

EXHIBIT 1
REDACTED

**UNITED STATES DISTRICT COURT
CENTRAL DISTRICT OF CALIFORNIA**

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:
FLO & EDDIE, INC., a California corporation, :
individually and on behalf of all other similarly situated, :
:
Plaintiff, :
:
Civil Action :
No. 2:14-cv-07648-PSG-GJS :
:
v. :
:
PANDORA MEDIA, LLC, a Delaware corporation; :
and DOES 1 through 100, :
:
Defendants. :
:
-----X

DECLARATION OF DANIEL F. SPULBER

January 13, 2023

CONFIDENTIAL

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I. QUALIFICATIONS AND EXPERIENCE

1. My name is Daniel F. Spulber. I am the Elinor Hobbs Distinguished Professor of International Business and Professor of Strategy at the Kellogg School of Management, Northwestern University, where I have taught since 1990. I am also Professor of Law (by Courtesy) at the Northwestern University Pritzker School of Law and I have had a joint appointment at the University of Southern California Law School where I taught a law course on regulated industries. I received a Ph.D. in economics in 1979 and a M.A. in economics in 1976 from Northwestern University and a B.A. in economics in 1974 from the University of Michigan.
2. I previously taught at Brown University, the University of Southern California, and the California Institute of Technology. I have served as the Research Director of the Northwestern University Center on Law, Business, and Economics at the Pritzker School of Law. I also served as the founding Director of Kellogg's International Business & Markets Program. I am the founding editor of the *Journal of Economics & Management Strategy*.
3. I have published fourteen books and numerous articles in leading economics journals and law reviews. I have received 37 research grants, including grants from the National Science Foundation, Qualcomm, the Ewing Marion Kauffman Foundation, and the United States Patent and Trademark Office.
4. I have conducted economic research and published works in books and refereed journals dealing with the calculation of damages in antitrust and infringement and valuation of Intellectual Property, including patents. I have also conducted economic research, published works in books and refereed journals, and provided testimony on recovery of stranded costs.¹ I have provided expert testimony before the International Trade Commission regarding Intellectual Property (patents) in cellular communication devices, digital video receivers and hardware and software components, and communication equipment with power over ethernet. I also have provided expert testimony before the Copyright Royalty Board of the Library of Congress regarding Intellectual Property (copyright) in songwriting and related music publishing. I coauthored a report on patents and technology standards for the Federal Trade Commission's Patent Standards Workshop, Washington, D.C.

¹ The term "stranded costs" refers to costs incurred by regulated utilities that they may not be able to recover due to changes in regulations and changes in the marketplace. *See* J. Gregory Sidak and Daniel F. Spulber. "Regulatory Takings and Breach of the Regulatory Contract." *New York University Law Review* 71.4 (1996): 851-999 at 868.

5. My curriculum vitae and a list of cases in which I have testified as an expert within the preceding four years are attached hereto as **Appendix A: Curriculum Vitae** and **Appendix B: Testimony in the Past Four Years**.

II. CASE BACKGROUND AND ASSIGNMENT

6. Plaintiff Flo & Eddie, Inc. (“Flo & Eddie”), on behalf of itself and all others similarly situated, brought this case alleging that Defendant Pandora Media, LLC (“Pandora”), from October 2, 2011 to October 10, 2018 (“Relevant Time Period”), systematically violated California law prohibiting unauthorized duplication of sound recordings fixed before February 15, 1972 (“Pre-1972 Sound Recordings”).²
7. Specifically, Flo & Eddie allege that Pandora made hundreds of thousands, if not millions, of permanent server copies of Pre-1972 Sound Recordings in California and billions of transmission copies of these recordings without the consent or authority of Flo & Eddie and other similarly situated owners of Pre-1972 Sound Recordings.³
8. I have been retained by Flo & Eddie, through its counsel Susman Godfrey LLP, to analyze the effect of Pandora’s unauthorized reproduction practices on the market for and the market value of Flo & Eddie’s sound recordings during the Relevant Time Period, which I understand from counsel is one of the factors courts use to address fair use.
9. In preparing this declaration, I have relied upon my more than four decades of economics and teaching experience and research and work on the valuation of intellectual property described above, as well as certain documents and testimony that were provided to me by counsel. A complete list of the documents and data that I rely upon in reaching my conclusions in this matter is provided in **Appendix C: Materials Relied Upon**.
10. The hourly rate for my work in this case is \$1,000. I have been assisted in these matters by staff of Vega Economics, who worked under my direction, and I received compensation from Vega Economics based on its collected staff billings for the support it provided to me. Neither my compensation in these matters nor my compensation from Vega Economics is dependent on the

² First Amended Class Action Complaint. *Flo & Eddie, Inc. v. Pandora Media, LLC, et al.* (C.D. Cal. No. 2:14-cv-07648-PSG-GJS) (Sept. 29, 2022) (“First Amended Complaint”) ¶ 1.

³ *Id.*

outcome of these matters or on any of the opinions expressed in these matters. All of the opinions expressed in this report are my own independent conclusions.

11. I reserve the right to amend or supplement my opinions and report, if appropriate, based on any additional discovery, or in response to opinions or reports of other experts in this matter.

III. SUMMARY OF OPINIONS

12. It is my professional opinion that Pandora's unauthorized reproduction of Flo & Eddie's Pre-1972 Sound Recordings has harmed the marketability of the copied work for at least two reasons.
13. First, Pandora's unauthorized copies foreclosed sales of Pre-1972 Sound Recordings by Flo & Eddie to Pandora, or other similar business engaged in internet streaming. That is, due to Pandora's unauthorized copying, Flo & Eddie was unable to sell any additional copies of its Pre-1972 Sound Recordings to Pandora for Pandora and others to stream to its listeners.
14. Second, Pandora's unauthorized copying dramatically and negatively impacted the sale of both physical and digital copies of Flo & Eddie's sound recordings. Pandora's unauthorized copying has likely led listeners to substitute away from physical and digital records and towards its internet streaming services.

IV. PANDORA'S REPRODUCTION OF SOUND RECORDINGS

15. Pandora began operating its internet streaming service in the second half of 2005 and has since grown into one of the most popular free music streaming providers in the country.⁴
16. During the Relevant Time Period, Pandora offered three services: an ad-supported streaming service, an ad-free subscription service called Pandora Plus, and an on-demand subscription service called Pandora Premium.⁵
 - a. Pandora—Ad-Supported Service: Pandora's ad-supported service allows listeners to access Pandora's catalog of music, comedy, livestreams, and podcasts through its

⁴ Pandora Media, Inc. *Form 10-K* (2017) at 2.

⁵ *Id.*

personalized playlist-generating system for free across all of its delivery platforms. As part of its streaming service, Pandora instantly generates a station that plays music it thinks that listener will enjoy. Listeners also have the ability to add variety to and rename stations, which further allows for the personalization and customization of the service for each listener.

- b. Pandora Plus—Ad-Free Subscription Service: Pandora Plus is an ad-free, paid subscription version of Pandora’s ad-supported streaming service that offers additional functionalities for listeners, including song replays, increased ability to skip songs, offline listening, higher quality audio on supported devices, and longer timeout-free listening. Listeners have limited interactive features such as controlling skips and replays. Similar to the ad-supported service, the more the listener interacts with the platform, the more Pandora tailors the content recommended to the listener.
- c. Pandora Premium—On-Demand Subscription Service: Pandora Premium launched in the United States in April 2017. This service combines the streaming features of Pandora Plus with an on-demand experience, providing users with the ability to search, play and collect songs and albums, build playlists on their own or with the tap of a button, listen to curated playlists, and share playlists on social networks. A listener can also create partial playlists and have Pandora complete the playlist based on the user’s listening activity. The features of Pandora Plus are also included in Pandora Premium.

17. I understand from counsel that the first two internet streaming services listed above—both ad-supported and ad-free subscription-based services—are at-issue in this case. It is also my understanding that Pandora considers these internet streaming services non-interactive.⁶ I however note that although listeners technically cannot search and play specific songs, they can still personalize their stations to include songs they enjoy or even skip songs they do not enjoy (if under Pandora Plus).

18. As part of its internet streaming service operations, Pandora made permanent and transmission copies of sound recordings.

⁶ Memorandum of Points and Authorities in Support of Defendant Pandora Media, LLC’s Motion for Summary Judgment. *Flo & Eddie, Inc. v. Pandora Media, LLC, et al.* (C.D. Cal. No. 2:14-cv-07648-PSG-GJS) (Nov. 18, 2022) (“MPAs ISO Pandora’s MSJ”) at 5.

19. First, for each sound recording, Pandora made an initial copy of the sound recording by ingesting the audio file, and then archived that copy in perpetuity.⁷ For each archived copy, Pandora made another back-up copy, which was also retained in perpetuity.⁸

20. For each song played, in addition to the permanent archive and back-up copies, Pandora also made a

[REDACTED]

21. Pandora also made [REDACTED]

[REDACTED]¹² [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]¹⁴

22. [REDACTED]

[REDACTED]
[REDACTED]

23. I understand that Flo & Eddie allege that, during the Relevant Time Period, Pandora made all the permanent and transmission copies I discussed above without its consent and authority.¹⁷

⁷ *Id.* at 6.

⁸ *Id.*

⁹ *Id.*

¹⁰ *Id.*

¹¹ *Id.* at 7.

¹² *Id.*

¹³ *Id.*

¹⁴ *Id.*

¹⁵ *Id.*

¹⁶ *Id.* at 8.

¹⁷ First Amended Complaint at 1.

V. PANDORA’S UNAUTHORIZED COPYING DURING THE RELEVANT TIME PERIOD HARMED THE MARKET FOR AND MARKET VALUE OF FLO & EDDIE’S SOUND RECORDINGS.

A. Pandora’s Unauthorized Copying Foreclosed Sales of Pre-1972 Sound Recordings by Flo & Eddie to Pandora.

24. Operationally, Pandora creates initial copies of sound recordings it streams by either ingesting the audio files off of physical CDs or DVDs it purchases, or by purchasing and downloading MP3s from commercial websites.¹⁸ Starting in 2015, Pandora began ingesting sound recordings through direct transmission from rights owners.¹⁹
25. By and large, Pandora did not produce or own the sound recordings it played through its internet streaming services, and instead obtained them by paying content acquisition costs based on licensing agreements with music labels and distributors.²⁰ In fact, for each year between 2011 and 2017, content acquisition costs represented the single largest operating cost for Pandora.²¹
26. After purchasing the original tracks of Pre-1972 Sound Recordings, Pandora made unauthorized copies of these recordings and played them more than 16 billion times between October 1, 2015 and September 30, 2018.²² Pandora started excluding Pre-1972 Sound Recordings from its non-interactive statutory licensing reporting to SoundExchange in February 2012, and continued doing so through March 2016.²³ As such, Pandora’s unauthorized copying foreclosed sales of those recordings by Flo & Eddie and all others similarly simulated to Pandora. But for Pandora’s unauthorized copying, the ordinarily expected action in a market economy—as demonstrated by Pandora’s own business practice—would have been for Pandora to purchase additional copies of Pre-1972 Sound Recordings in the marketplace from sellers such as Flo & Eddie, or else acquire a license to

¹⁸ Defendant Pandora Media, LLC’s Fifth Supplemental Responses to Plaintiff Flo & Eddie, Inc.’s First Set of Interrogatories. *Flo & Eddie, Inc. v. Pandora Media, LLC, et al.* (C.D. Cal. No. 2:14-cv-07648-PSG-GJS) (Aug. 4, 2020) at 13.

¹⁹ *Id.*

²⁰ Pandora Media, Inc. *Form 10-K* (2017) at 6 (“For sound recordings, we pay content acquisition costs based on the terms of direct license agreements with major and independent music labels and distributors for the significant majority of the sound recordings we stream on our ad-supported service, Pandora Plus and Pandora Premium.”).

²¹ Pandora Media, Inc. *Form 10-K* (2013) at 45; Pandora Media, Inc. *Form 10-K* (2015) at 68; Pandora Media, Inc. *Form 10-K* (2017) at 66.

²² Defendant Pandora Media, LLC’s Fifth Supplemental Responses to Plaintiff Flo & Eddie, Inc.’s First Set of Interrogatories. *Flo & Eddie, Inc. v. Pandora Media, LLC, et al.* (C.D. Cal. No. 2:14-cv-07648-PSG-GJS) (Aug. 4, 2020) at 7.

²³ *Id.*

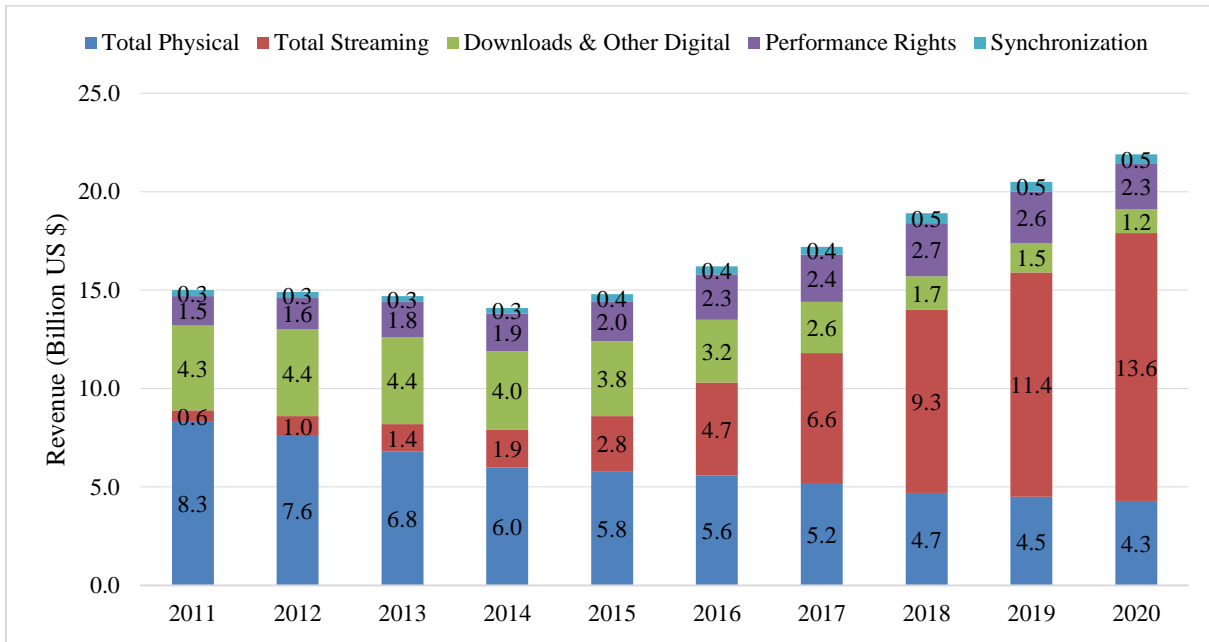
reproduce the Pre-1972 Sound Recordings. In that scenario, Flo & Eddie would have received revenues from either selling additional copies of their Pre-1972 Sound Recordings to Pandora or through licensing.

B. Pandora’s Unauthorized Copying Harmed Flo & Eddie More Broadly in the Physical and Digital Recordings Market.

27. Pandora’s unauthorized copying harmed Flo & Eddie more broadly in the physical and digital recordings market by displacing the sales of physical and digital recordings, including Pre-1972 Sound Recordings. Because the underlying musical content is the same, a sound recording obtained via one channel (e.g., internet streaming) and the same recording obtained via another channel (e.g., compact disc or digital sales) are what economists call “substitute goods.” The standard economic definition of these types of goods states that they are used in place of each other.²⁴ By producing unauthorized copies of sound recordings and making them available via its internet streaming services, Pandora competed with sales of recordings in physical and digital formats. Pandora thereby reduced consumer demand for recordings available in physical and digital formats. As a consequence, sellers in the physical and digital recordings market like Flo & Eddie were harmed due to lost sales.
28. Such substitution patterns are shown in **Figure 1: Global Recorded Music Industry Revenues by Channel**. Between 2011 and 2020, which includes the Relevant Time Period, global recorded music revenue generated via streaming (including ad-supported streams and subscription audio streams), increased from less than \$1 billion to \$13.6 billion. During the same period, revenue generated via sales of physical recordings such as CDs declined by \$4 billion, and revenue generated from downloads declined by \$3.1 billion.

²⁴ Mankiw, N. Gregory. *Principles of Microeconomics, Fifth Edition*. Mason, Ohio: South-Western Cengage Learning (2009) (“Substitutes are often pairs of goods that are used in place of each other, such as hot dogs and hamburgers, sweaters and sweatshirts, and movie tickets and video rentals.”) at 70.

Figure 1: *Global Recorded Music Industry Revenues by Channel*²⁵



29. The fact that the at-issue internet streaming services are non-interactive, as Pandora has represented,²⁶ does not inoculate sellers in the physical and digital recordings markets from these substitution effects. While Pandora’s internet streaming services do not allow users to play individual recordings, they allow personalization of stations based on characteristics such as artist, genre, and time period. For example, listeners can access stations such as “Turtles Station,” “Flo & Eddie Station,” and “70s Rock” in Pandora under the ad-supported service and Pandora-Plus.

30. In other words, Pandora’s internet streaming services provide listeners the ability to significantly narrow down the set of songs to be played, and at no monetary cost to the listener under its ad-supported streaming service. Pandora’s internet streaming stations, once customized, are substitutes to not only the individual recordings played on the station, but also those not played on the station but that share the same set of characteristics. That is, a consumer listening to the “Turtles Station,” or “Flo & Eddie Station” is less likely to purchase CDs of the band or pay to download their songs. Even if the list of songs included in a station is unknown to listeners, the substitution effect would

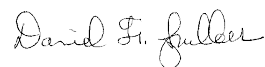
²⁵ “Global Music Report 2022.” *International Federation of the Phonographic Industry* (2022). <https://www.ifpi.org/wp-content/uploads/2022/04/IFPI_Global_Music_Report_2022-State_of_the_Industry.pdf> (accessed Jan. 10, 2023) at 11.

²⁶ MPAs ISO Pandora’s MSJ at 5.

still be at work as long as listeners expect that certain songs they like—and otherwise would have purchased in CD or digital format—are likely to be played.

31. Furthermore, the substitutability between Pandora’s internet streaming services and physical and digital recordings will be stronger when the internet streaming services have more interactive features. This is because with more interactive features, listeners are better able to customize and personalize the streaming stations they listen to such that those stations are increasingly similar to—and better substitutes for—sound recordings they would have purchased in physical or digital formats. As a result, the demand for recordings in physical and digital formats would be further reduced, as would sales and revenue.
32. For example, Pandora offered certain interactive features in its Pandora-Plus service such as replay and longer timeout-free listening.²⁷ Being able to replay songs that listeners prefer is certainly a more interactive experience than not. Furthermore, under both Pandora and Pandora Plus services, Pandora tailored the content both recommended and streamed to the listener during a streaming session based on user data.²⁸ Specifically, listeners could use the “Thumbs Up” or “Thumbs Down” functionality to tell Pandora to either bring in similar artists and songs to the streaming station or to not play a particular track.²⁹ As a result of this tailor-made service, the sound recordings Pandora played for a listener increasingly reflected the listener’s preference over time. These factors would increase the degree of substitutability between the internet streaming services and physical and digital recordings.

Dated: January 13, 2023



Daniel F. Spulber

²⁷ Pandora Media, Inc. *Form 10-K* (2017) at 2 (“This service is valued by listeners who want the ability to have limited interactive features such as controlling skips and replays.”).

²⁸ *Id.* (“The Music Genome Project, our content programming algorithms and data collected from our listeners power our ability to predict listener music preferences, play music content suited to the tastes of each individual listener and introduce listeners to the music we think they will love.”).

²⁹ “Thumbs.” *Pandora*. <https://help.pandora.com/s/article/Thumbs-1519949305945?language=en_US> (accessed Jan. 4, 2023).

Appendix A

Curriculum Vitae

CURRICULUM VITAE

DANIEL F. SPULBER

Department of Strategy
Kellogg School of Management
Northwestern University
Global Hub, 2211 Campus Dr.
Evanston, IL 60208-2013

E-mail: jems@kellogg.northwestern.edu
Mobile (847) 651-6503

EDUCATION

Ph.D., Economics, Northwestern University, 1979
Dissertation: Studies in Adaptive Investment Planning: Research and Development,
Rolling Plans and Renewable Resources.

Ph.D. Advisor: Dale Mortensen, Nobel Memorial Prize in Economic Sciences, 2010

M.A., Economics, Northwestern University, 1976
B.A., Economics, University of Michigan, 1974

CURRENT PROFESSIONAL APPOINTMENTS

Elinor Hobbs Distinguished Professor of International Business, Kellogg School of Management,
September, 2000 to present.

Professor, Strategy Department, Kellogg School of Management, Northwestern University, June
1, 1990 to present.

Professor of Law, Courtesy, Northwestern University Pritzker School of Law, October 2000 to
present.

Professor of Managerial Economics and Decision Sciences, Kellogg School of Management,
Northwestern University, Courtesy, June 1, 1993 to present.

PREVIOUS PROFESSIONAL APPOINTMENTS

Research Director of the Searle Center on Law, Regulation, and Economic Growth, and
Northwestern University Center on Law, Business, and Economics at the Pritzker School of
Law, September, 2010 to June, 2020.

Research Director: Program on Innovation, Entrepreneurship, and Economic Growth, Searle

Center on Law, Regulation, and Economic Growth, Northwestern University Pritzker School of Law, Fall, 2007 to Fall, 2010.

Founding Director of International Business & Markets Program and Research Center, Kellogg School of Management, Northwestern University, July 2001 to July 2006.

Chair in Energy Resource Management, Kellogg School of Management, Northwestern University, June 1, 1990 to September, 2000.

Visiting Professor of Economics, California Institute of Technology, September, 1989 to December, 1989.

Professor of Economics and Law, University of Southern California Law School, September, 1988 to May, 1990.

Professor of Economics, University of Southern California, September, 1988 to May, 1990.

Visiting Associate Professor of Economics, California Institute of Technology, January, 1988 to June, 1988.

Associate Professor of Economics, with tenure, University of Southern California, September, 1984 to August, 1988.

Research Associate, Institute for Marine and Coastal Studies, University of Southern California, July, 1982 to June, 1984.

Assistant Professor of Economics, University of Southern California, July, 1982 to August, 1984.

Assistant Professor of Economics, Brown University, September, 1978 to June, 1982.

AFFILIATIONS AND MEMBERSHIPS

Member, American Economic Association

Member, The Royal Economic Society

Member, Expert Network, Vega Economics, <https://vegaeconomics.com>

WEB PAGES

Daniel F. Spulber, SSRN AUTHOR PAGE, 16,711 downloads, Accessed October 13, 2022, https://papers.ssrn.com/sol3/cf_dev/AbsByAuth.cfm?per_id=31293

Daniel F. Spulber, GOOGLE SCHOLAR, 12,429 citations. Accessed October 13, 2022, <https://scholar.google.com/citations?user=Nvs1ixIAAAAJ>

Daniel F. Spulber, RePEc, Ranked 130th among economists by number of journal pages weighted by number of authors, as of September 2022, Accessed October 13, 2022, <https://ideas.repec.org/top/top.person.anbpages.html>.

Daniel F. Spulber, IDEAS, Journal articles: File downloads 6,653, Abstract views 27,300, Accessed October 13, 2022, <https://logec.repec.org/RAS/psp13.htm>

Daniel F. Spulber, Kellogg School of Management, FACULTY WEBPAGE: http://www.kellogg.northwestern.edu/Faculty/Directory/Spulber_Daniel.aspx

Daniel F. Spulber, Northwestern Pritzker School of Law webpage: <https://www.law.northwestern.edu/faculty/profiles/DanielSpulber/>

Daniel F. Spulber, AMAZON AUTHOR PAGE: https://www.amazon.com/Daniel-F-Spulber/e/B001ITX7JI/ref=dp_byline_cont_pop_ebooks_1

Daniel F. Spulber, PUBLONS profile, <https://publons.com/researcher/2872084/daniel-f-spulber/>

Daniel F. Spulber, Founding Editor, Journal of Economics & Management Strategy (JEMS), <http://editjems.org/>

Journal of Economics & Management Strategy (JEMS) is ranked at 86th out of 2,766 journals by IDEAS. Accessed June 14, 2022, <https://ideas.repec.org/top/top.journals.simple.html>.

Journal of Economics & Management Strategy (JEMS) at Wiley Online Library: <https://onlinelibrary.wiley.com/journal/15309134>

JEMS on Twitter: @jemsjournal

JEMS Facebook: <https://www.facebook.com/jemsjournal>

Daniel F. Spulber, TECHNOLOGY – ACADEMICS – POLICY (TAP): <https://www.techpolicy.com/Academics/Dan-Spulber.aspx>

Daniel F. Spulber, <https://www.concurrences.com/en/auteur/daniel-f-spulber>

COURSES

Sidney J. Levy Teaching Award for excellence in teaching, 1995-1996 academic year.

Current teaching:

International Business Strategy STRT 460 (MBA)

Technology and Innovation, MECS 549-1 (PhD)

Research in Economics, MECS 560-3 (PhD)

Other management courses taught:

Strategy and Organization 460 (MBA)

Public Policy and Management Strategy (MBA and Executive Management Program)

Economics courses taught:

Microeconomic Theory (Undergraduate and PhD)

Law and Economics (Undergraduate and PhD)

Industrial Organization (Undergraduate and PhD)

Regulation (PhD)

Energy and Resource Economics (Undergraduate and PhD)

Environmental Economics (Undergraduate)

Law courses taught:

Regulated Industries (University of Southern California Law School)

JOURNAL EDITING

Founding Editor, Journal of Economics & Management Strategy, Wiley-Blackwell Publishers, 1991 to present.

Editor, Special issue, Innovation Economics and Technology Standards, Journal of Competition Law and Economics, 2013, 9 (4), Oxford University Press, <https://academic.oup.com/jcle/issue/9/4>.

Member, International Advisory Board, Decision, Indian Institute of Management, Springer, 2014 to 2022.

Member, Advisory Board, Peking University Law Journal, 2012 to present, Taylor & Francis, <https://www.tandfonline.com/action/journalInformation?show=editorialBoard&journalCode=rplj>
20

Editorial board, Journal of Strategic Management Education, Senate Hall Academic Publishing, 2004 to present, <http://www.senatehall.com/strategic-management>

Coeditor, Papers and Proceedings of the American Economic Association, American Economic Review, May 1980.

WORKING PAPERS

Gaoyang Cai and Daniel F. Spulber, How Does Vertical Integration Affect Incentives to Innovate?, August 5, 2022. Available at SSRN:
https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4182875

PUBLICATIONS

BOOKS

14. Daniel F. Spulber, *The Case for Patents*, 2021, New Jersey: World Scientific Publishing Company, ISBN 9789811225635 (hardcover), ISBN 9789811225666 (ebook),
<https://www.worldscientific.com/worldscibooks/10.1142/11976>
Blog post about the book:
<https://www.techpolicy.com/ProfessorSpulberMakesCaseForPatents.aspx>
13. Daniel F. Spulber, *The Innovative Entrepreneur*, 2014, Cambridge: Cambridge University Press, ISBN 978-1-107-66811-9 (paperback), ISBN 978-1-107-04725-9 (hardback).
12. Daniel F. Spulber, *The Theory of the Firm: Microeconomics with Endogenous Entrepreneurs, Firms, Markets, and Organizations*, 2009, Cambridge: Cambridge University Press. ISBN-13: 9780521736602 (paperback), ISBN-13: 9780521517386 (hardback).

Chinese edition, 2012, Truth & Wisdom Press, Shanghai.

Top Ten Books in Corporate Governance, J. W. Verret, Truth on the Market, August 17, 2010, <https://truthonthemarket.com/2010/08/17/top-ten-books-in-corporate-governance/>
11. Daniel F. Spulber, *Networks in Telecommunications: Economics and Law*, with Christopher S. Yoo, 2009, Cambridge: Cambridge University Press, ISBN-13: 9780521673860 (paperback), ISBN-13: 9780521857109 (hardback).
10. Daniel F. Spulber, *Economics and Management of Competitive Strategy*, 2009, Singapore: World Scientific Publishing Company, ISBN 978-981-283-846-9, ISBN 978-981-3224-77-3 (paperback). <https://doi.org/10.1142/7171>
9. Daniel F. Spulber, *Global Competitive Strategy*, 2007, Cambridge: Cambridge University

Press, pp. 290 + xiv, ISBN-13: 978-052-188-081-7. (hardback) ISBN-10: 052-136-798-0, ISBN-13: 978-052-136-798-1 (paperback).

8. Daniel F. Spulber, *Management Strategy*, 2004, New York: McGraw Hill, pp. 431 + xv, ISBN 0072873485.
7. Daniel F. Spulber, *Famous Fables of Economics: Myths of Market Failures*, edited, 2002, Malden, MA: Basil Blackwell, pp. 312 +viii., ISBN 0-631-22674-5 (hardback) and ISBN 0-631-22675-3 (paperback).

Chinese edition, 2017, Guangxi Normal University Press Group Co.

Chinese edition (simplified characters) 2004, Century Publishing Group of Shanghai.

6. Daniel F. Spulber, *Market Microstructure: Intermediaries and the Theory of the Firm*, 1999, New York: Cambridge University Press, xxx + 368p., ISBN 0-521-65025-9 (hardback) and 0-521-65978-7 (paperback).

Chinese edition, 2003.

5. Daniel F. Spulber, *The Market Makers: How Leading Companies Create and Win Markets*, 1998, New York: McGraw Hill/ Business Week Books, x + 314p., ISBN 0-07-060584.

Portuguese edition, 2000, Negocio Editora Press, Brazil.

Chinese edition, 2004.

4. Daniel F. Spulber, *Deregulatory Takings and the Regulatory Contract: The Competitive Transformation of Network Industries in the United States*, 1997, with J. Gregory Sidak, Cambridge University Press, xi + 631p., ISBN 0-521-591597 (hardback and paperback).

Chinese edition (simplified characters), Century Publishing Group, Shanghai, 2013.

3. Daniel F. Spulber, *Protecting Competition from the Postal Monopoly*, with J. Gregory Sidak, 1996, Washington, D.C.: American Enterprise Institute, ix + 195p., ISBN 0-8447-3950-2.

2. Daniel F. Spulber, *Regulation and Markets*, 1989, Cambridge, Mass., M.I.T. Press, xviii + 690 p., ISBN 0-262-19275-6.

Chinese edition (simplified characters), 2007

Chinese edition published in 2000.

1. Daniel F. Spulber, *Essays in the Economics of Renewable Resources*, edited with Leonard J. Mirman, 1982, Amsterdam: Elsevier-North Holland Publishing Co., xii + 286 p., ISBN 0-444-86340-0.

ARTICLES

123. Pere Arqué-Castells and Daniel F. Spulber, 2022, *Firm Matching in the Market for Technology: Business Stealing and Business Creation*, *Journal of Industrial Economics*, forthcoming.
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GRANTS AND AWARDS (PRINCIPAL INVESTIGATOR)

37. Qualcomm, Research Project, Antitrust Policy toward Patent Licensing, Grant to Northwestern University, FY 2020 and FY 2021, \$572,209.
36. United States Patent and Trademark Office, Research Conference on Innovation Economics, 2020 Conference on Innovation Economics (June, 2020), Grant to Northwestern University, 2020, \$62,830.65 (Cumulative budget to date \$281,523.96).
35. United States Patent and Trademark Office, Research Conference on Innovation Economics, 2019 Conference on Innovation Economics (June, 2019), Grant to Northwestern University, 2019, \$64,893.
34. Qualcomm, Research Project, Innovation Law and Economics: Public Policy Implications, with Matthew Spitzer, Searle Center for Law, Regulation and Economic Growth, Northwestern University, FY 2018-2019 and FY 2019-2020, \$1,671,155.13.
33. United States Patent and Trademark Office, Research Conference on Innovation Economics, 2018 Conference on Innovation Economics (June 22-23, 2018), Grant to Northwestern University, 2018, \$61,334.
32. United States Patent and Trademark Office, Research Conference on Innovation Economics 2017, Tenth Annual Conference on Innovation Economics (June 22-23, 2017), Grant to Northwestern University, 2017, SP0038417, \$65,846.
31. Ewing Marion Kauffman Foundation, Entrepreneurship Effects of the Sharing Economy: Peer-to-Peer Networks, Mobile Communications, and the Internet of Things,

- Northwestern University, Summer Research Project, January 1, 2016 – December 1, 2017, \$181,990.
30. United States Patent and Trademark Office, Research Conference on Innovation Economics 2016, Ninth Annual Conference on Innovation Economics (June 23-24, 2016), Grant to Northwestern University, \$45,483.
 29. Microsoft, Seventh Annual Conference on Internet Commerce and Innovation, Searle Center on Law, Regulation and Economic Growth, Conference organizer, no PI on grant, 2016, \$60,000.
 28. Qualcomm Research Project, Innovation Economics, with Matthew Spitzer, Northwestern University, Grant renewal to Searle Center for Law, Regulation and Economic Growth, FY 2016, FY 2017, and FY 2018, \$3,654,892.
 27. United States Patent and Trademark Office, Eighth Annual Conference on Innovation Economics (June 18-19, 2015), Grant to Searle Center for Law, Regulation and Economic Growth, Northwestern University, 2015, \$68,601.
 26. United States Patent and Trademark Office, Roundtable on Patents and Technology Standards, April 9-10, 2015, Grant to Searle Center for Law, Regulation and Economic Growth, Northwestern University, 2015, \$47,980, May 14, 2015 to September 30, 2015.
 25. Qualcomm Research Project, Innovation Economics: Technology Standards, Market Power, and Public Policy, with Matthew Spitzer, Grant to Searle Center for Law, Regulation and Economic Growth, Northwestern University, May 1, 2013 to August 31, 2015, \$2.1 million.
 24. Ewing Marion Kauffman Foundation, Conference and Research on Intellectual Property and Entrepreneurship, Grant to Searle Center for Law, Regulation and Economic Growth, Northwestern University, December 1, 2012 through September 13, 2013.
 23. United States Patent and Trademark Office, Conference on Intellectual Property and Entrepreneurship, Grant to Searle Center for Law, Regulation and Economic Growth, Northwestern University, December 1, 2012 through September 30, 2013.
 22. Qualcomm Research Project, Searle Center Research Initiative in Innovation: Technology Standards and Market Coordination, with Max M. Schanzenbach, Director Searle Center, Northwestern University, Grant to Searle Center for Law, Regulation and Economic Growth, Research Roundtable February 2013 and Research Conference, June, 2014.
 21. Ewing Marion Kauffman Foundation, Conference and Research on Intellectual Property and Entrepreneurship, Grant to Searle Center for Law, Regulation and Economic

- Growth, Northwestern University, June 2012 through December 1, 2012.
20. United States Patent and Trademark Office, Conference and Research on Intellectual Property and Entrepreneurship, Grant to Searle Center for Law, Regulation and Economic Growth, Northwestern University, June 1, 2012 through December 1, 2012.
 19. Ewing Marion Kauffman Foundation, Conference and Research on Intellectual Property and Entrepreneurship, Grant to Searle Center for Law, Regulation and Economic Growth, Northwestern University, July 1, 2011 to December 1, 2012.
 18. United States Patent and Trademark Office, Conference and Research on Intellectual Property and Entrepreneurship, Grant to Searle Center for Law, Regulation and Economic Growth, Northwestern University, July 1, 2011 to December 1, 2012.
 17. Ewing Marion Kauffman Foundation, Entrepreneurship, Investment and Financial Capital: Establishment of Firms, Incentives, and Contracts, Northwestern University, Research Project, May 1, 2011 through December 1, 2012.
 16. Microsoft, Antitrust and Competition in Two-Sided Markets, Northwestern University, Research Project, January 1, 2011 to December 13, 2011.
 15. Ewing Marion Kauffman Foundation, Microeconomic Foundations of Entrepreneurship: Establishment of Firms: Competition, Innovation, and Economic Growth, Northwestern University, Research Project, March 1, 2008 through February 28, 2011.
 14. Ewing Marion Kauffman Foundation, The Central Role of the Entrepreneur in the Establishment of Firms: A Fundamental Analysis of the Theory of the Firm, Northwestern University, Research Project, February 14, 2006 through July 15, 2008.
 13. The Searle Fund, Access to Networks in the United States: Economic and Constitutional Connections, Northwestern University, Research Project, June 2004 to May 2005.
 12. The Searle Fund, The Economic Functions of the Firm in the Contemporary Economy and in Economic Development, Northwestern University, Research Project, June 2002 to May 2004.
 11. The Searle Fund, The Role of Trust in Private Contracts, Northwestern University, Research Project, Research Project, June 2000 to May 2002.
 10. Ameritech Foundation Grant, Competitive Strategy and Shakeouts in Telecommunications, Northwestern University, Research Project, June-August 1995.

9. National Science Foundation, Grant No. SES-90-96205, Sequential Models of Regulation with Limited Commitment, Northwestern University, Research Project, January 1990-June 1992.
8. National Science Foundation, Grant No. SES-86-08115 Project Renewal, Government Regulation and Procurement Under Incomplete Information, University of Southern California, Research Project, July 1987-June 1988.
7. National Science Foundation, Grant No. SES-86-08115, Government Regulation and Procurement Under Incomplete Information, University of Southern California, Research Project, July 1986 to June 1987.
6. Sea Grant, Economic Analysis for Resource Regulation, University of Southern California, Research Project, October, 1983 to October, 1985.
5. National Science Foundation, Grant No. SES-82-19121, Risk Sharing and Retail Inventories, University of Southern California, Research Project, September 1983 to June 1985.
4. National Science Foundation, Grant No. SES-82-09219, Competition and Welfare with Nonlinear Pricing, Project Renewal, University of Southern California, Research Project, August 1982 to January 1984.
3. National Science Foundation, Grant No. SES-81-05852, Competition and Welfare with Nonlinear Pricing, Brown University and University of Southern California, Research Project, August 1981 to January 1983.
2. National Science Foundation, Grant No. SES-79-14386, The Economics of Renewable Resource Management, Conference Grant, Brown University, Research Project, October 1979 to March 1981.
1. National Science Foundation, Grant No. SES-79-07201, Stochastic Optimization and Economic Dynamics, Brown University, Research Project, July 1979 to July 1980.

HONORS

Bayard Wickliffe Heath Memorial Lecture, University of Florida Law School, March 20, 2019.

The 12 Best Papers on Antitrust & the Digital Economy, The Technology Liberation Front, #4 Daniel F. Spulber, "Unlocking Technology: Antitrust and Innovation," 4 (4) Journal of Competition Law & Economics, (2008): 915, 2012, <http://techliberation.com/2012/09/06/the-12-best-papers-on-antitrust-the-digital->

economy

Ranked 6th in the United States in the listing of top 50 economists by pages published in leading journals, 1984-1993, "Trends in Rankings of Economics Departments in the U.S.: An Update, Loren C. Scott and Peter M. Mitias, *Economic Inquiry*, v. XXXIV, April, 1996, pp. 378-400.

152nd in the world in the listing of top economists by publications in Tom Coupé, "Revealed Performances: Worldwide Rankings of Economists and Economics Departments, 1990-2000," *Journal of the European Economic Association*, 2004.

Highly ranked for 1979-2003 adjusted appearances in "The Most Frequent Contributors to the Elite Economics Journals: Half Century of Contributions to the 'Blue Ribbon Eight'," J. L. Heck and P. A. Zaleski, *Journal of Economics and Finance*, 9 Spring, 2006, pp. 1-37.

Listed in Marquis' Who's Who in American Education, 4th Edition, and Marquis' Who's Who In Finance and Industry, 27th Edition.

The Bonser Distinguished Lecture at the Kelley School of Business, Indiana University, "Famous Fables of Economics: Myths of Market Failures," March 27, 2003.

Maggie Award for Business 2.0 series "10 Driving Principles of the New Economy," Daniel F. Spulber, 1999, "Clock Wise: Customer Convenience is the Key to e-Commerce; Rule 3: Time," *Business 2.0*, Special Supplement, February, pp.15-18.

CONFERENCES ORGANIZED

33. Daniel F. Spulber, Fourteenth Annual USPTO/Kellogg School of Management, Conference on Innovation Economics, Virtual conference, August 20, 2021.
32. Daniel F. Spulber, Thirteenth Annual USPTO/Kellogg School of Management/Center on Law, Business, and Economics Conference on Innovation Economics, August 27-28, 2020, Virtual conference, https://www.law.northwestern.edu/research-faculty/clbe/events/innovation/documents/innovation_economics_2020_agenda.pdf
31. Daniel F. Spulber, Twelfth Annual USPTO/Searle Center Conference on Innovation Economics, Searle Center on Law, Regulation and Economic Growth, June, 2019, http://www.law.northwestern.edu/research-faculty/searlecenter/events/innovation/documents/2019_innovation_economics_june_2019_agenda.pdf
30. Daniel F. Spulber, Eleventh Annual USPTO/Searle Center Conference on Innovation Economics, Searle Center on Law, Regulation and Economic Growth, June, 2018,

- http://www.law.northwestern.edu/research-faculty/searlecenter/events/innovation/documents/searle_11th_innovation_economics_2018_agenda.pdf
29. Daniel F. Spulber, Sixth Annual Research Roundtable on Patents and Technology Standards, Searle Center on Law, Regulation and Economic Growth, May, 2018, http://www.law.northwestern.edu/research-faculty/searlecenter/events/roundtable/documents/searle_sso_patent_2018_agenda.pdf
 28. Daniel F. Spulber, Tenth Annual USPTO/Searle Center Conference on Innovation Economics, Searle Center on Law, Regulation and Economic Growth, June 22-23, 2017. http://www.law.northwestern.edu/research-faculty/searlecenter/events/innovation/documents/Searle_10th%20Annual_Innovation_Economics_2017_agenda.pdf
 27. Daniel F. Spulber, Eighth Annual Conference on Internet Commerce and Innovation, Searle Center on Law, Regulation and Economic Growth, June 8-9, 2017. http://www.law.northwestern.edu/research-faculty/searlecenter/events/internet/documents/Searle_8th_Internet_Commerce_2017_Agenda.pdf
 26. Daniel F. Spulber, Fifth Annual Research Roundtable on Patents and Technology Standards, Searle Center on Law, Regulation and Economic Growth, May 4-5, 2017. <http://www.law.northwestern.edu/research-faculty/searlecenter/events/roundtable/>, http://www.law.northwestern.edu/research-faculty/searlecenter/events/roundtable/documents/Searle_Center_Patent_Roundtable_2017_Agenda.pdf
 25. Daniel F. Spulber, Ninth Annual USPTO/Searle Center Conference on Innovation Economics, Searle Center on Law, Regulation and Economic Growth, June 23-24, 2016, http://www.law.northwestern.edu/research-faculty/searlecenter/events/innovation/documents/Searle_Center_9th_Innovation_Economics_2016_agenda.pdf
 24. Daniel F. Spulber, Seventh Annual Conference on Internet Commerce and Innovation, Searle Center on Law, Regulation and Economic Growth, June 9-10, 2016, http://www.law.northwestern.edu/research-faculty/searlecenter/events/internet/documents/Searle_Center_7th_Annual_Internet_Commerce_Innovation_2016_Agenda.pdf
 23. Daniel F. Spulber, Fourth Annual Research Roundtable on Patents and Technology Standards, Searle Center on Law, Regulation and Economic Growth, May 5-6, 2016, http://www.law.northwestern.edu/research-faculty/searlecenter/events/roundtable/documents/Searle_Center_Technology_Standards_Roundtable_2016_Agenda.pdf

22. Daniel F. Spulber, Eighth Annual USPTO/Searle Center Conference on Innovation Economics, Searle Center on Law, Regulation and Economic Growth, June 18-19, 2015, http://www.law.northwestern.edu/research-faculty/searlecenter/events/innovation/documents/Searle_Center_8th_Innovation_Economics_2015_agenda.pdf
21. Daniel F. Spulber, Sixth Annual Conference on Internet Search and Innovation, Searle Center on Law, Regulation and Economic Growth, June 4-5, 2015, http://www.law.northwestern.edu/research-faculty/searlecenter/events/internet/documents/Searle_Center_6th_Internet_Search_Innovation_2015_Agenda.pdf
20. Daniel F. Spulber, Third Annual Research Roundtable on Patents and Technology Standards, Data Sets, with Stuart Graham, Cosponsored by the USPTO, Searle Center on Law, Regulation and Economic Growth, April 9-10, 2015, http://www.law.northwestern.edu/research-faculty/searlecenter/events/roundtable/documents/Searle_Center_Patents_Technology_Standards_2015_Agenda.pdf
19. Daniel F. Spulber, Seventh Annual USPTO/Searle Center Conference on Innovation Economics, Searle Center on Law, Regulation and Economic Growth, June, 2014, http://www.law.northwestern.edu/research-faculty/searlecenter/events/entrepreneur/documents/Searle_Center_Seventh_Annual_Innovation_Economics_2014_agenda.pdf
18. Daniel F. Spulber, Fifth Annual Conference on Internet Search and Innovation, Searle Center on Law, Regulation and Economic Growth, June, 2014, http://www.law.northwestern.edu/research-faculty/searlecenter/events/internet/documents/Searle_Center_Fifth_Annual_Internet_Search_Innovation_2014_Agenda.pdf
17. Daniel F. Spulber, Research Roundtable on Software and Business Method Patents, Searle Center on Law, Regulation and Economic Growth, with Emerson Tiller, April 24-April 25, 2014, http://www.law.northwestern.edu/research-faculty/searlecenter/events/roundtable/documents/Searle_Center_Software_Business%20Method%20Patents_Roundtable_2014_Agenda.pdf
16. Daniel F. Spulber, Research Roundtable on Innovation Economics, Searle Center on Law, Regulation and Economic Growth, October, 2013, <http://www.law.northwestern.edu/faculty/programs/searlecenter/events/roundtable/index.html#innovationroundtable>
15. Daniel F. Spulber, Sixth Annual Conference on Innovation and Entrepreneurship, Searle Center on Law, Regulation and Economic Growth, June 6-7, 2013, <http://www.law.northwestern.edu/searlecenter/conference/entrepreneur/index.html>

14. Daniel F. Spulber, Fourth Annual Conference on Internet Search and Innovation, Searle Center on Law, Regulation and Economic Growth, June 20-21, 2013, <http://www.law.northwestern.edu/searlecenter/conference/internet/index.html>
13. Daniel F. Spulber, Research Roundtable on Technology Standards, Innovation, and Market Coordination, Searle Center on Law, Regulation and Economic Growth, February 7-8, 2013, <http://www.law.northwestern.edu/searlecenter/conference/roundtable/#standards>
12. Daniel F. Spulber, Fifth Annual Conference on Innovation and Entrepreneurship, Searle Center on Law, Regulation and Economic Growth, June, 2012, <http://www.law.northwestern.edu/searlecenter/conference/entrepreneur/index.html>
11. Daniel F. Spulber, Third Annual Conference on Internet Search and Innovation, Searle Center on Law, Regulation and Economic Growth, June, 2012, <http://www.law.northwestern.edu/searlecenter/conference/internet/index.html>
10. Daniel F. Spulber, Book Preview Roundtable, Daniel F. Spulber's The Innovative Entrepreneur, Searle Center on Law, Regulation and Economic Growth, April 26-27, 2012, <http://www.law.northwestern.edu/searlecenter/conference/roundtable/#entrepreneurship>
9. Daniel F. Spulber, Fourth Annual Conference on Entrepreneurship and Innovation, Searle Center on Law, Regulation and Economic Growth, June, 2011, <http://www.law.northwestern.edu/searlecenter/conference/entrepreneur/index.html>
8. Daniel F. Spulber, Second Annual Conference on Internet Search and Innovation, Searle Center on Law, Regulation and Economic Growth, June, 2011, <http://www.law.northwestern.edu/searlecenter/conference/internet/index.html>
7. Daniel F. Spulber, Research Roundtable on Innovation Policy, Intellectual Property, and Entrepreneurship, Searle Center on Law, Regulation and Economic Growth, 2011, <http://www.law.northwestern.edu/searlecenter/conference/roundtable/#innovation>
6. Daniel F. Spulber, Third Annual Conference on The Economics and Law of the Entrepreneur, Searle Center on Law, Regulation and Economic Growth, June, 2010, <http://www.law.northwestern.edu/searlecenter/conference/entrepreneur/index.html>
5. Daniel F. Spulber, First Annual Conference on The Economics and Law of Internet Search, 2010, <http://www.law.northwestern.edu/searlecenter/conference/internet/index.html>
4. Daniel F. Spulber, Second Annual Conference on The Economics and Law of the Entrepreneur, Searle Center on Law, Regulation and Economic Growth, June, 2009, <http://www.law.northwestern.edu/searlecenter/conference/entrepreneur/index.html>

3. Daniel F. Spulber, Book Preview Roundtable, Daniel F. Spulber and Christopher Yoo, Networks in Telecommunications, 2008, http://www.law.northwestern.edu/academics/searle/conference/roundtable/Networks_agenda.pdf
2. Daniel F. Spulber, First Annual Conference on The Economics and Law of the Entrepreneur, Searle Center on Law, Regulation and Economic Growth, June, 2008, <http://www.law.northwestern.edu/searlecenter/conference/entrepreneur/index.html>
1. Daniel F. Spulber, Book Preview Roundtable, Daniel F. Spulber's The Theory of the Firm, Searle Center on Law, Regulation and Economic Growth, 2008, http://www.law.northwestern.edu/academics/searle/conference/roundtable/theory_agenda.pdf

DOCTORAL STUDENTS

1. Paul Calem
2. Sudipto Dasgupta
3. Anindya Sen
4. Sarbajit Sengupta
5. Yossi Spiegel
6. Hon Sing Lee
7. Deepa Kumar
8. Pedro Mendi
9. Ramon Casadesus-Masanell
10. Alexei Alexandrov
11. Nolan Miller
12. Joaquin Poblete
13. Francisco Ruiz Aliseda

OUTSIDE ACTIVITIES

Daniel F. Spulber, Comments on Draft USPTO, NIST, & DOJ Policy Statement on Licensing Negotiations and Remedies for Standard-Essential Patents Subject to Voluntary F/RAND Commitments, Docket ATR-2021-0001, Submitted February 3, 2022.

Comments of Scholars of Law, Economics, and Business Draft USPTO, NIST, & DOJ Policy Statement on Licensing Negotiations and Remedies for Standard-Essential Patents Subject to

Voluntary F/RAND Commitments, Docket ATR-2021-0001, Submitted February 4, 2022.

Daniel F. Spulber, Member of the Jury, 2021 Antitrust Writing Award, Concurrences.

Daniel F. Spulber, 2017, Reviewer for 2018 Kauffman Dissertation Fellows, Ewing Marion Kauffman Foundation.

Daniel F. Spulber, Interview for the Global Antitrust Economics Conference, interviewed by Managing Principal Jeffrey Cohen (Analysis Group).
<https://www.eventbrite.com/e/interview-with-daniel-spulber-the-global-antitrust-economics-conference-tickets-26910829014>, Concurrences + Searle Center on Law, Regulation, and Economic Growth at Northwestern Pritzker School of Law, Friday, October 7, 2016, Chicago, IL.

SELECTED PRESENTATIONS

2022

Keynote Speaker, Taiwan Symposium on Innovation Economics and Entrepreneurship, a collaboration of the Center for Research in Econometric Theory and Applications (CRETA) of National Taiwan University (NTU) and Office of Interdisciplinary Research (OIR) of National Tsing Hua University (NTHU), March 25, 2022, upcoming.

Participant, Book Roundtable, on Thibault Schrepel's Blockchain + Antitrust: The Decentralization Formula, Edward Elgar Publishing, 2021, Technology, Innovation, and Intellectual Property Program, Classical Liberal Institute, New York University, March 11, 2022, upcoming.

Seminar Speaker, Patent Policy for the 5G Era: The Role of Licensing Standard Essential Patents, ITS webinar, International Telecommunications Society, March 1, 2022, <https://www.itsworld.org/wp-content/uploads/2021/12/ITS-Webinar-Patent-Policy-for-the-5G-Era.pdf>

Seminar Speaker, Incentives to Invent When Innovators Make "New Combinations" of Inventions, Nottingham University Business School (NUBS), University of Nottingham, UK, February 22, 2022.

2021

Keynote Speaker, Licensing Standard Essential Patents and Incentives to Innovate, Conference on Transatlantic Relationships in Innovation Policies: Converging Agendas?, European University Institute, Florence School of Regulation, Communications & Media, Florence, Italy, November 11, 2021.

Participant, Book Roundtable, on Zorina Khan's Inventing Ideas: Patents, Prizes, and the Knowledge Economy, Oxford University Press, Technology, Innovation, and Intellectual Property Program, Classical Liberal Institute, New York University, October 28, 2021.

Speaker and organizer, Fourteenth Annual USPTO/Kellogg School of Management, Conference on Innovation Economics, Virtual conference, August 20, 2021.

Speaker, Book Roundtable, The Case for Patents, by Daniel F. Spulber, Technology, Innovation, and Intellectual Property Program, Classical Liberal Institute, New York University, May 11, 2021.

Speaker, The Case for Patents, Annual conference on Intellectual Property Rights, Intellectual Property 2021: New Risks, New Challenges & Emerging Solutions, April 26-28 2021, World IP Forum, <https://www.worldipforum.com/wipf-speakers.php?login=success>.

Speaker, The Case for Patents, Podcast, Mercatus Institute, with Alden Abbott, George Mason University, Washington, D.C., April 6, 2021, <https://www.mercatus.org/podcasts/04062021/economic-benefits-patent-system>.

Speaker, Chief Economist Speaker Series, Antitrust and Innovation Competition, United States Patent and Trademark Office (USPTO), Washington, D.C., April 1, 2021.

Speaker, Seminar, "The Case for Patents," Lazarides Institute, Wilfred Laurier University, Waterloo, Canada, Thursday, March 25, 2021.

Speaker, Panel, Digital Platforms: Innovation, Antitrust, Privacy & the Internet of Things, Center for intellectual Property, Information, and Privacy Law, John Marshall Law School, University of Illinois, Chicago. March 12, 2021.

Speaker, LeadershIP Roundtable, IP, Antitrust and Standards: Have We Reached Global Convergence?, February 2, 2021.

Book Roundtable, Innovators, Firms, and Markets: The Organizational Logic of Intellectual Property by Jonathan M. Barnett, Technology, Innovation, and Intellectual Property Program, Classical Liberal Institute, New York University, January 14, 2021.

2020

Speaker, Panel, FRAND and the Automotive Value Chain, SEP2020 Conference, IPWatchdog, November 17, 2020.

Speaker, Panel, AI and IP, Conference, Joint program with the Giles S. Rich Inn, Pauline

Newman IP American Inn of Court, October 20, 2020.

Speaker, Panel, The Antitrust IP Interface: How Antitrust Affects IP Implementation, online broadcast at World Intellectual Property Review/ Life Sciences Intellectual Property Review, Newton Media Ltd, Kingfisher House, 21-23 Elmfield Road, Bromley BR1 1LT United Kingdom, October 22, 2020, <https://www.lspnconnect.com/>

Speaker, Panel, Using Data to Inform Policy: Empirical Evidence on SEPs, SSOs and FRAND Royalties, 5G at the Nexus of IP, Antitrust, and Technology Leadership, Eighth Annual Fall Conference hosted by the Center for the Protection of Intellectual Property (CPIP) at Antonin Scalia Law School, George Mason University, Arlington, Virginia. Wednesday, October 7 and Thursday, October 8, 2020.

Speaker, Making IP Markets, IP Licensing Roundtable, Center for the Protection of Intellectual Property (CPIP) at Antonin Scalia Law School, George Mason University, Thursday, September 17th, 2020.

Coauthor speaker, Paper Session, TIM Conversations - Technology Acquisitions, Firm Matching in the Market for Technology: Harnessing Creative Destruction, with Pere Arque-Castells, University of Groningen, Academy of Management, Vancouver, BC, Canada, August 10, August 7-11, 2020.

Speaker, Panel on Antitrust Issues, Digital Platforms: Innovation, Antitrust, and Privacy, Center for intellectual Property, Information, and Privacy Law, John Marshall Law School, University of Illinois, Chicago, IL, March 13, 2020.

Speaker, Antitrust Policy toward Patent Licensing: Why Negotiation Matters, Sponsored by the National Science Foundation (NSF), 2020 Future of IP Conference, Orlando Florida, February 28, 2020.

2019

Speaker, Licensing Standard Essential Patents: What is Fair, Reasonable, and Non-Discriminatory?, Bayard Wickliffe Heath Memorial Lecture, University of Florida Law School, March 20, 2019.

Speaker, Panel on Economics of Intellectual Property, USPTO Conference on Artificial Intelligence: Intellectual Property Policy Considerations, January 31, 2019, USPTO, Alexandria, VA.

2018

Speaker, Panel, Session on Competition and Performance: The Role of Technology and Innovation Strategies, Academy of Management, Chicago, IL, August 13, 2018.

Speaker, Panel, Session on Organization Design and Industry Dynamics, Ecosystem Design and Industry Dynamics, Annual Organization Design Conference Chicago, IL, August 12, 2018.

Speaker, Panel, ABA Antitrust Section - IP Committee: Teleconference on Essential Patents and the Agencies – Incentives to Standardize, March 6, 2018.

2017

Coauthor presentations of Pere Arqué-Castells and Spulber, Daniel F., The Market for Technology: Harnessing Creative Destruction: Fifth Annual Research Roundtable on Patents and Technology Standards, May 4-5, 2017, Chicago; 7th ZEW/MaCCI Conference on the Economics of Innovation and Patenting, May 9, 2017, Mannheim, Germany; European Policy for Intellectual Property (EPIP) 2017 Conference, September 4-7 2017, Bordeaux, France; Barcelona GSE workshop on the Economics of Science and Innovation, June 15-16, 2017, Barcelona, Spain; 2017 Intellectual Property Statistics for Decision Makers (IPSDM) conference, November 14-15 in Mexico City; Workshop on challenges of innovation policy, November 24, 2017, Reus, Spain.

Speaker, The Internet of Things: Economic Effects and Public Policy Implications, Cyber-physical Technologies to Enable the Internet of Things, Office of Research Development LINC Series: Launching Interdisciplinary Connections, February 15th, 2017, Cook Hall room 2058, Evanston Campus, Northwestern University.

2016

Speaker, Economics of Fostering Innovation and Open Standards in Payment Markets, Federal Reserve Bank of Chicago (FRBC), Chicago Payment Symposium, Chicago, IL, October 12-13, 2016.

Speaker, Panel on “Innovation Economics and New Business Models: Which Consequences for Antitrust Policy?” Global Antitrust Conference, Concurrences Review, Chicago, IL, October 7, 2016.

Speaker, Panel on Patent Holdup, Royalty Stacking, and Standards: Theory and Evidence, Conference on Patent Holdup Theory Implications for The Courts, Government, and the Legislature, Stanford University's Hoover Working Group on Intellectual Property, Innovation, and Prosperity (Hoover IP2), Washington, D. C., October 4, 2016.

Speaker, Standard Setting Organizations and Standard Essential Patents: Voting Power versus Market Power, Ninth Annual Searle Center Conference on Antitrust Economics and Competition Policy, September 16-17, 2016, Northwestern Pritzker School of Law.

Speaker, Session on Consequences of the IoT: Economic Implications, General Accountability Office (GAO) Meeting of Experts on Internet of Things, National Academies of Sciences, Engineering, and Medicine, Washington, D. C., May 24-25, 2016.

Keynote speaker, “What Can We Learn From Technology Standards?” Fourth Annual Research Roundtable on Patents and Technology Standards, Searle Center on Law, Regulation and Economic Growth, Northwestern University, May 5-6, 2016.

Seminar speaker, “Standard Setting Organizations and Standard Essential Patents: Voting Power versus Market Power,” Managerial Economics and Decision Sciences (MEDS), Kellogg School of Management Northwestern University, April 1, 2016.

Seminar speaker, “Standard Setting Organizations and Standard Essential Patents: Voting Power versus Market Power,” Technology & Operations Management, Harvard Business School, March 28, 2016.

Appendix B

Testimony in the Past Four Years

Testimony in the Past Four Years

1. *Douglas Bernstein, et al. v. Cengage Learning, Inc.* (S.D.N.Y. No. 19-cv-7541-ALC-SLC).
2. Written Rebuttal Testimony. *Determination of Rates and Terms for Making and Distributing Phonorecords IV (Phonorecords IV)*. (No. 21-CRB-0001-PR (2023-2027)) (2022). Copyright Royalty Board Library of Congress, Washington, D.C.
3. Additional Written Direct Testimony. *Determination of Rates and Terms for Making and Distributing Phonorecords III (Phonorecords III)*. (No. 16-CRB-0003-PR (2018-2022) (Remand)) (2022). Copyright Royalty Board Library of Congress, Washington, D.C.
4. Initial Expert Report. *Certain LTE-Compliant Cellular Communication Devices*. (Inv. No. 337-TA-1253) (Report October 26, 2021, and Oral Deposition December 3, 2021). United States International Trade Commission, Washington, D.C.
5. Written Direct Testimony. *Determination of Rates and Terms for Making and Distributing Phonorecords IV (Phonorecords IV)*. (No. 21-CRB-0001-PR (2023-2027)) (2021). Copyright Royalty Board Library of Congress, Washington, D.C.
6. Remand Written Rebuttal Testimony. *Determination of Rates and Terms for Making and Distributing Phonorecords III (Phonorecords III)*. (No. 16-CRB-0003-PR (2018-2022) (Remand)) (2021). Copyright Royalty Board Library of Congress, Washington, D.C.

Appendix C

Materials Relied Upon

Materials Relied Upon¹

Legal

Defendant Pandora Media, LLC's Fifth Supplemental Responses to Plaintiff Flo & Eddie, Inc.'s First Set of Interrogatories. *Flo & Eddie, Inc. v. Pandora Media, LLC, et al.* (C.D. Cal. No. 2:14-cv-07648-PSG-GJS) (Aug. 4, 2020).

First Amended Class Action Complaint. *Flo & Eddie, Inc. v. Pandora Media, LLC, et al.* (C.D. Cal. No. 2:14-cv-07648-PSG-GJS) (Sept. 29, 2022).

Memorandum of Points and Authorities in Support of Defendant Pandora Media, LLC's Motion for Summary Judgment. *Flo & Eddie, Inc. v. Pandora Media, LLC, et al.* (C.D. Cal. No. 2:14-cv-07648-PSG-GJS) (Nov. 18, 2022).

Publications

"Global Music Report 2022." *International Federation of the Phonographic Industry* (2022). <https://www.ifpi.org/wp-content/uploads/2022/04/IFPI_Global_Music_Report_2022-State_of_the_Industry.pdf> (accessed Jan. 10, 2023).

J. Gregory Sidak and Daniel F. Spulber. "Regulatory Takings and Breach of the Regulatory Contract." *New York University Law Review* 71.4 (1996): 851-999.

Mankiw, N. Gregory. *Principles of Microeconomics, Fifth Edition*. Mason, Ohio: South-Western Cengage Learning (2009).

Pandora Media, Inc. *Form 10-K* (2013).

Pandora Media, Inc. *Form 10-K* (2015).

Pandora Media, Inc. *Form 10-K* (2017).

"Thumbs." *Pandora*. <https://help.pandora.com/s/article/Thumbs-1519949305945?language=en_US> (accessed Jan. 4, 2022).

¹ In preparing my declaration, I relied upon the documents listed here along with any items cited or referenced in the body and footnotes of my declaration.