancient orient)[104]
- LA - History of Education [107]
- LD - Education (Individual Institutions-US) [110]
- LG - Education (Indiv. Instit.-Asia; Africa; etc.[113]
- LT - Textbooks [116]
- MT - Musical instruction and study [119]
- NB - Sculpture [122]
- NE - Print media [125]
- P - Language and Literature [128]
- PC - Romanic languages [131]
- PG - Slavic langs; Baltic langs; Albanian lang[134]
- PK - Indo-Iranian philology and literature [137]
- PN - Literature (General) [140]
- PS - American literature [143]
- Q - Science (General) [146]
- QC - Physics [149]
- QH - Natural history - Biology [152]
- QM - Human anatomy [155]
- R - Medicine (General) [158]
- RC - Internal medicine [161]
- RF - Otorhinolaryngology [164]
- RK - Dentistry [167]
- RS - Pharmacy and materia medica [170]
- RX - Homeopathy [173]
- SB - Plant culture [176]
- SH - Aquaculture. Fisheries. Angling. [179]
- TA - Engineering (Gen'l). Civil Engineering [182]
- TE - Highway engineering. Roads & pavements [185]
- TH - Building construction [188]
- TL - Motor vehicles Aeronautics Astronautics[191]
- TR - Photography [194]
- TX - Home economics [197]
- UB - Military administration [200]
- UE - Cavalry. Armor [203]
- UH - Other services [206]
- VB - Naval administration [209]
- VE - Marines [212]
- VK - Navigation. Merchant marine [215]
- ZA - Information Resources [218]
- AC - Collections. Series. [3]
- AI - Indexes [6]
- AP - Periodicals [9]
- AZ - History of scholarship[12]
- BD - Speculative philosophy [15]
- BJ - Ethics [18]
- BP - Islam. Bahaism. Theosophy [21]
- BS - The Bible [24]
- BX - Christian Denominations [27]
- CC - Archaeology [30]
- CJ - Numismatics [33]
- CS - Genealogy [36]
- DA - History-G. Britain-Ireland-British Isles [39]
- DD - History of Germany [42]
- DG - History of Italy - Malta [45]
- DK - History of Russia; Soviet Union... [48]
- DQ - History of Switzerland [51]
- DT - History of Africa [54]
- E - History of America [57]
- GA - Mathematical geography; Cartography[60]
- GE - Environmental Sciences [63]
- GR - Folklore [66]
- H - Social sciences (General) [69]
- HC - Economic history and conditions [72]
- HF - Commerce [75]
- HM - Sociology (General) [78]
- HV - Social pathology; Soc'l & pub. welfare...[81]
- JA - Political science (General) [84]
- JJ - Political instit & public admin-N America[87]
- JN - Political instit. & public admin -Europe [90]
- JV - Colonies & colonization. Emigration... [93]
- K - Law [96]
- KE - Law (Canada) [99]
- KH - Law (South America) [102]
- KZ - Law of Nations. International law [105]
- LB - Theory and practice of education [108]
- LE - Education (Indiv. Instit.-Amer. except US)[111]
- LH - College and school magazines and papers [114]
- M - Printed Music [117]
- N - Visual arts [120]
- NC - Drawing. Design. Illustration [123]
- NK - Decorative arts [126]
- PA - Greek and Latin language & lit. [129]
- PE - English language [132]
- PH - Uralic languages; Basque language [135]
- PL - Languages of Eastern Asia; Africa; etc.[138]
- PQ - French lit.-Italian, Spanish, Portuguese [141]
- PT - German Dutch Scand. etc lit since 1830[144]
- QA - Mathematics [147]
- QD - Chemistry [150]
- QK - Botany [153]
- QP - Physiology [156]
- RA - Public aspects of medicine [159]
- RD - Surgery [162]
- RG - Gynecology and obstetrics [165]
- RL - Dermatology [168]
- RT - Nursing [171]
- RZ - Other systems of medicine [174]
- SD - Forestry [177]
- SK - Hunting sports [180]
- TC - Hydraulic engineering - Ocean Eng'g [183]
- TF - Railroad engineering and operation [186]
- TJ - Mechanical engineering & machinery [189]
- TN - Mining engineering. Metallurgy [192]
- TS - Manufactures [195]
- U - Military Science (General) [198]
- UC - Maintenance and transportation [201]
- UF - Artillery [204]
- V - Naval science (General) [207]
- VC - Naval maintenance [210]
- VF - Naval ordnance [213]
- VM - Naval architecture Shipbuilding etc. [216]
- AE - Encyclopedias [4]
- AM - Museums. Collectors [7]
- AS - Academies...[10]
- B - Philosophy; Psychology; Religion [13]
- BF - Psychology [16]
- BL - Religions. Mythology...[19]
- BQ - Buddhism [22]
- BT - Doctrinal Theology [25]
- C - Auxiliary Science of History [28]
- CD - Diplomatics. Archives. Seals [31]
- CN - Inscriptions. Epigraphy [34]
- CT - Biography [37]
- DB - History of Austria-Liechtenstein...[40]
- DE - History of the Greco-Roman World [43]
- DH - History of Low Countries-Benelux C's[46]
- DL - History of Northern Europe; Scandavia [49]
- DR - History of the Balkan Peninsula [52]
- DU - History of Oceania (South Seas) [55]
- F - Local History-United States & British...[58]
- GB - Physical geography [61]
- GF - Human ecology; Anthropogeography [64]
- GT - Manners and customs (General) [67]
- HA - Statistics [70]
- HD - Industries; Land use; Labor [73]
- HG - Finance [76]
- HN - Social history & conditions... [79]
- HX - Socialism. Communism. Anarchism [82]
- JC - Political theory-State Theories of state[85]
- JK - Political instit. & public admin -US [88]
- JQ - Political instit. & public admin -Asia; Africa etc.[91]
- JX - International law (obsolete) [94]
- KB - Religious law [97]
- KF - Law (United States) [100]
- KJ - Law (Europe) [103]
- L - Education [106]
- LC - Special aspects of education [109]
- LF - Education (Indiv. Instit. - Europe) [112]
- LJ - Student fraternities; United States [115]
- ML - Literature on music [118]
- NA - Architecture [121]
- ND - Painting [124]
- NX - Arts in general [127]
- PB - Modern languages; Celtic languages [130]
- PF - West Germanic languages [133]
- PJ - Oriental philology and literature [136]
- PM - Hyperborean; Indian; & artificial lang's[139]
- PR - English literature [142]
- PZ - Fiction and juvenile belles lettres [145]
- QB - Astronomy [148]
- QE - Geology [151]
- QL - Zoology [154]
- QR - Microbiology [157]
- RB - Pathology [160]
- RE - Ophthalmology [163]
- RJ - Pediatrics [166]
- RM - Therapeutics. Pharmacology [169]
- RV - Botanic; Thomsonian; eclectic med. [172]
- S - Agriculture (General) [175]
- SF - Animal culture [178]
- T - Technology (General) [181]
- TD - Environmental tech. Sanitary eng'g [184]
- TG - Bridge engineering [187]
- TK - Electrical engineering. Electronics... [190]
- TP - Chemical technology [193]
- TT - Handicrafts. Arts and crafts [196]
- UA - Armies: Org'n; distrib; military... [199]
- UD - Infantry [202]
- UG - Military engineering [205]
- VA - Navies: Org'n; distribution; etc. [208]
- VD - Naval seaman [211]
- VG - Minor services of navies [214]
- Z - Books (Gen'l). Writing Paleography etc.[217]

60. Further, the HDL contains works in a multitude of languages as illustrated in the following diagram:



61. Works within the HDL were also published across a broad range of dates, commencing prior to the 15th century and running to the present as illustrated in the following diagram:[4]

[4] Interactive versions of each of the pie diagrams included in this declaration may be accessed through the HathiTrust website located at www.hathitrust.org.



62. Approximately 30% of the corpus consists of material that is clearly within the public domain. It bears emphasis that although we treat the balance of the works as if they are in-copyright, this does not in fact mean that 70% of the corpus is in-copyright.

63. It is notoriously difficult to determine whether a particular work remains in-copyright. For example, it is my understanding that works published between 1923 and 1963 entered the public domain unless they were renewed. Other copyright determinations may rely on the death date of authors about whom very little is known or documented.

64. While the vast majority of works from this period were not renewed, determining the renewal status of works from this period is an extraordinarily difficult task. The Copyright Office's records prior to January 1, 1978 are not completely or reliably digitized at the present time. Therefore, the process of confirming whether a work was renewed involves the laborious

task of checking the physical records at the Copyright Office in Washington, D.C. Of course, even if a search confirmed that the work had been renewed, there is no guarantee that a subsequent search would identify the current rights holder.

65. Accordingly, we err on the side of classifying works as in-copyright *even though we are confident that many of those works are, in fact, in the public domain*.

66. While precise calculation is difficult given the size of the HDL corpus, it is my understanding that the vast majority of works in the corpus are now out of print (and, in fact, for older works within the collection, have been out of print for decades).

67. Based upon an analysis of the call numbers within the archive, less than 9% of the HDL corpus consists of prose fiction, poetry and drama. The remainder, approximately 90% of the corpus, is likely to consist of factual works such as books and journals in many disciplines of the arts, humanities, social sciences and sciences.

G. The Limited Uses of the Works within the HDL

68. We permit extremely limited use of the works in the HDL presumed to be in-copyright. Specifically, patrons can *only* make the following uses of such works:

- **Full-Text Search**: Through the Internet, the University's students, faculty, and staff, as well as the general public, may search for a particular term across all works within the HDL. For those works that are not in the public domain or for which the copyright holder has not expressly authorized use, the search results indicate only the frequency and page numbers for which a particular term is found within a particular book or periodical. (Unlike Google's service, the results do not show portions of text in "snippet" format.) At no time does the user have digital access to any of the actual written content within such works (unless he/she is afforded access as a certified print disabled user). *In other words, none of the work's text is ever displayed on the computer screen or available for print, not even one word.*

- **Preservation**: As noted above, before Google assisted with our digital conversion, we were losing works every year as a result of the natural disintegration of books (particularly the large segment of the collection written on paper with high acid content). There was also the ever-present risk of other more sudden forms of loss such as those occasioned by fire, flood, or theft. The

HDL now constitutes an extremely valuable protection against the prospect of such loss and permits us to make copies pursuant to Section 108 of the Copyright Act in the event that a work is lost damaged, deteriorating, lost, or stolen and a replacement copy cannot be obtained by the University Library at a fair price.

- **Access for people with certified print disabilities**: For decades, the University Library has converted works in its collection to alternative formats for the blind and other persons who have disabilities that prevent them from accessing printed materials. Because digitization has significantly improved the quality of access for print-disabled readers, the HDL was designed specifically to enable libraries to make their collections accessible to such readers in digital format.

69. It is important to emphasize that given the very limited uses made of in-copyright works in the HDL, our digitization of such materials *does not diminish our purchases of in-copyright works*.

70. Indeed, in my opinion, if the HDL has any impact whatsoever on the University Library's acquisition of in-copyright material, *it has a positive effect on our purchasing*.

71. Experience and basic common sense tells me that scholars, students, and other patrons are *more likely to discover and use works that they can locate through digital search*. Such increased demand for works invariably translates into increased purchases. This is because, as noted above (*see* ¶ 13), if a work is frequently requested by patrons, and we find ourselves maintaining a waiting list for such works, we try to acquire more copies of that particular work to meet patron demand.

72. For instance, the University Library includes in its print collection a work called *Television Program Master Index*. This work contains an index of critical and historical information regarding over 1,000 television shows contained in hundreds of books.

73. We digitized *Television Program Master Index* and, since it is presumed to be in-copyright, we only permit HDL users to search the text of the work (*i.e.*, the text is not available except to users who have print disabilities). The HDL search functionality does quickly allow a

user to determine whether a particular show is covered in the work and, if it is, users typically follow up by borrowing a print copy of the work from the library.

74. After we made the *Television Program Master Index* searchable through the HDL, the usage of the University Library's copy of the work increased dramatically and we decided to acquire two additional copies of the work to satisfy the increasing demand.

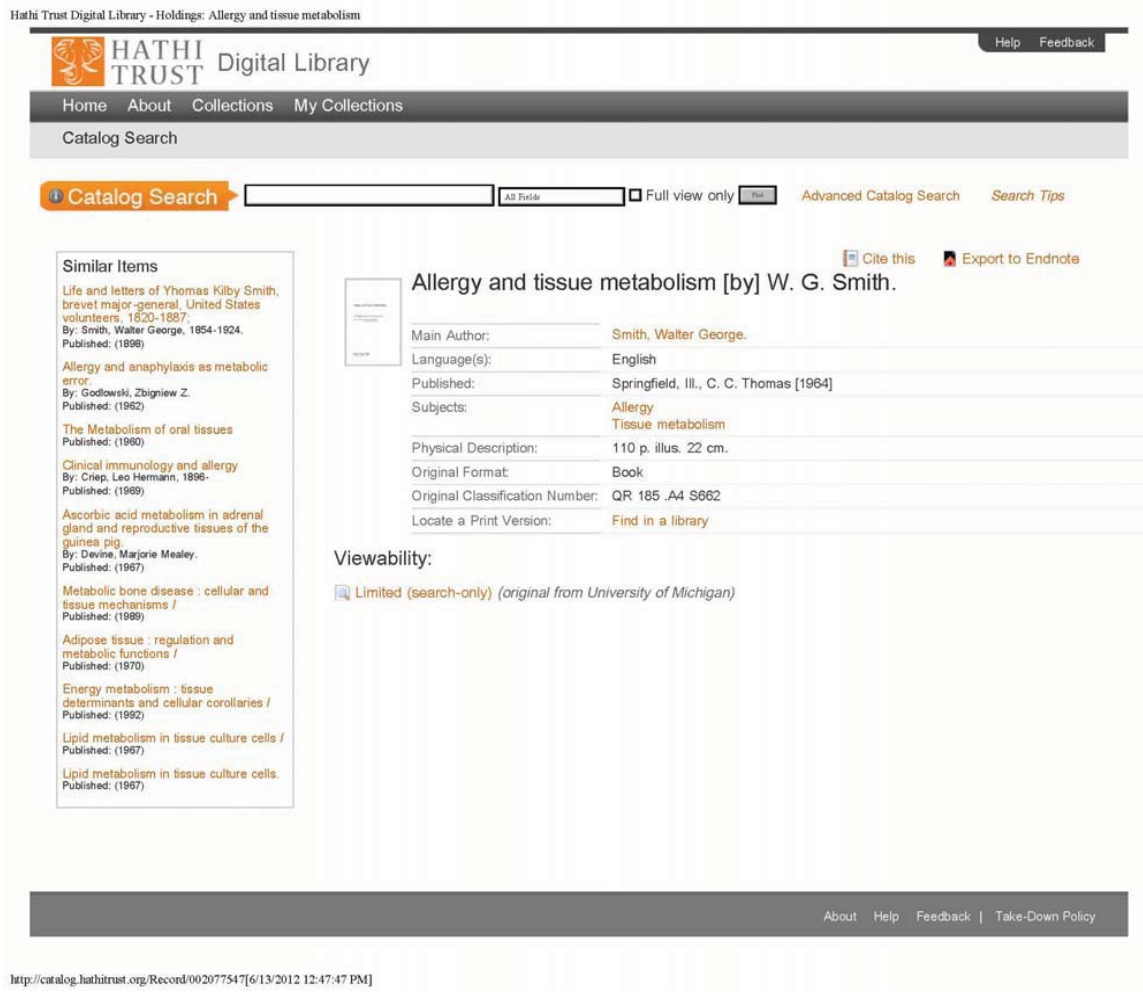
H. The Benefits of the HDL's Full-text Search Functionality

75. Full-text searching easily constitutes the most significant advance in library search technology since the 1960's.

76. Rather than combing through electronic cataloging records and attempting to discern which works in our collection may be of interest, scholars can access the HDL website and search *the actual text* of over 10 million books and journals. They can then immediately access those works that are in the public domain or for which HathiTrust has the rights to display the work in full text mode.

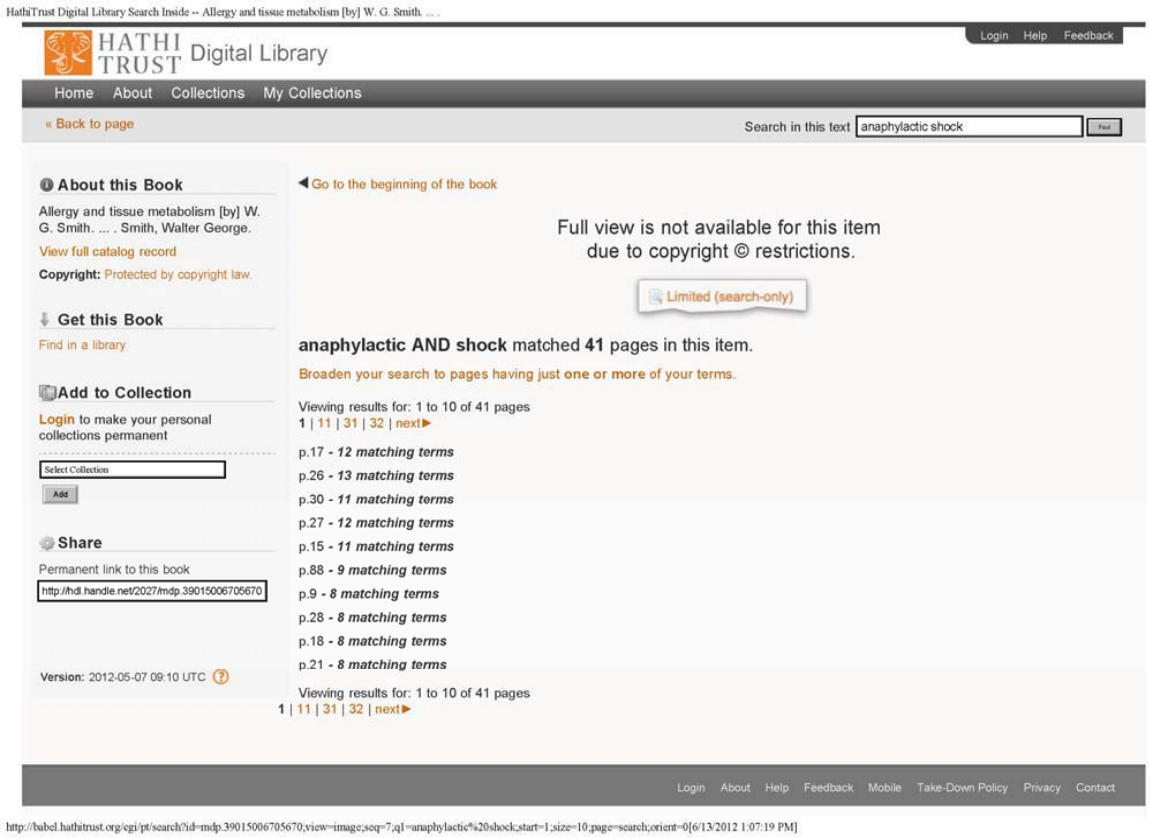
77. The Libraries, through the HDL, have made it possible for university students, faculty, and staff, as well as the general public, to search the combined digital collections contributed by the HathiTrust members. The search results display bibliographic information—including title, author, publisher, and publication date—for books containing the search term, as well as the frequency and page numbers for which the term is found, giving some clues as to how useful the book might be.

78. For example, as of June 8, 2012, a search for "anaphylactic shock" identifies 38,239 works. If the user selects the work titled *Allergy and Tissue Metabolism* by W.G. Smith – in which the term "anaphylactic shock" appears – the following bibliographic information is displayed:



79. Only the bibliographic information is displayed for this work. As reflected in the above screen shot, the "viewability" of this work is search only; none of the text of the work is available for display or download. (Only certified users who have print disabilities are able to access the text through a secure network.)

80. If the user searches for the same term in this book, a screen showing the page numbers for each use of the term is displayed as follows:



81. Based upon the search results, the user may decide to purchase the book or check out a physical copy from one of the member libraries. The text of books is not made digitally available unless it is determined that they are in the public domain or unless the rights holder has given us permission to provide access to the work.[5]

82. Without the ability to search the entire full text, the content within these resources—as distinct from basic bibliographic information describing that text—is invisible, or nearly so, to the majority of researchers.

83. Moreover, full-text searching is incredibly helpful even with respect to resources that could be identified as potentially relevant through a catalog search. For example, many

[5] The exception to this is that Michigan students, faculty and staff certified through the Office of Services for Students with Disabilities as having print disabilities are granted access to digitized files of presumed in-copyright works.

libraries, including the University Library, store a substantial portion of their collections in offsite facilities, these materials are not immediately available to the scholar, and their retrieval may require significant library staff time. If full-text searching is available, a researcher can use it to determine whether a potentially relevant off-site work may be pertinent to her research.

84. Indeed, the HDL empowers scholars to perform types of research on a scale that simply could not be performed before the HathiTrust libraries digitized their collections. For example, and as explained in more detail in the Declaration of Dr. Neil R. Smalheiser, a digital research method commonly called "text mining" is already proving itself a vital tool for scholarly research and could potentially have application to works within the HDL corpus.

85. In short, having a digitized library of the magnitude represented by the HDL has the potential to yield breakthrough scientific discoveries – potentially lifesaving discoveries – that simply would not be possible if the service ceased to exist.

I. HathiTrust's Efforts to Preserve the Libraries' Collections and the Cultural Record

86. One of the primary goals of HathiTrust is the preservation of the published record of human knowledge through the creation of reliable and accessible electronic representations of the works within the corpus.

87. The use of redundant storage in geographically remote locations ensures long-term preservation of digital data by protecting against the total loss that would otherwise occur from the failure or destruction of the primary storage.

88. The HDL corpus is stored at Michigan with a "live" mirror site located at Indiana University's Indianapolis campus.

89. The existence of the mirror site allows for balancing the load of user web traffic to avoid overburdening a single site, and each site acts as a back-up of the HDL collection in the

event that one site were to cease operation (for example, due to failure caused by a disaster, or even as a result of routine maintenance).

90. To allow for recovery of the HDL collection in the event of a disaster, automatic tape backups are created. Two encrypted backup tapes are created and are stored separately from each other, as well as from the two "live" storage instances, and the tape backups are not connected to the Internet. In the event of a disaster causing large-scale data loss to the primary HDL corpus at Michigan and the mirror site at Indiana University's Indianapolis campus, the backup tapes could be used to restore the lost data.

91. The HDL has been certified as a trustworthy digital repository by the Center for Research Libraries ("CRL") through their rigorous Trustworthy Repositories Audit and Certification ("TRAC") assessment program, which included an in-depth preservation audit of the HDL. Attached as **Exhibit C** is a true and correct copy of this certification report.

92. This audit began in November 2009 and was completed in December 2010. Only a small number of digital repositories have been granted this certification.

93. In addition to protecting the digital data in the HDL from loss through disaster or mechanical failure, Michigan employs many levels of security to control access to the content in the HDL. The security employed by Michigan with respect to the digital library meets, and in many ways exceeds, the specifications developed by the parties in the Google Books proposed settlement.

94. First, Michigan maintains, and requires the University of Indiana to maintain, rigorous physical security controls. HDL servers, storage, and networking equipment at Michigan and Indiana University are mounted in locked racks, and only six individuals at Michigan and three at Indiana University have keys. The data centers housing HDL servers,

storage, and networking equipment at each site location are monitored by video surveillance, and entry requires use of both a keycard and a biometric sensor.

95. Second, network access to the HDL corpus is highly restricted, even for the staff of the data centers housing HDL equipment at Michigan and Indiana University. For example, two levels of network firewalls are in place at each site, and Indiana University data center staff do not have network access to the HDL corpus, only access to the physical equipment. For the backup tapes, network access is limited to the administrators of the backup system, and these individuals are not provided the encryption key that would be required to access the encrypted files on the backup tapes.

96. Web access to the HDL corpus is also highly restricted. Access by users of the HDL service is governed by primarily by the HDL rights database, which classifies each work by presumed copyright status, and also by a user's authentication to the system (e.g., as an individual certified to have a print disability by Michigan's Office of Services for Students with Disabilities).

97. Michigan staff who have been granted web access to in-copyright works in the HDL in order to perform a job function for HathiTrust (e.g., because they are involved in-copyright status determinations or image quality research) must use a specific, approved IP address *and* successfully authenticate to the system using their username and password. In addition, this web access is encrypted using Secure Socket Layer, a cryptographic protocol providing communication security over the Internet.

98. Even where we do permit a work to be read online, such as a work in the public domain, we make efforts to ensure that inappropriate levels of access do not take place. For example, a mass download prevention system called "choke" is used to measure the rate of

activity (such as the rate a user is reading pages) by each individual user. If a user's rate of activity exceeds certain thresholds, the system assumes that the user is mechanized (e.g., a web robot) and blocks that user's access for a set period of time.

99. A proxy detection system is also used. The proxy detection system consults real-time blacklist services to identify users that appear to be employing known proxy or anonymization servers to falsify a physical presence in the United States (in an attempt to subvert HDL use limitations that restrict access to some materials to users in the United States). If the proxy detection system identifies such a user, that user's access is blocked. Web access to the HDL is also logged by IP address and, when available, by username, the HTTP request string, and whether or not the volume requested is identified as presumed in-copyright in the HDL rights database. Such logs are regularly reviewed.

J. Access for Individuals with Print Disabilities

100. One of the primary goals of HathiTrust has always been to enable people who have print disabilities to access the wealth of information within library collections. We constructed the archive with the objective of making the world's first accessible research library. Access for people who have print disabilities is a part of our agreements with HathiTrust members and it is one of the core services around which the archive is built, along with preservation and search.

101. For centuries, libraries have been inaccessible to people who have a broad range of disabilities because library collections have not been available in accessible formats. As a result, individuals with print disabilities simply do not have equal access to library collections and are denied the full promise offered by libraries. This is particularly true in the academy, where access to the written record is at the heart of most scholarly pursuits.

102. For instance, given the number of works a student must review to write a typical term paper, she may have to wait weeks or even months to get access to converted works—in Braille or audio recording format—that she has not yet even been able to determine whether or not she will use. Even digitizing the works on a case-by-case basis can take weeks, which makes pursuing an education that much more difficult for a student who has a print disability.

103. Accessibility has been a hallmark of our digitization efforts from the earliest days and, when we discussed digitizing the library in connection with Google, it was one of our primary objectives to make our library collections immediately accessible to people who have print disabilities.

104. In fact, in 2005, when the National Federation of the Blind first contacted us about Google Books, we invited them to campus to demonstrate the accessible library we had already developed.

105. Our accessible library works like this:

- A person who has a print disability seeks certification from a qualified expert.
- The expert informs the library when a particular patron has a print disability for which digital access is a reasonable accommodation.
- We explain the digital library to the patron, we describe appropriate uses of the service (including warnings about copyright infringement), and we enable the patron to get secure access to the accessible library.
- If we have a digital copy of a work, the authorized patron with a print disability will have immediate access to that work in a format that can be made accessible through a variety of adaptive technologies. For example, the disabled user can enable software that translates the text into spoken words.

106. For our patrons who have print disabilities, this service makes it possible for these individuals to achieve their full academic and scholarly potential.

K. The Orphan Works Project

107. As noted above, we believe it is clear that scholars, students, and other patrons are more likely to discover and use works that they can access in a digital format.

108. Therefore, we strive to find ways to provide lawful access to digital works we have digitized and we spend millions of dollars each year to license access to digital content for our campus. Unfortunately, with orphan works, because a rights holder cannot be identified, there is no way to license digital access.

109. With this in mind, we developed a project that we called the "Orphan Works Project" (or "OWP" for short). The goal of the OWP was to identify orphan works and then to enable limited uses of those works to students, scholars, and walk-in patrons.

110. The OWP, as initially contemplated, had two steps: (i) first, we identify potential orphan works through a diligent, reasonable process that eliminates works that are claimed by a putative rights holder or that are otherwise found not to be orphans; and (ii) based on the results of the first step, we planned to enable limited uses of orphan works by Michigan students, scholars, and walk-in patrons.

111. As contemplated, the OWP would have allowed users access to orphan works for the purpose of online review, with the number of users permitted to view a given work limited at any one time to the number of copies held by the library. Readers would have been reminded, through watermarking and other explicit notices, that the books are subject to copyright.

112. After completing its initial process to identify potential orphan works, Michigan posted a list of *potential* orphan works on the Michigan library website on or about July 15, 2011 and provided a link to the list on the HathiTrust website. The public posting was a conscious

part of the identification process. With more eyes on possible orphan works, it was our intent to increase the accuracy of the identification process.

113. The public scrutiny component of the OWP worked as intended in instances when works identified as potential orphan works were claimed by the putative rights holder or the rights holder was identified by a third party. Had the project moved forward, these works would not have been treated as orphan works.

114. In evaluating the methods used to determine potential orphan works, we concluded that there were flaws in our pilot process and that we needed to remedy those flaws before moving ahead with the OWP. We therefore suspended the process and never proceeded to the second step of the project (i.e., we never proceeded to enable limited uses of putative orphan works).

115. Michigan, which is the only member of HathiTrust that has actively engaged in the work of the OWP, is continuing to study ways to improve the candidate identification process. In fact, we reached out to plaintiff The Authors Guild and other associations (including the Association of American Publishers) to invite their input on ways to improve the candidate identification process. After initially expressing interest in speaking with us and participating in this process, the Authors Guild thereafter abruptly filed this lawsuit.

116. Not a single patron has been given access to a work through the OWP and at present, we do not know whether or how the OWP will continue.

117. In the event that Michigan decided to move forward with the OWP and provide access of works to users through the project, it would seek to comply with the requirements of section 108(e) of the Copyright Act.

118. While I am not a lawyer, it is my understanding that section 108(e) of the Copyright Act authorizes distribution of copyrighted works provided certain requirements are satisfied, including requirements that: (i) the library first determine, on the basis of a reasonable investigation, that a copy of the copyrighted work cannot be obtained at a fair price; (ii) the copy becomes the property of the user; (iii), the library or archives has had no notice that the copy would be used for any purpose other than private study, scholarship, or research; and (iv) the library or archives displays prominently, at the place where orders are accepted, and includes on its order form, a warning of copyright in accordance with requirements that the Register of Copyrights shall prescribe by regulation.

I declare under penalty of perjury under the laws of the United States that the foregoing is true and correct.

Date: June 28, 2012

John P. Wilkin