

THE ELECTRONIC SILK ROAD

HOW THE WEB BINDS
THE WORLD IN
COMMERCE

ANUPAM CHANDER

Yale
UNIVERSITY PRESS
New Haven & London

Copyright © 2013 by Yale University.

All rights reserved.

Subject to the exception immediately following, this book may not be reproduced, in whole or in part, including illustrations, in any form (beyond that copying permitted by Sections 107 and 108 of the US Copyright Law and except by reviewers for the public press), without written permission from the publishers.

An online version of the work is made available under a Creative Commons license for use that is both noncommercial and nonderivative. The terms of the license are set forth at <http://creativecommons.org/licenses/by-nc-nd/3.0/legalcode>. For more information about the work, please see the author's website at <http://www.chander.com>.

Yale University Press books may be purchased in quantity for educational, business, or promotional use. For information, please e-mail sales.press@yale.edu (US office) or sales@yaleup.co.uk (UK office).

Designed by Lindsey Voskowsky.

Set in Adobe Caslon Pro and Whitney type by IDS Infotech, Ltd.

Printed in the United States of America.

Library of Congress Cataloging-in-Publication Data

Chander, Anupam.

The electronic silk road : how the web binds the world in commerce /

Anupam Chander.

pages cm

Includes bibliographical references and index.

ISBN 978-0-300-15459-7 (clothbound : alk. paper)

1. Law and globalization—Economic aspects. 2. Electronic commerce—Law and legislation. 3. Internet—Social aspects. 4. Globalization—Economic aspects. I. Title.

KZ1268.C47 2012

381'.142—dc23

2012047258

A catalogue record for this book is available from the British Library.

This paper meets the requirements of ANSI/NISO Z39.48-1992
(Permanence of Paper).

10 9 8 7 6 5 4 3 2 1

THE NEW GLOBAL DIVISION OF LABOR

What an extraordinary episode in the economic progress of man that age was which came to an end in August, 1914! . . . The inhabitant of London could order by telephone, sipping his morning tea in bed, the various products of the whole earth, in such quantity as he might see fit, and reasonably expect their early delivery upon his doorstep.

—John Maynard Keynes, *The Economic
Consequences of the Peace*

Adam Smith could never have dreamed of the global division of labor that is quickly coming to pass. It would take two centuries after *The Wealth of Nations* for the global manufacturing process to be perfected. Where the twentieth century saw the rise of the global supply chain in manufacturing, in the twenty-first century technology now permits the rise of a global supply chain in services. Relying on suppliers around the world, a garage entrepreneur can coordinate the production and delivery of a service from anywhere. Firms can transfer processes to foreign third-party vendors, relying on the discipline of the market rather than the discipline of supervisory management. The search for talent has gone global,

hurdling the barriers to labor factor mobility posed by restrictive immigration laws.

Not only can firms find inputs anywhere, but they can find buyers everywhere. Firms can offer their services directly to consumers across the world without investing in extensive local distribution networks. They can leverage this worldwide consumer base to achieve economies of scale. Firms can locate their headquarters where they might have most ready access to capital, especially venture capital, and their servers where they can find cheap and plentiful energy. They might locate their operations in a jurisdiction that provides tax incentives to encourage job creation. Because technology now allows firms and consumers to turn to service providers far from home, suddenly the local information broker—from the reporter to the auctioneer to the yenta—must now compete with suppliers across the world.

This organizational revolution puts pressure on law. The movement from make to buy, from status to contract, will require a robust transnational legal framework to facilitate cross-border contracts and information flows. The risks to security and privacy as information crisscrosses the world between consumers and service providers will require a legal response. Rather than the Silk Road's disputes among merchants or modern goods traders' disputes regarding bills of lading and shipping documents, disputes in this new international market for services will grow among household buyers and sellers located across the globe, between ordinary citizens and global websites.

In this chapter, I describe this evolution in the organization of production, arguing that we will likely see increasing cross-border contracting between unaffiliated parties as firms move internal processes to third-party vendors. Where there are contracts, there are eventually contractual disputes, requiring a legal infrastructure of dispute resolution. The open-source programming that drives much

of this trade itself relies on the enforceability of contract and property rights across borders—supplemented by reputation and reward systems. In the final section of this chapter, I describe the close and mutually beneficial connection between outsourcing and open-source production methods.

Butcher, Baker, Information Broker

“In the lone houses and very small villages which are scattered about in so desert a country as the Highlands of Scotland, every farmer must be butcher, baker, and brewer for his family.”¹ Adam Smith began his 1776 study of the wealth of nations by examining the division of labor. The division of labor, he observed, depended in large part on the size of the market, which in turn depended largely on geography and technology. In remote locations, the absence of extensive markets limited the division of labor. But those with better access to means of transportation could reach larger markets, and thereby improve efficiency: “by means of water carriage a more extensive market is opened . . . and industry of every kind naturally begins to subdivide and improve itself.”² Specialization would improve productivity by reducing the time wasted in transferring among multiple tasks, increasing the dexterity of the individual worker at a specific task, and spur the invention of machines that perform specified functions.³ Smith critiqued the reigning mercantile political economy of his day, which sought to encourage exports but discourage imports. While Smith spoke in terms of absolute advantage and not comparative advantage, he argued that liberal rules for both export and import would deepen the division of labor and enrich nations.

Smith wrote at a time when the medieval age’s dusty silk roads and wooden ships were soon to give way to the railroads and

steamships of the industrial age. Industrial revolutions in mechanization, transportation, and communications technology deepened the national and international division of labor. Technology eroded the decisive role of geography in the organization of production. Mass-production techniques and the modern management systems they spawned swelled the international trade in goods.

The economic benefits of this globalization have been distributed widely—but many have also borne the pain and dislocation that follow from global competition.⁴ Merchandise producers reduced their costs by shifting manufacturing to advantageous locations, often in maquiladoras or other export-processing zones in the developing world.⁵ This shift led to the loss of blue-collar jobs in the industrialized nations, the rise of sweatshops in the developing world in some cases, and the dazzling array of affordable merchandise available at the local superstore.

As economic historian Alfred Chandler describes, technological innovation shifted not just the location of production but also its organization. By enlarging both output and markets, the nineteenth century's industrial revolution required the creation of the managerial hierarchies (managers who manage managers) characteristic of the modern business enterprise.⁶ These colossus corporations, increasingly capitalized through the public markets, brought inside the corporate walls functions that had historically been provided by third parties. These corporations integrated mass production and mass distribution within the firm and its subsidiaries, replacing the invisible hand of the market with the visible hand of management.

The multidivision corporation (dubbed the “M-Form” corporation) would rapidly extend itself internationally to become the multinational corporation that came to dominate the twentieth century.⁷ Even at the dawn of the twentieth century, some Europeans labeled this the “American invasion” and fretted about the “Americanisation

of the world.”⁸ The multinational corporation would become a principal vehicle for cross-border trade in services. Hollywood began to recognize the global audience available for its media products. Software enterprises, too, sought global markets. Microsoft has subsidiaries in more than 110 countries, from Albania to Zimbabwe.⁹ Financial institutions extended themselves around the world; Citigroup today has offices in nearly a hundred countries worldwide.¹⁰ Western telecommunications companies similarly found opportunities for growth in the developing world. The global wave of privatizations of government services beginning in the 1980s increased the local presence of multinational corporations in a variety of fields from banking to telecommunications to water services.

But with the exception of finance, this cross-border trade in services did not generally require the real-time transmission of large volumes of data across borders.¹¹ Microsoft and Disney developed their products in one country—typically the United States—and then disseminated that product globally. Local subsidiaries were simply translators and distributors. Thus, while service providers in certain industries in the developing world faced competition from Western corporations with local distribution channels, service providers in advanced, industrialized nations did not face a reciprocal competition from service providers in the developing world.

Unlike merchandise, which typically can tolerate the lag between product design and product production imposed by international shipping, many services require a real-time exchange of information between the service provider and its consumer. Accordingly, for the bulk of human history, services had to be performed on-site or near-site. The digital revolution disrupted this requirement through two related innovations: the creation of global digital networks and the digitization of information itself. First, the introduction of the Internet and other high capacity transcontinental electronic data

networks made possible remote collaboration on a real-time basis, with parties separated by continents able to share data almost as readily as if they had adjoining cubicles.¹² Second, the digitization of information spurred its wide dissemination. The adoption of computers as a tool for work meant that information was often created originally in digital form. The World Wide Web established one common information-sharing platform, taking advantage of both digital networks and digitized information. Information that had been held locally now found wide distribution. Take, for example, the US Securities and Exchange Commission's EDGAR database, with its immense storehouse of information about publicly traded companies, and the Patent and Trademark Office's databases, which make every patent and registered trademark searchable. It was not long ago when accessing SEC or PTO public records required hiring a runner to photocopy files in a Washington area basement, delivering a copy by either Federal Express or fax. With the rise of the World Wide Web, these databases became available for free to people across the world.¹³ The global information platform allowed the creation of new services, such as search engines, video and other information-sharing depositories, and personal social networks.

Today, cross-border outsourcing includes "typists, researchers, librarians, claims processors, proofreaders, accountants and graphic designers."¹⁴ Cross-border trade in services also includes engineering,¹⁵ architectural services,¹⁶ legal services,¹⁷ animation, and movie special effects.¹⁸ The jobs are both "big—100-page investment reports requiring weeks of work—and small."¹⁹ Chennai-based "Iayaraja Marimuthu, for instance, is designing a program for [the] wedding of Ann and John, a Texas couple proclaiming their joy in being 'together for life.'²⁰ (The flower arranging, alas, cannot be outsourced cross-border, even if the flowers themselves come from the tropics.) Today, telecommuting can occur across hemispheres. A

Wall Street Journal article offers a vivid example of what it calls “extreme telecommuting”: although Paolo Conconi’s “work is in Europe and China, his office is a table by the pool of his villa in Bali, Indonesia. As he goes through his mail, he sips his favorite Italian coffee. An attendant lights his cigarette.”²¹

Manufacturing, too, has been transformed by electronic networks. Even a trade as ancient as Persian carpet weaving “is guided, these days, in part by e-mail missives on the tastes of rich customers in the West.”²² This is an example of the design services that are a key input into the manufacturing process.

The Organisation for Economic Co-operation and Development (OECD) estimates that one-fifth of all service jobs in the developed economies will be affected by cross-border trade in services.²³ This does not mean that such a large fraction of jobs will soon be outsourced but, rather, that the terms of these positions will change as a result of international competition. The deepening division of labor represented by cross-border outsourcing of services increases efficiency, just as the international division of labor in manufacturing increased efficiency. An inefficient service sector functions as “a prohibitive tax on the national economy.”²⁴ By removing this unproductive tax, trade in services should improve growth across the world. Of course, even while many more will gain, many will lose. The personal misfortunes that will result will be enormous. Retraining and adjustment programs are necessary measures, but not all countries can afford them.

Vendor or Captive? Reinterpreting “Make or Buy”

The first claim to fame of the economist Ronald Coase was his 1937 inquiry into why firms existed at all, rather than individuals who contracted with one another in the marketplace. The question has

been translated into the query: Make (inside a firm) or buy (through a market)? Often overlooked is that Coase placed technology at the heart of his explanation of the determinants of the boundaries of the firm, recognizing that technology would influence both the transactions costs of marketplace contracting and the organization costs of internal hierarchy.²⁵ In 2000, the *New York Times* linked the organizational shift to a prediction of Coase's theory: "Sixty years [after Coase's paper], transaction costs have plunged, thanks to the Internet. . . . As a result, companies can get complete information about potential suppliers and business partners within a few clicks, and can therefore set up supplier agreements or form alliances with other companies for a fraction of what it would have cost even a decade ago."²⁶ Electronic data networks reduced not only the costs of marketplace transactions but also the costs of managerial hierarchies. The first effect—the reduction of transaction costs—tends to reduce the size of the firm by increasing the use of the marketplace for purchasing inputs into the production process. However, the second effect—the reduction of hierarchy costs—tends to increase the size of the firm as the costs of internalizing production inputs fall. In his original paper, Coase was uncertain whether improvements in communications technology (he offered the example of the telephone) would put greater downward pressure on market transaction costs or internal organization costs.²⁷ Today, the standing view seems to be that the greater effect has been on market transaction costs, implying an increase in third-party outsourcing.²⁸

Yet the choice of employing a service provider abroad does not necessitate a turn to the market. Many Western corporations outsource by establishing local subsidiaries rather than by employing independent vendors. In the parlance of international businesspeople, nonchalant about the evocation of colonial rule, these are "captives." Restated in the language of organizational economics, the

Western corporations that outsource through captives choose “make” over “buy.” (Economists consider obtaining an input from a foreign subsidiary “making,” not “buying,” the input because it is produced in-house by a corporate arm.) The General Electric Company pioneered this type of outsourcing in India, in large part by accident. In 1997, as GE was establishing an Indian office to process credit applications from Indians for a credit card joint venture with an Indian bank, the “light went on.” “We started to think, we can do this for the rest of the world,” says Pramod Bhasin, a former GE Capital executive who helped create GE Capital International Services (“Gecis”) and serves as its chief executive. Now Gecis reviews credit card applications from New Delhi to New York. “By the late 1990s,” the *Wall Street Journal* reports, “GE began turning its attention from simply buying software from India to using the country as a base for data entry, processing credit-card applications and other clerical tasks.” GE realized “savings on backroom operations alone” of about \$300 million a year. By 2000 the outsourcing had deepened further, as GE established the John F. Welch Technology Centre in Bangalore, named after its storied CEO, employing “thousands of researchers working on everything from new refrigerators to jet engines.”²⁹

New institutional economists have refined Coase’s insights into the determinants of the organization of the firm. Today economists explain the decision to make rather than buy as turning in part on the existence of *asset specificity*. Certain types of marketplace contracts might be subject to post-contractual opportunistic behavior, leading companies to bring those functions within the corporate hierarchy. When either party invests in assets specialized to that particular contract, the counterparty can exploit that investment by renegotiating the terms of the contract, recognizing that the party making a specialized investment cannot readily divert its resources

to alternative productive uses.³⁰ In cross-border outsourcing, either the vendor or the procurer of services may face the risk of exploitation: the vendor might be required to engage in extensive information gathering about its client or create processes and systems narrowly tailored to the client's needs; the client, meanwhile, might come to rely on proprietary systems owned and supported by a particular vendor. The vendor's investment in knowledge may leave the client vulnerable, at least in the short run, if such knowledge will be difficult for another vendor to replicate readily in the future. At the same time, the vendor may be vulnerable because of its extensive asset-specific human and other capital investment in the project of the procurer, an investment that will be amortized only over a long term.

Firms faced with asset-specific inputs might avoid the possibility of exploitative behavior by entering into long-term contracts that provide remedies for exploitative behavior. However, such contracts might be quite expensive, both to write and to enforce.³¹ This problem is compounded by the difficulty of pricing idiosyncratic inputs. Because neither the buyer nor the seller will find it easy to predict exactly how many resources the input will ultimately require, the contractual price may be subject to adjustment under the contract terms. The price escalation clause makes it difficult to distinguish legitimate pricing adjustments due to unexpected cost increases from behavior exploiting the counterparty's asset-specific investments. At times, one party will accept the risk of exploitation by the other side, a risk that it will presumably price. Reputational sanctions and the withdrawal of expected future business often prove a means to discipline exploitative behavior.

The principal alternative to contracting as a response to the difficulties posed by asset specificity is vertical integration—that is, buying or building the supplier instead of buying the supply. Rather

than rely on contracts with third-party vendors, corporations might choose to bring the function in-house. They can do so even with inputs to be delivered across borders, typically through establishing a local subsidiary in the foreign country. General Electric did exactly this when it expanded its financial services operations in India.

But vertical integration increases hierarchy costs and fails to take full advantage of the market. Managing subsidiaries cross-border is an especially expensive proposition. More important, keeping a function in-house reduces the opportunities for benefiting from economies of scale. Of course, a firm could create a subsidiary that serves not just that firm but also other companies. But third-party vendors can more readily serve multiple clients. This represents a division of labor across firms rather than within them. The approach is the opposite of the twentieth-century firm described by Alfred Chandler, either the conglomerate that makes everything from tires to rolls of bathroom tissue (similar only to the extent that both are circular) or the vertically integrated multidivisional firm. Contemporary organization theorists see investments through public and private markets, rather than managerial hierarchy, as the superior mechanism in most cases for diversifying risk and investing in opportunities in diverse markets. A stand-alone enterprise not confined to one buyer finds it easier to scale up by offering its service to multiple demanders. A diversity of demanders also increases the efficiency with which that service is used, as slackened demand by a customer here (say, as a result of regional or sectoral recession) can be compensated by increased demand elsewhere. By providing services to multiple companies, third-party vendors also develop specialized expertise not readily available to a supplier for a single entity. As one expert notes, captive centers must “derive one’s own learning, unlike in a third-party scenario where they would have picked up best practices from other clients and processes.”³² The efficiencies of

third-party vendors hold a financial payoff: the *Economist* magazine reports that captives may tend to be more expensive than independent vendors, with costs up to 50 percent higher.³³

Indeed, the pioneer in outsourcing to India, GE, has spun off its Gecis subsidiary, selling a majority stake to US-based private equity firms.³⁴ The sale “allowed Gecis to begin working for companies other than GE, including Japan’s Nissan Motor Co.”³⁵ One of the many India-based outsourcing companies to list on the New York Stock Exchange, WNS (Holdings) Limited, followed a similar path, beginning life as the in-house services provider for British Airways, until the American private equity group Warburg Pincus purchased a majority stake. Today the company, which is incorporated in Jersey, Channel Islands, continues to serve British Airways but also serves Air Canada, Virgin Atlantic Airways, and numerous financial institutions.³⁶ The trend seems to be continuing. Citigroup, for example, sold its Indian subsidiary Citigroup Global Services to Tata Consultancy Services at the end of 2008 for half a billion dollars. Tata took on the twelve thousand employees of the subsidiary and agreed to provide services to Citigroup for the next decade. Citigroup then sold another Indian services subsidiary to Wipro, simultaneously agreeing to a five-year contract to outsource certain services to Wipro. The Swiss bank UBS sold its Indian business-process outsourcing unit to outsourcing firm Cognizant.

The decision to outsource a function through a foreign subsidiary rather than a third-party vendor often turns on yet other factors beyond asset specificity or efficiency. Companies are especially wary of turning “strategic” or “core” functions over to third-party entities. The concern is especially evident when such functions involve proprietary and secret information, given the fear that the foreign vendor might appropriate such information and use it to enhance a competitor. But some management consultants argue in a *Harvard*

Business Review article that even “critical functions like engineering, R&D, manufacturing, and marketing can—and often should—be moved outside.”³⁷ Even the definition of what is “strategic” and “core” is susceptible to change over time. The history of the integrated circuit chip industry reflects this dynamic:

In the 1980s, large U.S. integrated circuit chip (“chip”) design companies began moving manufacturing of their chips to offshore fabrication facilities (or “fabs”) that also leveraged economies of scale to produce large volumes of chips for many chip companies. . . . The benefit for these companies included reducing their costs to produce their chips, while freeing up capital and time to develop newer and better chips. Today, almost every new U.S. chip company is “fabless”; they design their semiconductor products and turn to offshore fabrication facilities to produce them.³⁸

Intel remains an important exception to this rule, maintaining plants across the world. Outsourcing production of even a company’s most valued products is commonplace: Apple outsources its star products—iPhone, iPod, and laptop production—to Taiwanese vendors. In 2012, Apple’s CEO Tim Cook visited the Chinese plant where 120,000 workers employed by the Taiwanese company Foxconn build Apple’s products.³⁹ Apple also announced plans to renew limited manufacturing in the United States. Over time, the pressure to minimize costs may increase demand for third-party vendors with respect to services, but only as long as issues of intellectual property, privacy, security, and contract enforcement are adequately resolved. As outsourcing to third-party entities deepens, we may see a reversal of the trend famously noted by Alfred Chandler: a move from the visible hand of management to the invisible hand of the market.

From Open Source to Outsource

Outsourcing shares much in common with open-source production processes, an increasingly important mode of organizing production. Harvard theorist Yochai Benkler describes what he calls “commons-based peer production,” whereby individuals, usually working as volunteers, contribute to a communal project in a “self-selected and decentralized, rather than hierarchically assigned” manner, rewarded principally only in reputation or in the use of the final product. Benkler suggests that these volunteers can “beat the largest and best-financed business enterprises in the world at their own game.”⁴⁰ Both outsourcing and open sourcing require that a larger task be divisible across numerous persons who are geographically dispersed, a division made immeasurably easier by the emergence of the Internet. Both thus embody the increasing *deconstruction* of the firm, with the functions of the firm disaggregated via piecemeal work performed remotely.⁴¹ In this section, I explore the relation between the two, suggesting that outsourcing can benefit from the adoption of open source and open standards.

Open-source production can be understood as a species of network: in commons-based peer production, the person originating the project outsources development to others around the world, though without the command directive or purchasing conditions typically present in a traditional outsourcing transaction. Consider Linux, the exemplar of the peer production and open-source movement. The kernel to this operating system was developed by Linus Torvalds from his home in Finland, built atop code developed by Richard Stallman. Since 1991, when he released his source code to an Internet newsgroup, Torvalds has coordinated a global production process, now from the West Coast of the United States.⁴² The Linux kernel today contains more than fifteen million lines of code and powers the great bulk of the world’s top supercomputers.⁴³

In computer software, languages evolved to promote modular programming, which facilitates collaboration.⁴⁴ Programming now often involves extending a “library” of functions, each performing a well-defined operation upon the receipt of specified parameters. The rationalization of business processes, too, has increasingly standardized some corporate functions.

In peer production, the ability to collaborate depends on a related fundamental characteristic: the decision to publish the necessary standards (and often the underlying code) for modifying or extending the given project. Opening up the source and the interfaces enables a largely spontaneous division of labor across unaffiliated parties. The web itself has been called “the apotheosis of open standards.”⁴⁵ The web’s principal designer, Tim Berners-Lee, sought to ensure that the programming underlying a webpage would be publicly available (thus the feature of most desktop web browsers that allows one to look at the page’s programming).⁴⁶ The decision of some companies to open their application programming interfaces (even without necessarily revealing the underlying code) to the world enables others to access the application’s functionality and extend the application in unforeseen ways. Today a website can mash up the mapping service offered by Google with the photography service offered by Flickr mixed in with Amazon’s sales services.

One of the principal attractions of the open-source process is that it reduces opportunistic behavior exploiting asset specificity.⁴⁷ Proprietary standards for any given system limit the potential market for suppliers who might manage or extend that system. At least in the absence of reverse engineering (which is both costly and potentially imperfect), only the original supplier of the proprietary system or its licensees will have the information required to modify that system. Where a system is open source, in contrast, many suppliers can

potentially modify that system. Consider the journey of IBM, which practically invented proprietary computing systems, to its current embrace of open source. Its CEO, Samuel Palmisano, now evangelizes open standards: “Everywhere, economic activity is turning outward by embracing shared business and technology standards that let businesses plug into truly global systems of production.”⁴⁸

Open-source projects have gone viral across borders without paying much attention to the legal niceties usually accompanying cross-border licensing. Yet given their global scope, open-source projects rely on the global enforceability of licenses. They do not limit themselves either to contributions from coders from jurisdictions likely to enforce the license or to users from such jurisdictions. Eben Moglen and Richard Stallman, the authors of one of the most popular open-source licenses, the GNU public license (GPL), acknowledge that version 2 of the GPL was “a license constructed by one US layman and his lawyers, largely concerned with US law.”⁴⁹ Even its current third version neither chooses governing law or forum nor offers variations based on jurisdiction. The Creative Commons licenses, by contrast, have been “ported” to more than fifty jurisdictions. Version 3 of the GPL was, however, written with the substantive harmonization requirements of international intellectual property treaties in mind. The GNU license disclaims warranties and asserts claims over the distribution of derivative works without reference to any particular jurisdiction’s laws.⁵⁰ Thus far, this failure to consider choice of law and local property and contracting problems does not appear to have proven detrimental, perhaps because of the disciplinary force of informal reputation sanctions in the programming community. In drafting the third version of the GPL, which they characterize as a “Worldwide Copyright License,” Moglen and Stallman observed that, despite the lack of

international foundations, the “GPL version 2 performed the task of globalization relatively well.”⁵¹

The economic logic of net-work—specifically, the increase in productivity arising from a deepening division of labor—supports the lowering of protectionist barriers against trade in services.⁵² But more is required. International trade flourishes in a legal infrastructure of enforceable contracts. This is ever more urgent as firms turn increasingly to buying over making, as they outsource production processes to third-party vendors in alien jurisdictions. The increased legal risks of the market mechanism operating cross-border might be reduced through better transnational dispute resolution frameworks. I turn to these issues in chapter 7.

Despite the efficiencies of global commerce, national borders remain crucial. Law, after all, is defined largely at the national level. States will be loath to abandon their law in the face of offerings mediated by the Internet. In the coming chapters I show how the nations of the world are reconfiguring themselves for global e-commerce and how the law can both facilitate and regulate such commerce. Adam Smith deplored the mercantilism of his day, which would erect barriers to imports so that no specie left the homeland. In this book, I argue that we must dismantle the logistical and regulatory barriers to net-work trade while at the same time ensuring that public policy objectives cannot easily be evaded through a simple jurisdictional sleight of hand or keystroke.

NOTES

Introduction

1. *Canada—Certain Measures Concerning Periodicals*, 17, WT/DS31/AB/R, June 30, 1997 (“A periodical is a good comprised of two components: editorial content and advertising content. Both components can be viewed as having services attributes, but they combine to form a physical product—the periodical itself”).

2. *China—Measures Affecting Trading Rights and Distribution Services for Certain Publications and Audiovisual Entertainment Products*, ¶ 36, WT/DS363/AB/R, Dec. 21, 2009.

3. See Jagdish Bhagwati, “International Trade in Services and Its Relevance for Economic Development,” in *The Emerging Services Economy*, ed. Orio Giarini (Oxford: Pergamon, 1987), 3; and Joseph Francois and

Bernard Hoekman, "Services Trade and Policy," *Journal of Economic Literature* 48 (2010): 642, 643.

4. Apple introduced the iTunes music store in April 2003. By April 2008, Apple was the biggest music retailer in the country. <http://www.apple.com/pr/library/2003/04/28Apple-Launches-the-iTunes-Music-Store.html>; <http://www.apple.com/pr/library/2008/04/03iTunes-Store-Top-Music-Retailer-in-the-US.html>.

5. Bobbie Johnson, "Google Urges UN to Set Global Internet Privacy Rules," *Guardian*, Sept. 14, 2007; Peter Fleischer, "The Need for Global Privacy Standards," Sept. 14, 2007, <http://peterfleischer.blogspot.com/2007/09/need-for-global-privacy-standards.html>.

6. These are the words of Grateful Dead lyricist turned Electronic Frontier Foundation–founder John Perry Barlow. See "A Declaration of Independence of Cyberspace," Feb. 8, 1996.

7. See, e.g., Niall Ferguson, "Sinking Globalization," *Foreign Affairs* 84:2 (2005) ("From around 1870 until World War I, the world economy thrived in ways that look familiar today. The mobility of commodities, capital, and labor reached record levels; the sea-lanes and telegraphs across the Atlantic had never been busier, as capital and migrants traveled west and raw materials and manufactures traveled east").

8. See Anupam Chander, "Next Stop, Kazaakhstan? The Legal Globe-Trotting of Kazaa, the Post-Napster File Sharing Company," *Findlaw.com*, Oct. 24, 2002, http://writ.news.findlaw.com/commentary/20021024_chander.html; Michael Tarm, "KaZaA! Youths from Cyber-Savvy Estonia Write the New Napster, Delivering a Blow to the Global Entertainment Industry," *City Paper—The Baltic States* (March–April 2003), <http://www.citypaper.ee/kazaa.htm>. Kazaa's founders would go on to create Skype following a similar model, incorporating their London-operated company in Luxembourg and relying on Estonians for programming. Ivar Ekman, "Skype Is 2nd Jackpot for Scandinavian Duo," *International Herald Tribune*, Sept. 13, 2005. Skype itself turns out to be a boon to net-work firms, which can now use it to engage in cheap international communications.

9. Nils Pratley, "The Porn Princess, the Indian Computer Whizz and the Poker Bet That Made \$10bn," *Guardian*, June 3, 2005.

10. World Bank, *World Bank Atlas*, 36th ed. (Washington, DC: World Bank Publications, 2004) ("The services sector now accounts for two-thirds of global economic output").

11. World Trade Organization, *World Trade Report 2012* (2012), 19. It is likely that this figure undercounts cybertrade in services because national statistical accounts have yet to fully recognize the kind and volume of trade that is occurring.

12. Geza Feketekuty, *International Trade in Services: An Overview and Blueprint for Negotiations* (Cambridge, MA: Ballinger, 1988), 299–308.

13. General Agreement on Trade in Services, Apr. 15, 1994, Marrakesh Agreement Establishing the World Trade Organization, Annex, 1B, Legal Instruments—Results of the Uruguay Round, 1869 U.N.T.S. 183, 33 I.L.M. 1167 (1994) [hereinafter GATS].

14. Article 14 of the EC Treaty.

15. North American Free Trade Agreement, Ch. 12, U.S.–Can.–Mex., Dec. 17, 1992, 32 I.L.M. 289 (1993); Central America–Dominican Republic–United States Free Trade Agreement, U.S.–Cen. Am.–Dom. Rep., arts. 2.1, 3.1, 3.2, 7.2, 9.1(1)–(3), 11.1, 12.2, 12.3, 12.9(1), Aug. 5, 2004, 43 I.L.M. 514 (2004).

16. Jagdish Bhagwati et al., “The Muddles Over Outsourcing,” *Journal of Economic Perspectives* 18:4 (2004): 93, 112 (concluding that outsourcing, defined as services traded internationally at arm’s length, has “effects that are not qualitatively different from those of conventional trade in goods [and] . . . leads to gains from trade and increases in national income, with the caveats that are standard in this literature”).

17. Paul Samuelson, “Where Ricardo and Mill Rebut and Confirm Arguments of Mainstream Economists Supporting Globalization,” *Journal of Economic Perspectives* 18:3 (2004): 135 (arguing that changing terms of trade over the long term might result in real per capita income loss for a country like the United States); Alan S. Blinder, “Offshoring: The Next Industrial Revolution?” *Foreign Affairs* 85:2 (2006): 113. Challenged years ago to identify a social science proposition that was both true and nontrivial, Samuelson had famously selected the theory of comparative advantage. His concerns about comparative advantage for services thus merit serious inquiry, which Jagdish Bhagwati and Arvind Panagariya have undertaken. Arvind Panagariya, “Why the Recent Samuelson Article Is NOT About Offshore Outsourcing,” [http://www.columbia.edu/~ap2231/Policy%20Papers/Samuelson%20JEP%20\(Summer%202004\)_Not%20on%20Outsourcing.htm](http://www.columbia.edu/~ap2231/Policy%20Papers/Samuelson%20JEP%20(Summer%202004)_Not%20on%20Outsourcing.htm) (arguing that Samuelson misapplies changing terms of trade model to outsourcing).

18. Google, Inc., Form 10-Q, July 24, 2012, 35; Facebook, Form 10-Q, July 27, 2012, 18.

19. David Wessel and Bob Davis, “Pain from Free Trade Spurs Second Thoughts,” *Wall Street Journal*, Mar. 28, 2007.

20. In his classic study, Douglass North suggests that “the major role of institutions in a society is to reduce uncertainty.” Douglass C. North, *Institutions, Institutional Change, and Economic Performance* (Cambridge: Cambridge University Press, 1990), 6.

1. The New Global Division of Labor

Epigraph: Writing at the end of World War I, Keynes describes this idyll, which comes crashing with the beginning of war. John Maynard Keynes, *The Economic Consequences of the Peace* (London: Macmillan, 1919).

1. Adam Smith, *An Inquiry into the Nature and Causes of the Wealth of Nations* [1776], ed. R. H. Campbell and A. S. Skinner (Oxford: Clarendon Press, 1976), 31.

2. *Ibid.*, 32.

3. *Ibid.*, 17–21.

4. Scholars have studied the implications of this new employment order for labor law. Katherine V. W. Stone, *From Widgets to Digits: Employment Regulation for the Changing Workplace* (Cambridge: Cambridge University Press, 2004); Miriam Cherry, “A Taxonomy of Virtual Work,” *Georgia Law Review* 45 (2011): 951.

5. Folker Fröbel, Jürgen Heinrichs, and Otto Kreye, *The New International Division of Labour: Structural Unemployment in Industrialised Countries and Industrialisation in Developing Countries*, trans. Pete Burgess (Cambridge: Cambridge University Press, 1980).

6. Alfred D. Chandler Jr., *The Visible Hand: The Managerial Revolution in American Business* (Cambridge, MA: Belknap Press, 1977), 12 (“The visible hand of management replaced the invisible hand of market forces where and when new technology and expanded markets permitted a historically unprecedented high volume and speed of materials through the processes of production and distribution. Modern business enterprise was thus the institutional response to the rapid pace of technological innovation and increasing consumer demand in the United States during the second half of the nineteenth century”).

7. *Ibid.*, 368–69, 480.
8. *Ibid.*, 369, citing the following books published in London: Fred A. McKenzie, *The American Invaders* (1901); and W. T. Stead, *The Americanization of the World* (1902).
9. “Facts About Microsoft,” Microsoft.com, June 30, 2012, http://www.microsoft.com/presspass/inside_ms.msp.
10. “Global Locations,” Citigroup.com, <http://www.citigroup.com/citi/global/>.
11. Financial transactions often did require instantaneous interchange of information, and financial houses developed early global electronic networks such as SWIFT for such purposes.
12. See, e.g., Iris M. Reyes, “Special Feature,” *BusinessWorld* (Philippines), July 29, 2002, available at 2002 WLNR 3220723 (reporting on the Internet’s contribution to trade in architectural services).
13. Interview with Komal Shah, Mumbai, India, Jan. 2, 2005.
14. David Streitfeld, “Office of Tomorrow Has an Address in India,” *Los Angeles Times*, Aug. 29, 2004.
15. Reyes, “Special Feature” (“because current engineering technology—be it CAD [computer-aided design] files or engineering computations—stores data electronically, off-shore engineering services are now an easy option for foreign companies”).
16. Pete Engardio et al., “The New Global Job Shift,” *Business Week*, Feb. 3, 2003, 50–51 (“Fluor Corp. . . . of Aliso Viejo, Calif., employs 1,200 engineers and draftsmen in the Philippines, Poland, and India to turn layouts of giant industrial facilities into detailed specs and blueprints”).
17. Eric Bellman and Nathan Koppel, “More U.S. Legal Work Moves to India’s Low-Cost Lawyers,” *Wall Street Journal*, Sept. 28, 2005 (“increasingly, squads of experienced but inexpensive lawyers based in India are doing things ranging from patent applications to divorce papers to legal research for Western clients”); Daniel Brook, “Are Your Lawyers in New York or New Delhi?” *Legal Affairs* (May–June 2005).
18. Amol Sharma, “India Winning Higher-Status Jobs from US,” *Christian Science Monitor*, June 18, 2003 (describing outsourcing of special effects production to Bangalore for movies such as *The Nutty Professor II to Independence Day*).
19. *Ibid.*
20. *Ibid.*

21. Kevin Voigt, “For ‘Extreme Telecommuters,’ Remote Work Means Really Remote—Enterprising Employees Swap Cubicles for Exotic Locales,” *Wall Street Journal*, Jan. 31, 2001.

22. Ian Fisher, “A Quest for Carpets Reveals the Persian Past and the Soul,” *New York Times*, Sept. 3, 2005.

23. Organisation for Economic Cooperation and Development, *GATS: The Case for Open Services Markets* (Paris: OECD, 2002), 18.

24. *Ibid.*, 14.

25. Ronald Coase, “The Nature of the Firm,” *Economica* 4 (1937): 386.

26. Bob Tedeschi, “Coase’s Ideas Flourish in the Internet Economy,” *New York Times*, Oct. 2, 2000.

27. See Coase, “Nature of the Firm,” 397 (“It should be noted that most inventions will change both the costs of organising and the costs of using the price mechanism. In such cases, whether the invention tends to make firms larger or smaller will depend on the relative effect on these two sets of costs. For instance, if the telephone reduces the costs of using the price mechanism more than it reduces the costs of organizing, then it will have the effect of reducing the size of the firm”).

28. See Larry Downes and Chunka Mui, *Unleashing the Killer App: Digital Strategies for Market Dominance* (Boston: Harvard Business School Press, 1998), 42; and Thomas W. Malone et al., “Electronic Markets and Electronic Hierarchies,” *Communications of the ACM* 30 (1987): 484, 490 (suggesting information technology-led shift from intrafirm hierarchies to markets).

29. Jay Solomon and Kathryn Kranhold, “In India’s Outsourcing Boom, GE Played a Starring Role,” *Wall Street Journal*, Mar. 23, 2005 (quoting Nigel Andrews, a former top GE Capital executive who oversaw India).

30. Benjamin Klein et al., “Vertical Integration, Appropriable Rents, and the Competitive Contracting Process,” *Journal of Law and Economics* 21 (1978): 297, 308.

31. *Ibid.*, 303, 319.

32. Sathya Mithra Ashok, “Build or Buy,” *Outsourcing World*, Dec. 6, 2005.

33. “Relocating the Back Office,” *Economist*, Dec. 11, 2003 (“The business of shifting back-office functions offshore began in earnest in the early 1990s when companies such as American Express, British Airways, General Electric and Swissair set up their own ‘captive’ outsourcing operations in India. However, many of these captives are now finding that their costs are up to 50% higher than those of independent third parties.”).

34. WNS (Holdings) Limited, Registration Statement (Form F–1), July 20, 2006, 71–72, <http://www.sec.gov/Archives/edgar/data/1356570/000114554906001034/u92712bfv1za.htm>.

35. Streitfeld, “Office of Tomorrow”; Sankar Mehta, “GE’s Outsourcing Departure Sets a New Trend—Outsource Headaches Do Not Own It!” *India Daily*, Oct. 7, 2004 (“‘GE can extract much more juice from the operation by opening it up to competitors who would feel too uncomfortable if it was still ‘captive,’” says one foreign executive”).

36. British Airways sold its remaining minority stake as part of WNS’s NYSE listing in July 2006. “BA Unloads Remaining Stake in Indian Outsourcer,” July 27, 2006, <http://dealbook.nytimes.com/2006/07/27/ba-unloads-remaining-stake-in-indian-outsourcer/>.

37. Mark Gottfredson et al., “Strategic Sourcing: From Periphery to the Core,” *Harvard Business Review* 83 (2005): 132.

38. Rajiv P. Patel and Ralph M. Pais, “Software Outsourcing Offshore—Business and Legal Issues Checklist” (2004), http://www.fenwick.com/FenwickDocuments/Outsourcing_Offshore.pdf.

39. Dylan Love, “Tim Cook Is Doing What Steve Jobs Never Did—Visiting China as Apple’s CEO,” *Business Insider*, Mar. 26, 2012.

40. Yochai Benkler, *The Wealth of Networks: How Social Production Transforms Markets and Freedom* (New Haven: Yale University Press, 2006), 59.

41. Yochai Benkler, “Coase’s Penguin, or, Linux and the Nature of the Firm,” *Yale Law Journal* 112 (2002): 369, 375 (“Commons-based peer production . . . relies on decentralized information gathering and exchange to reduce the uncertainty of participants”).

42. Steven Weber, *The Success of Open Source* (Cambridge, MA: Harvard University Press, 2004), 71 (noting the “profoundly international nature” of the Linux open source community). Contributions to open source projects such as Linux and Gnome are not evenly distributed around the world, being largely the work of people who speak English and, increasingly, of Europeans. See David Lancashire, “Code, Culture and Cash: The Fading Altruism of Open Source Development,” *First Monday*, Nov. 19, 2001 http://www.firstmonday.org/issues/issue6_12/lancashire/.

43. Ryan Paul, “Linux Kernel in 2011: 15 Million Total Lines of Code and Microsoft Is a Top Contributor,” *Ars Technica*, Apr. 4, 2012, <http://arstechnica.com/business/2012/04/linux-kernel-in-2011-15-million-total->

lines-of-code-and-microsoft-is-a-top-contributor/; Steven J. Vaughan-Nichols, “Fast, Faster, Fastest: Linux Rules Supercomputing,” *ZDNet*, June 19, 2012, <http://www.zdnet.com/blog/open-source/fast-faster-fastest-linux-rules-supercomputing/11263>.

44. Carliss Y. Baldwin and Kim B. Clark, *Design Rules 1* (2000): 413 (describing emergence of modular design in computer systems).

45. Kevin Kelleher, “All Access Economy,” *Wired*, July 2006, 140.

46. Tim Berners-Lee, *Weaving the Web: The Original Design and Ultimate Destiny of the World Wide Web by Its Inventor* (San Francisco: HarperSanFrancisco, 1999), 57.

47. See notes 31, 32, above, and accompanying text.

48. Samuel J. Palmisano, “The Globally Integrated Enterprise,” *Foreign Affairs* 85:3 (2006): 127, 130.

49. Eben Moglen and Richard Stallman, “GPL Version 3: Background to Adoption,” June 5, 2005, <http://www.fsf.org/news/gpl3.html>; Andrés Guadamuz González, “GNU General Public License v3: A Legal Analysis,” *SCRIPT-ed* 3:2 (2006): 154, <http://www.law.ed.ac.uk/ahrc/script-ed/vol3-2/guadamuz.asp>.

50. “GNU General Public License,” <http://www.gnu.org/copyleft/gpl.html>.

51. Moglen and Stallman, “GPL Version 3.”

52. Of course, an increase in productivity does not, by itself, justify free trade. Societies may choose to protect domestic industry even at the price of productivity. Indeed, I have argued that a democratic society must retain the prerogative, however foolishly, to choose protectionism over trade. Anupam Chander, “Globalization and Distrust,” *Yale Law Journal* 114 (2005): 1193, 1218.

2. Western Entrepôt

1. According to *Wikipedia*, the iTunes store operates in more than fifty countries. “Apple iTunes Store,” *Wikipedia*. During its 2011 fiscal year (ending in September 24, 2011), Apple earned \$66 billion in net sales revenues from hardware, software, and services sold outside the United States, accounting for 61 percent of its net sales worldwide. Apple Inc., Form 10-K, filed Oct. 26, 2011, 74 (accounting note 8). In the first quarter of 2012, Apple earned 54 percent of its net sales revenues worldwide from sales outside the United States.