VIRTUAL EXIT IN THE GLOBAL INFORMATION ECONOMY*

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INTRODUCTION

The Internet, it seems, causes trouble. In the short time that this global computer network has been publicly accessible, it has begun to challenge past notions of jurisdiction,[1] begun to require a re-thinking of free speech,[2] has created a panic over intellectual property,[3] and now threatens to re-write the rules of commerce for a new digital marketplace.[4] Because the technological underpinnings of the network violate the assumptions embedded in many current legal doctrines, certain legal mainstays have proven inapplicable to the Net, at least in their current form.[5] This places new and unusual stresses on previously settled rules of law.[6]

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1. *See* Dan L. Burk, *Federalism in Cyberspace*, 28 CONN. L. REV. 1095 (1996); David R. Johnson & David Post, *Law and Borders—The Rise of Law in Cyberspace*, 48 STAN. L. REV. 1367 (1996).

2. *See* Anne Wells Branscomb, *Anonymity, Autonomy, and Accountability: Challenges to the First Amendment in Cyberspace*, 104 YALE L.J. 1639 (1995); M. Ethan Katsh, *Rights, Camera, Action: Cyberspatial Settings and the First Amendment*, 104 YALE L.J. 1681, 1683 (1995); *see also* Julie E. Cohen, *A Right to Read Anonymously: A Closer Look at Copyright Management in Cyberspace*, 28 CONN. L. REV. 981 (1996) (postulating a novel constitutional right to reading privacy).

3. *See, e.g.*, INFORMATION INFRASTRUCTURE TASK FORCE, INTELLECTUAL PROPERTY AND THE NATIONAL INFORMATION INFRASTRUCTURE: THE REPORT OF THE WORKING GROUP ON INTELLECTUAL PROPERTY RIGHTS (1995) [hereinafter WHITE PAPER]; Jane C. Ginsburg, *Putting Cars on the "Information Superhighway": Authors, Exploiters, and Copyright in Cyberspace*, 95 COLUM. L. REV. 1466 (1995).

4. *See* A. Michael Froomkin, *The Essential Role of Trusted Third Parties in Electronic Commerce*, 75 OR. L. REV. 49 (1996).

5. *See* Joel R. Reidenberg, *Governing Networks and Rule-Making in Cyberspace*, 45 EMORY L.J. 911, 912 (1996).

6. *See* I. Trotter Hardy, *The Proper Legal Regime for "Cyberspace"*, 55 U. PITT. L. REV. 993, 994 (1994); Lawrence Lessig, *The Path of Cyberlaw*, 104 YALE L.J. 1743 (1995).

In nature, organisms faced with new or unusual stresses display two primary modes of response: they attempt to alter the situation, or they attempt to escape it. Biologists term these choices "fight or flight."[7] A version of "fight or flight" occurs in response to social stresses as well, where the responses have been labeled as "voice" and "exit."[8] Citizens or consumers may respond to some situations by exercising voice: that is, by using votes, publications, speeches, or other signaling devices to express complaints or compliments about the circumstances. At other times, citizens or consumers may respond by "exiting," that is, by abandoning an unsatisfactory situation to seek a more favorable circumstance. In some instances, "exit" may take the shape of an actual physical migration to another locale; in other situations, "exit" may simply mean abandoning one brand of a product for another.

Exploration of these responses to social stimuli has prompted a rich scholarly literature exploring how individuals choose "voice" or "exit" as a reaction to political or economic choices.[9] But as a practical matter, it has long been apparent that real-world costs erect barriers to the exercise of either option. Access to "voice" through traditional print or broadcast media is expensive,[10] and at the same time, the costs of physically migrating to a new home may be prohibitive for the majority of people.[11] Particularly in the case of "exit," the distortions caused by such cost barriers have hampered efforts to fully develop a theory of interjurisdictional competition.[12]

7. KENT M. VAN DE GRAAF, HUMAN ANATOMY 399, 429 (2d ed. 1988).

8. *See generally* ALBERT O. HIRSCHMAN, EXIT, VOICE, AND LOYALTY: RESPONSES TO DECLINE IN FIRMS, ORGANIZATIONS AND STATES (1970).

9. *See, e.g.*, Rudolf Klein, *Models of Man and Models of Policy: Reflections on Exit, Voice and Loyalty Ten Years Later*, 58 MILBANK MEMORIAL FUND Q. 416 (1980); Lena Kolarska & Howard Aldrich, *Exit, Voice, and Silence: Consumers' and Managers' Responses to Organizational Decline*, 1 ORG. STUD. 41 (1980); Jagdip Singh, *Voice, Exit, and Negative Word-of-Mouth Behaviors: An Investigation Across Three Service Categories*, 18 J. ACAD. MARKETING SCI. 1 (1990). *See generally* Albert O. Hirschman, *Exit, Voice, and Loyalty: Further Reflections and a Survey of Recent Contributions*, 58 MILBANK MEM. FUND Q. 430 (1980).

10. *See* Eugene Volokh, *Cheap Speech and What It Will Do*, 104 YALE L.J. 1805 (1995).

11. *See* William W. Bratton & Joseph A. McCahery, *The New Economics of Jurisdictional Competition: Devolutionary Federalism in a Second-Best World*, 86 GEO. L.J. 201, 233-34 (1997); Susan Rose-Ackerman, *Beyond Tiebout: Modeling the Political Economy of Local Government, in* LOCAL PROVISION OF PUBLIC SERVICES: THE TIEBOUT MODEL AFTER TWENTY-FIVE YEARS 55, 56 (George R. Zodrow ed., 1983); *see also* David E. Wildasin & John D. Wilson, *Imperfect Mobility and Local Government Behavior in an Overlapping-Generation Model*, 60 J. PUB. ECON. 177, 180-81 (1996) (discussing how governments may attempt to capture rents from aging, less mobile citizens who cannot exercise the option to exit).

12. *See* Bratton & McCahery, *supra* note 11, at 231-35.

The Internet, however, radically lowers such cost barriers, creating new opportunities for individuals or firms to migrate from a less favorable market position to a more favorable one. The option to exit an unfavorable market is closely tied to the option of voice, as entities attempt to use political processes to shift the market in one's favor.[13] I take as my thesis the proposition that the Internet will facilitate both voice and exit, by lowering the cost for each.[14] As a consequence, the advent of the network offers an unprecedented opportunity to explore the interplay of and ramifications of these strategies. Other commentators have already addressed the likely effects of "cheap voice."[15] Here I shall focus on the effects of "cheap exit." I shall argue that because it allows almost costless migration of digitized goods, the Internet will promote international competition in two distinct but interrelated markets. By thus facilitating both business and consumer "exit" in the market for digitized goods, the Internet will reshape the market for national and international information policy.

This intermarket dynamic has important ramifications for our understanding of regulatory spillover between markets. Competition may exist at different levels: at the level of nations, firms, or individuals. These competitive arenas are not independent, and a change in one may initiate changes in the others. Taking copyright law as my example, I shall principally argue that the Internet will facilitate competition among firms for information products, and so among nations for intellectual property regulation. These types of competition are closely linked, and the impact of the Internet on international competition for information products will cause a type of "market cascade" that will affect international competition for regulation. Information policy operates in both markets, although I shall show that it is a cost in one market, but a product in the other. I hope to show that the option of "virtual exit" may facilitate externalization of costs at all market levels, potentially undermining efficiency gains from increased competition, and this result may be generalized to other areas of information policy besides intellectual property. This in turn will require a reconsideration of the proper

13. *See id.* at 236-39.

14. *Cf.* David G. Post, *Anarchy, State, and the Internet: An Essay on Law-Making in Cyberspace*, 1995 J. ONLINE L., ¶¶ 40-44 (Oct. 20, 1998) <http://warthog.cc.wm.edu/law/publications/jol/post.html> (noting the Internet's facilitation of exit).

15. *See generally* Volokh, *supra* note 10.

legal mechanisms to control such losses. I shall begin by discussing the technological milieu that has created the present situation.

I. THE NEW TECHNOLGY

When considering the advent of the Internet, we are confronted with a familiar pattern of events. We might say that in the march of progress, technology leads the way; law tries to keep pace, but is generally found in the rear, limping a little.[16] The impact of the Internet on information technology threatens to leave information-related law playing "catch-up" yet again. This profound effect that the Internet promises to have on competition for information and its related regulation arises from certain technical features of networked communications. These features include packet-switching, decentralization, and geographic transparency, which together challenge our previous notions of cost and distance.[17]

A. Technical Characteristics

The first of the Internet's technical peculiarities lies in its design as a "packet switching" network.[18] Internet communication channels are not dedicated in real time to a single transmission, as occurs in conventional telephony, broadcast, and other prior media.[19] Information to be transmitted along the network is broken into discrete packets of bits that are labeled with the address of their final destination.[20] Packets are referred along their route from computer to computer. The packets are sent on their way as transmission capacity becomes available, and are reassembled at the point of receipt.[21] Thus, packets from a variety of sources may share the same channel as bandwidth allows, promoting more efficient use of available carrying capacity.[22]

A second critical feature of the Internet is its employment of "smart communications." Because the Internet is a network of

16. *See* Sir Zelman Cowen, *In the Rear and Limping a Little: Some Reflections on Medicine, Biotechnology, and Law: The Roscoe Pound Lectures*, 64 NEB. L. REV. 548 (1985).

17. *See generally* Jeffrey K. MacKie-Mason & Hal R. Varian, *Economic FAQs About the Internet*, *in* INTERNET ECONOMICS 27, 33-38 (Lee W. McKnight & Joseph P. Bailey eds., 1997).

18. *See* Vinton G. Cerf, *Networks*, SCI. AM., Sept. 1991, at 72, 74.

19. *See id.* at 74.

20. *See* NICHOLAS NEGROPONTE, BEING DIGITAL 180-81 (1995).

21. *See id. See generally* MacKie-Mason & Varian, *supra* note 17.

22. *See* Cerf, *supra* note 18, at 74.

computers, silicon intelligence is available at every node of the network to control the flow of packet traffic. The design of the Internet takes full advantage of this characteristic. Computers at each node monitor traffic on the network, and route packets along the least congested path to the next node. From there, the process is repeated.[23] In addition to spatial ordering, temporal ordering may also be employed to effectively use the available channels: a computer that receives packets may choose to hold them until traffic clears.

As a consequence, packets comprising a single message may take different paths at different times to their final destination.[24] At first consideration, this method might seem a recipe for chaos. There is no central coordination of traffic, but only independent routing and sequencing decisions by local computers. However haphazard this process may seem, the sum of the many independent local routing decisions moves packets along the most efficient route as if by an "invisible hand." And, in addition to efficient channel usage, the Internet's lack of central coordination has an additional important implication: there is no central point at which to monitor, restrict, or censor information flow.

Finally, as might be expected from the nature of packet-switching, the Internet is relatively transparent to physical distance.[25] Originally designed to promote sharing of scientific equipment and information resources, the network hosts a variety of features that permit remote access to such facilities.[26] Internet users can access computers and information across a continent or around the world as easily as they can access resources in the next room—indeed, depending upon local network traffic, accessing the distant facility may prove to be faster and more responsive.[27] So insensitive is the network to geography that it is frequently impossible to determine the physical location of a resource or user.[28] Such information is unimportant to the network's function or to the purposes of its creators, and the network's design thus makes little provision for

23. *See id.*

24. *See id.*

25. *See* M. ETHAN KATSH, LAW IN A DIGITAL WORLD 57-58 (1995).

26. *See* EDWARD A. CAVAZOS & GAVINO MORIN, CYBERSPACE AND THE LAW: YOUR RIGHTS AND DUTIES IN THE ON-LINE WORLD 5-9 (1994).

27. *See* NEGROPONTE, *supra* note 20, at 178.

28. *See id.* at 194; WILLIAM MITCHELL, CITY OF BITS 8 (1996).

geographic discernment.[29]

B. The Virtual Marketplace

The technical characteristics of the Internet are rapidly being applied toward creation of a "virtual marketplace."[30] Consumer transactions are becoming an increasingly important feature of Internet communications. At present, commercial traffic on the network usually culminates in an exchange of physical goods. In this type of exchange, the network acts much like a glorified mail-order catalog. Consumers may select, order, and even pay for goods on-line, but tangible goods cannot be sent over a fiber-optic cable.[31] The goods must be shipped to the consumer, and the legal structure of such transactions is not appreciably different from past mail-order or telephone-order business.

The expansion of commerce on the network, however, is leading to entirely new forms of transaction that will be shaped by the unique features of the network described above.[32] The Internet already supports user access to a wide variety of information utilities such as databases and computational facilities, as well as archives of text, music, graphics, and software.[33] Information and information-based services on the network have traditionally been offered for free, but will increasingly be offered on a commercial basis.[34] Unlike the purchase of physical goods through the network, the on-line purchase of informational commodities requires no shipment of physical goods. Transfer of digitized information products such as music, photographs, novels, motion pictures, multimedia works, and software can be accomplished entirely within the network itself.[35]

Consequently, the Internet can serve as an international conduit for the purchase and delivery of digitized informational commodities. Such information products already occupy a critical position in the

29. *See generally* MITCHELL, *supra* note 28.

30. *See* A. Michael Froomkin, *Flood Control on the Information Ocean*, 15 J.L. & COM. 395, 449-50 (1996).

31. *See* NEGROPONTE, *supra* note 20, at 12-13.

32. *See* Froomkin, *supra* note 30, at 450.

33. *See* Thomas J. Smedinghoff, *Copyrights in Digital Information, in* ONLINE LAW: THE SPA'S LEGAL GUIDE TO DOING BUSINESS ON THE INTERNET § 9.3 [hereinafter ONLINE LAW] (Thomas J. Smedinghoff ed., 1996) (listing various types of digital works available on-line).

34. *See* CAVAZOS & MORIN, *supra* note 26, at 33.

35. *See* Thomas J. Smedinghoff, *Online Law: What's New and Different?, in* ONLINE LAW, *supra* note 33, at 3-4.

economies of developed nations, and will likely occupy an increasingly important position in the world economy.[36] Simply as a technology that will increase the exchange of such products, the Internet would be a subject worthy of careful scrutiny. But the Internet will do more than simply facilitate delivery of information products: the network's capacity to exchange such products on-line will challenge certain established notions of market structure. This in turn will affect the structure of firms that conduct business on-line, and ultimately, the law governing all these entities as well.

1. Spatial Distribution of Firms

The features of the Internet described above dictate that the characteristics of on-line commerce will differ substantially from those previously familiar in exchange of tangible goods. In particular, behavior of firms and consumers in the virtual marketplace will not follow conventional models of regional economic organization that were developed to describe and predict the exchange of tangible goods in real space. Such analyses of regional structure draw heavily on the distributional model pioneered by August Lösch, which predicts the spatial distribution of production centers or cities as a function of economic factors.[37]

Löschian analysis bases production center distribution on a combination of proximity to production input factors and proximity to points of product sale to consumers.[38] The question of transportation costs is key to such an analysis. At a boundary point some certain distance from the central production facility, transportation of raw materials into the production facility becomes prohibitive.[39] Similarly, at a boundary point some certain distance from the production center, transportation costs limit the edge of the spatial market that can be served by that center.[40] Where these boundaries intersect, a new production facility can be expected to

36. *See* OFFICE OF TECHNOLOGY ASSESSMENT, U.S. CONGRESS, ELECTRONIC ENTERPRISES: LOOKING TO THE FUTURE 13-15 (1994) [hereinafter ELECTRONIC ENTERPRISES].

37. *See* AUGUST LÖSCH, THE ECONOMICS OF LOCATION (W.H. Woglom & W.F. Stopler trans., Yale Univ. Press 1954).

38. *See* M.J. Beckman, *Outline of a Theory of Regional Structure, in* THE ANALYSIS OF REGIONAL STRUCTURE: ESSAYS IN HONOUR OF AUGUST LÖSCH 8 (R. Funck & J.B. Parr-Karlsruhe eds., 1978) [hereinafter REGIONAL STRUCTURE].

39. *See* R. Sohns, *Lösch and the Theory of Trade, in* REGIONAL STRUCTURE, *supra* note 38, at 119, 122-24.

40. *See id.*

arise, becoming the focal point of a new "cell" of production and market activity.[41] The economic influence of each production center is bounded by the territorial extent of its geographic "cell."

Historical examples of such centers are relatively common. For example, the city of Abilene grew up at the border where the practical limit of cattle drives ended, and railroads began.[42] Similarly, Chicago's meat packing plants grew up at the border where the practical limit on movement of live animals ended, and shipment of processed meat began.[43] But commercial exchange over the Internet can be expected to violate the Löschian model, as the characteristics of the Internet obviate certain assumptions inherent in this regional analysis. The most important of these superseded assumptions is that transportation costs for finished goods increase with distance. This assumption is plausible in real space, where expenditures of fuel and other resources are required to move tangible goods over geographic distances.[44] The type of goods best suited to Internet commerce, however, are information goods carried in digitized form. Such arrangements of bits lack the physical form that generates conventional marginal transportation costs. Such costs essentially disappear for electronically delivered information goods.[45]

This is not to suggest that transfer of information goods over the Internet is costless. The transfer requires telecommunications infrastructure that has finite bandwidth.[46] The packet-switched design of the network bears testimony of this limitation, as an attempt to deal with problems of congestion. Congestion may occur as a result of limited physical infrastructure, or in extreme cases, as a result of the practical limits of the capacity of computers that provide packet switching and routing capability. Congestion may also be created by local regulatory structure—access fees or other tariffs unrelated to the actual usage.[47] Alleviating such congestion, either through additional

41. *See id.*; Beckman, *supra* note 38, at 9.

42. *See* JOHN A. HAWGOOD, AMERICA'S WESTERN FRONTIERS 317, 322-23 (1972).

43. *See* DONALD L. MILLER, CITY OF THE CENTURY: THE EPIC OF CHICAGO AND THE MAKING OF AMERICA 58-59, 96 (1966).

44. *See* NEGROPONTE, *supra* note 20, at 4.

45. *See* William H. Lehr & Martin B.H. Weiss, *The Political Economy of Congestion Charges and Settlements, in* THE INTERNET AND TELECOMMUNICATIONS POLICY: SELECTED PAPERS FROM THE 1995 TELECOMMUNICATIONS POLICY RESEARCH CONFERENCE 79, 80 (Gerald W. Brock & Gregory L. Rosston eds., 1996).

46. *See id.*

47. *See generally* HENRY H. PERRITT, JR., LAW AND THE INFORMATION SUPERHIGHWAY § 7.1, at 301 (1996).

capacity or through technological innovation, may be costly.[48] However, the critical point regarding information products is that once network infrastructure is in place, the marginal cost of sending an additional packet approaches zero. This is not the case for physical goods, where even after a highway, airline, or other physical transportation system is in place, each additional unit carried requires additional expenditures of fuel, maintenance, and so on.

Moreover, incremental transfer costs on the Net are not simply vanishingly small: they are not tied to geographic proximity. This uncoupling of cost and geography stems from the lack of homology between cyberspace and real space. As discussed above, Internet transfers do not necessarily map well onto physical distance: rather than choosing the most direct route, a packet-switching network will route information transfer via the least congested route. This makes highly efficient use of bandwidth, but is not necessarily the shortest physical route—contrary to conventional models of spatial ordering, choosing the shortest distances between sender and receiver might actually increase costs. This, together with the overall "transparency" of the Net with regard to physical distance, suggests that a regular spatial distribution of Internet production centers is unlikely: the economic constraints that dictate location of such centers in real space are absent or radically altered in cyberspace.[49]

2. Location and Migration

Thus, the Internet largely frees centers for production of information goods from the location constraints inherent in physical transportation costs. This suggests that such production centers will instead locate according to the dictates of other economic constraints. But, as in the case of transportation limits, such constraints are unlikely to be traditional physical limitations. Neoclassical economics predicts that industries will locate on the basis of the "comparative advantage" of particular locations.[50] Such advantages might include proximity to transportation, availability of raw materials, or access to

48. *See* Padmanabhan Srinagesh, *Internet Cost Structures and Interconnection Agreements, in* TOWARD A COMPETITIVE TELECOMMUNICATION INDUSTRY: SELECTED PAPERS FROM THE 1994 TELECOMMUNICATIONS POLICY RESEARCH CONFERENCE 251, 257 (Gerald W. Brock ed., 1995) (noting that physical infrastructure involves significant sunk costs).

49. *See* NEGROPONTE, *supra* note 20, at 163.

50. *See* ROBERT S. PINDYK & DANIEL L. RUBENFELD, MICROECONOMICS 597-99 (2d ed. 1992).

skilled labor.[51] For example, the development of the computer industry in "Silicon Valley" has been attributed to the close proximity and interaction of skilled labor and venture capital in the San Jose region.[52] Proximity of such inputs is one of the Löschian constraints on spatial distribution, and just as in the case of proximity to consumers, this constraint dwindles in importance where the Internet is concerned. First, the Internet makes physical proximity less important because the "raw materials" that go into creating finished information goods differ in mobility from those of traditional industries. Computer code, digitized music or text, and numerical data require no costly physical transportation, but can be transmitted over the Net. In addition, the labor inputs for such production may be provided by Internet linkage—creative people from around the globe can work on information products without being physically close to one another, or to the base of product distribution.[53]

This means that information production can potentially relocate to almost any nation on the globe. Unlike industries where heavy equipment must be centrally located to create manufacturing facilities, the equipment involved in information production is relatively mobile. A few thousand dollars worth of computer equipment will quickly put an Internet information supplier on-line, and such equipment tends to be highly portable. The necessary inputs, if not available locally can largely be supplied via Internet link.[54] Someone must of course be available to keep the computers running, but skilled technical support personnel, if not available locally, are equally mobile or accessible on-line.[55] Local availability of telecommunications infrastructure may pose a real constraint on choice of operational venue,[56] but increasingly sophisticated Internet linkages are expected to become available in most parts of the

51. *See id.*; ROGER SCHMENNER, MAKING BUSINESS LOCATION DECISIONS 37-38, 149-54 (1982).

52. *See* ANNALEE SAXENIAN, REGIONAL ADVANTAGE: CULTURE AND COMPETITION IN SILICON VALLEY AND ROUTE 128 (1994).

53. *See* NEGROPONTE, *supra* note 20, at 228; *see also* Jaikumar Vijayan, *Look Out, Here Comes India*, COMPUTERWORLD, Feb. 26, 1996, at 101-02 ("Satellite links, dedicated phone lines, E-mail, the Internet, and videoconferencing hookups give off-shore programmers the same kind of access to their customers' hardware as U.S.-based employees.").

54. *See* ELECTRONIC ENTERPRISES, *supra* note 36, at 32; NEGROPONTE, *supra* note 20, at 165-66.

55. *See* Vijayan, *supra* note 53.

56. *See* Narander Ramparu et al., *Issues in Foreign Outsourcing: Focus on Applications Development and Support,* INFO. SYS. MGMT., Spring 1997, at 27, 29.

world.[57]

This degree of production mobility and decentralization does not mean that information creators and providers will not choose to locate on the basis of comparative advantage. Quite the contrary, local conditions will continue to have a powerful effect on the choice of location for information industries. However, the mobility afforded by Internet conduits may drastically change the type of advantage that assumes prominence in the choice. Location decisions for real-space businesses have been strongly effected by proximity to markets, labor, and transportation.[58] Beyond these factors, producers of physical goods and real-space services may choose their location on the basis of factors unrelated to proximity of inputs or consumers. Direct subsidies, local tax structure, environmental regulation, municipal services, and quality of life play important roles in the decision to locate traditional industries.[59] These secondary considerations will similarly affect the decision to locate information industries that are otherwise relatively unconstrained as to location.

Thus, one might imagine the case of a software developer who takes advantage of the mobility of the Internet by incorporating subsidiaries in various jurisdictions, say, the United States, Korea, India, and Poland. Code is written in the United States, and is then shipped via Internet to another jurisdiction, where the cost of labor is lower, for time-consuming debugging, after which it is shipped back to the United States. The lower costs of labor might include lower base salaries, no unions, relaxed occupational safety requirements, or other local comparative cost advantages.[60] The developer may even arrange this multinational work schedule so that the code is worked on continuously—i.e., U.S. engineer works on it until 5:00 p.m., ships it to Korean engineers who start working on it at 9:00 a.m. and finish at 5:00 p.m., ship it to Indian engineers who do the same, and so on around the globe.[61]

57. *See* Russell Daggat, *Satellites for a Developing World*, SCI. AM., Sept. 1995, at 94.

58. *See* John R. Moore et al., *The Efficacy of Public Policy, in* INDUSTRY LOCATION AND PUBLIC POLICY 257, 269 (Henry W. Herzog & Alan M. Schlottmann eds., 1991).

59. *See* SCHMENNER, *supra* note 51, at 152.

60. *See* Ramparu et al., *supra* note 56, at 28. Foreign outsourcing, or "body shopping" of software applications development has already become extremely common for this reason, with about 43% of U.S. software firms taking advantage of foreign comparative advantage in skilled labor. *Id.* at 29.

61. *See* Jaikumar Vijayan, *Seven by Twenty-Four*, COMPUTERWORLD, Feb. 26, 1996, at 102 ("In addition to cost and quality, Indian companies are leveraging... the 10½-hour time difference between India and the U.S., which allows them to run cost-effective, seven-day-a-

Note that in such an example, the types of "comparative advantage" factors that affect firm relocation frequently fall into the category of public goods and services. Factors such as tax and environmental regulation are largely the legislative creations of local governments—the products of a legal or regulatory comparative advantage. Where information industries are concerned, the class of regulations most directly affecting the creation and distribution of their products may be intellectual property laws. For example, the developer may choose to write the initial code in the United States in order to take advantage of the protection of U.S. patent or trade secrecy law. Alternatively, a software developer may take advantage of legal comparative advantage by setting up her operation in a jurisdiction where it is permissible to decompile code or otherwise reverse engineer it, use the knowledge gained to build a non-infringing product, and then offer that product via the Internet for sale into jurisdictions where the reverse engineering act itself would have been an infringement. We may therefore expect that a jurisdiction's "intellectual property" comparative advantage may assume considerable importance in determining the physical location of information producers. The regulatory options available to nations arise from the nature of information itself.

II. INFORMATION PRODUCTS

As described above, the technical characteristics of the Internet will shape the growing global market for information products. But the initial contours of the information market are set by characteristics of the product traded: information. Information has long been known to have a "public" character that requires the peculiar forms of regulation we call intellectual property law. The Internet amplifies and enhances this "public" character of information, and in so doing can be expected to perturb previous paradigms of intellectual property regulation.

A. Production of Public Goods

Current positive and normative theories of intellectual property owe much to analysis of public goods as formulated nearly half a century ago by Paul Samuelson.[62] Samuelson observed that there are

week, 24-hour operations.").

62. *See* Paul A. Samuelson, *The Pure Theory of Public Expenditure*, 36 REV. ECON. &

certain classes of "goods" that are public in nature, that is to say, which are non-rival and non-exclusive. A good such as "national defense" provides a now-classic example: it is non-rival because, unlike tangible goods, a unit of national defense may simultaneously benefit more than one person.[63] It is non-exclusive because, again unlike most tangible goods, once a unit of national defense is produced for the benefit of one individual, it is nearly impossible to prevent others from simultaneously benefiting from its production.[64]

Because public goods are non-exclusive, there may be little incentive for anyone to be willing to pay for their production.[65] The optimal strategy for a given consumer would be to let someone else pay for production, and then, because he cannot be excluded from consuming the good, "free ride" off of what is produced.[66] Naturally, if everyone adopts this strategy, no one will pay at all and no good will be produced.[67] At the same time, because public goods are non-rival, the marginal cost of providing the benefit to additional consumers is zero or nearly zero.[68] This means, first, that it would actually be inefficient to exclude additional consumers from enjoying the good, even if a method could be devised to do so.[69] But it also means, second, that there is little if any incentive to produce more than one unit of the good because everyone can simultaneously hold the first unit.[70] This combination of attributes is anticipated to lead to chronic underproduction of public goods in a competitive market.[71]

Information products tend to resemble Samuelsonian public goods in many respects. In their purest form, information products are at least non-rival—ideas, facts, songs, and poems can be "held" or known by many people simultaneously.[72] The cost of distribution for such pure information products or "ideal goods" is also close to zero;

STAT. 387 (1954).

63. *See* PINDYK & RUBENFELD, *supra* note 50, at 661-62.

64. *See id.*

65. *See* William M. Landes & Richard A. Posner, *An Economic Analysis of Copyright Law*, 18 J. LEGAL STUD. 325, 326 (1989).

66. *See* PINDYK & RUBENFELD, *supra* note 50, at 665.

67. *See id.*

68. *See id.* at 661.

69. *See* ARMEN ALCHIAN & WILLIAM R. ALLEN, EXCHANGE AND PRODUCTION: COMPETITION, COORDINATION, AND CONTROL 100 (3d ed. 1983).

70. *See* Richard P. Adelstein & Steven I. Peretz, *The Competition of Technologies in Markets for Ideas: Copyright and Fair Use in Evolutionary Perspective*, 5 INT'L REV. L. & ECON. 209, 219 (1985).

71. *See* PINDYK & RUBENFELD, *supra* note 50, at 664-65.

72. *See* ALCHIAN & ALLEN, *supra* note 69, at 100.

telling an idea to another individual is generally a fairly low-cost proposition.[73] However, this is not true non-exclusivity, as in the case of a "pure" public good like national defense—unlike additional consumption of national defense, additional consumption of an ideal good can be curtailed by concealment or secrecy.[74] Nonetheless, ideal goods are sometimes said to be "non-exclusive" because they are very cheap to reproduce. Each consumer of an ideal good becomes a potential source of secondary distribution, and proliferation of such secondary sources at some point causes the availability of ideal goods to approach true non-exclusivity.[75]

Intellectual property law almost never protects ideal goods in their ideal form. Fundamental tenets of patent and copyright law forbid the protection of ideas or principles; rather, the specific embodiment of the idea in, respectively, an invention or a tangible medium of expression is protectable.[76] The embodiment, such as a book, painting, or compact disc, can be held by only one person at a time. The embodiment thus has the characteristics of a private good; it is rival and excludable.[77] The intellectual property embedded in the embodiment loses some of its public character, and more closely resembles what might be called a local public good rather than a "pure" or general public good.[78]

For example, even though different copies of a copyrighted work can be held simultaneously by more than one individual, a particular copy is limited to a discrete physical location.[79] This quality of intellectual property differs substantially from that of a classic Samuelsonian public good such as national defense, which is embodied at no discrete situs. The non-rival nature of the protected work therefore lies in the ability to generate multiple copies, rather than in the diffuse or inchoate nature of the work.[80] Additionally, the physical embodiment of the work is subject to the constraints of physical distribution. The work is therefore only as non-exclusive as shipping constraints allow.

73. *See* Adelstein & Peretz, *supra* note 70, at 219.

74. *See* PERRITT, *supra* note 47, § 10.2, at 420.

75. *See* Adelstein & Peretz, *supra* note 70, at 218.

76. *See* 17 U.S.C. §102(b) (1994); Gottshalk v. Benson, 409 U.S. 63 (1972).

77. *See* ALCHIAN & ALLEN, *supra* note 69, at 101.

78. *See* Joseph E. Stiglitz, *The Theory of Local Public Goods Twenty-Five Years After Tiebout: A Perspective, in* LOCAL PROVISION OF PUBLIC SERVICES: THE TIEBOUT MODEL AFTER TWENTY-FIVE YEARS, *supra* note 11, at 17, 19.

79. *See* ALCHIAN & ALLEN, *supra* note 69, at 101.

80. *See* PERRITT, *supra* note 47, § 10.2, at 419.

Most information products are not in fact ideal goods, but are rather ideal goods embodied in some tangible form, such as compact disks, books, magnetic tape, and so on.[81] Such embodied goods cannot be reproduced as effortlessly as ideal goods, nor distributed as effortlessly as ideal goods.[82] Because the non-rival aspect of embodied ideal goods is in fact an artifact of reproducibility, control of reproduction could serve as a choke point in the availability of the good. If reproduction cannot be restricted, distribution of the physical copy may be. Restriction of reproduction and distribution allows the controller to extract a higher price for access to the goods. Such restrictions can be used to counteract the tendency to undersupply such goods.[83]

Copyright law, for example, uses this physical "bottleneck" as a point of control to allow authors to recoup their investment in creative works. Copyright extends only to works embodied in a tangible medium of expression,[84] but it grants to authors the exclusive rights to reproduce, distribute, and similarly exploit such embodied works.[85] Unauthorized reproduction or distribution is discouraged via legal penalties. Thus the copyright holder is able to sell copies or licenses to copy at an artificially—but necessarily—inflated price.[86] By restricting reproduction and distribution of information goods, creation is fostered.[87]

However, technology has tended to greatly enhance the "non-exclusivity" of information products by lowering the cost of reproduction.[88] From hand-copied manuscript to printing press to photocopy to floppy disk, the reproduction bottleneck exploited by copyright is widening.[89] The Internet takes this trend a step further, not only by facilitating digital reproduction, but by allowing cheap distribution. By pushing the marginal cost of distribution close to zero, the Internet enables dissemination of information products that is highly efficient—some might argue too efficient.[90] The Internet

81. *See* Adelstein & Peretz, *supra* note 70, at 217.
82. *See* Landes & Posner, *supra* note 65, at 329.
83. *See id.*
84. *See* 17 U.S.C. § 102(a) (1994).
85. *See id.* § 106 (1994).
86. *See* ALCHIAN & ALLEN, *supra* note 69, at 101, 292.
87. *See* Feist v. Rural Tel. Serv. Co., 499 U.S. 340 (1991).
88. *See* PERRITT, *supra* note 47, §10.1, at 416-17.
89. *See* PAUL GOLDSTEIN, COPYRIGHT'S HIGHWAY: FROM GUTTENBERG TO THE CELESTIAL JUKEBOX 32-33 (1994).
90. *See* Adelstein & Peretz, *supra* note 70, at 215.

both makes information resources available to distant users and facilitates distribution of digitized information products at a cost that approaches that of an ideal good.[91] As described above, such efficient distribution enhances the "pure public goods" nature of information products, allowing free riders to reap the external benefits of information producers, and potentially undermining incentives to produce the goods in the first instance.[92]

B. Production and Distribution

The artificial price structure imposed by copyright regimes are a key consideration in understanding the interaction of nations that produce informational goods, and those that are said to "pirate" informational goods. Copyright distributional restrictions generate incentives to produce informational goods, but at the price of curtailing distribution.[93] Pirate nations attempt to encourage maximum distribution of a work by circumventing copyright restrictions that would inflate the work's price. This restrictive effect creates something of a paradox for intellectual property: jurisdictions that encourage "piracy" are in fact encouraging a type of efficiency, whereas jurisdictions with stringent copyright laws are encouraging a type of inefficiency.[94]

This paradox may be in part resolved by considering that these strategies are actually directed to different phases in the life cycle of an information product.[95] Creation of information products, like the creation of other products, may be conceived of as comprising several phases. An initial phase may involve generation of the information or creative work.[96] A subsequent phase may involve "adding value" to the work through processing, tagging, verifying, indexing, standardizing, packaging, or similar "institutionalization."[97] Yet a third phase involves distribution or dissemination, which will

91. *See* Pamela Samuelson, *Copyright, Digital Data, and Fair Use in Digital Networked Environments, in* THE ELECTRONIC SUPERHIGHWAY: THE SHAPE OF TECHNOLOGY AND LAW TO COME 117, 119 (Ejan Mackaay et al. eds., 1995).

92. *See id.* at 120.

93. *Cf.* Martyne M. Hallgren & Alan K. McAdams, *The Economic Efficiency of Internet Public Goods, in* INTERNET ECONOMICS, *supra* note 17, at 455, 460-61 (discussing asymmetric pricing of public goods).

94. *See* Landes & Posner, *supra* note 65, at 333.

95. *See* Karen B. Levitan, *Information Resources as "Goods" in the Life Cycle of Information Production*, 33 J. AM. SOC'Y INFO. 44 (1982).

96. *See id.* at 46.

97. *See id.* at 47.

generally include reproduction of the work.[98] Each of these phases may entail considerable cost, and each may be thought of as generating a separate "good": raw information resources, "value added" information resources, and information products or services.

Each of these separate information goods exists to some extent in its own market, although the markets are interconnected: the good from each successive phase is an input to the next phase, leading eventually to distribution of information products. As noted above, copyright law has tended to use the bottleneck in the distribution phase to allow authors to recoup the costs of their creative investment in either the generation or institutionalization phases. Thus, stringent control of a work tends to promote production, but at the cost of inefficient distribution. Jurisdictions adopting restrictive copyright regimes thus foster efficient production, whereas jurisdictions adopting permissive copyright regimes foster efficient distribution. Both approaches tend toward efficiency, but only at one particular stage in the product's life cycle.

This tension between approaches has long been apparent in the copyright systems adopted by different jurisdictions. Developed nations, such as the United States, have tended to focus on restrictive copyright regimes that promote production of creative works.[99] Other nations, typically underdeveloped nations, have tended to focus on permissive regimes that promote distribution to their populace at the cheapest cost.[100] These two approaches to some extent focus on different markets—either generation or distribution—however, attempts to maximize efficiency in one market entail a loss of efficiency in the other. From these competing interests charges of "piracy" are born. Efficient distributors must still have something to distribute—most frequently, permissive regimes have distributed unauthorized copies of works fostered under restrictive regimes.

Physical barriers have tended to keep the effect of pirating localized, thereby allowing concurrent existence of production-oriented and distribution-oriented regimes. Unauthorized copies of works have tended to circulate within a given nation or region, but generally not globally in sizeable quantities. This tendency toward

98. *See id.*

99. *See* Ruth L. Gana, *Has Creativity Died in the Third World? Some Implications of the Internationalization of Intellectual Property*, 24 DENV. J. INT'L L. & POL'Y 109, 113-14 (1995).

100. *See* Alan S. Gutterman, *The North-South Debate Regarding the Protection of Intellectual Property Rights*, 28 WAKE FOREST L. REV. 89, 104 (1993).

localization arises from the non-ideal nature of the works at issue; recall that copies of works embodied in tangible media tend to resemble local public goods rather than general public goods. The physical copies have bulk, weight, and other characteristics that make them costly to transport. In a Löschian system, these characteristics impose limits on efficient distribution. Transportation costs across geographic distances will naturally curtail the circulation of physical copies.

Other barriers to circulation may be interposed to frustrate low-cost transborder distribution. For example, by hiring customs inspectors, sizeable shipments of infringing works entering a "producer" nation can be interdicted at a point of entry.[101] Creation of such a public interdiction capability could perhaps be viewed as a national investment in barriers; by preventing a flood of cheap foreign copies, domestic production is fostered. But as with any other trade barrier, one must also recognize that it is a public subsidy to information product producers—the public pays both the cost of the customs service and the inflated prices charged by the protected information producers.[102]

The Internet, as we have seen, threatens to drastically change the calculus of distributional costs. Unconstrained by the transportation assumptions of a Löschian system, the Net allows information products to be distributed without the costs commonly associated with transporting physical goods over distance. This aspect of the network threatens to breach the regional compartmentalization previously associated with information piracy. Distance and transportation costs may no longer pose a significant barrier to distribution of unauthorized copies of a work. The network potentially extends the reach of information pirates, transforming regional permissive distribution into global permissive distribution.

Additionally, because of the Internet, interdiction of infringing products may become nearly impossible. The Internet, as we have observed, lowers marginal costs, including artificially created marginal costs. As a practical matter, the sheer volume of Internet traffic would make it prohibitively time consuming to examine each

101. *See generally* Lawrence M. Friedman, *Summary Protection of Intellectual Property Rights at the Border: Customs Law and Practice*, 19 RUTGERS COMPUTER & TECH. L.J. 429 (1993).

102. *Cf.* RICHARD A. POSNER, ECONOMIC ANALYSIS OF LAW 635 (4th ed. 1992) (discussing tariff effects).

packet coming into the territory of a copyright restrictive nation, and to sort among them for potentially infringing copies. Infringing packets might enter a territory at almost any point on the border, via microwave broadcast, fiber-optic, or copper wire transmission, or satellite downlink. Even if all the packets in all these media were monitored, works traversing the Net are likely to be broken into multiple packets that may be simultaneously routed through a variety of entry points. The Internet's feature of piecemeal transmission could thus further obscure a determination of whether the final reassembled transmission would be an infringing work.

The result is that the compartmentalization that protects production-oriented regimes may fail. National borders of restrictive copyright jurisdictions will be rendered highly porous to delivery of cheap information products from permissive copyright jurisdictions.[103] Infringing information products that formerly had the character of local, or at least regional, goods, may be freed from their physical embodiments and suddenly begin to resemble true general public goods. The Internet will therefore act not merely as a product delivery system that will free information producers to relocate where they will because they no longer require close proximity to information consumers; it will simultaneously act as a conduit for externalizing the costs of local information regulation choices.

III. LAW PRODUCTS

We have seen that the Internet, by rendering the delivery of information products geographically transparent, will shape the type of intellectual property regime that nations may select. By shaping such regulatory choices, the Internet will impact not only the market for information products, but a second, less well recognized market for information product *regulation*. Implicit in the prediction that some nations will become "digital pirates" or "copyright havens" is the assumption that nations compete for business revenues by creating local regulatory comparative advantages.[104] The dynamics of such interjurisdictional competition are dependent upon the public nature of such regulations, and just as the Internet enhances the public character of intellectual property, so does it similarly enhance the public character of intellectual property *law*.

103. *See* Ginsburg, *supra* note 3, at 1498.
104. *See id.*

A. Local Public Goods

It is at this point that Samuelson's insight into the nature of public goods again plays a critical, albeit corollary, role in analyzing the informational market effects of the Internet. Samuelson's observations regarding under-production of public goods did not go long without an answer.[105] In 1956, Charles Tiebout published his now-classic paper modeling local provision of public services on a theory of interjurisdictional competition that closely resembles market competition for provision of private goods.[106] Tiebout theorized that if citizens are free to migrate between jurisdictions, competition for desirable citizen immigrants will arise.[107] Local communities will offer to potential immigrants the most attractive packages of goods and services at the lowest tax rate possible.[108] Similarly, migrants will relocate to jurisdictions offering the maximum package of public goods at the tax rate that the migrant is willing to pay.[109] Local communities may even tailor their offerings to appeal to particular types of immigrants, and immigrants would be expected to sort themselves out into groups of similar means and tastes by jurisdiction.[110]

The production of local public goods and services might thus resemble the production of private goods in a competitive market: competitive pressure from other jurisdictions will prevent any given jurisdiction from offering too much or too little in the way of public services.[111] Jurisdictions that offer too much will experience an influx of immigrants from less generous jurisdictions; jurisdictions that offer too little will experience an exodus to more generous jurisdictions.[112] Migration in or out of the jurisdiction will continue until parity with competing jurisdictions is reached.[113] These forces therefore act as a check on overproduction or underproduction of local public goods.

105. *See* Rose-Ackerman, *supra* note 11, at 55.

106. *See* Charles M. Tiebout, *A Pure Theory of Local Expenditures*, 64 J. POL. ECON. 416 (1956).

107. *See id.* at 418-20.

108. *See id.*

109. *See id.* at 422.

110. *See* Martin McGuire, *Group Segregation and Optimal Jurisdictions*, 82 J. POL. ECON. 112 (1974).

111. *See* Stiglitz, *supra* note 78, at 18.

112. *See id.*

113. *See* George J. Stigler, *Economic Competition and Political Competition*, 13 PUB. CHOICE 91, 93 (1972).

By "voting with their feet," or exiting, citizens force efficiency in allocation of resources to such goods.[114]

The Tiebout model, like most pure economic theories, rests upon a number of simplifying assumptions. The model assumes that voters have full knowledge of the package of local services offered in various jurisdictions, that there are a large number of jurisdictions from which to choose, that individual mobility is relatively unconstrained, and that communities have an optimal size which will be dictated by the balance between resource constraints and economies of scale.[115] Most important for this discussion, the Tiebout model assumes that jurisdictions are tightly compartmentalized so that no external costs or benefits accrue from the local provision of public services.[116] If jurisdictions are "leaky," then individuals could perhaps enjoy the positive benefits of a neighboring jurisdiction's policy without actually incurring the cost of migrating there.[117] More significantly, in a world of leaky borders, jurisdictions could lower the costs to local firms by imposing all or part of those costs on neighboring jurisdictions.[118] This would serve to attract firms, but not necessarily by generating a net gain in efficiency.

Ironically, this final assumption implies that even on its own terms, the Tiebout model is an inadequate answer to the problem of inefficient production of Samuelsonian public goods.[119] If all the necessary assumptions are in place for operation of the Tiebout model, then the problem of Samuelsonian goods is not addressed.[120] The Tiebout model applies only to allocative efficiency of local public goods, that is, production of public goods that are local in nature, having no external effects. However, Samuelsonian public goods are almost always general public goods, that is, true public goods whose effects are not locally circumscribed. For such goods, allocative efficiency will not arise through interjurisdictional competition, because the positive or negative external effects will be felt outside the jurisdiction. Tiebout competition will arise only where public goods can be securely compartmentalized.

114. *See* DENNIS MUELLER, PUBLIC CHOICE 126-27 (1979).

115. *See id.*

116. *See* Robert P. Inman & Daniel L. Rubinfeld, *The Political Economy of Federalism, in* PERSPECTIVES ON PUBLIC CHOICE: A HANDBOOK 71, 83 (Dennis C. Mueller ed., 1997).

117. *See* Stiglitz, *supra* note 78, at 48.

118. *See* ROBERTA ROMANO, THE GENIUS OF AMERICAN CORPORATE LAW 5-6 (1993).

119. *See* Stiglitz, *supra* note 78, at 47.

120. *See id.*

B. Law as a Product

Business firms were not part of Tiebout's original model, but his insight was quickly expanded to encompass strategic preferences of local governments regarding such firms. Just as in the consumer/citizen model, businesses too may vote with their feet, locating their operations in jurisdictions that offer the most attractive set of local public goods.[121] This in turn implies that jurisdictions may tailor their offerings to attract businesses, or to attract certain kinds of desirable businesses, or even to repel undesirable businesses.[122] In this market for business migration, the "price" of migration may take a variety of forms: jurisdictions may offer anything from tax incentives, land grants, and liability waivers to museums, sports arenas, and public transportation systems.[123]

However, in analyzing business migration, we face a problem not encountered with persons.[124] The "location" of a business is a problematic question, because unlike an individual consumer, a business may have no discrete situs of existence—offices may be in one physical location, manufacturing in another, distribution in another, and sales in yet others. To the extent that a business as a juridical person is "located" anywhere, it may be located in the state of incorporation. Certainly the law governing the state of incorporation has a profound effect on the rights and structure of the organization.[125] As a consequence, one might expect that local laws governing incorporation might attract or discourage incorporation under those laws, and that jurisdictions might compete for the benefits—i.e., taxes and fees—to be garnered from incorporation franchises.[126]

This type of competition, in fact, appears to occur under certain conditions, giving rise to the so-called "Delaware phenomenon."[127] It is fairly widely recognized that in the United States, a surprisingly

121. *See* Frank H. Easterbrook, *Antitrust and the Economics of Federalism*, 26 J.L. & ECON. 23, 29 (1983).

122. *See id.* at 43; Susan Rose-Ackerman, *Does Federalism Matter? Political Choice in a Federal Republic*, 89 J. POL. ECON. 152, 157 (1981).

123. *See* Albert Breton, *The Existence and Stability of Interjurisdictional Competition, in* COMPETITION AMONG STATES AND LOCAL GOVERNMENTS: EFFICIENCY 37, 42 (Daphne A. Kenyon & John Kincaid eds., 1991).

124. *See* Susan Rose-Ackerman, *Risk Taking and Reelection: Does Federalism Promote Innovation?*, 9 J. LEGAL STUD. 593, 608 (1980).

125. *See* Easterbrook, *supra* note 121, at 34, 35.

126. *See* POSNER, *supra* note 102, at 416.

127. *See* ROMANO, *supra* note 118, at 6-11.

large number of corporations choose to incorporate or re-incorporate under the laws of the state of Delaware.[128] The proper explanation for this phenomenon is less well settled than is the observation itself. Analyses of the phenomenon tend to fall into two broad schools of thought. The first of these schools, originally set out by law professor William Cary, suggests that competition for incorporations represents a "race to the bottom," that is, a race to liberalize incorporation law for the benefit of officers and directors.[129] By enacting laws to appeal to the interests of officers and directors, states may attract incorporations, but at the expense of shareholders' rights. As states vie with one another for incorporation franchises, they successively liberalize their laws, until the rights of shareholders are entirely subordinated.[130] Cary recommended federal intervention to halt what he perceived as a downward spiral of ruinous interstate competition.[131]

The second school, which coalesced in response to Cary's claims, questions whether shareholders would in fact be stupid enough, or oblivious enough to their own interests, to leave their investment dollars with firms incorporated under laws detrimental to the shareholders' interests.[132] If jurisdictions such as Delaware were subordinating shareholder rights, one might expect to see shareholders "vote with their feet" by abandoning Delaware corporations for firms incorporating under laws more favorable to investors. Such a loss of investment dollars to Delaware corporations might in turn provide an incentive for firms not to incorporate there. The fact that there appears to be no such migration of investors from Delaware firms, or of firms from Delaware itself, leads commentators of the second school to interpret Delaware's success in attracting franchisees as indicating that such incorporations are attractive to investors, probably due to the superior returns on investment received from such firms.

This latter analysis suggested that Delaware, far from winning a

128. *See id.*

129. *See* William L. Cary, *Federalism and Corporate Law: Reflections upon Delaware*, 83 YALE L.J. 663, 666 (1974).

130. *See id.* at 665.

131. *See id.*

132. *See* Peter Dodd & Richard Leftwich, *The Market for Corporate Charters: "Unhealthy Competition" Versus Federal Regulation*, 53 J. BUS. 259 (1980); Daniel R. Fischel, *The "Race to the Bottom" Revisited: Reflections on Recent Developments in Delaware's Corporation Law*, 76 NW. U. L. REV. 913, 917 (1982); Ralph K. Winter, Jr., *State Law, Shareholder Protection, and the Theory of the Corporation*, J. LEGAL STUD. 251 (1977).

"race to the bottom" for inefficient incorporation laws, had won a "race to the top" for efficient incorporation laws that permitted maximum returns to investors. A subset of the "race to the top" school, typified in the writings of Roberta Romano, particularly emphasized the Delaware phenomenon as a competition between jurisdictions for "law as a product."[133] Delaware may not necessarily have attracted the lion's share of incorporations because of the absolute superiority of its governing rules, but because the Delaware legal system has specialized in corporate law, offering additional certainty to firms seeking incorporation.[134] Thus, Delaware offers not merely a highly developed statutory system, but also a court system with a high degree of expertise in resolving corporate conflicts, as well as a considerable body of case precedent governing such conflicts.[135]

Thus, these scholars argue, the total package of Delaware's legal capital succeeds in the incorporation marketplace as a superior product. Subsequent studies have suggested that interjurisdictional competition for law as a product operates in areas besides incorporation, such as bankruptcy law.[136] Such studies suggest a strong analogy between the competition among jurisdictional legal systems and the competition among private parties in a market for tangible goods.[137] In private markets, buyers "exit" by switching to other brands that are cheaper, better, or more desirable.[138] In interjurisdictional law "markets," firms may virtually exit by changing their place of incorporation. Or, as the Tiebout model predicts, they may physically exit by changing their geographic location.

However, not every kind of law can compete in the interjurisdictional marketplace. Interjurisdictional market failure may occur if externalities cannot be contained—that is to say, if the effects of the law in question are not localized. This problem quickly becomes apparent when considering law other than incorporation law that affects businesses. For purposes other than incorporation, businesses may be present almost anywhere that transactions are

133. *See* ROMANO, *supra* note 118; Roberta Romano, *Law as a Product: Some Pieces of the Incorporation Puzzle*, 1 J.L. ECON. & ORG. 225 (1985).

134. *See* ROMANO, *supra* note 118, at 38.

135. *See id.* at 39-40.

136. *See, e.g.*, Margaret F. Brinig & F.H. Buckley, *The Market for Deadbeats*, 25 J. LEGAL STUD. 201 (1996) (empirical study indicating that jurisdictions compete for desirable immigrants by offering absolution from former debts).

137. *See* Easterbrook, *supra* note 121, at 28.

138. *See id.* at 34.

conducted. Because a firm's presence is physically diffuse rather than physically discrete, certain types of legal regulation will not constitute local public goods with regard to a firm in a given jurisdiction. For example, a firm that manufactures a given product may be subject to tort liability in a large variety of jurisdictions—the place where a tort occurs will weigh heavily in a legal conflict of law analysis to decide which jurisdiction's law should apply to the question of liability.[139] No matter where a firm's central offices are located, or where its manufacturing facility is located, it is the place where its goods are sold and used that will determine its liability for injuries caused by its goods.[140]

Consequently, we would not expect local tort regulation to appreciably affect where most businesses locate their headquarters or manufacturing facilities. No matter where the firm locates, the law of personal injury in that jurisdiction will at best cover injuries in the workplace—a minuscule part of most firms' overhead.[141] The majority of a firm's tort liability is likely to accrue where it sells its products. Tort law may therefore have a profound effect on where the business decides to sell or not sell its products, but not on location of its facilities. Thus, with respect to the business' decision to locate facilities in a given jurisdiction, tort law is not a local public good, that is, it is not a public good whose effects are circumscribed to a discrete geographic region. Instead, choice of law analysis transforms tort law into a general public good that spills over the borders of any given geographic region to reach businesses incorporated and headquartered in other jurisdictions. This violates the Tiebout model requirement regarding externalities, and frustrates the creation of a "market" for manufacturer law.[142]

Conversely, we would expect corporate chartering, and not tort law, to be the type of "law product" that choice of law regimes will treat as geographically sited, and hence amenable to interjurisdictional competition. In the United States, recognition of such legal status has been formalized as a requirement under the Full

139. *See* RESTATEMENT (SECOND) OF CONFLICT OF LAWS §136 cmt. h (1969).

140. *Cf.* C. Robert Morris, Jr., *Enterprise Liability and the Actuarial Process—The Insignificance of Foresight*, 70 YALE L.J. 554, 574 (1961) (noting that insurance rates are based on where an automobile is housed rather than upon the domicile of the owner or driver).

141. An exception might occur when the firm is engaged in the manufacture of dangerous commodities, such as chemical manufacture. In the event of a serious accident, local tort liability might appreciably affect the firm's profits. Knowing this, the firm would take the expected costs of such an accident into account in locating its facility.

142. *See* Bratton & McCahery, *supra* note 11, at 231.

Faith and Credit Clause of the Federal Constitution.[143] But even where such a formal federal agreement does not exist, mutual recognition will tend to arise, generating international competition for corporate charters, or international competition for marine vessel registries. Corporate chartering and other recognitions of legal status, such as marriage[144] or vessel registry,[145] will tend to comprise unbundled legal products that are not connected to particular physical items, and which are not connected with significant external costs. While competing jurisdictions need not necessarily as a matter of law recognize legal status conferred by a competitor, in practice jurisdictions will be under considerable competitive pressure to engage in mutual recognition of such nominally sited legal relationships. One can imagine a situation in which some nations decline to recognize a particular legal status, such as citizenship in another nation. Under such a regime, tourism and even trade with those nations would likely be deterred, as domiciliaries of one nation were subjected to multiple conflicting requirements of taxation, military service, jury duty, and so on.[146] Such losses, coupled with the threat of retaliatory treatment of their own citizens would tend to far exceed any benefits, including administrative fees, that nations would gain from their non-acquiescence.

Tort liability, by contrast, comprises a bundle of public and private goods that may entail significant cross-subsidies between jurisdictions.[147] Liability in fact comprises a type of legal status; when a manufactured product crosses the border between jurisdictions, it may change legal status from safe to defective. Jurisdictions are unlikely to treat the status of the product according to the law of its jurisdiction of origin, in part because the physical damages that a defective product inflict at the place of the tort will tend to tip the cost-benefit calculus in favor of imposing the local liability status. Additionally, jurisdictions that fail to enact protective tort regulation will tend to find that they are effectively subsidizing payment of

143. *See* U.S. CONST. art IV, § 1; *see also* Baker v. General Motors Corp., 522 U.S. 222 (1998) (outlining limits of the Full Faith and Credit Clause).

144. *See* Bratton & McCahery, *supra* note 11, at 266 n.263 (citing Nevada divorces as "the primary example").

145. *See generally* Jane Marc Wells, Comment, *Vessel Registration in Selected Open Registries*, 6 MAR. L. 221 (1981) (discussing vessel registration states).

146. *See* Bratton & McCahery, *supra* note 11, at 273 (discussing costs of complying with diverse regulatory schemes across jurisdictions).

147. *See* David A. Rice, *Product Quality Laws and the Economics of Federalism*, 65 B.U. L. REV. 1, 7-8 (1985).

damages in jurisdictions that do—that is, the cost of products sent into the less protective jurisdiction will reflect the cost of liability imposed in protective jurisdictions, but the less protective jurisdictions will not be sharing in any portion of that higher price in the form of recovered damages.[148]

The market dynamics for law products also indicate which types of jurisdictions are likely to compete in the market for nominally sited legal relationships. The jurisdictions that have tended to compete most successfully for corporate charters, or vessel registries, or bank deposits, are relatively small jurisdictions such as Delaware, Singapore, Liechtenstein, or various small island nations.[149] These jurisdictions will tend to have fewer physical resources as compared to larger jurisdictions. However, because the generation of law products is not a type of production that requires economies of scale efficiency, small jurisdictions can compete in the law market as easily as large jurisdictions.[150] At the same time, the income generated by competing in a law market may form a significant portion of a small jurisdiction's revenues—for example, Bratton and McCahery note that although fifteen percent of Delaware's tax base is drawn from corporate franchise fees, this same cash flow would form a trivial percentage of a larger state's tax base.[151]

C. The Market for Intellectual Property Law

In contrast to regulation that has the characteristics of Samuelsonian public goods, other types of regulation that have the characteristics of local public goods may potentially affect the location of a business' physical facilities. Tax requirements, particularly property taxes, as well as state environmental regulation, worker safety, and employee benefits requirements will all tend to have localized effects, permitting a market in such law "products." The question might be posed as to whether the effects of intellectual property law "products" will tend to be localized, like those of incorporation law, or diffuse, like those of tort law. Most especially, the question must be posed as to what effect, if any, the Internet may have on the localization or externalization of intellectual property law

148. *See id.* at 49.

149. *See* Wells, *supra* note 145, at 236-38 (discussing vessel registration in Singapore); S. REP. NO. 99-130, at 29-36 (1985) (discussing banking haven states).

150. *See* Bratton & McCahery, *supra* note 11, at 273.

151. *See id.* at 267.

as a product.

The answer appears to be that the externalizing effects of the Internet on the market for intellectual property *law* may be as profound as its externalizing effects on the market for intellectual property itself. Much as in the case of corporation or bankruptcy law, jurisdictions may be expected to compete in producing intellectual property law; as suggested above, some may adopt a creation-fostering stance, others a distribution-fostering stance. As also suggested above, distance and border control have previously kept these differing approaches compartmentalized, allowing competition between permissive and restrictive regimes. However, the Internet breaks down that compartmentalization, allowing the effects of permissive regimes to be felt in nations with restrictive regimes. This effectively allows permissive regimes to lower regulatory costs at the expense of restrictive regimes, and spells the end of an efficient Tiebout type competition in information law.

Although this effect might be characterized as a "race to the bottom" for intellectual property law, the discussion above suggests that it is better thought of as simply "a race to externalize."[152] Jurisdictions may adopt a permissive information distribution regime in order to attract distributors, but the Internet expands the market of such low-cost distributors globally to the territories of restrictive jurisdictions. The availability of low-cost information from off-shore sources may disrupt the restrictive jurisdictions' attempt to foster information generation. In order to compete with the off-shore source, domestic providers may have to lower prices to a level at which the creators of information products cannot recoup their investment costs. This potentially puts information production into a death spiral of lowered prices and lower production, ending in the type of underproduction predicted by Samuelson for classic public goods.[153]

It may therefore seem that a permissive intellectual property policy is suicidal for information distributors on the Internet. By undercutting incentives for information generation and institutionalization, they would seem to pronounce their own death sentence. In the past, physical distance and national compartmentalization allowed such permissive regimes to function,

152. *See* Joel P. Trachtman, *International Regulatory Competition, Externalization, and Jurisdiction*, 34 HARV. INT'L L.J. 47, 73 (1993).

153. *See generally* Samuelson, *supra* note 62.

but as the Internet ties previously isolated markets together, a permissive strategy may ultimately prove self-defeating. In this sense, the permissive strategy constitutes a form of "Prisoner's Dilemma" scenario.[154] The Prisoner's Dilemma comprises a one-round game in which two parties must independently choose between cooperating with the other party or defecting; that is, attempting to profit at the expense of the other party.[155] The pay-offs in the game are arranged so that if both parties cooperate, they will gain a modest benefit; if both parties defect, they will both be worse off; and if only one party defects, that party will gain a substantially larger benefit than it would gain by cooperating. In such a situation, there is a strong temptation to choose the large payoff at the expense of the other party.[156] However, if each party thinks this way, both will end up worse off than if they had cooperated.[157] Similarly, in choosing between a permissive copyright regime and a restrictive one, it may appear advantageous to let other jurisdictions bear the cost of production, but if all jurisdictions adopt this strategy, no production will occur.[158]

Nonetheless, we might well expect permissive regimes to continue engaging in such potentially destructive behavior. The "Prisoner's Dilemma" game model predicts the existence of situations in which the players' apparently rational choices lead to a suboptimal outcome.[159] Theories of international cooperation predict that, much as in the "Prisoner's Dilemma" scenario, a nation will remain party to a cooperative agreement only to the extent that the agreement is "self-enforcing," that is, only so long as the nation has more to gain from cooperation than from defection.[160] Because the Internet transforms local public goods into general public goods, efficient production of the goods will only occur when consumption decisions

154. *See* Post, *supra* note 14; *see also* R. DUNCAN LUCE & HOWARD RAIFFA, GAMES AND DECISIONS, 95-102 (1957) (explaining the "Prisoner's Dilemma" game theory scenario).

155. *See* DAVID M. KREPS, GAME THEORY AND ECONOMIC MODELING 28-29 (1990). The colorful title of this game derives from an narrative embodiment in which a prosecutor offers two suspected criminal conspirators the opportunity to testify against the other in exchange for lighter prison sentences that meet the pay-off criteria of the game. *See id.* at 37-39. For application of the Prisoner's Dilemma scenario to intellectual property markets, see Wendy J. Gordon, *Asymmetric Market Failure and Prisoner's Dilemma in Intellectual Property*, 17 U. DAYTON L. REV. 853 (1992).

156. *See* Robert Axelrod & Robert O. Keohane, *Achieving Cooperation Under Anarchy: Strategies and Institutions*, 38 WORLD POL. 226, 230-31 (1985).

157. *See id.*

158. *See* Easterbrook, *supra* note 121, at 38. *See generally* Post, *supra* note 14.

159. *See* ERIC RASMUSSEN, GAMES AND INFORMATION: AN INTRODUCTION TO GAME THEORY 28-29 (1989); MICHAEL TAYLOR, THE POSSIBILITY OF COOPERATION 3 (1987).

160. *See* Lester Telser, *A Theory of Self-Enforcing Agreements*, 53 J. BUS. 27 (1980).

are made jointly between nations.[161] But when linked together by the Internet, no nation has an incentive to adopt a production centered scheme unless every other nation does so—and, in fact, every nation may have strong incentives to "defect" from such cooperation in order to externalize its regulatory costs at the expense of others.[162]

IV. COMPETITION OR COLLUSION

The analysis to this point has described the type of market failures that may occur due to Internet externalities. Because the Internet straddles intersecting markets in public goods, competitive failure in the market for intellectual property law may lead to failure in the market for intellectual property. In terms of the Tiebout model, the optimal number of jurisdictions may be one, because of the spillover effects from multiple jurisdictions.[163] This is a corollary to the principle that where competitive market failure occurs, it may be that more coordinated behavior is required to compensate. However, coordinated behavior will only be a superior alternative if a cooperative equilibrium is possible, that is, a type of coordinated response where all the parties are better off. Coordinated behavior may be an inferior solution if it leads to collusion, that is, to activity where some group of players is made better off at the expense of other players. And in the coming global information economy, the line between cooperation and collusion may prove very fine.

A. Cooperative Agreements

In order to find possible solutions to self-defeating political and commercial incentives in the virtual marketplace, we must carefully consider the conditions leading to such incentives. Simple game analysis, such as the "Prisoner's Dilemma" scenario, indicates that in a "wired" world, national self-interests may lead to undesirable international outcomes. But games in the real world are rarely so simple. For example, the "Prisoner's Dilemma" scenario assumes that the players are unable to communicate with one another, and that the game is a single-round interaction.[164] Because the

161. *See* MUELLER, *supra* note 114, at 13.

162. *See* Trachtman, *supra* note 152, at 76.

163. *See* Stiglitz, *supra* note 78, at 47 (discussing the optimal number of jurisdictions for pure public goods).

164. *See* PINDYK & RUBENFELD, *supra* note 50, at 476.

information held by the players in the scenario is limited, and because their interaction is limited to a single event, they are subject to a kind of "bounded rationality."[165] If their time horizon were lengthened, or if they knew more, their perception of self-interest would change, and they would act differently to avoid the sub-optimal outcome.[166]

Nations are not necessarily constrained by these assumptions. Opportunities for negotiation arise with some frequency, and the "players" in the international market know that they will interact again in the future.[167] This latter knowledge may be especially significant, as studies of multi-round games have suggested that cooperative strategies tend to dominate such tournaments, and so cooperative strategies may be the preference of rational actors in international competition.[168] Repeated interaction may lead to "trust," where trust comprises mutual recognition of the strategic advantage of cooperation.[169]

Additionally, the "Prisoner's Dilemma" assumes only two players—in the international arena there are far more than two players. In an iterated game with a large number of players, it does not necessarily follow that if one player defects, the others should follow suit.[170] By remaining in a cooperative agreement, the majority of players will continue to enjoy the benefits of the agreement, even if a small number of players free-ride or defect.[171] Rather than lose those benefits, they may choose to ignore the defection. This may mean that, at least in some situations, a small number of free-riders will be unable to induce a "race to the bottom."[172] Of course, it may

165. The concept of bounded rationality essentially recognizes the constraint of imperfect information; individuals make decisions within the parameters of available information, time, and processing capacity. *See* Herbert A. Simon, *Theories of Bounded Rationality, in* 2 MODELS OF BOUNDED RATIONALITY: BEHAVIORAL ECONOMICS AND BUSINESS ORGANIZATION 408, 410-11 (1982).

166. *See* ROBERT AXELROD, THE EVOLUTION OF COOPERATION 12 (1984); DOUGLAS G. BAIRD ET AL., GAME THEORY AND THE LAW 173-74 (1994).

167. *See* John E. Chubb, *How Relevant is Competition to Government Policymaking?, in* COMPETITION AMONG STATES AND LOCAL GOVERNMENTS: EFFICIENCY, *supra* note 123, at 57-58.

168. *See* AXELROD, *supra* note 166, at 136-39.

169. *See* James S. Coleman, *Recontracting, Trustworthiness, and the Stability of Vote Exchanges*, 40 PUB. CHOICE 89 (1983).

170. *See* Russel Hardin, *Economic Theories of the State, in* PERSPECTIVES ON PUBLIC CHOICE: A HANDBOOK, *supra* note 116, at 21, 29-30.

171. *See* THOMAS C. SCHELLING, MICROMOTIVES AND MICROBEHAVIOR 217-19 (1978).

172. *See id.*; TAYLOR, *supra* note 159, at 104. Taylor argues, however, that a partial cooperation will survive in the face of defection only under certain constrained conditions that create games within games. *See id.*

also mean that a small number of players can "free-ride" indefinitely on the benefits generated by the cooperative group. But if such cooperation could evolve among competitors in the market for intellectual property regulation, the "race for externalization" via the Internet might be avoided even if some nations choose to become "pirates."

1. Cooperative Failure

Although the international situation is more complex than that predicted in single-round game models, the additional complexity may also add barriers to cooperation. Certain serious barriers dim the prospects for an international cooperative equilibrium. The first such problem arises from the obvious fact that governments are comprised of people, and people do not remain in the same position forever. At minimum, exercise of "voice" through internal elections will periodically change the identity of those representing the nation.[173] Cooperation between nations may be a multi-round game, but, at least so far as nations with democratic process are concerned, it is a game in which the players change every few rounds. Cooperative relationships may be exceedingly difficult to maintain under such conditions, because the time horizon for exit of a particular player is finite.[174] If an agreement is concluded with a player who may shortly leave the game, then the value of the agreement becomes uncertain, whereas the value of cheating on the agreement is known.[175] This difficulty is to some extent blunted by organizational mechanisms within governments that promote continuity. However, reversals of a nation's international information policy may be as frequent as the elections of a chief executive or majority of the legislature.

A second barrier to intergovernmental cooperation is to some extent a corollary to the first: nations are not monolithic. Whereas the game scenarios considered above assume a single rational decisionmaker, the behavior of nations is far more complex. In the case of nations, external policy reflects the sum of the thousands of individual strategic decisions that comprise the nation's internal politics.[176] In other words, governments do not have interests;

173. *See* Breton, *supra* note 123, at 38, 49.
174. *See id.*
175. *See* PINDYK & RUBENFELD, *supra* note 50, at 478-79.
176. *See* Chubb, *supra* note 167, at 60-61.

individuals do. Where the state is concerned, the individuals furthering their own interests are politicians, and politicians are engaged not simply in a competitive game with their international counterparts, but with domestic voters as well.[177] This latter game will frequently prove to be the more influential factor in intellectual property policy; despite the importance of the Tiebout insight, voting with one's feet need not always eclipse voting with one's ballot. As discussed above, a jurisdiction that wished to win the "race to the top" for international information production might be required to do so at the expense of domestic information consumers. Thus, the highly restrictive intellectual property rules necessary to satisfy information producers could be unacceptable to domestic voters, who would see prices for access to domestic information products rise. If such dissatisfaction were manifest at the ballot box, that jurisdiction's ability to ensure attractive profits for information producers could be stymied. Additionally, if domestic voters are aware of competing policies in other jurisdictions, they may use this information to gauge the performance of their domestic leaders and demand comparable policies.[178] Failure to implement such policies may result in disgruntled constituents exercising voice by removing local politicians from office, rather than exiting.

Thus, voice may be as important as exit in the calculus of intellectual property law production.[179] However, some voices may be louder than others. Public choice theory suggests that because of the dynamics of democratic voting, domestic legislatures may be subject to capture.[180] Capture occurs when special interest groups essentially control voting in an elected legislature. This result will tend to occur to the extent that politicians are rational in the economic sense; that is, that they pursue their own self-interest in one fashion or another: by cultivating fame, by accumulating wealth, or by advancing their own perception of a better society.[181] In general, such goals will tend

177. *See* Roland Vaubel, *A Public Choice View of International Organization, in* THE POLITICAL ECONOMY OF INTERNATIONAL ORGANIZATIONS 27, 30 (Roland Vaubel & Thomas D. Wilbert eds., 1991).

178. *See id.*

179. *See* Chubb, *supra* note 167.

180. Public choice theory is defined as "the economic study of non-market decision making, or simply the application of economics to political science." MUELLER, *supra* note 114, at 1.

181. This assumption of public choice analysis has been criticized by a variety of commentators, but the criticisms ultimately fail to disprove the fundamental conclusions of such analysis. *See, e.g.*, Susan Block-Lieb, *Congress' Temptation to Defect: A Political and Economic Theory of Legislative Resolutions to Financial Common Pool Problems*, 39 ARIZ. L. REV. 801, 830 (1997) ("In the end, however, critics qualify rather than question the conclusions of public

to be furthered by re-election or by election to a higher office, but politicians may be responsive to special interests rather than to the general populace, because the marginal value of an individual vote is almost nil, and voters in democracies may tend to be rationally ignorant or even rationally indifferent to the electoral process.[182] The average voter's ability to affect the outcome of an election may not be worth the time investment to become an informed voter.[183] It may not even be worth a voter's time to cast a vote.[184]

In the face of such indifference, representative governments may be captured by "rent-seekers," that is, special interest groups who, unlike the average voter, find that it is worth their time to attempt to influence government.[185] Generally, such rent-seeking groups will seek special interest legislation that benefits them, but which may not be efficient for society generally.[186] Politicians may be able to accommodate such special interests by engaging in wealth transfers from the general public to rent-seekers if the burden on the public is sufficiently diffuse that no member of the public is likely to undertake an investigation.[187]

The influence of such special interest lobbyists in the formulation of domestic intellectual property laws is both ubiquitous and well-

choice theory."); Einer R. Elhauge, *Does Interest Group Theory Justify More Intrusive Judicial Review?*, 101 YALE L.J. 31, 43 (1991) (public choice critics "do not disprove the point that . . . special interest groups . . . exercise disproportionate political influence").

For example, some commentators have argued that the assumption of rational self-interest fails to appreciate the altruism and ideological commitment of many politicians. *See, e.g.*, Daniel A. Farber & Phillip P. Frickey, *The Jurisprudence of Public Choice*, 65 TEX. L. REV. 873, 890-900 (1987). However, the subjective motivation of an elected representative is immaterial to the analysis; a politician may be responsive to special interests whose goals could be considered laudable, or to special interests whose goals might be considered base, but in either case, to the extent that the representative's incentives are not consistent with general welfare, the dynamics of legislative behavior will tend to produce the result described here.

Perhaps more importantly, the assumption of self-interest is intended to model aggregate behavior, not to explain individual behavior. Whether or not the members of legislatures in *fact* act to maximize their own self-interest, legislative models may be more accurate when constructed as if they do. *See* Geoffrey Brennan & James Buchanan, *Predictive Power and Choice Among Regimes*, 93 ECON. J. 89, 97 (1983).

182. *See* ANTHONY DOWNS, AN ECONOMIC THEORY OF DEMOCRACY 207-67 (1957).

183. *See id.*

184. *See* POSNER, *supra* note 102, at 526.

185. *See* Gordon Tullock, *The Welfare Cost of Tariffs, Monopolies, and Theft*, 5 W. ECON. J. 224, 232 (1967).

186. *See id.*; George J. Stigler, *The Theory of Economic Regulation*, 2 BELL J. ECON. & MGMT. SCI. 3 (1971).

187. *See* David McGowan & Mark A. Lemley, *Antitrust Immunity: State Action and Federalism, Petitioning and the First Amendment*, 17 HARV. J.L. & PUB. POL'Y 293, 341 (1994).

documented.[188] An explanation of current intellectual property laws does not necessarily require resort to theories of exit in interjurisdictional competition; a public choice account of domestic interests would seem adequate.[189] In the past, increases in the level of domestic intellectual property protection have not necessarily been curtailed by the threat of exit—the United States, for example, has historically responded to extraterritorial copyright piracy not by loosening domestic law, but by exerting diplomatic and economic pressure on the permissive jurisdiction to tighten its copyright requirements.[190] In an Internet world, the interest groups that forged the present intellectual property environment can be expected to continue to attempt to influence policy to their advantage.

2. The Threat of Exit

The potential for legislative capture suggests that the electoral voice mechanism may sometimes break down, in part from the agency costs involved in representative democracy, and in part from a type of Prisoner's Dilemma effect in the dynamics of large groups. Since each voter faces disincentives to gathering information about activity of elected representatives, all voters collectively suffer.[191] This stems not only from the marginal value of a vote, but from the perverse reward structure of voting. In voting against an incumbent representative, voice becomes a type of exit: much like switching brands in the marketplace, voters may switch candidates and cast their vote for a new representative. However, there are important differences between marketplace exit and voter exit. Consumers usually reap an immediate benefit, in the form of lower price or

188. *See* Jessica Litman, *Copyright Legislation and Technological Change*, 68 OR. L. REV. 275 (1989).

189. Public choice analysis of domestic copyright policy is inherent in the discussion of special interest politics by recent commentators. *See, e.g.*, Jessica Litman, *The Exclusive Right to Read*, 13 CARDOZO ARTS & ENT. L.J. 29, 32 (1994) (attributing recent copyright proposals to special interest lobbying); Pamela Samuelson, *The Copyright Grab*, WIRED, Jan. 1996, at 134, 137-38 (same).

190. *See Administration Trade Policy, Hearing of the Senate Comm. on Finance*, 103rd Cong. (1993) (statement of Mickey Kantor, U.S. Trade Representative) (protecting intellectual property has been a major concern in U.S. trade negotiations with China, Japan, and other nations); Michael L. Doane, *TRIPS and International Intellectual Property Protection in an Age of Advancing Technology*, 9 AM. U. J. INT'L L. & POL'Y 465 (noting importance of intellectual property in U.S. agenda for trade negotiations); *see also* Amy E. Simpson, Note, *Copyright Law and Software Regulation in the People's Republic of China: Have the Chinese Pirates Affected World Trade?*, 20 N.C. J. INT'L L. & COM. REG. 575 (1995) (detailing history of United States attempts to bring China into intellectual property protection compliance).

191. *See* POSNER, *supra* note 102, at 525.

better quality, from switching brands.[192] But the same is not necessarily true with regard to switching representatives: the next election may be some time away, and the exit of an individual consumer has essentially no effect on the outcome of an election. Thus, in a democracy, the benefits of voice are often delayed and diffuse.[193]

The benefits of jurisdictional exit, however, are more likely to be immediate and concentrated, making it an attractive alternative where the requirements for Tiebout competition are met. The threat of such exit may also tend to work in favor of efficient provision of local public goods, especially when combined with the threat of domestic voice. The availability of more attractive regulatory regimes abroad may attract industry out of a jurisdiction, putting politicians in that jurisdiction under considerable voter pressure to streamline domestic regulation.[194] Politicians faced with a net emigration of firms or citizens may be inclined to enact more efficient local regulation to stem the tide of departure, or to avoid it completely. The threat of exit thus forces regulators to set the price of regulation closer to the competitive interjurisdictional "price."[195]

This reasoning indicates that there is implicit in the Tiebout model an answer to the problem of capture that is predicted by public choice theory.[196] A nation that faces stiff extraterritorial Tiebout competition cannot afford the drag of such inefficient legislation that may occur when politicians respond to favored special interests. Inefficient special interest legislation may prompt overregulated businesses to exit the jurisdiction, and such exit may provide electoral sanctions to counteract the legislative tendency toward capture. As in the case of firms in private markets, nations may be forced to become more efficient in order to compete for desirable businesses. Jurisdictions will generally have two options in developing such a competitive set of law products: regulating better and regulating less. In some instances, law products may do well in the legal market because they embody true regulatory innovation, but more often, rules may be made competitive by paring away inefficient special interest regulation.

192. *See* McGowan & Lemley, *supra* note 187, at 337.

193. *See id.* at 337-38.

194. *See id.*

195. *See* Breton, *supra* note 123, at 40.

196. *See generally* MANCUR OLSON, THE LOGIC OF COLLECTIVE ACTION: PUBLIC GOODS AND THE THEORY OF GROUPS (1965).

What this means for information policy is that stiff interjurisdictional competition to attract information providers and distributors may help to keep local politicians honest. Public choice analysis suggests that politicians will engage in an international race to attract information providers only to the extent such activity furthers the politicians' personal or political goals.[197] Some degree of intellectual property bottleneck is desirable to maintain creative incentives, but information producers in a given nation may attempt to influence local law so as to allow producers to reap monopoly profits beyond those necessary to prompt creation. Because the Internet facilitates efficient distribution of informational products, such rent-seeking will simply facilitate the exit of distributors. Nations competing with other jurisdictions in the market for intellectual property law will have to avoid special interest boondoggles, or watch new industries migrate offshore to compete in the information product market.

Recent proposals for amending the U.S. copyright laws appear to provide a concrete example of this effect.[198] The proposals, drawn from a Department of Commerce "White Paper," have been criticized as heavily favoring information producers at the expense of information distributors and consumers.[199] Several commentators have suggested that these proposals are in fact the result of "rent-seeking" by powerful entertainment and publishing lobbies.[200] However, assuming that this perceived bias is real, it is difficult to see how such domestic proposals would assist the rent-seekers in the face of international competition. The proposals, if enacted, would allow special interests to seek higher prices for the information products they produce. But the Internet would simultaneously allow lower cost distributors to migrate off-shore to more permissive jurisdictions, and by delivering their goods on-line, undercut the inflated domestic

197. *See* Vaubel, *supra* note 177, at 31.

198. *See* H.R. 2441, 104th Cong. (1995); S. 1284, 104th Cong. (1995). Similar legislation was re-introduced in the 105th Congress. *See* H.R. 2282, 105th Cong. (1997); S. 1121, 105th Cong. (1997).

199. *See* Peter Jaszi, *Caught in the Net of Copyright*, 75 OR. L. REV. 299 (1996); Leslie A. Kurtz, *Copyright and the National Information Infrastructure in the United States*, 18 EUR. INTELL. PROP. REV. 120 (1996); Charles R. McManis, *Taking TRIPS on the Information Superhighway: International Intellectual Property Protection and Emerging Computer Technology*, 41 VILL. L. REV. 207 (1996); Pamela Samuelson, *Intellectual Property Rights and the Global Information Economy*, COMM. OF THE ACM, Jan. 1996, at 23. For rare favorable treatment of the proposals, see Ginsburg, *supra* note 3 and Gary W. Glisson, *A Practitioner's Defense of the White Paper*, 75 OR. L. REV. 277 (1996).

200. *See* Litman, *supra* note 188; Samuelson, *supra* note 189.

content prices. This in turn would force the beneficiaries of the legislation to lower their prices, negating the effect of the proposals.

This theory of the "White Paper" proposals would predict that, because of foreign competition for both law products and information products, the rent-seekers' only hope to protect their proposed prerogatives would be to seek homogenous international enforcement of the proposals. This prediction in fact fits the currently available data; the same Clinton administration bureaucrats who championed the proposals in the United States have vigorously advocated the same proposals before a diplomatic World Intellectual Property Organization ("WIPO"), seeking their widespread adoption.[201] And of course at this juncture, a "cooperative" international intellectual property agreement may resemble cooperative equilibrium less than it resembles anticompetitive collusion in a private sector cartel.[202]

B. Collusion

The analysis thus far indicates that the presence of barriers to cooperative international behavior must be recognized as a very mixed blessing. The very forces that tend to prohibit cooperation in one setting are the same forces that generate an efficient law market in another setting—if in some situations barriers prohibit beneficial coordinated action, they may preclude detrimental coordinated action in others. International adoption of uniform intellectual property standards might serve to avoid the race to the bottom for intellectual property producers. But because of the public goods nature of intellectual property, in preventing the race to the bottom in producer standards, an international agreement may also cripple the race to the top in distribution standards. Such a cure may be no better than the

201. WIPO is an agency of the United Nations whose mandate includes promoting international harmonization of intellectual property standards. *See generally* SAM RICKETSON, THE BERNE CONVENTION FOR THE PROTECTION OF LITERARY AND ARTISTIC WORKS: 1886-1986 (1987) (discussing international role of WIPO). In December of 1996, a new treaty amending the Berne Convention was adopted under the auspices of a WIPO diplomatic conference. *See* Pamela Samuelson, *The U.S. Digital Agenda at WIPO*, 37 VA. J. INT'L L. 369 (1997) (describing the WIPO conference and the maneuvering of the U.S. delegation). The Berne Convention is an international treaty governing copyright and related rights. *See* Berne Convention for the Protection of Literary and Artistic Works, Sept. 9, 1886, 828 U.N.T.S. 221. The United States did not join the Berne Convention until 1989, when the treaty was over a century old. *See* Berne Convention Enabling Act of 1988, Pub. L. No. 100-568, 102 Stat. 2853 (1988); *see also* Jane C. Ginsburg & John Kernochan, *One Hundred and Two Years Later: The U.S. Joins the Berne Convention*, 13 COLUM.-VLA J.L. & ARTS 1 (1988).

202. *See* Easterbrook, *supra* note 121, at 225.

disease, as interjurisdictional collusion regarding law products could seek to forestall competition by imposing a uniform international standard for the product.

Much like a classic private-sector economic cartel, governments that participate in an international intellectual property agreement may be able to avoid ruinous competition in the market for law as a good. By standardizing the law product, they may succeed in effectively fixing the price for business migration. In the Internet context, enforcement of high protectionist standards would prevent cartel nations from lowering their "price" to attract information distributors. Fixing the price for information distributor migration would in turn allow domestic producers to avoid foreign information competition, and engage in monopoly overcharge for information products.[203] This type of monopoly overcharge effectively taxes non-producing nations—particularly developing nations—to support the information producers of the developed world.[204]

Such collusive international activity may be highly advantageous to politicians at the national level.[205] First, through collusion with foreign politicians, domestic politicians can protect themselves against superior foreign law products.[206] Exodus of firms to more attractive regulatory regimes may place domestic politicians and bureaucrats under pressure to streamline local regulation, perhaps at the expense of favored but inefficient rent-seeking constituents.[207] Such streamlining may, however, be avoided by agreement with foreign counterparts to cooperate in suppressing formulation of more efficient regulation in their respective jurisdictions.[208]

At the same time, local politicians may use an international agreement to deflect domestic voter dissatisfaction over domestic special interest legislation, by characterizing the local protectionist measures as a necessary part of international cooperation.[209] This in essence facilitates intrajurisdictional externalization of regulatory costs: rather than shifting costs to other jurisdictions, costs are shifted to a different constituency within the jurisdiction.[210] Thus,

203. *See id.* at 39.
204. *Cf. id.* (discussing monopoly overcharge as a form of taxation).
205. *See* Vaubel, *supra* note 177, at 32.
206. *See id.* at 32-33.
207. *See* Breton, *supra* note 123, at 39-40.
208. *See* Vaubel, *supra* note 177, at 33.
209. *See id.*
210. *See* Trachtman, *supra* note 152, at 57.

international collusion may prevent both "voice" and "exit" from correcting political improvidence.[211]

Elements of both these political ploys seem apparent in the recent debate over the Clinton administration's "White Paper" copyright legislation.[212] As mentioned above, these proposed amendments to the Copyright Act appear strongly partisan, favoring information producers over information distributors and consumers. Administration officials sponsoring the legislation spoke loudly of the need for the United States to show copyright law "leadership" before the international community.[213] In Congressional hearings on the domestic legislation, WIPO officials were paraded before the legislature to certify the importance and necessity of the amendments as part of international cooperation.[214] When attempts at domestic legislation failed, the same U.S. politicians sponsoring the domestic amendments introduced the proposals into the WIPO process for revising the Berne Convention.[215] This latter move appears to have been an attempt to bring the proposals in through a back door, by re-introducing them into Congress for ratification as part of a negotiated treaty.[216]

However, the success of U.S. protectionists, or any other group of price-fixers, requires a stable cartel, and cartels of any sort are notoriously unstable.[217] Such instability results in part from a form of Prisoner's Dilemma or race to the bottom effect.[218] Cartels extract monopoly profits by agreeing to restrain output so as to be able to push prices to monopoly levels that would be impossible to maintain if the members engaged in production at competitive levels. Cartel members therefore have a strong incentive to cheat: if a cartel member engages at competitive level production while competitors restrain output, the cheater can reap enormous profits.[219] But since all

211. *See* Vaubel, *supra* note 177, at 34.

212. *See* WHITE PAPER, *supra* note 3.

213. *See* Samuelson, *supra* note 201, at 430.

214. *See NII Copyright Protection Act of 1995: Joint Hearing Before the Subcomm. on Courts and Intellectual Property of the House Comm. on the Judiciary and the Senate Comm. on the Judiciary*, 104th Cong., 53, 65 (1995) (statement of Mihály Ficsor, Assistant Director General, World Intellectual Property Organization).

215. *See* Samuelson, *supra* note 201, at 374-75.

216. *See id.* After several incarnations, domestic legislation purportedly designed to implement the terms of the WIPO copyright treaty was enacted as the Digital Millenium Copyright Act, Pub. L. No. 105-304, 112 Stat. 2860 (1998).

217. *See* George J. Stigler, *A Theory of Oligopoly*, 72 J. POL. ECON. 44 (1977).

218. *See* PINDYK & RUBENFELD, *supra* note 50, at 447, 456.

219. *See id.*

members of the cartel are tempted by this same possibility, one member is unlikely to be able to cheat without triggering cheating by all the other members, leading back to competitive pricing and loss of the profits that prompted the cheating.[220] These effects become increasingly prevalent the larger the number of members in the cartel, as monitoring other member's compliance becomes increasingly difficult with larger membership.[221]

In the case of private economic cartels, a collusive organization is believed to be most feasible and stable where the quality of the product is homogeneous, the price elasticity of demand for the product is low, barriers to entry are high, all suppliers of the product have similar cost functions, and there is a dominant supplier who can act as price-leader.[222] In the case of international collusion over intellectual property law products, several of these requirements may be met.

First, it would appear that the universe of law producers on an international scale is largely closed, forming something of a barrier to entry. New nations do not arise with particular frequency, and when they do, the circumstances of their inauguration—such as revolution or social upheaval—will likely deter information producers from relocating to take advantage of whatever new law products they choose to offer. Additionally, accumulation of legal capital poses a barrier to jurisdictions attempting to enter the law product market. In Romano's analysis of the race to the top for incorporation law, firms that incorporated in Delaware repeatedly referred to the large body of settled case law on corporations as a reason for incorporating there.[223] Similarly, nations with a long history of well-developed copyright law may be especially attractive to information distributors seeking to locate their operations, especially if the jurisdiction sports specialty courts with a high degree of expertise in copyright. The certainty offered by a well-developed body of copyright law may in many instances offer greater business value than would relaxed regulation of information distribution. New entrants into the information law market may have their work cut out for them in order to displace the law products of well-established jurisdictions.[224]

220. *See* POSNER, *supra* note 102, at 286.

221. *See* Axelrod & Keohane, *supra* note 156, at 231; TAYLOR, *supra* note 159, at 105.

222. *See* Vaubel, *supra* note 177, at 33.

223. *See* ROMANO, *supra* note 118, at 258-61, 274-75.

224. *Cf.* ROMANO, *supra* note 118, at 40. ("Legal capital is not as easily duplicated by other states . . . because of the start-up costs in developing precedent and the dynamic precedent-

Price-leadership or "dominant firm" effects may also be seen in the market for intellectual property law. The number of sovereign states is relatively large, but certain nations, particularly the United States, are able to exert considerable diplomatic and economic pressure toward conformity.[225] In this regard, it is worth noting that in pressing its "White Paper" recommendations to WIPO, the United States appears suspiciously like a supplier attempting to act as "price-leader" in the market for intellectual property law. By promulgating its new "White Paper" copyright law products as a proposed standard for inclusion within the Berne treaty revisions, the United States was attempting to coordinate the international market for such law products.

Barriers to product substitution may also exist. The price elasticity of demand for law products has in the past been tied to firm location, depending on the type of law in question. As noted above, the incorporation law of one state may be an acceptable substitute for that of another, because a firm need not physically move to make the substitution. However, when firms must physically move to substitute law "products," they may be locked into one legal standard by the cost of migration. The Internet itself, by increasing firm mobility, increases the ability of law "purchasers" to substitute one jurisdiction's law product for another's. By substantially lowering or eliminating that cost, the Internet destabilizes the ability of nations to collectively set an international standard for intellectual property law.

If the conditions for a stable intergovernmental cartel can be attained, the expected damage to innovation and competition will follow naturally from the principles outlined previously in this article. First, by homogenizing national intellectual property systems, an international agreement forces international businesses to operate in a world where "one size fits all." Opportunities for jurisdictional experimentation and innovation are curtailed.[226] New information industries that might have arisen under innovative schemes may be stifled. Established information industries will be confined to an international norm, rather than offered the opportunity to select from a diversity of systems that which is best suited to their operation. As

based nature of adjudication by courts.")

225. *See* Gana, *supra* note 99; Marci A. Hamilton, *The TRIPS Agreement: Imperialistic, Outdated, and Overprotective*, 29 VAND. J. TRANSNAT'L L. 613, 615-16 (1996); J.H. Reichman, *Beyond the Historical Lines of Demarcation: Competition Law, Intellectual Property Rights, and International Trade After the GATT's Uruguay Round*, 20 BROOK J. INT'L L. 75, 113 (1993).

226. *See* Vaubel, *supra* note 177, at 29.

a corollary effect, information firms will be exposed to greater business risk because they will be less able to diversify across jurisdictions.[227] Thus, the international inefficiencies resulting from an international intellectual property cartel may be no less serious than the inefficiencies resulting from lack of coordination.

V. CENTRALIZATION

We have explored how, in some situations, certain types of defection may be desirable in order to create interjurisdictional law competition, but how other types of defection may lead to an undesirable race to externalize. If in fact co-operative strategies prove impossible or unworkable, rational competitors may have yet another option. If "horizontal" cooperation among jurisdictions proves unstable, the creation of a "third party" standing in a vertical relationship to the competitors may be necessary.[228] Tiebout recognized this in his original model by noting that where externalities exist, centralized decisionmaking, rather than interjurisdictional competition, may be required to achieve an efficient outcome. This principle may also be stated in game theoretic terms: because states know that their own rational short-term competitive preferences will inevitably lead to their own detriment in the long term, states may choose to voluntarily surrender all or part of their decision-making power to a third party.

The "third party" approach is in essence the strategy adopted by the individual states of the United States in acquiescing to the constitutional compact that creates a centralized federal government;[229] similar benefits may be found in the federal compacts of Canada and Australia,[230] and to some extent that of the European Community.[231] Interestingly, it is also much the strategy adopted by the General Agreement on Tariffs and Trade ("GATT") signatory nations in creating the World Trade Organization ("WTO").[232]

227. *See id.*

228. *See* Breton, *supra* note 123, at 48-49.

229. *See generally* Jaques LeBoeuf, *The Economics of Federalism and the Proper Scope of the Federal Commerce Power*, 31 SAN DIEGO L. REV. 555 (1994).

230. *See generally* M.J. SPROULE, PUBLIC CHOICE IN FEDERALISM IN AUSTRALIA AND CANADA (1975).

231. *See* James M. Buchanan, *Federalism and Individual Sovereignty*, 15 CATO J. 259, 266-67 (1995-96) (discussing federal structure of European Union central governance).

232. *See* Norio Komuro, *The WTO Dispute Settlement Mechanism: Coverage and Procedures of the WTO Understanding*, 12 J. ARB. 81 (1995). The WTO is the trade dispute resolution mechanism resulting from the culminating round of negotiations in the multilateral General

However, any movement toward centralization should preserve to the extent possible the benefits of interjurisdictional legal diversity. For example, in the United States, the benefits of interstate competition have also been preserved to the extent deemed practical.[233] Because competitive benefits will be lost in whichever markets are centralized, centralization must be considered a drastic measure to be taken only where no such efficiencies are to be had; that is, where externalities prevent the development of competition in the first instance.[234] Therefore, international centralization for Internet-related information rights should likewise be approached with a minimalist attitude, if at all. This requires a careful consideration of which areas truly generate externalities that would undermine information product creation, and limitation of the central authority to those areas.[235]

A. Approaches to Centralization

Centralization of regulatory authority may take a number of forms. The thought of "centralization" is perhaps most commonly associated with direct regulation of the externality-producing activity.[236] However, centralized regulation of international intellectual property protection is probably neither practical nor desirable. Aside from the practical problems of convincing sovereign nations to cede authority over a highly lucrative market, direct regulation is most unlikely. In many instances, such centralization simply moves the same public choice inefficiencies of the regional government to a higher and more far-reaching regime—and in the case of an international authority, "exit" to another regime would not be available as a threat to curtail rent-seeking.

An alternative to direct regulation is to have the higher-level authority set minimum standards, leaving the implementation to regional governments.[237] This is in effect the approach under the

Agreement on Tariffs and Trade. *See* Marrakesh Agreement Establishing the World Trade Organization, 33 I.L.M. 81 (1994); *see also* Uruguay Round Agreements Act, Pub. L. No. 103-465, 108 Stat. 4809 (1994) (United States ratification and implementation of WTO agreements).

233. *See* Richard Epstein, *The Proper Scope of the Commerce Power*, 73 VA. L. REV. 1387, 1454 (1987).

234. *Cf.* Breton, *supra* note 123, at 46.

235. *See generally* POSNER, *supra* note 102.

236. *See* Robert C. Ellickson, *Public Property Rights: Vicarious Intergovernmental Rights and Liabilities as a Technique for Correcting Intergovernmental Spillovers, in* ESSAYS ON THE LAW AND ECONOMICS OF LOCAL GOVERNMENTS 49 (Daniel L. Rubinfeld ed., 1979).

237. *See* Breton, *supra* note 123, at 50.

international Berne convention on copyright, which sets threshold copyright requirements for member states. These minimum standards form a "floor" to contain an information distribution "race to the bottom." However, some degree of local innovation is still permissible, so long as it lies above the level required by the convention. So long as the minimum standards are in fact minimum, prices in both the market for intellectual property and in the market for intellectual property law are supported at the level necessary for efficient production.

Once such standards are in place, the question remains as to how they are to be enforced. The most desirable sort of centralized "enforcement" may be the implementation of grants-in-aid to counter jurisdictional spillovers.[238] Under this approach, the central authority monitors regional activity for public goods spillovers, and then offers grants to local authorities to offset their external effects of local activity.[239] Positive externalities may be subsidized so that the local authority will not underproduce a public good that could benefit those outside the jurisdiction, but who otherwise could not be induced to pay for the good.[240] Alternatively, jurisdictions may be "bribed" not to engage in activities that generate negative externalities.[241] Grants are given to offset the local revenues that might be gained at the expense of non-residents in an interjurisdictional "race to externalize." This latter type of grant might be especially appropriate to forestall the Internet externality problem. An organization such as the World Bank or International Monetary Fund could offer payments to developing nations that might otherwise gain revenue through information product piracy. Payments might be tied to the level of intellectual property protection available and enforced in the recipient nation.

This type of program could in fact implement a form of exchange predicted by the famous Coase Theorem.[242] For example, yearly estimates of the Pacific rim sales lost by U.S. industries due to Chinese information product piracy range into the hundreds of

238. *See generally* WALLACE OATES, FISCAL FEDERALISM (1972).

239. *See* Therese J. McGuire, *Federal Aid to States and Localities and the Appropriate Competitive Framework, in* COMPETITION AMONG STATES AND LOCAL GOVERNMENTS: EFFICIENCY, *supra* note 123, at 153, 159.

240. *See id.*

241. *See* Breton, *supra* note 123, at 50-51.

242. *See* Ronald H. Coase, *The Problem of Social Cost*, 3 J.L. & ECON. 1 (1960).

millions of dollars.[243] We have shown here how the proliferation of the Internet may well exacerbate that trend by removing or lowering the pirate's cost of transporting physical media. Under a Coasean analysis, U.S. information producers might cheerfully pay Chinese information distributors some "bribe" up to the expected value of the lost sales in order to induce the Chinese to stop pirating. Of course, such an arrangement involves extensive coordination and transaction costs, that might well block the exchange from occurring. However, these costs might be lowered substantially by reducing the number of parties to the exchange such as by arranging for an international fund to pay the Chinese government to vigorously enforce international standards of intellectual property protection.

Although this might prove to be the most efficient type of solution to the Internet externality problem, I also consider it to be the most unlikely to be implemented, primarily due to the public choice analysis reviewed above. It may be far cheaper for U.S. information producers to engage in rent-seeking than for them to engage in grant-funding. For the price of a few thousand dollar's contribution to political campaign funds, information producers can likely induce domestic politicians to engage in diplomatic pressure, or even an all-out trade war,[244] to prevent foreign piracy—indeed, the industry lobbyists may even be invited to stay in the Lincoln bedroom as part of the bargain.[245] From the domestic politician's point of view, diplomatic or economic saber-rattling is likely to be far more popular than funding a grant program to maximize global utility. Consequently, prospects for this type of international cooperation seem dim.

A second and more feasible centralized mechanism for controlling Internet externalities might be implementation of what Robert Ellickson has called "public property rights."[246] Under this approach, the central authority makes lower-level governments vicariously responsible for the externality-generating activities of their private constituents.[247] The governments then represent the real

243. *See generally* Simpson, *supra* note 190.

244. *See, e.g.*, David E. Sanger, *U.S.-Europe Trade War Looms Over Bananas*, N.Y. TIMES, Dec. 22, 1998 at A1 (political contributors Dole and Chiquita here made bananas a Washington trade policy priority).

245. *See* Michael Weisskopf & Charles R. Babcock, *Donors Pay and Stay at the White House: Lincoln Bedroom a Special Treat*, WASH. POST, Dec. 15, 1996, at A01.

246. *See generally* Ellickson, *supra* note 236.

247. *See generally id.* at 53-54.

parties in interest in any negotiation or litigation over harm accruing from the activity. This system may be desirable where coordination costs make impractical assignment of rights and liabilities to private parties.[248] Although public representatives might not pursue cost internalization as assiduously or efficiently as private owners might, it will be in their interests to do so in egregious or prominent instances of harmful interjurisdictional spillover.

Prospects for initiating such a system seem relatively favorable, as the elements of this system are already in place in the World Trade Organization. The WTO dispute resolution mechanism does not entertain complaints by private entities who are harmed by unfair trade practices, but rather by governments representing such interests.[249] Under the Agreement on Trade-Related Aspects of Intellectual Property Rights ("TRIPS"), WTO members are required to adhere to the copyright standards of the Berne convention.[250] Violation of the Berne minimum standards can thus lead to initiation of a WTO proceeding, resulting in trade retaliation or payment of sanctions against the non-complying nation.[251] The ready availability of this mechanism offers a potentially satisfactory enforcement mechanism provided that the incorporated Berne provisions are in fact suitable "minimum standards" against Internet spillovers.

B. Defining the Standard

The suitability of the Berne copyright standards as a "floor" to forestall Internet externalities remains an open question. On the one hand, to the extent that copyright law was formulated to exploit the cost of distributing physical media, it may be seriously deficient in addressing digital works. This militates in favor of revising international copyright law to consider digital works, as was recently done in a diplomatic summit hosted by the WIPO. On the other hand, recent commentary concerning the WIPO diplomatic

248. *See id.* at 69.

249. *See* Rochelle Cooper Dreyfuss & Andreas F. Lowenfeld, *Two Achievements of the Uruguay Round: Putting TRIPS and Dispute Settlement Together*, 37 VA. J. INT'L L. 275 (1997).

250. *See* Neil W. Netanel, *The Next Round: The Impact of the WIPO Copyright Treaty on TRIPS Dispute Settlement*, 37 VA. J. INT'L L. 480 (1997); Jerome H. Reichman, *Universal Minimum Standards of Intellectual Property Protection Under the TRIPS Component of the WTO Agreement*, 29 INT'L L. 345 (1995).

251. *See* Paul Edward Geller, *Intellectual Property in the Global Marketplace: Impact of TRIPS Dispute Settlement*, 29 INT'L L. 99 (1995); Netanel, *supra* note 250; Adrian Otten & Hannu Wager, *Compliance With TRIPS: The Emerging World View*, 29 VAND. J. TRANSNAT'L L. 391 (1996).

conference depicts the meeting as an exercise in special interest rent-seeking, and I have shown here that such activity is consistent with some rather unflattering public choice models of public officials' behavior. Thus, there exists a strong possibility that the Berne "minimum" standards could become an instrument for collusive international behavior to set excessive monopoly rents in both the market for intellectual property law and the market for intellectual property.

If this result is to be avoided, the Berne standards will require careful calibration. I shall spend the balance of this article showing that, as a practical matter, legal "minimum standards" need not be set very high to counter undesirable Internet "spillovers," and will likely be necessary only for selected types of digital works. In other areas, sufficient barriers remain to effectively prevent many information products from becoming general public goods, and so long as they remain local public goods, competitive mechanisms can be allowed to function.

1. Barriers to Entry

Although the Internet promises to lower distance barriers, other economic barriers may help maintain sufficient compartmentalization that precipitous international action need not be taken, at least not yet. As mentioned above, there are effective barriers to entering the market for intellectual property law. These barriers would likely tend to favor developed information producing nations such as the United States over developing nations with immature information law precedents. Of course, the unsettled nature of law on the Internet may blunt this comparative advantage; to the extent that production of "cyberlaw" represents entry into a new market, no nation yet enjoys a unassailable market share. However, the existence in some nations of courts with a developed expertise in copyright and related law could offer a significant advantage even in the absence of precedential decisions directly addressed to the Internet. This may mean that a stampede of firms to permissive but untried jurisdictions will not develop.

Second, compartmentalization among jurisdictions may be sustainable because of non-legal factors. Law is in many senses a "bundled" product—the decision to "exit" for an alternative venue will be made on the totality of the public goods package offered off-

shore.[252] Even if a permissive intellectual property law product is offered, other regulation in that jurisdiction will be taken into account, and may outweigh the competitiveness of the intellectual property offering. Indeed, non-legal "factor endowments" such as climate or quality of life may be in essence bundled with the intellectual property law product of the jurisdiction. Restrictive intellectual property jurisdictions may be able to remain competitive if their total package of taxes, climate, labor regulation, import duties, and other local public goods remains attractive. Such limitations may turn the "race for the bottom" into a leisurely stroll, or forestall it altogether.

2. Presentation Barriers

Similarly, with regard to the market for intellectual property itself, there may be no stampede of consumers to off-shore providers because of barriers of presentation.[253] In many instances, consumers may continue to prefer to obtain works in tangible embodiments that are subject to Löschian constraints. For example, a common complaint regarding on-line reading material is the inconvenience of moving between screens; it is difficult to "skim" or quickly "thumb through" the displayed material as compared to a hard-copy version.[254] Even the most compact notebook computer is fairly awkward and bulky compared to a paperback book; until the advent of some major and ubiquitous advance in flat-panel technology, this will likely remain the case.[255] And, even with rising printing costs, the present price of a paperback is difficult to beat.[256] Thus, it seems unlikely that novels downloaded off the Internet will displace books for pleasure reading in the near future: readers curling up on the sofa with a palm-top computer and a large mug of cocoa is not a scenario that the publishing industry need fear.[257]

Of course, many of these presentation barriers may be overcome as the separate home appliances of computer, stereo, and television

252. *See generally* Rose-Ackerman, *supra* note 122; Trachtman, *supra* note 152, at 79.

253. *See* I. Trotter Hardy, *Contracts, Copyright, and Preemption in a Digital World*, 1 RICH. J.L. & TECH. (1995) <http://www.urich.edu/~jolt/v1.1/hardy.html>.

254. *See* NEGROPONTE, *supra* note 20, at 13.

255. *See* Laura Van Dam, *A Never Ending Story*, TECH. REV., Mar.-June 1996, at 12 (describing development of a flexible panel electronic "book").

256. *See* NEGROPONTE, *supra* note 20, at 13; *see also* Philip Yam, *Plastics Get Wired*, SCI. AM., July 1995, at 83-84 (price of conducting polymers still prohibits flexible panel displays).

257. *See* NEGROPONTE, *supra* note 20, at 7.

begin to merge, allowing seamless transfer of digital works between video, audio, and information processing systems. But that convergence has not happened yet. At least for the present, though, it appears that the Internet has not magically transformed aesthetic and entertainment works into general public goods—quite the contrary, the particular embodiment of such works remains an important aspect of consumer enjoyment, and the preferred embodiments continue to show characteristics of local public goods. So long as this remains true, "spillover" into other jurisdictions may be containable.

For other classes of copyrighted works, however, present computer presentation formats will remain perfectly acceptable. Such works might include databases, factual or instructional documents, and, of course, computer software. Because such works are not intended to be enjoyed aesthetically, the presentation format is less important to consumers than the works' content. Interestingly, such "utilitarian" works tend to be those not traditionally protected by copyright, and hence those works for which copyright protection is most problematic or "thin."[258] Nonetheless they appear to be the type of works that will most closely resemble general public goods in Internet commerce; consequently, some special provision for such works may be in order.

3. Technological Barriers

Information goods that entail presentation barriers have aspects of private goods because consumers value a particular embodiment that may not be available in a digitized format. This suggests that there may be significant opportunities for self-help, that is, for information producers to capture the value of their products without resort to legal protection. In some instances, such opportunities may constitute simple business devices, such as selling frequent updates or upgrades to information products that are difficult to protect from piracy—the cost of the investment in the hard-to-protect information can be capitalized in the updates.[259] This type of stratagem, long known to lawyers as the "pocket part," is already becoming prevalent

258. *See generally* Pamela Samuelson et al., *A Manifesto Concerning the Legal Protection of Computer Programs*, 94 COLUM. L. REV. 2308 (1994).

259. *See* Tom Palmer, *Intellectual Property: A Non-Posnerian Law and Economics Approach*, 12 HAMLINE L. REV. 261, 289-91 (1989) (discussing non-legal exclusion from public goods).

on the Internet.[260]

Additionally, information goods of all types could perhaps be imbued with private goods aspects via technological barriers.[261] Passwords and other access barriers may be of some use, but once the material is accessed, it may be copied by and distributed from the user's system without restraint. What may be more useful is the use of "secure systems" that prevent unauthorized end-user copying and distribution.[262] Technology now under consideration would allow users to treat digital works much like physically embodied works, including "loaning" or browsing the work without making a permanent copy.[263] Some types of secure systems could be used to monitor the number of uses, charging users for the particular degree of access that they desire.[264]

This approach restricts the ability of the user to reproduce or distribute the information product, effectively imposing on the digital product an "embodiment" with private good aspects. However, it may prove a mixed blessing. First, if improperly used, this approach could negate the many positive benefits of digital media. Information users could possibly use secure systems to privately appropriate the public value of information works that has traditionally been reserved to the public domain.[265] These systems may also entail some dangers regarding the privacy of information used to manage the system.[266]

A second and closely related problem arises from the fact that "the technology of exclusion is a growth industry with frequent innovation."[267] For every technological lock, there is a key, and it is possible that technically sophisticated users could circumvent secure systems to widely distribute either the unauthorized circumvention technology or the unlocked product itself. This of course, may

260. *See* John Perry Barlow, *The Framework for Economy of Ideas: Rethinking Patents and Copyrights in the Digital Age*, WIRED, Mar. 1994, at 83, 128-29; Esther Dyson, *Intellectual Value*, WIRED, July 1995, at 136-38.

261. *See* Mark Stefik, *Letting Loose the Light: Igniting Commerce in Electronic Publication*, *in* INTERNET DREAMS: ARCHETYPES, MYTHS, AND METAPHORS 219 (Mark Stefik ed., 1996); Mark Stefik, *Shifting the Possible: How Trusted Systems and Digital Property Rights Challenge Us to Rethink Digital Publishing*, 12 BERKELEY TECH. L.J. 137 (1997).

262. *See* Mark Stefik, *Trusted Systems*, SCI. AM., Mar. 1997, at 43.

263. *See id.*

264. *See* Julie E. Cohen, *Some Reflections on Copyright Management Systems and Laws Designed to Protect Them*, 12 BERKELEY TECH. L.J. 161 (1997).

265. *See* Julie E. Cohen, *Reverse Engineering and the Rise of Electronic Vigilantism: Intellectual Property Implications of "Lock-Out" Programs*, 68 S. CAL. L. REV. 1091 (1995).

266. *See generally* Cohen, *supra* note 2.

267. *See* Hardin, *supra* note 170, at 28.

prompt the innovation of a more sophisticated lock, prompting in turn development of an unauthorized key to that system, and so on—sort of secure systems arms race. To forestall such a race, information producers have looked to create legal sanctions against circumvention technology. However, legal standards to prevent this type of free-riding must be tailored to the minimum in order to prevent information producers from accruing excessive monopoly rents. Overbroad legal protection of technical barriers could allow content producers to capture intellectual goods beyond the optimum level necessary to encourage creation.[268]

Additionally, given the considerations outlined in this article, there appears to be a substantial likelihood that the enactment of anti-circumvention law may itself trigger a race to externalize the costs of a copyright management technology "arms race." The presence of this ancillary race gives rise to a sort of fractal pattern of virtual exit,[269] where nested within the dynamic of interjurisdictional competition for copyright law there lies an identical interjurisdictional competition for technological circumvention law. As in the race for copyright law, some of the externalities of the race for circumvention law could be internalized by centralization or harmonization of anti-circumvention standards, but the dangers of overreaching or rent-seeking are equally present. The recent WIPO-sponsored amendment to the Berne convention attempts to modulate the race for circumvention law by requiring signatory nations to adopt effective legal protection against circumvention.[270] However, the implementation of this obligation may vary widely among signatory nations.[271] Additionally, some jurisdictions may choose to defect from the WIPO agreement, becoming circumvention havens. The option of virtual exit to such havens may help curtail overreaching by content providers who employ technological barriers, but as in the case of the market for copyright law, such defections could also

268. For example, the Digital Millenium Copyright Act (DMCA) declares the availability of fair use for digital works, but then essentially negates this declaration by penalizing unauthorized access to technologically protected works—in effect, giving users of technologically protected works little or no opportunity to exercise their right of fair use. *See* Pub. L. No. 105-304, 112 Stat. 2860, § 103 (Oct. 1998) (codified at 17 U.S.C. § 1201).

269. *See generally* BENOIT B. MANDELBROT, THE FRACTAL GEOMETRY OF NATURE (1983) (describing fractal geometry).

270. *See* WIPO Copyright Treaty, art. 18, Dec. 20, 1996, 36 I.L.M. 65.

271. For example, some commentators have suggested that the anti-circumvention provisions of the DMCA were unnecessary to put the United States into compliance with the WIPO treaty requirements; our existing caselaw on contributory infringement would have been adequate. *See, e.g.*, Cohen, *supra* note 264, at 169 n.31 (quoting Professor Samuelson).

undermine the benefits of the system as a whole.

CONCLUSION

The Internet promises to facilitate both trans-border delivery of information products and trans-border migration of information producers. Thus, the competitive effects of the Internet may prove a mixed blessing, depending on one's perspective. The challenge will be to preserve the competitive benefits enabled by the network, while minimizing its externalizing effects. To meet that challenge, a carefully crafted international agreement on copyright and information policy may be necessary. However, given the potential for international collusion via such regulatory centralization, any agreement should leave maximum opportunity for jurisdictional experimentation and variation. This likely means doing no more than specifying minimum standards for copyright protection by the signatories, and providing an appropriate mechanism for enforcement of egregious violations. Interestingly enough, this is already the approach taken by both the Berne Convention and, by incorporation of the Berne standards into the TRIPS agreements, the approach of the WTO. Thus the sensible approach at present may simply be to seek increased enrollment in existing agreements, rather than new or drastically modified agreements. Only by striking the proper balance between mobility and compartmentalization can such an agreement preserve both voice and exit in the virtual marketplace.