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Google Set Sail: Ocean-Based Server Farms and International Law

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STEVEN R. SWANSON

In recent years, the oceans have become a venue for nontraditional uses such as rocket launches, fish farming, and energy production. In 2009, the United States Patent and Trademark Office granted Google a patent for an ocean-based server farm, powered and cooled by the seas' wind and water. A server farm is simply a collection of computers joined together on a network providing services to remotely connected users. Google argued that the transportability of these server ships would allow easy movement to world regions where such services are needed. In addition, the data center ship would provide a relatively green alternative to power-hungry server farms located on land.

If these massive server farms populate the oceans, what regulatory schemes will apply? The server ship's owner may understandably seek the ability to avoid national exercises of jurisdiction. Internet theorists have traditionally resisted state jurisdiction, arguing that cyberspace should provide its own norms. This early view has recently been undercut by successful state exercises of control over various Internet players and the development of new technology allowing geographic segmentation of Internet content and use.

This Article will consider and evaluate international law's probable application to state jurisdiction over these server ships and other innovative technologies just beyond view. It argues that the international community should resist additional abridgements of high seas freedoms to address issues relating to server ships or other new maritime uses, absent a compelling international need for additional regulation.

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Google Sets Sail: Ocean-Based Server Farms and International Law

STEVEN R. SWANSON*

I. INTRODUCTION

Internet pioneers saw a cyberworld free from national boundaries. Traditional notions of the nation-state system, with its dependence on territorial jurisdictional control, would simply become irrelevant in the online world, which could create its own norms to control unwanted Internet behavior without state-sovereignty restrictions.¹ Unfortunately for these utopian theorists, the world's nations had an entirely different vision, finding diverse ways to exercise power over the Internet game's significant players.² Although a particular website might not be subject to a state's jurisdiction, the Internet service provider allowing local access to that site might be. Companies providing search engines or financial transactions on the Internet might find themselves subject to local restrictions. In addition, entities with property or personnel in the regulating country might be coerced into compliance.³ The Internet does not just exist in the ether; its physical manifestations exist within many countries, making cyberspace vulnerable to the state jurisdiction that Internet theorists had hoped to avoid.

Even as the cyberworld has opened its doors, technology has multiplied the ways that human beings use the seas. Plans are underway to build the nation's first ocean-based wind farm off Rhode Island's coast.⁴ Fish farming in deep offshore waters is beginning to look like it may become economically feasible.⁵ Discussions are underway about how to

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¹ See *infra* notes 221–26 and accompanying text.

² See *infra* notes 227–31 and accompanying text.

³ See *infra* notes 58–59 and accompanying text.

⁴ *Deepwater Wind To Build First U.S. Ocean Wind Farm*, CNET NEWS (Dec. 11, 2009), http://msn-cnet.com.com/8301-11128_3-10413743-54.html?part=msn-cnet&subj=ns&tag=feed. The wind farm will be made up of eight turbines providing twenty-eight megawatts of electricity. Another facility has been planned off the coast of Massachusetts, but has been slowed by protests. *Id.*

⁵ See John McQuaid, *In Search of New Waters, Fish Farming Moves Offshore*, YALE ENV'T 360 (Dec. 3, 2009), <http://e360.yale.edu/content/feature.msp?id=2216> (reviewing recent attempts to create deep sea fish farms).

create livable settlements on the high seas.⁶ Russia is considering building floating nuclear power stations to power its arctic oil and gas exploration efforts.⁷ Spacecraft are even blasting off from the high seas.⁸

Given these newfound maritime uses, it is not surprising that Internet stakeholders are looking to the seas as a place to locate, and perhaps protect, their businesses. For example, in 2007, the owners of The Pirate Bay, a notorious Swedish illegal file-sharing operation, wanted to locate its servers on the Principality of Sealand, a self-declared independent state on a deserted British defense platform in the Atlantic Ocean.⁹ By locating its servers on this metallic “sovereign” nation, The Pirate Bay hoped to avoid national laws that prohibited its file-sharing service.¹⁰ Ultimately the deal fell through,¹¹ but efforts persisted to isolate servers and the valuable information that they may contain.

On February 26, 2007, Google filed for a U.S. patent on a “water-based data center.”¹² The patent application covered “a floating platform-mounted computer data center comprising a plurality of computing units, a sea-based electrical generator in electrical connection with the plurality of computing units, and one or more sea-water cooling units for providing cooling to the plurality of computing units.”¹³ In layman’s terms, the patent sought to create container-based server units located on the water, powered and cooled by the ocean itself. These units could be combined in multiple configurations and moved to new locations with relative ease.¹⁴

The United Nations Conference on the Law of the Sea, which produced the United Nations Convention on the Law of the Sea

⁶ See Ted Chamberlain, *Future Sea Cities: Freedom’s Final Frontier in Pictures*, NAT’L GEOGRAPHIC NEWS, <http://news.nationalgeographic.com/news/2009/05/photogalleries/seasteading-sea-buildings-pictures/index.html> (last visited Jan. 15, 2011) (reporting on design contest for homesteads on the seas).

⁷ John Vidal, *Russia To Build Floating Arctic Nuclear Stations*, OBSERVER, May 3, 2009, at 13 (describing the Russian plan and environmentalists’ concerns).

⁸ Sea Launch, partially owned by Boeing, is in the business of launching payloads from a sea-based platform into equatorial orbit. *Cruising to Orbit: Why Sea Launch*, SEA LAUNCH, http://www.sea-launch.com/why_sea_launch.htm (last visited Jan. 15, 2011). The last launch of a satellite from the sea was a communications satellite on April 20, 2009. *Cruising to Orbit: History*, SEA LAUNCH, <http://www.sea-launch.com/history.htm> (last visited Jan. 15, 2011).

⁹ Darren Murph, *The Pirate Bay Eying Sealand To Escape Digital Persecution*, ENGADGET (Jan. 14, 2007, 8:45 PM), <http://www.engadget.com/2007/01/14/the-pirate-bay-eying-sealand-to-escape-digital-persecution>. The micro-nation had previously hosted HavenCo, which hosted gambling and other financial ventures seeking freedom from state jurisdiction. *Id.* For additional discussion of Sealand, see Kevin Fayle, Note, *Sealand Ho! Music Pirates, Data Havens, and the Future of International Copyright Law*, 28 HASTINGS INT’L & COMP. L. REV. 247, 260–63 (2005).

¹⁰ See Murph, *supra* note 9 (“Sealand could be a potential sanctuary from the claws of the RIAA, MPAA, and other content ‘owners.’”).

¹¹ Jared Moya, *The Pirate Bay Abandons Plans for a Sovereign Nation*, ZERO PAID (Feb. 22, 2007), http://www.zeropaid.com/news/8442/the_pirate_bay_abandons_plans_for_a_sovereign_nation.

¹² Water-Based Data Ctr., U.S. Patent No. 7,525,207 (filed Feb. 26, 2007) (issued Apr. 28, 2009).

¹³ *Id.*

¹⁴ *Id.*

(“UNCLOS”),¹⁵ met from 1973–1982. Although the UNCLOS was successful in codifying and moving forward the international law of the sea, it did not anticipate the radical changes in sea usage that have subsequently occurred. After all, the world’s oceans had been used for a limited number of purposes. Transportation of goods and passengers and fishing were early traditional uses.¹⁶ Over time, navies plied the oceans in support of national goals, and communications cables ran across ocean floors.¹⁷ More recently, the seas have provided a source for the exploration and exploitation of natural resources and scientific study.¹⁸ The oceans have also served as a venue for human recreation.¹⁹ The UNCLOS’s provisions understandably attempted to provide an overarching set of norms to regulate these routine activities, but these provisions present an awkward framework for today’s myriad high-tech uses.

This Article will explore the legal implications of an ocean-based server farm, beginning with a review of server farms’ unique problems and how Google’s approach may help to solve some of them. The next segment will consider traditional international law rules relating to the state’s ability to prescribe conduct like the server farms envisioned under

¹⁵ United Nations Convention on the Law of the Sea, Dec. 10, 1982, 1833 U.N.T.S. 397 [hereinafter UNCLOS]. To date, the United States has not ratified the convention, although it considers many of its provisions to be customary international law. See Statement of President Reagan on United States Ocean Policy, 19 WEEKLY COMP. PRES. DOC. 383, 383 (Mar. 10, 1983) (“[T]he convention also contains provisions with respect to traditional uses of the oceans which generally confirm existing maritime law and practice and fairly balance the interests of all states.”). The Obama administration has indicated that it will seek Senate approval of the treaty. Ben Block, *U.S. Leaders Support Law of the Sea Treaty*, WORLDWATCH INST. (Jan. 22, 2009), <http://www.worldwatch.org/node/5993>.

¹⁶ See, e.g., 1 BENEDICT ON ADMIRALTY § 2 (7th ed. 1985) (“In those days, a merchant would often travel by sea with his goods and merchandise, and sometimes there might be more than one such merchant in a ship.”). Recent research shows that medieval fisherman plied the ocean waters as early as 1000 A.D., due to diminishing fresh water stocks. Mark Kinver, *Study Unlocks History of the Seas*, BBC NEWS (May 24, 2009), <http://news.bbc.co.uk/2/hi/science/nature/8058351.stm>. The origins of maritime law are quite ancient and can be found in nearly every culture. In those days, maritime law was necessary to regulate trade and travel. 1 BENEDICT ON ADMIRALTY, *supra*, § 2 (“The practice of these seafarers and merchants gave rise to customary law.”).

¹⁷ See, e.g., United States of America Statement in Right of Reply (Mar. 8, 1983), in 17 THIRD UNITED NATIONS CONF. ON THE LAW OF THE SEA: OFFICIAL RECORDS 243, 244 (1984) (“[A]ll States continue to enjoy in the zone traditional high seas freedoms of navigation and overflight and the laying of submarine cables and pipelines . . .”). The United States’ interpretation of UNCLOS recognizes laying of submarine cables and conducting military operations, exercises, and activities as “internationally lawful uses of the sea.” *Id.*

¹⁸ See, e.g., Craig H. Allen, *Protecting the Oceanic Gardens of Eden: International Law Issues in Deep-Sea Vent Resource Conservation and Management*, 13 GEO. INT’L ENVTL. L. REV. 563, 565–67 (2001) (discussing the possibility of obtaining resources from deep sea vents); Mary Turnipseed et al., *The Silver Anniversary of the United States’ Exclusive Economic Zone: Twenty-Five Years of Ocean Use and Abuse, and the Possibility of a Blue Water Public Trust Doctrine*, 36 ECOLOGY L.Q. 1, 4–7 (2009) (discussing the dangers of exploitation of natural resources in the oceans).

¹⁹ See, e.g., 10 BENEDICT ON ADMIRALTY § 1.01 (2009) (“[A]lthough only 11.3% of Americans have ever taken a cruise . . . 56% have expressed an interest in doing so in the next five years.”). The cruise industry in the United States is currently a \$12 billion per year business, with more than five million passengers per year. *Id.*

the Google patent. The Article will then review UNCLOS's embodiment of the law of the sea to determine whether those rules adequately address unexpected issues presented by rapidly-changing technology, as informed by the analogous attempts to control pirate radio stations outside national jurisdiction. In combating the pirate radio problem, the UNCLOS confers on states a right to arrest pirate radio vessels that contravene the exclusive flag state jurisdiction over its registered vessels. When combined with the UNCLOS's extension of state jurisdiction over large areas of traditional high seas, this suggests a willingness to undercut high seas freedoms that have long been the core of the law of the sea. The Article concludes that the international legal community should be cautious about further limiting traditional notions of freedom of the sea in order to regulate these new maritime uses, particularly when there are less intrusive options.

II. SERVER FARMS CAST OFF

A. *What Is a Server Farm?*

Put simply, a server is a computer designed to provide information or processes to other computers on a network,²⁰ and a server farm, also known as a data center, is a group of servers in one location connected by a network.²¹ With the advent of cloud computing, the need for powerful remote storage facilities is bound to increase at a rapid rate.²² Cloud computing takes much of what was traditionally done on the local computer to remotely-located computer servers.²³ In the past, the remote server would only be the information source; in the future, the cloud will likely run remotely-located applications, supplying the product to the local user.²⁴ In addition, users are much more likely to store their data, or at least back it up, on the cloud.²⁵ The growth of such applications and

²⁰ Bradley Mitchell, *Server*, ABOUT.COM, http://compnetworking.about.com/od/basicnetworking/concepts/g/network_servers.htm (last visited Jan. 15, 2011) (defining "server").

²¹ N. Madison, *What Is a Server Farm?*, WISEGEEK, <http://www.wisegeek.com/what-is-a-server-farm.htm> (last visited Jan. 15, 2011) (outlining the basic features and purposes of server farms).

²² LUIZ ANDRÉ BARROSO & URS HÖLZLE, *THE DATACENTER AS A COMPUTER: AN INTRODUCTION TO THE DESIGN OF WAREHOUSE-SCALE MACHINES* 1-5 (2009), <http://www.morganclaypool.com/doi/abs/10.2200/S00193ED1V01Y200905CAC006> (featuring a discussion of two Google employees on the future of large scale server farms). "[Cloud computing] refers to companies building massive computing power and then renting that capacity out to other firms." *Server Farms Becoming a Cash Crop in the Midwest*, REDORBIT (May 7, 2008), http://www.redorbit.com/news/technology/1374175/server_farms_becoming_a_cash_crop_in_the_midwest.

²³ See BARROSO & HÖLZLE, *supra* note 22, at 1 ("Increasingly, computing and storage are moving from PC-like clients to large Internet services.").

²⁴ See *id.* ("While early Internet services were mostly informational, today many Web applications offer services that previously resided in the client, including email, photo and video storage and office applications.").

²⁵ See *id.* ("The shift toward server-side computing is driven primarily not only by the need for user experience improvements, such as ease of management (no configuration or backups needed) and

storage will, of course, require the creation of a greater number of large server farms.²⁶

B. *The Problem with Server Farms*

Server farms can be big, hot, power-guzzling, and ugly.²⁷ Google's Dalles Data Center will have a 75,000 square foot capacity.²⁸ Microsoft's San Antonio Data Center is 475,000 square feet,²⁹ and Apple's new data center in North Carolina is over 500,000 square feet.³⁰ These examples present the tip of the iceberg. Google has nineteen data centers in the United States, twelve in Europe, three in Asia, and one in South America.³¹ In 2008, Microsoft was adding 10,000 servers a month.³²

Location is important to providing good service. Long distances between servers, as well as between servers and individual users, slow delivery times.³³ Unacceptable delivery times could kill the cloud computing concept; therefore, there is a need for server farms based broadly around the world.

Running a data center requires cheap energy—and a lot of it.³⁴ A large server farm can actually use as much power as a mid-sized city.³⁵

ubiquity of access (a browser is all you need), but also by the advantages it offers to vendors.”)

²⁶ Apple has apparently recognized the need for such large server farms. It is investing \$1 billion in a server farm in North Carolina. Erik Sherman, *It's Official: Apple To Build Massive Data Center*, BNET (June 3, 2009), <http://industry.bnet.com/technology/10002016/its-official-apple-to-build-massive-data-center/948> (reporting on North Carolina legislature's passage of tax relief measure to encourage Apple to build its facility in North Carolina). Google has similarly received state support for the location of a server farm in North Carolina. *Id.*

²⁷ See Stephanie N. Mehta, *Behold the Server Farm*, FORTUNE (July 28, 2006, 7:26 PM), http://money.cnn.com/2006/07/26/magazines/fortune/futureoftech_serverfarm.fortune/index.htm (describing the growth of large server farms).

²⁸ Matthew Wheeland, *Google Data Center's Massive Energy Appetite*, GREENBIZ.COM (May 4, 2009, 3:50 PM), <http://www.greenbiz.com/blog/2009/05/04/google-data-centers-massive-energy-appetite> (describing energy use at a Google facility).

²⁹ J. Nicholas Hoover, *Inside Microsoft's \$550 Million Mega Data Centers*, INFORMATIONWEEK (June 17, 2008), http://www.informationweek.com/news/hardware/data_centers/showArticle.jhtml?articleID=208403723 (describing Microsoft's San Antonio Data Center).

³⁰ Rich Miller, *First Look: Apple's Massive iDataCenter*, DATA CENTER KNOWLEDGE (Feb. 22, 2010), <http://www.datacenterknowledge.com/archives/2010/02/22/first-look-apples-massive-idatacenter>.

³¹ *Map of All Google Data Center Locations*, ROYAL PINGDOM (Apr. 11, 2008), <http://royal.pingdom.com/2008/04/11>.

³² Ina Fried, *Microsoft's Data Centers Growing by the Truckload*, CNET NEWS (Aug. 20, 2008, 7:28 AM), http://news.cnet.com/8301-13860_3-10020902-56.html (outlining Microsoft's server growth).

³³ *Server Farms Becoming a Cash Crop*, *supra* note 22.

³⁴ See Cliff Kuang, *Google To Take Its Servers to the High Seas?*, FAST COMPANY (May 1, 2009), <http://www.fastcompany.com/blog/cliff-kuang/design-innovation/google-might-be-taking-its-servers-high-seas> (explaining Google's floating data center patent).

³⁵ See Rachel Konrad, *Server Farms on Hot Seat Amid Power Woes*, CNET NEWS (May 14, 2001, 11:20 AM), <http://news.cnet.com/2100-1017-257567.html> (describing a server farm that would consume the same amount of energy as that needed to provide energy for all the homes in the city of Honolulu); Mehta, *supra* note 27 (discussing the immense amount of energy needed to construct a data center).

Understandably, many current farms are in areas that provide relatively inexpensive power.³⁶ If low-cost energy is not readily available, the server farm may need to build power sub-stations.³⁷ Although attempts have been made to make servers greener,³⁸ power consumption remains a major concern. Server farms produce a great deal of heat.³⁹ Half of a typical data center's energy consumption is used for cooling.⁴⁰ Thus, developers try to locate server farms near rivers or lakes that can provide cooling for the facility at a relatively low cost.⁴¹

Despite their overbearing size and power needs, Internet data centers still serve a crucial function in the development of cyberspace. To the extent that the server ship concept may offer an alternative that is greener and more cost-effective, the development of such vessels could be a godsend for the industry.

C. *The Google Patent*

The U.S. Patent and Trademark Office granted Google's patent on a water-based data center on April 28, 2009.⁴² The data center would be made up of servers inside containers like those normally used for the carriage of goods by sea or rail.⁴³ Cranes would place these containers on ships or barges. The containers would be linked together to form large data centers that would be located at sea wherever necessary.⁴⁴ Ocean waves, tides, or currents would supply power to these floating data

³⁶ See *Server Farms Becoming a Cash Crop*, *supra* note 22 (stating that Google has built server farms in "cheap-electricity locales").

³⁷ See, e.g., Rich Miller, *RagingWire Builds Own Power Substation*, DATA CENTER KNOWLEDGE (Jan. 29, 2007), <http://www.datacenterknowledge.com/archives/2007/01/29/ragingwire-builds-own-power-substation> (discussing the construction of a hosting company's own power substation). Google has even received permission from the Federal Energy Regulatory Commission to act as a utility in buying and selling power. Darren Murph, *Google Gains Clearance To Buy and Sell Energy. Continue Taking over the World*, ENGADGET (Feb. 19, 2010, 8:02 PM), <http://www.engadget.com/2010/02/19/google-gains-clearance-to-buy-and-sell-energy-continue-taking-o>.

³⁸ For an entire website about green data centers, see GREEN DATA CENTER NEWS, <http://www.greendatacenternews.org> (last visited Jan. 15, 2011).

³⁹ Jane Anne Morris, *The Energy Nightmare of Web Server Farms*, SYNTHESIS/REGENERATION, Winter 2008, at 6, 6, available at <http://www.greens.org/s-r/45/45-03.html>.

⁴⁰ *Id.*

⁴¹ See Mehta, *supra* note 27 (discussing how Microsoft began constructing a server farm close to hydroelectric power); *Server Farms Becoming a Cash Crop*, *supra* note 22 ("[S]erver farms typically require a good water source because the outposts often use water-cooled systems . . . rather than conventional air-conditioning.").

⁴² Water-Based Data Ctr., U.S. Patent No. 7,525,207 (filed Feb. 26, 2007) (issued Apr. 28, 2009).

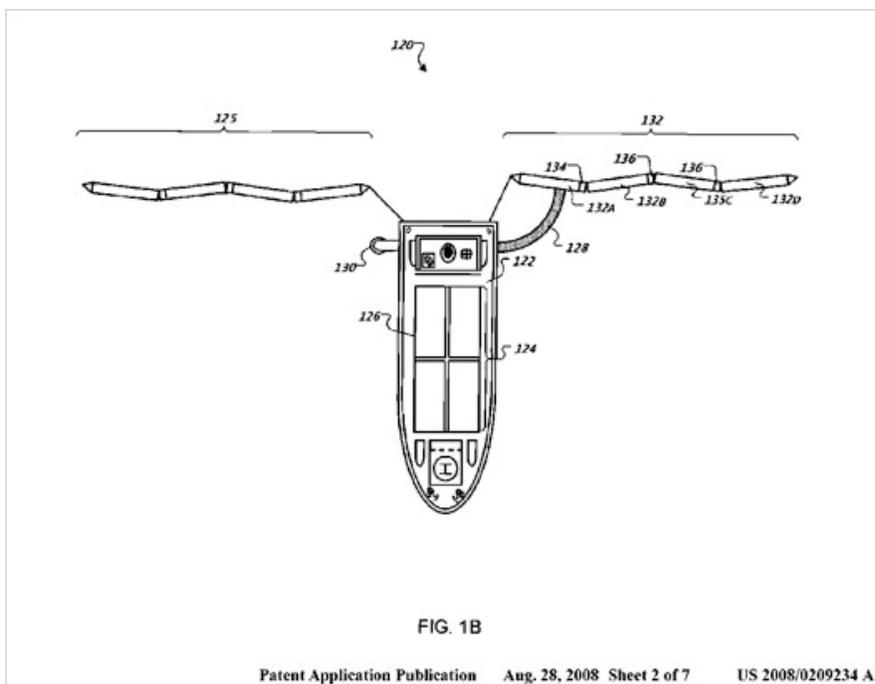
⁴³ *Id.* at col. 3 ll. 13–23.

⁴⁴ *Id.* at col. 3 ll. 11–29. The patent also purports to cover data centers on land that are powered and cooled in the same fashion. *Id.* at col. 9 ll. 58–64.

centers,⁴⁵ and pumping the surrounding water through an onboard system would cool them.⁴⁶

Figure 1

Illustration from Google patent of ship with server containers on board, Pelamis machines providing power, and cooling provided by the water⁴⁷



In the patent application, Google noted the increasing need for global access to the Internet, with ever-expanding bandwidth expectations.⁴⁸ This additional demand fed the need for localized data centers; after all, running long-distance connections to remotely-located server farms would be prohibitively costly, inefficient, and unworkable.⁴⁹ In addition, Google noted that emergencies or military exercises could require establishing a

⁴⁵ *Id.* at col. 1 ll. 57–65. As an example, Google suggests that Pelamis machines could provide power. *Id.* at col. 2 ll. 13–25. These devices use wave energy to create electricity. For more information, see the Pelamis Wave Power corporate website, <http://www.pelamiswave.com> (last visited Jan. 15, 2011).

⁴⁶ 207 Patent at col. 2 ll. 1–6.

⁴⁷ *Id.* at fig. 1B.

⁴⁸ *Id.* at col. 1 ll. 10–14.

⁴⁹ *Id.* at col. 1 ll. 24–30. Google explains that it is best to locate these servers close to users. When this is done, data must only be sent once and network activity is limited and balanced. *Id.* at col. 1 ll. 31–38.

data center in a location that lacks adequate land-based facilities.⁵⁰

Thus, Google's application emphasized cost, efficiency, and environmental friendliness as the reasons driving the need for water-based data centers.⁵¹ Some have suggested other motivations, however, such as the creation of data centers outside the jurisdictions of the countries that they serve.⁵² Google might do this to avoid, for example, China's restrictions on search results leading to websites considered unacceptable to China's ruling elite. On the other hand, Google might be trying to create data centers storing sensitive materials to escape local laws, like The Pirate Bay's attempt to use Sealand. Roving server farms might also provide a desirable venue for typically heavily regulated industries, such as banking and credit card operations that want to escape local laws, including taxation. Gambling or pornography websites could also escape scrutiny by running floating sites. These purported freedoms would inescapably generate national jurisdictional claims with serious international legal and political implications.

A website owner could theoretically be located anywhere in the world. For any number of reasons, a national government might want to eliminate access to that website within its national boundaries or at least control the allowed content. Australia may want to allow its nationals to bring a libel suit in its courts regarding statements made on a U.S. website read in Australia.⁵³ France will prohibit Nazi memorabilia being sold on a Yahoo! auction site from appearing in France.⁵⁴ China wants to tightly control any content critical of the government or its policies.⁵⁵ In fact, Google is currently struggling to comply with Chinese law.⁵⁶ Effectively exercising jurisdiction over a website located halfway around the world is difficult.

⁵⁰ *Id.* at col. 1 ll. 40–50.

⁵¹ *See id.* at col. 1 ll. 10–50 (describing the advantages of a water-based data center).

⁵² *See* Annalee Newitz, *Server Farms of the High Seas*, 109 (Sept. 8, 2008), <http://io9.com/5047017/server-farms-of-the-high-seas> (questioning Google's motives for the patent).

⁵³ *See* JACK GOLDSMITH & TIM WU, WHO CONTROLS THE INTERNET? ILLUSIONS OF A BORDERLESS WORLD 147–48 (2006) (discussing an Australian case against the *Wall Street Journal* for alleged defamatory information on its website).

⁵⁴ *See id.* at 1–8 (discussing a French suit against Yahoo! to have Nazi items removed from its auction sites); *see also* Jennifer Shyu, Comment, *Speak No Evil: Circumventing Chinese Censorship*, 45 SAN DIEGO L. REV. 211, 239–40, 247 (2008) (suggesting that proxy-blocking services and economic coercion would provide a temporary remedy for Chinese censorship).

⁵⁵ *See* Charles Li, *Internet Content Control in China*, INT'L J. COMM. L. & POL'Y, Winter 2003/2004, at 1, 5 (discussing Chinese attempts at Internet control).

⁵⁶ *See* Keith B. Richburg, *China Renews Google's License; Globe's Biggest Online Market*, WASH. POST, July 10, 2010, at A08 (reporting that Google's discontinuance of its policy rerouting Chinese users to its Hong King site caused renewal of license to operate in China); Thomas Claburn, *Google China Shutdown Almost Certain*, INFO. WEEK (Mar. 15, 2010), http://www.informationweek.com/news/software/open_source/showArticle.jhtml?articleID=223800260 (reporting that Google may shut down its operations in China because it has been unable to reach agreement with China regarding its censorship rules); Lara Farrar, *Google-China Move Hurts Businesses, Academics*, CNN (Mar. 24, 2010), <http://www.cnn.com/2010/BUSINESS/03/23/china.google.impact/index.html> (discussing the ramifications of Google's departure from China).

That does not mean, however, that there is no way for a nation to control access to unwanted materials on the Internet. One option would be to regulate the local user, but this piecemeal approach is likely to prove unwieldy, ineffective, and expensive.⁵⁷ Going after individuals among millions of users does little to stop the overall flow of information. Users are likely to rely on the statistical unlikelihood of being the targeted user. The use of libraries or Internet cafes also makes it more difficult to identify the real user. A state may better be able to control Internet content by going after what Professors Goldsmith and Wu refer to as “Internet intermediaries.”⁵⁸ Intermediaries could include Internet service providers, search engines, entities providing financial services, or domain name registry providers, and any state could go after any of these entities with personnel or property within its borders.⁵⁹ Exercising control over a search engine provider could be a particularly effective way of restricting information access because the search engine is critical to deciphering the Internet’s enormous content. Although it is probably impossible to remove all intermediaries from the local jurisdiction, one key link of the Internet chain could perhaps escape the state’s reach by moving offshore. Relocating the search engine to the open water could remove it from the state’s jurisdiction. Because Google’s patent presumes the sea as a base for its activities, international law in general and the UNCLOS in particular provide the basic international law framework necessary to analyze possible jurisdiction over the server farms and other offshore activities.

III. GENERAL NOTIONS OF JURISDICTION UNDER INTERNATIONAL LAW

Ignoring for the moment that these data ships will be located on the seas, a review of international norms for the exercise of prescriptive jurisdiction should help focus the discussion. In the *Case of the S.S. Lotus*, the Permanent Court of International Justice laid out the general principle for a state’s assertion of jurisdiction:

Though it is true that in all systems of law the principle of the territorial character of criminal law is fundamental, it is equally true that all or nearly all these systems of law extend their action to offences committed outside the territory of the State which adopts them, and they do so in ways which vary from State to State. The territoriality of criminal law, therefore, is not an absolute principle of international law and

⁵⁷ See GOLDSMITH & WU, *supra* note 53, at 70 (describing the difficulties that arise in Internet regulation when governments attempt to circumvent intermediaries such as Internet Service Providers).

⁵⁸ Goldsmith and Wu define these intermediaries as “the people, equipment, and services within national borders that enable local Internet users to consume the offending Internet communication.” *Id.* at 68.

⁵⁹ *Id.* at 72–79.

by no means coincides with territorial sovereignty.⁶⁰

Thus, the state is not limited to its territorial boundaries in applying its laws internationally. Nevertheless, boundaries do constrain how far a state can go, and these limits relate to the three primary types of jurisdiction.⁶¹ Prescriptive jurisdiction provides the extent to which a state may make legal rules applicable to persons or activities.⁶² Adjudicative jurisdiction concerns the power of the state to force persons or property in its courts or other tribunals.⁶³ Enforcement jurisdiction governs when a state may require compliance with its laws.⁶⁴ This Article focuses on prescriptive and enforcement jurisdiction, which would be the primary focus of international concerns over a state's attempt to exert authority over any new technology on the seas.

According to the *Restatement of the Law (Third) of the Foreign Relations Law of the United States* ("Restatement (Third)"), international law allows the state prescriptive jurisdiction over:

(1)(a) conduct that, wholly or in substantial part, takes place within its territory;

(b) the status of persons, or interests in things, present within its territory;

(c) conduct outside its territory that has or is intended to have substantial effect within its territory;

(2) the activities, interests, status, or relations of its nationals outside as well as within its territory; and

(3) certain conduct outside its territory by persons not its nationals that is directed against the security of the state or against a limited class of other state interests.⁶⁵

The *Restatement (Third)* further limits the exercise of jurisdiction by requiring that it be reasonable in light of international comity concerns.⁶⁶

⁶⁰ The Case of the S.S. Lotus (Fr. v. Turk.), 1927 P.C.I.J. (ser. A) No. 10, at 20 (Sept. 7).

⁶¹ RESTATEMENT (THIRD) OF THE FOREIGN RELATIONS LAW OF THE UNITED STATES § 401 (1987).

⁶² *Id.* § 401(a).

⁶³ *Id.* § 401(b).

⁶⁴ *Id.* § 401(c).

⁶⁵ *Id.* § 402; *Draft Convention on Jurisdiction with Respect to Crime*, 29 AM. J. INT'L L. SUPP. 439, 439-40 (1935).

⁶⁶ The *Restatement (Third)* provides:

(1) Even when one of the bases for jurisdiction under § 402 is present, a state may not exercise jurisdiction to prescribe law with respect to a person or activity having connections with another state when the exercise of such jurisdiction is unreasonable.

(2) Whether exercise of jurisdiction over a person or activity is unreasonable is determined by evaluating all relevant factors, including, where appropriate:

(a) the link of the activity to the territory of the regulating state, i.e., the extent to

In addition to these foundational principles of jurisdiction, any state may prescribe activities considered to be universal crimes, such as piracy, slave trade, aircraft attack or hijacking, genocide, war crimes, and certain specified acts of terrorism.⁶⁷ The question is whether these general jurisdictional principles could support a state's jurisdiction to prescribe the conduct of a server ship outside its territorial jurisdiction.

A. Territorial

A state unquestionably possesses the right to exercise prescriptive jurisdiction over persons, locations, or activities within its territory.⁶⁸ No sensible data center wishing to avoid the exercise of a particular state's jurisdiction to prescribe would locate within the state's territorial boundaries. The remaining and related inquiry, however, is whether territorial jurisdiction might provide a basis for jurisdiction that reaches an outside-the-state server that connects with local computers inside the state's territories. In other areas, states have utilized the objective territorial principle to exercise jurisdiction over activities that occur outside the jurisdiction, so long as effects are felt within the state.⁶⁹ The presence

which the activity takes place within the territory, or has substantial, direct, and foreseeable effect upon or in the territory;

(b) the connections, such as nationality, residence, or economic activity, between the regulating state and the person principally responsible for the activity to be regulated, or between that state and those whom the regulation is designed to protect;

(c) the character of the activity to be regulated, the importance of regulation to the regulating state, the extent to which other states regulate such activities, and the degree to which the desirability of such regulation is generally accepted;

(d) the existence of justified expectations that might be protected or hurt by the regulation;

(e) the importance of the regulation to the international political, legal, or economic system;

(f) the extent to which the regulation is consistent with the traditions of the international system;

(g) the extent to which another state may have an interest in regulating the activity; and

(h) the likelihood of conflict with regulation by another state.

(3) When it would not be unreasonable for each of two states to exercise jurisdiction over a person or activity, but the prescriptions by the two states are in conflict, each state has an obligation to evaluate its own as well as the other state's interest in exercising jurisdiction, in light of all the relevant factors, Subsection (2); a state should defer to the other state if that state's interest is clearly greater.

RESTATEMENT (THIRD) OF THE FOREIGN RELATIONS LAW OF THE UNITED STATES § 403 (1987).

⁶⁷ *Id.* § 404 (allowing states to define and punish certain universal crimes).

⁶⁸ See *Schooner Exch. v. McFaddon*, 11 U.S. (7 Cranch) 116, 136 (1812) (finding that territorial jurisdiction is exclusive and absolute); see also *Munaf v. Geren*, 553 U.S. 674, 694 (2008) (reiterating the *Schooner Exchange* language).

⁶⁹ For example, the United States has a long history of exercising antitrust jurisdiction over extraterritorial acts having effects in the United States. See, e.g., *United States v. Aluminum Co. of Am.*, 148 F.2d 416, 443–44 (2d Cir. 1945). For attempts to recognize international comity concerns to prevent overreaching by U.S. courts, see *F. Hoffmann-La Roche Ltd. v. Empagran S.A.*, 542 U.S. 155, 165–66 (2004); *Mannington Mills, Inc. v. Congoleum Corp.*, 595 F.2d 1287, 1297–98 (3d Cir. 1979);

of a floating data center outside state territorial jurisdiction that allows a local to gamble or set up an offshore banking account may well create “effects” that could form the basis for prescriptive jurisdiction. Even the ability to search for a site that offends the laws of the state could be seen as producing effects. Under the *Restatement (Third)* standard, the server ship’s conduct could be considered to have or be intended to have, substantial effects within its territory.⁷⁰

B. Nationality

International law also allows states to prescribe the behavior of their nationals.⁷¹ Nationals are considered to owe an allegiance to their home country—and the state similarly retains an interest in its nationals—no matter where the national travels.⁷² In addition, a state is thought to be responsible internationally for its citizens’ actions, making worldwide jurisdiction appropriate.⁷³ Thus, the United States criminalizes its citizens’ bribery of a foreign official anywhere on the globe.⁷⁴

Any state could pass laws applicable to nationals on board a domestic or foreign flag vessel ship.⁷⁵ In addition, the coastal state could enact

Timberlane Lumber Co. v. Bank of Am., 549 F.2d 597, 607 (9th Cir. 1976). *But see* *Hartford Fire Ins. Co. v. California*, 509 U.S. 764, 798–99 (1993) (refusing to apply comity doctrine absent a true conflict between U.S. and foreign law). *See also* Gary B. Born, *A Reappraisal of the Extraterritorial Reach of U.S. Law*, 24 *LAW & POL’Y INT’L BUS.* 1, 6–21 (1992) (discussing the rules of statutory construction which allow federal courts to “establish the extraterritorial reach of federal law”); Steven R. Swanson, *A Threshold Test for Validity: The Supreme Court Narrows the Act of State Doctrine*, 23 *VAND. J. TRANSNAT’L L.* 889, 908–15 (1991) (commenting on the diminishing role of international comity via limitations on the “act of state doctrine”). The extent to which the European Court of Justice has adopted a form of the effects test has been a matter of some dispute. *See* Joseph P. Griffin, *EC and U.S. Extraterritoriality: Activism and Cooperation*, 17 *FORDHAM INT’L L.J.* 353, 355–59 (1994) (analyzing developments in extraterritorial jurisprudence).

In the context of the law of the sea, the *S.S. Lotus* case stated:

If, therefore, a guilty act committed on the high seas produces its effects on a vessel flying another flag or in foreign territory, the same principles must be applied as if the territories of two different States were concerned, and the conclusion must therefore be drawn that there is no rule of international law prohibiting the State to which the ship on which the effects of the offence have taken place belongs, from regarding the offence as having been committed in its territory and prosecuting, accordingly, the delinquent.

The Case of the *S.S. Lotus* (Fr. v. Turk.), 1927 P.C.I.J. (ser. A) No. 10, at 25 (Sept. 7).

⁷⁰ RESTATEMENT (THIRD) OF THE FOREIGN RELATIONS LAW OF THE UNITED STATES § 403(2)(a) (1987).

⁷¹ *See* *Blackmer v. United States*, 284 U.S. 421, 436–37 (1932) (requiring a U.S. citizen residing in France to return to the United States to give testimony in a tax case).

⁷² *See* Geoffrey R. Watson, *Offenders Abroad: The Case for Nationality-Based Criminal Jurisdiction*, 17 *YALE J. INT’L L.* 41, 67–70 (1992) (“In civil law and common law systems alike, nationality jurisdiction is normally justified by the theory that the national owes allegiance to the home state both while at home and while abroad.”).

⁷³ *Id.* at 68.

⁷⁴ Foreign Corrupt Practices Act, 15 U.S.C. § 78(dd)(1)–(3), (ff) (2006).

⁷⁵ *See* Horace B. Robertson, Jr., *The Suppression of Pirate Radio Broadcasting: A Test Case of the International System for Control of Activities Outside National Territory*, 45 *LAW & CONTEMP. PROBS.* 71, 88 (1982) (“Where a person, corporation, vessel or aircraft has the nationality of a state,

legislation prohibiting its nationals from dealing with an offending vessel.⁷⁶ These laws could attempt to regulate activities on the server ship in any number of ways.⁷⁷ Of course, a vessel itself is considered to have the nationality of its flag jurisdiction, and the flag state may regulate its conduct anywhere in the world.⁷⁸

C. *Protective*

The *Restatement (Third)* indicates that a state may exercise jurisdiction under the protective principle.⁷⁹ Although the extent of coverage has not always been clear, comment f attempts to define its parameters:

f. The protective principle. . . . International law recognizes the right of a state to punish a limited class of offenses committed outside its territory by persons who are not its nationals—offenses directed against the security of the state or other offenses threatening the integrity of governmental functions that are generally recognized as crimes by developed legal systems, *e.g.*, espionage, counterfeiting of the state's seal or currency, falsification of official documents, as well as perjury before consular officials, and conspiracy to violate the immigration or customs laws.⁸⁰

Whether this provision would apply to a server ship would depend on what the vessel was doing. The United States has used the principle to outlaw perjury committed before a government official abroad,⁸¹ to apply a statute extraterritorially that criminalized violent crimes in aid of racketeering,⁸² and to allow the boarding of vessels suspected of smuggling drugs without seeking the flag state's permission.⁸³ In addition, the protective principle has been used to justify environmental and anti-terrorism legislation.⁸⁴ If a server farm's main purpose is to facilitate file-sharing or Internet searches, it is unlikely that its activities would be

that state has jurisdiction to make rules governing the conduct of that person, corporation, vessel or aircraft.”).

⁷⁶ *Id.*

⁷⁷ See *infra* note 190 and accompanying text.

⁷⁸ See *infra* notes 161–62 and accompanying text.

⁷⁹ RESTATEMENT (THIRD) OF THE FOREIGN RELATIONS LAW OF THE UNITED STATES § 402(3) (1987).

⁸⁰ *Id.* § 402 cmt. f.

⁸¹ See *United States v. Pizzarusso*, 388 F.2d 8, 9 (2d Cir. 1968).

⁸² See *United States v. Vasquez-Velasco*, 15 F.3d 833, 837 (9th Cir. 1994) (applying 18 U.S.C. § 1959 (2006) to the kidnapping and murder of a Drug Enforcement Agency agent).

⁸³ See *United States v. Gonzalez*, 776 F.2d 931, 933–34 (11th Cir. 1985).

⁸⁴ See MARIA GAVOUNELI, FUNCTIONAL JURISDICTION IN THE LAW OF THE SEA 31–32 (2007) (discussing how the protective principle establishes “the acknowledged basis of anti-terrorist protection”).

considered threatening to state security. On the other hand, a server ship providing banking services that facilitate tax avoidance or containing sensitive national security information may implicate these sovereign national interests. Protective jurisdiction might justify governmental acts to pursue pirate radio broadcasters because controlling the radio airwaves is considered an exclusively governmental function in European countries.⁸⁵ This same exclusivity cannot likely be claimed for the Internet in general, a relatively unregulated wild west.⁸⁶ Nevertheless, it is not difficult to imagine circumstances under which the regulation of extraterritorial servers might find justification under this principle.

D. *Universal and Passive Personality*

Any state has the power to prescribe a relatively limited group of offenses that are considered by the international community to be of universal concern.⁸⁷ Initially, covered crimes were limited to piracy and slave trading; over time, coverage expanded to include various acts of hijacking and terrorism, genocide, and some war crimes.⁸⁸ Unless the server ship is involved in one of these prohibited activities, universal jurisdiction will not apply.

Passive personality is a more controversial principle that supports state attempts to prescribe conduct that harms its nationals.⁸⁹ Under this approach, the United States criminalizes taking U.S. citizens hostage outside the country⁹⁰ and terrorist murders of U.S. citizens abroad.⁹¹ Generally, passive personality does not reach ordinary crimes or civil wrongs; rather, the doctrine is triggered by public wrongs such as terrorist attacks or crimes against diplomatic representatives.⁹² Although it is possible to imagine a scenario in which a server farm could be utilized for serious misconduct of this sort, the principle's real-world relevance in this context seems strained.

In the end, even if a traditional basis of prescriptive jurisdiction applies, the power to enforce that prescription may be far more challenging. The UNCLOS provides the steps that the coastal state can

⁸⁵ Robertson, *supra* note 75, at 87.

⁸⁶ Although the content of the Internet has been left primarily to its users, the United States has tried to maintain control over the Internet root authority. For an interesting story of failed attempts to remove this control, see GOLDSMITH & WU, *supra* note 53, at 29–46.

⁸⁷ RESTATEMENT (THIRD) OF THE FOREIGN RELATIONS LAW OF THE UNITED STATES § 404 (1987).

⁸⁸ *Id.* § 404 & 404 cmt. a.

⁸⁹ *Id.* § 402 cmt. g.

⁹⁰ 18 U.S.C. § 1203 (2006).

⁹¹ *Id.* § 2332.

⁹² RESTATEMENT (THIRD) OF THE FOREIGN RELATIONS LAW OF THE UNITED STATES § 402 cmt. g (1987).

take against a vessel on the seas.⁹³ The coastal state's inability to enforce its prescriptions may undo any national laws regulating the server ship.

IV. THE LAW OF THE SEA

The international law of the sea, as it exists today, is the product of a constant battle between freedom of the seas and state assertions of control over those waters.⁹⁴ Although recognized as early as the Roman Civil Law,⁹⁵ the freedom of the seas argument finds its intellectual origins in the writings of Dutch jurist Hugo Grotius in his *Mare Liberum*,⁹⁶ which was published in 1608.⁹⁷ The work grew out of a dispute over Portugal's claim to exclusive trade with the East Indies.⁹⁸ Grotius used natural law theory to argue that the sea is a common conduit for trade and communication among states and not subject to taking by the state for its own use.⁹⁹ Because no state can control something as vast as the oceans, a state's jurisdiction should be limited to the area that it can control effectively.¹⁰⁰

⁹³ UNCLOS, *supra* note 15, at arts. 21, 25, 27, 28, 33, 56, 73, 77, 105, 107, 108, 109, 110, 111.

⁹⁴ D.P. O'CONNELL, *THE INTERNATIONAL LAW OF THE SEA* 1 (1982). O'Connell argues that the balance between these themes has changed with the times:

The tension between these has waxed and waned through the centuries, and has reflected the political, strategic, and economic circumstances of each particular age. When one or two great commercial powers have been dominant or have achieved parity of power, the emphasis in practice has lain upon the liberty of navigation and the immunity of shipping from local control; in such ages the seas have been viewed more as strategic than as economic areas of competition. When, on the other hand, great powers have been in decline or have been unable to impose their wills on smaller States, or when an equilibrium of power has been attained between a multiplicity of States, the emphasis has lain on the protection and reservation of maritime resources, and consequently upon the assertion of local authority over the sea.

Id.

⁹⁵ Patrick W. Franzese, *Sovereignty in Cyberspace: Can It Exist?*, 64 A.F. L. REV. 1, 7, 18 (2009) (arguing for the extension of state sovereignty in cyberspace). For a detailed discussion of the history of high seas freedoms, see generally PITMAN B. POTTER, *THE FREEDOM OF THE SEAS IN HISTORY, LAW, AND POLITICS* (1924).

⁹⁶ HUGO GROTIUS, *THE FREE SEA* (Richard Haklyut trans., Liberty Fund 2004) (1608). For an online English translation of this famous work, see HUGO GROTIUS, *THE FREEDOM OF THE SEAS* (Ralph van Deman Magoffin trans.) (1608), http://oll.libertyfund.org/index.php?option=com_staticxt&staticfile=show.php%3Ftitle=552&Itemid=27 (last visited Jan. 15, 2011).

⁹⁷ O'CONNELL, *supra* note 94, at 10.

⁹⁸ *Id.* at 9. Apparently, the dispute arose when a group of Dutch East India vessels captured a Portuguese merchant vessel. Some saw the Dutch act as the equivalent of piracy, and Grotius was asked to write a defense of the Dutch acts. He later edited his work, and *Mare Liberum* was published as a pamphlet in 1608. *Freedom of the Seas*, YALE L. LIBR.—RARE BOOKS BLOG, <http://blogs.law.yale.edu/blogs/rarebooks/archive/tags/Freedom+of+the+Seas+1609+exhibit/default.aspx> (last visited Jan. 15, 2011).

⁹⁹ See GEORGE V. GALDORISI & KEVIN R. VIENNA, *BEYOND THE LAW OF THE SEA: NEW DIRECTIONS FOR U.S. OCEANS POLICY* 10 (1997) (“[N]o part of the sea can be considered as territory of any people whatsoever.”); O'CONNELL, *supra* note 94, at 9–10 (describing the “theory that the seas are avenues of commerce which of their nature are not susceptible of appropriation”).

¹⁰⁰ See GROTIUS, *supra* note 96, at 26–27 (providing a description of the sea as common property).

In response, English jurist John Selden published *Mare Clausum* in 1635.¹⁰¹ Selden conceded that the earth had, at one point, been subject to common holding, but argued that God had allowed the division of the oceans and that man had accepted that separation through the social contract.¹⁰² He denied Grotius's argument that the seas were too vast to control, saying that the oceans were as subject to delimitation as the land because the ocean resources were not without limits.¹⁰³ According to Selden, by exercising dominion over the sea, the possessor may exclude all others.¹⁰⁴

In the end, Grotius's free seas approach won out, mostly because the colonial powers needed unrestricted commerce with their far-reaching holdings.¹⁰⁵ Coastal state jurisdiction was restricted to a thin band along the coastline, purportedly the distance that cannons could fire.¹⁰⁶ The three-mile limit remained the rule until the middle of the twentieth century, when states sought greater control over maritime resources.¹⁰⁷

This push for greater state control over the oceans can be seen in the UNCLOS,¹⁰⁸ which divides the seas into a number of different zones with

¹⁰¹ O'CONNELL, *supra* note 94, at 11 & n.61.

¹⁰² *Id.* at 11.

¹⁰³ See POTTER, *supra* note 95, at 77 (supporting Selden's conclusion that the "sea could be bounded as well as the land").

¹⁰⁴ See *id.* at 72–73 (stating that, in Selden's view, dominion over the sea is "a full title").

¹⁰⁵ GALDORISI & VIENNA, *supra* note 99, at 10.

¹⁰⁶ *Id.*

¹⁰⁷ *Id.* The law of the sea continues to exhibit the tension between *mare liberum* and *mare clausum*. The United States, as a major naval power and supporter of free trade, has long supported the freedom of the seas argument:

The right to send ships across the oceans unimpeded by other states, subject only to limited exceptions in a coastal state's maritime zones and even more limited exceptions on the high seas, has long been a centerpiece of U.S. policy. The United States has been concerned for centuries with keeping the oceans open for trade and commerce. Even before the United States was formed, American colonists stressed the importance of free navigation. The United States, responding to attacks on commercial vessels, sent a permanent naval squadron to the Mediterranean in 1815 to suppress pirates. Furthermore, the United States has often emphasized the importance of international law in protecting neutral shipping during wartime. According to Professor Douglas Sylvester, the United States historically promoted "[n]eutrality, recast as a right of sovereignty under the law of nations, [as] the cornerstone of the system" of international commerce, a system to which the United States maintained an "ideological commitment." Preserving navigational freedoms was a major reason for U.S. participation in the War of 1812 and World War I. As the U.S. Supreme Court said in 1947, the United States "throughout its existence has stood for freedom of the seas."

John E. Noyes, *The United States, the Law of the Sea Convention, and Freedom of Navigation*, 29 SUFFOLK TRANSNAT'L L. REV. 1, 11 (2005) (quoting Douglas J. Sylvester, *International Law as Sword or Shield? Early American Foreign Policy and the Law of Nations*, 32 N.Y.U. J. INT'L L. & POL. 1, 86 (1999)).

¹⁰⁸ See ARND BERNAERTS, BERNAERTS' GUIDE TO THE 1982 UNITED NATIONS CONVENTION ON THE LAW OF THE SEA 102–03 (1988) (describing states' interests in the UNCLOS); Bernard H. Oxman, *The Territorial Temptation: A Siren Song at Sea*, 100 AM. J. INT'L L. 830, 833–36 (2006) (discussing how the UNCLOS addresses the temptation to assign geographic boundaries and territories to the sea).

varying legal regimes. In addition, the UNCLOS recognizes different actors with roles in this legal regime; the relevant primary actors are the flag state and the coastal state.¹⁰⁹ International legal rules controlling a data center vessel's actions on the seas will differ depending on the ship's location and who is attempting to exercise jurisdiction. For purposes of this discussion, one must assume that server ships could be found in any zone at various times, making it necessary to look at the legal regimes applying in each.

A. *In the Zone*

Under the UNCLOS, the coastal state's ability to enforce its laws on a foreign-flagged vessel depends on that vessel's location. The UNCLOS divides the seas into six zones: the internal waters, territorial seas, contiguous zone, exclusive economic zone, continental shelf, and high seas.¹¹⁰ A different legal regime would apply to a server vessel in each of these zones.

1. *Internal Waters*

The UNCLOS provides only limited coverage to the internal waters inside the baselines drawn in accordance with the convention. In the case of a relatively straight coast, the baseline is drawn on the low-water line of the coast.¹¹¹ Where the coast is irregular, a baseline will be constructed using straight lines to join points along the coastline.¹¹² These baselines are not allowed to diverge significantly from the "general direction of the coast," and the waters inside the baselines must be "closely linked to the land domain."¹¹³ The internal waters of the coastal state are those on the landward side of this baseline.¹¹⁴ These waters would include any portion of the sea, as well as lakes, rivers, and bays within the line. For the exercise of jurisdiction, a nation has full territorial sovereignty over internal waters.¹¹⁵ In general, a server ship within a nation's territorial sovereignty will be subject to that nation's jurisdiction, both in terms of that country's jurisdiction to prescribe and enforce its laws.¹¹⁶ The

¹⁰⁹ See UNCLOS, *supra* note 15, at arts. 2, 94 (describing the sovereignty and duties of coastal states and flag states, respectively).

¹¹⁰ DAVID J. BEDERMAN, INTERNATIONAL LAW FRAMEWORKS 120 (2001).

¹¹¹ UNCLOS, *supra* note 15, at art. 5.

¹¹² *Id.* at art. 7(1).

¹¹³ *Id.* at art. 7(3).

¹¹⁴ *Id.* at art. 8(1).

¹¹⁵ BEDERMAN, *supra* note 110, at 120–21.

¹¹⁶ See *Wildenhus's Case*, 120 U.S. 1, 19 (1886) (holding that every state has sovereign jurisdiction throughout its territory and has an interest in repressing crimes and offences within its territory); see also J.L. BRIERLY, THE LAW OF NATIONS 223 (1963) ("A private ship in internal waters is, in principle, fully subject to the local jurisdiction, and the completeness of the coastal state's right to exercise its jurisdiction in civil matters does not appear to be questioned.").

UNCLOS contains one exception to this exclusive coastal state jurisdiction: where the application of straight baselines results in creating internal waters that were traditionally not considered internal, the right of innocent passage will apply.¹¹⁷

International law does not require that foreign vessels be allowed in internal waters.¹¹⁸ Nevertheless, international ports are usually considered open to merchant vessels during times of peace.¹¹⁹ When a foreign vessel is in a coastal state port, both the flag state and the coastal state may claim competence to control behavior on the vessel. Coastal states normally refrain from exercising jurisdiction over matters having to do with the vessel's internal workings¹²⁰ unless the infraction disturbs the peace and tranquility of the port.¹²¹

In all likelihood, a coastal state's attempt to regulate the server ship would not relate solely to the vessel's internal workings; as a result, the server ship faces the real probability of subjecting its primary function to local regulation. Of course, this presumes a workable definition of internal workings, a concept that is less than clear.¹²² A vessel wishing to avoid state jurisdiction will want to steer clear of the internal waters.

2. Territorial Seas

Although the law of the sea traditionally limited the state's territorial jurisdiction to the distance that a cannon could fire—later defined as three nautical miles,¹²³ the UNCLOS expanded the territorial seas to twelve miles from the baselines,¹²⁴ and coastal states generally have sovereign rights over this area.¹²⁵ The convention does, however, provide for the right of innocent passage,¹²⁶ which allows ships continuous and

¹¹⁷ UNCLOS, *supra* note 15, at art. 8(2). For a discussion of innocent passage, see *infra* notes 126–37 and accompanying text.

¹¹⁸ See *Military and Paramilitary Activities in and Against Nicaragua (Nicar. v. U.S.)*, 1986 I.C.J. 14, 111 (June 27) (stating that internal waters are “subject to the sovereignty of the coastal State”); LORI DAMROSCH ET AL., *INTERNATIONAL LAW CASES AND MATERIALS* 1382 (5th ed. 2009).

¹¹⁹ See BEDERMAN, *supra* note 110, at 121; DAMROSCH ET AL., *supra* note 118, at 1382.

¹²⁰ See *Spector v. Norwegian Cruise Line Ltd.*, 545 U.S. 119, 130 (2005) (“This Court has long held that general statutes are presumed to apply to conduct that takes place aboard a foreign-flag vessel in United States territory if the interests of the United States or its citizens, rather than interests internal to the ship, are at stake.”); *Wildenhus*, 120 U.S. at 12 (“[I]t would be beneficial to commerce if the local government would abstain from interfering with the internal discipline of the ship . . .”).

¹²¹ *Wildenhus*, 120 U.S. at 17.

¹²² See *Spector*, 545 U.S. at 130 (discussing the conditions under which U.S. statutes apply to foreign-flag ships, a consideration that turns on whether the statute would regulate “the internal order and discipline of the vessel”).

¹²³ BERNAERTS, *supra* note 108, at 112.

¹²⁴ UNCLOS, *supra* note 15, at art. 3.

¹²⁵ *Id.* at art. 2(1).

¹²⁶ Article 17 of the UNCLOS provides for innocent passage: “Subject to this Convention, ships of all States, whether coastal or land-locked, enjoy the right of innocent passage through the territorial sea.” *Id.* at art. 17.

expeditious passage through the coastal state's territorial seas,¹²⁷ so long as that passage is innocent.¹²⁸ Passage is generally deemed innocent if it does not interfere with the "peace, good order or security of the coastal State."¹²⁹

The UNCLOS lists activities that are not innocent.¹³⁰ Most would be of little concern to the server ship, but a few could be construed as applying. Article 19(2)(c) states that "any act aimed at collecting information to the prejudice of the defence or security of the coastal State" is not innocent.¹³¹ Assuming that the data vessel limits itself to storing and transmitting information, it would be difficult to show that it is collecting information.¹³² Article 19(2)(d) could be more problematic; it provides that "any act of propaganda aimed at affecting the defence or security of

¹²⁷ Ships are allowed passage through the territorial sea under UNCLOS article 18:

1. Passage means navigation through the territorial sea for the purpose of:
 - (a) traversing that sea without entering internal waters or calling at a roadstead or port facility outside internal waters; or
 - (b) proceeding to or from internal waters or a call at such roadstead or port facility.

2. Passage shall be continuous and expeditious. However, passage includes stopping and anchoring, but only in so far as the same are incidental to ordinary navigation or are rendered necessary by *force majeure* or distress or for the purpose of rendering assistance to persons, ships or aircraft in danger or distress.

Id. at art. 18

¹²⁸ UNCLOS article 19 defines what is considered innocent:

1. Passage is innocent so long as it is not prejudicial to the peace, good order or security of the coastal State. Such passage shall take place in conformity with this Convention and with other rules of international law.

2. Passage of a foreign ship shall be considered to be prejudicial to the peace, good order or security of the coastal State if in the territorial sea it engages in any of the following activities:

- (a) any threat or use of force against the sovereignty, territorial integrity or political independence of the coastal State, or in any other manner in violation of the principles of international law embodied in the Charter of the United Nations;
- (b) any exercise or practice with weapons of any kind;
- (c) any act aimed at collecting information to the prejudice of the defence or security of the coastal State;
- (d) any act of propaganda aimed at affecting the defence or security of the coastal State;
- (e) the launching, landing or taking on board of any aircraft;
- (f) the launching, landing or taking on board of any military device;
- (g) the loading or unloading of any commodity, currency or person contrary to the customs, fiscal, immigration or sanitary laws and regulations of the coastal State;
- (h) any act of wilful and serious pollution contrary to this Convention;
- (i) any fishing activities;
- (j) the carrying out of research or survey activities;
- (k) any act aimed at interfering with any systems of communication or any other facilities or installations of the coastal State;
- (l) any other activity not having a direct bearing on passage.

Id. at art. 19.

¹²⁹ *Id.* at art. 19(1)

¹³⁰ *Id.* at art. 19(2)(a)–(l).

¹³¹ *Id.* at art. 19(2)(c).

¹³² Article 19(2)(j) also states that research and survey activities are not innocent. The server vessel would not be likely to undertake such efforts. *Id.* at art. 19(2).

the coastal State” would not be innocent.¹³³ Information stored on and transmitted by the server ship could arguably constitute such propaganda.

Article 19(2)(k) also presumes non-innocence for “any act aimed at interfering with any systems of communication or any other facilities or installations of the coastal State.”¹³⁴ If a server hooks into the coastal state’s Internet, could that act amount to interference with that state’s systems of communication? Although it seems likely that this provision was aimed at pirate radio or jamming devices, a state might argue that certain information or technology relating to the data ship could interfere with its system of communication. For example, hackers might attack through the server ship. If the state attempts to filter certain information from entering the country, the server ship might somehow interfere with that effort. The UNCLOS drafters never had such scenarios in mind when drafting the convention,¹³⁵ even so, these circumstances could yield an argument for interference with server ship activities. Finally, the UNCLOS includes a catchall provision against “any other activity not having a direct bearing on passage.”¹³⁶ It is easy to imagine a state making expansive arguments against innocence under this provision, and some have.¹³⁷

Of course, these innocence questions do not matter if the vessel is not in passage mode, moving continuously and expeditiously through the territorial waters.¹³⁸ If either the transmission mode (cable or wireless) or energy production system requires the vessel to be stationary, the UNCLOS will likely not consider the ship’s travel through the territorial seas as passage. The Google patent provides that the ship would be anchored while operating;¹³⁹ thus, its anchored server farm would likely not be in passage.

¹³³ *Id.* at art. 19(2)(d).

¹³⁴ *Id.* at art. 19(2)(k).

¹³⁵ The Third United Nations Conference on the Law of the Sea met from 1973–82. *The United Nations Convention on the Law of the Sea (A Historical Perspective)*, OCEANS AND LAW OF THE SEA http://www.un.org/Depts/los/convention_agreements/convention_historical_perspective.htm (last visited Jan. 15, 2011). Although a rudimentary form of the Internet was initially brought online in 1969, its widespread use was not possible until the design of the World Wide Web in 1990 by Tim Berners-Lee, long after the completion of the UNCLOS process. Walt Howe, *A Brief History of the Internet*, WALTHOWE.COM, <http://www.walthowe.com/navnet/history.html> (last visited Jan. 15, 2011).

¹³⁶ UNCLOS, *supra* note 15, at art. 19(2)(l).

¹³⁷ See GAVOUNELI, *supra* note 84, at 40 & n.60 (discussing expansive claims that environmental protection justifies a claim that passage is not innocent).

¹³⁸ It has been argued that ships cannot hover or cruise around the territorial sea, because, regardless of whether or not they are innocent, they would not be engaged in passage. See R.R. CHURCHILL & A.V. LOWE, *THE LAW OF THE SEA* 82 (1983) (noting how “coastal State jurisdiction is reserved in the case of ships lying in the territorial sea or passing through it after leaving internal waters”). Nevertheless, ships may stop when there is a valid navigational reason to do so or required by force majeure, distress, or saving life or property. UNCLOS, *supra* note 15, at art. 18(2).

¹³⁹ Water-Based Data Ctr., U.S. Patent No. 7,525,207 col.1 ll. 57–62 (filed Feb. 26, 2007) (issued Apr. 28, 2009).

For the most part, a ship doing anything more than efficiently transiting through the territorial sea should assume that it will be subject to the coastal state's full jurisdiction. If the server ship's passage is non-innocent, the coastal state has full jurisdiction over the vessel¹⁴⁰ and "may take the necessary steps in its territorial sea to prevent passage which is not innocent."¹⁴¹ The convention does not clarify exactly what these steps might be.¹⁴²

3. *Contiguous Zone*

The UNCLOS codifies a contiguous zone outside the territorial sea that extends twenty-four nautical miles from the baseline.¹⁴³ Within this zone, the coastal state can prevent or punish violations of its "customs, fiscal, immigration or sanitary laws and regulations within its territory or territorial sea."¹⁴⁴ The convention notably does not permit a coastal state to exercise jurisdiction in the contiguous zone for security violations. Although the waters in this zone are considered part of the high seas, states may still exercise limited jurisdiction.¹⁴⁵ The data center vessel in the contiguous zone should not risk interference unless its actions will have a prohibited effect within the territory or territorial sea. The most likely

¹⁴⁰ GAVOUNELI, *supra* note 84, at 40.

¹⁴¹ UNCLOS, *supra* note 15, at art. 25(1).

¹⁴² William K. Agyebeng, *Theory in Search of Practice: The Right of Innocent Passage in the Territorial Sea*, 39 CORNELL INT'L L.J. 371, 384 (2006) (arguing that freedom of navigation should prevail over states' claims for greater authority). Article 21 of the UNCLOS does put limits on the types of restrictions that the coastal states can put on innocent passage:

1. The coastal State may adopt laws and regulations, in conformity with the provisions of this Convention and other rules of international law, relating to innocent passage through the territorial sea, in respect of all or any of the following:
 - (a) the safety of navigation and the regulation of maritime traffic;
 - (b) the protection of navigational aids and facilities and other facilities or installations;
 - (c) the protection of cables and pipelines;
 - (d) the conservation of the living resources of the sea;
 - (e) the prevention of infringement of the fisheries laws and regulations of the coastal State;
 - (f) the preservation of the environment of the coastal State and the prevention, reduction and control of pollution thereof;
 - (g) marine scientific research and hydrographic surveys;
 - (h) the prevention of infringement of the customs, fiscal, immigration or sanitary laws and regulations of the coastal State.
2. Such laws and regulations shall not apply to the design, construction, manning or equipment of foreign ships unless they are giving effect to generally accepted international rules or standards.
3. The coastal State shall give due publicity to all such laws and regulations.
4. Foreign ships exercising the right of innocent passage through the territorial sea shall comply with all such laws and regulations and all generally accepted international regulations relating to the prevention of collisions at sea.

UNCLOS, *supra* note 15, at art. 21.

¹⁴³ UNCLOS, *supra* note 15, at art. 33(2).

¹⁴⁴ *Id.* at art. 33(1)(a).

¹⁴⁵ DAMROSCH, *supra* note 118, at 1403.

danger would be violations of the state's tax policy if the vessel is involved in offshore banking or illegal gambling activities which have an effect in the coastal state. In such cases, the ship should assume that the coastal state would have jurisdiction over the vessel.

4. *Exclusive Economic Zone*

Because the Google patent includes an energy production component, it could run afoul of UNCLOS provisions relating to the exclusive economic zone ("EEZ"). The EEZ extends 200 nautical miles from the coastal state's baselines.¹⁴⁶ These states have sovereign rights to exploit natural resources in the EEZ,¹⁴⁷ an area covering about one-third of the world's oceans.¹⁴⁸ In particular, Article 56 states that the rights extend to "activities for the economic exploitation and exploration of the zone, such as the production of energy from the water, currents and winds."¹⁴⁹ Although high seas freedoms are otherwise allowed in the EEZ, the coastal state's sovereign rights over energy production would likely trump the data center ship's need to manufacture its own electricity. The coastal state could likely prevent the ship's operation anywhere within the 200-mile EEZ. On the other hand, if another method could be found for powering the ship's electronics, its actions would provoke no resource issue, and the rules relating to the high seas would apply.

In addition, the UNCLOS provides that the coastal state has exclusive rights to construct or authorize "installations and structures" for Article 56 purposes in the EEZ.¹⁵⁰ A data ship permanently anchored to the ocean

¹⁴⁶ UNCLOS, *supra* note 15, at art. 57.

¹⁴⁷ *Id.* at art. 56. Article 56 outlines the rights, jurisdiction, and duties of the coastal State in the EEZ:

1. In the exclusive economic zone, the coastal State has:
 - (a) sovereign rights for the purpose of exploring and exploiting, conserving and managing the natural resources, whether living or non-living, of the waters superjacent to the seabed and of the seabed and its subsoil, and with regard to other activities for the economic exploitation and exploration of the zone, such as the production of energy from the water, currents and winds;
 - (b) jurisdiction as provided for in the relevant provisions of this Convention with regard to:
 - (i) the establishment and use of artificial islands, installations and structures;
 - (ii) marine scientific research;
 - (iii) the protection and preservation of the marine environment;
 - (c) other rights and duties provided for in this Convention.
2. In exercising its rights and performing its duties under this Convention in the exclusive economic zone, the coastal State shall have due regard to the rights and duties of other States and shall act in a manner compatible with the provisions of this Convention.
3. The rights set out in this article with respect to the seabed and subsoil shall be exercised in accordance with Part VI.

Id.

¹⁴⁸ Oxman, *supra* note 108, at 839.

¹⁴⁹ UNCLOS, *supra* note 15, at art. 56.

¹⁵⁰ *Id.* at art. 60. Article 60 provides, in part:

floor might be considered such a structure, making it subject to the coastal state's exclusive rights. Given the coastal state's exclusive control over energy production, it may not matter whether the anchored server ship is an Article 56 installation or a ship exercising its high seas freedoms. In either case, it would be subject to state regulation. Nevertheless, subject to these restrictions, all vessels retain the high seas freedoms otherwise provided for by the convention,¹⁵¹ including freedom of navigation.¹⁵²

5. *The Continental Shelf*

The UNCLOS gives the coastal state sovereign rights over the continental shelf “for the purpose of exploring it and exploiting its natural resources.”¹⁵³ The server ship outlined in the Google patent should not have any significant effect on these resources, making it unlikely that a coastal state could use this regime to regulate such a vessel.

6. *The High Seas*

Assuming that the server ship is trying to avoid national jurisdiction, its best bet is likely to operate on the high seas. Of course, doing this could undercut one of the goals of putting the data center in the water. If the vessel operates 200 miles off the coast, it loses some of the benefit of

1. In the exclusive economic zone, the coastal State shall have the exclusive right to construct and to authorize and regulate the construction, operation and use of:

- (a) artificial islands;
- (b) installations and structures for the purposes provided for in article 56 and other economic purposes;
- (c) installations and structures which may interfere with the exercise of the rights of the coastal State in the zone.

2. The coastal State shall have exclusive jurisdiction over such artificial islands, installations and structures, including jurisdiction with regard to customs, fiscal, health, safety and immigration laws and regulations.

Id.

¹⁵¹ *Id.* at art. 58.

¹⁵² *Id.* at art. 87. Article 87 provides:

1. The high seas are open to all States, whether coastal or land-locked. Freedom of the high seas is exercised under the conditions laid down by this Convention and by other rules of international law. It comprises, inter alia, both for coastal and land-locked States:

- (a) freedom of navigation;
- (b) freedom of overflight;
- (c) freedom to lay submarine cables and pipelines, subject to Part VI;
- (d) freedom to construct artificial islands and other installations permitted under international law, subject to Part VI;
- (e) freedom of fishing, subject to the conditions laid down in section 2;
- (f) freedom of scientific research, subject to Parts VI and XIII.

2. These freedoms shall be exercised by all States with due regard for the interests of other States in their exercise of the freedom of the high seas, and also with due regard for the rights under this Convention with respect to activities in the Area.

Id.

¹⁵³ *Id.* at art. 77. The UNCLOS contains a complicated set of rules for determining the extent of the coastal state's jurisdiction over the continental shelf. *Id.* at art. 76.

transportability. The distance from ultimate users on land might become problematic; obviously, closer is better. Even so, 200 miles is not a terribly long distance, and a vessel seeking to avoid jurisdiction may find it acceptable.

The high seas are not as vast as they once were. With the advent of a broader territorial sea,¹⁵⁴ expanded notions of jurisdiction in the contiguous zone,¹⁵⁵ extensions of sovereignty over economic resources in the EEZ¹⁵⁶ and on the continental shelf,¹⁵⁷ and additional rights for archipelagic states,¹⁵⁸ the remaining areas of high seas freedom have diminished. Article 87 retains the primary high seas freedoms, particularly freedom of navigation,¹⁵⁹ and appears to provide no restrictions on the operation of a server ship. Although the high seas legal regime is based on the ancient notion of *mare liberum*,¹⁶⁰ that has its limits. Article 87(2) requires that the high seas freedoms be exercised with “with due regard for the interests of other States in their exercise of the freedom of the high seas,”¹⁶¹ and Article 88 limits free seas usage to “peaceful purposes.”¹⁶² One can imagine a situation in which a data center vessel might be accused of operating with less than peaceful purposes. In cases where the military is using its resources to conduct operations or hack the national security operations of the coastal state, there is no doubt that the server ship’s activities would be considered less than peaceful. In most cases, however, a server ship’s operation would seem to fit within the UNCLOS’s spirit without violating its restrictions.¹⁶³

In the *S.S. Lotus* case, the Permanent Court of International Justice stated:

A corollary of the principle of the freedom of the seas is that a ship on the high seas is assimilated to the territory of the State the flag of which it flies, for, just as in its own territory, that State exercises its authority upon it, and no other State may do so.¹⁶⁴

¹⁵⁴ *Id.* at art. 3.

¹⁵⁵ *Id.* at art. 33.

¹⁵⁶ *Id.* at art. 56.

¹⁵⁷ *Id.* at arts. 76–77.

¹⁵⁸ *Id.* at arts. 46–54.

¹⁵⁹ *Id.* at art. 87.

¹⁶⁰ *See* *The Marianna Flora*, 24 U.S. (11 Wheat.) 1, 42 (1826) (stating that the seas are “[a] common highway of all, appropriated to the use of all; and no one can vindicate to himself a superior or exclusive prerogative there”).

¹⁶¹ UNCLOS, *supra* note 15, at art. 87(2).

¹⁶² *Id.* at art. 88.

¹⁶³ *See* Robertson, *supra* note 75, at 79 (addressing the same issue with regard to the 1958 Geneva Convention on the High Seas, Apr. 29, 1958, 13 U.S.T. 2312, 450 U.N.T.S. 82).

¹⁶⁴ *The Case of the S.S. Lotus (Fr. v. Turk.)*, 1927 P.C.I.J. (ser. A) No. 10, at 25 (Sept. 7).

Ships plying the high seas are expected to fly a national flag,¹⁶⁵ and the flag state generally exercises exclusive jurisdiction over the vessel.¹⁶⁶ Under UNCLOS provisions, a server ship would have only one nationality,¹⁶⁷ ships attempting to fly the two or more flags are accorded the same legal status as stateless vessels.¹⁶⁸ If a ship appears to have no nationality, the navy of any state may board and assert jurisdiction.¹⁶⁹ Even when the vessel appropriately flies a flag, it may be boarded under limited circumstances such as when the ship engages in piracy or the slave trade, or illegally broadcasts into the coastal state.¹⁷⁰ In addition, customary international law allows public vessels to stop any ship that constitutes a real threat to its national security or territorial integrity,

¹⁶⁵ UNCLOS, *supra* note 15, at art. 91.

¹⁶⁶ Article 92 provides:

1. Ships shall sail under the flag of one State only and, save in exceptional cases expressly provided for in international treaties or in this Convention, shall be subject to its exclusive jurisdiction on the high seas. A ship may not change its flag during a voyage or while in a port of call, save in the case of a real transfer of ownership or change of registry.

2. A ship which sails under the flags of two or more States, using them according to convenience, may not claim any of the nationalities in question with respect to any other State, and may be assimilated to a ship without nationality.

Id. at art. 92.

¹⁶⁷ *Id.*

¹⁶⁸ *Id.*

¹⁶⁹ Article 110 of UNCLOS provides:

1. Except where acts of interference derive from powers conferred by treaty, a warship which encounters on the high seas a foreign ship, other than a ship entitled to complete immunity in accordance with articles 95 and 96, is not justified in boarding it unless there is reasonable ground for suspecting that:

- (a) the ship is engaged in piracy;
- (b) the ship is engaged in the slave trade;
- (c) the ship is engaged in unauthorized broadcasting and the flag State of the warship has jurisdiction under article 109;
- (d) the ship is without nationality; or
- (e) though flying a foreign flag or refusing to show its flag, the ship is, in reality, of the same nationality as the warship.

2. In the cases provided for in paragraph 1, the warship may proceed to verify the ship's right to fly its flag. To this end, it may send a boat under the command of an officer to the suspected ship. If suspicion remains after the documents have been checked, it may proceed to a further examination on board the ship, which must be carried out with all possible consideration.

3. If the suspicions prove to be unfounded, and provided that the ship boarded has not committed any act justifying them, it shall be compensated for any loss or damage that may have been sustained.

4. These provisions apply *mutatis mutandis* to military aircraft.

5. These provisions also apply to any other duly authorized ships or aircraft clearly marked and identifiable as being on government service.

Id. at art. 110; *see also* United States v. Marino-Garcia, 679 F.2d 1373, 1382–83 (11th Cir. 1982) (holding that any state may board a stateless vessel).

¹⁷⁰ UNCLOS, *supra* note 15, at art. 110. For a full discussion of this issue, see Robert C.F. Reuland, Note, *Interference with Non-National Ships on the High Seas: Peacetime Exceptions to the Exclusivity Rule of Flag-State Jurisdiction*, 22 VAND. J. TRANSNAT'L L. 1161, 1229 (1989) (arguing that the exceptions to flag-state jurisdiction are "small chinks" in the general rule of exclusive flag-state jurisdiction).

subject to the limits imposed by self-defense, necessity, and proportionality.¹⁷¹

Having a nationality actually protects the ship from other states' jurisdiction and lets the flag state exercise diplomatic protection over the vessel under appropriate circumstances.¹⁷² Since random exercises of jurisdiction would undercut any of the goals attributed to the Google patent, the data center owner would be foolish not to seek flag state protection for its server ships.

Because a server ship would need to have a nationality, it would likely seek a flag that best suits its interests. Flag jurisdiction over shipping has created controversies in diverse contexts.¹⁷³ Seeking a loose regulatory environment or lower taxes, ships seek registration in flag of convenience countries,¹⁷⁴ such as Liberia, Honduras, the Bahamas, St. Vincent & the

¹⁷¹ See Reuland, *supra* note 170, at 1206–10 (discussing the state's right of self-defense on the high seas).

¹⁷² H. MEYERS, *THE NATIONALITY OF SHIPS* 90 (1967); Robertson, *supra* note 75, at 80.

¹⁷³ See BOLESŁAW ADAM BOCZEK, *FLAGS OF CONVENIENCE: AN INTERNATIONAL LEGAL STUDY* 1 (1962) (“This controversy [over flags of convenience] has assumed a variety of forms; there have been strikes, boycotts, and picketing in ports all over the world—legal battles in municipal courts and international assemblies—and even an appeal before the International Court of Justice in The Hague.”).

¹⁷⁴ H. Edwin Anderson III provides a concise history and description of flags of convenience:

Historically, while vessels have been flagged or reflagged for one reason or another, most scholars trace the modern use of flags of convenience to the 1920s, the prohibition era of the United States. During that time, several U.S. vessels, including two cruise liners, the M/V RELIANCE and the M/V RESOLUTE, were reflagged in Panama to avoid the U.S. law banning the sale of alcohol aboard U.S. ships.

Since the 1920s, the amount of the world's tonnage flying flags of convenience has steadily increased. The latest United Nations Conference on Trade and Development (UNCTAD) “Review of Maritime Transport” listed the top three shipowning nations as Greece (81.97 million dwt), Japan (80.3 million dwt), and the United States (55.1 million dwt). Over half of the tonnage from these three nations are flying flags of convenience. By all accounts, the trend in commercial shipping to fly flags of convenience is still increasing.

The term “flag of convenience” has evolved to mean registration for primarily economic reasons in a country with an open registry. Previously, the term contemplated registration for political reasons or to conceal criminal or questionable activities. Today, however, the term is used commonly in a pejorative sense and indicates that a vessel owner, for one reason or another, does not want to create mutual obligations with a country with stricter standards for registration. The current perspective on the definition of “flags of convenience” was concisely reflected in the Rochdale Report, published by the United Kingdom in 1970. According to the Report, there are six criteria for determining the status of “flag of convenience”:

“[1] The country of registry allows ownership and/or control of its merchant vessels by non-citizens[;]

[2] Access to the registry is easy; ship may usually be registered at a consulate abroad. Equally important, transfer from the registry at the owner's option is not restricted[;]

[3] Taxes on the income from the ships are not levied locally, or are very low. A registry fee and an annual fee, based on tonnage, are normally the only charges made. A guarantee or acceptable understanding regarding future freedom from taxation may also be given[;]

Grenadines, Belize, or Panama,¹⁷⁵ even when there is no real relationship between the vessel and the flag state.¹⁷⁶

A server ship's purpose will often dictate the chosen flag. If its goals are limited to those usually faced by the shipping industry—low regulation and cost—the server vessel may seek out one of the flag of convenience nationalities. Other goals may suggest other possibilities. A flag of convenience state may not have the power or political will to defend one of these vessels against another state's violations of the server vessel's flag state status. In light of these vulnerabilities, a major naval power such as the United States offers more security as the flag nation.

On the other hand, if the server ship seeks to avoid a particular country's regulation, it will not want to fly that nation's flag. For example, a server ship trying to sidestep United States' banking, gambling, or pornography laws would not fly a U.S. flag. Another data center vessel may want to protect information on board from political repression in a particular country; for that reason, it will forego that country's flag for one with a strong tradition of allowing and protecting political speech. A server vessel that wants to protect delicate information from the world will want a state that champions the confidential nature of such information and is willing to defend it. No one jurisdiction can be perfect under all circumstances; thus, the server ship owner should consider different flags for different vessels.

If server ships are registered in countries that meet the vessel's needs, will other states recognize those registrations? Although the UNCLOS gives each state the right to determine its conditions for granting nationality to a vessel,¹⁷⁷ it also provides that the flag state must have a

[4] The country of registry is a small power with no national requirement under any foreseeable circumstances for all the shipping registered, but receipts from very small charges on a large tonnage may produce a substantial effect on its national income and balance of payments[.]

[5] Manning of ships by non-nationals is freely permitted[; and]

[6] The country of registry has neither the power nor the administrative machinery effectively to impose any governmental or international regulations; nor has the country even the wish or the power to control the companies themselves.”

H. Edwin Anderson III, *The Nationality of Ships and Flags of Convenience: Economics, Politics, and Alternatives*, 21 TUL. MAR. L.J. 139, 156–58 (1996) (alterations in original) (footnotes omitted) (citing Committee of Inquiry into Shipping: London, H.M.S.O. 1970, Cmnd 4337 [The Rochdale Report]).

¹⁷⁵ David Garfield Wilson, *Interdiction on the High Seas: The Role and Authority of a Master in the Boarding and Searching of His Ship by Foreign Warships*, 55 NAVAL L. REV. 157, 174–75 (2008).

¹⁷⁶ BOCZEK, *supra* note 173, at 2.

¹⁷⁷ Article 91 of the UNCLOS provides:

1. Every State shall fix the conditions for the grant of its nationality to ships, for the registration of ships in its territory, and for the right to fly its flag. Ships have the nationality of the State whose flag they are entitled to fly. There must exist a genuine link between the State and the ship.

2. Every State shall issue to ships to which it has granted the right to fly its flag documents to that effect.

UNCLOS, *supra* note 15, at art. 91; *see also* *Lauritzen v. Larsen*, 345 U.S. 571, 584 (1953) (“Each

genuine link with the ship.¹⁷⁸ Can a state refuse to recognize the vessel's nationality when no genuine link exists? In the *M/V Saiga* case, the International Tribunal for the Law of the Sea determined that the state could not;¹⁷⁹ after all, the genuine link provision only exists to ensure that the flag state can exercise the UNCLOS-required control over the vessel.¹⁸⁰

The 1986 United Nations Convention on Conditions for Registration of Ships¹⁸¹ does little to clarify the situation. Although that convention does better define what constitutes a genuine link, it lets the flag state determine whether to grant nationality to a vessel.¹⁸² The treaty does not suggest that another state can challenge the genuineness of the links; this limits its relevance in this context. More importantly, the convention requires forty ratifications to come into force;¹⁸³ to date, only fourteen nations have ratified.¹⁸⁴

Thus, neither the UNCLOS nor the Convention on Conditions for Registration of Ships prevents a data center ship from seeking a flag state that meets its needs. Under current law, the best way to avoid interference with the ship's operations would be to find a friendly flag state and operate on the high seas. That flag state should have exclusive jurisdiction over the flag vessel and its activities, achieving the goal of removing the data center from other nations' prying eyes and restrictions.

B. *Pirate Radio*

In examining how the data center ship's new technology might be treated outside normal sovereign control, the analogous situations

state under international law may determine for itself the conditions on which it will grant its nationality to a merchant ship").

¹⁷⁸ The concept of a genuine link comes from the *Nottebohm* case, in which the International Court of Justice determined that a state need not recognize another state's granting of nationality to a person unless there is a genuine link between that person and the nationality-granting state. *Nottebohm Case (Liech. v. Guat.) (Second Phase)*, 1955 I.C.J. 5, 11 (Apr. 6).

¹⁷⁹ *M/V Saiga (No. 2) (St. Vincent v. Guinea)*, Case No. 2, Order of Jan. 18, 1999, 3 ITLOS Rep. 1, 47.

¹⁸⁰ The Tribunal stated:

The conclusion of the Tribunal is that the purpose of the provisions of the Convention on the need for a genuine link between a ship and its flag State is to secure more effective implementation of the duties of the flag State, and not to establish criteria by reference to which the validity of the registration of ships in a flag State may be challenged by other States.

Id. at 42.

¹⁸¹ United Nations Convention on Conditions for Registration of Ships, Feb. 7, 1986, 26 I.L.M. 1229. For further discussion of this convention, see Moira L. McConnell, "*Business as Usual*": *An Evaluation of the 1986 United Nations Convention on Conditions for Registration of Ships*, 18 J. MAR. L. & COM. 435 (1987).

¹⁸² United Nations Convention on Conditions for Registration of Ships, *supra* note 181, at art. 4.

¹⁸³ *Id.* at art. 19.

¹⁸⁴ *United Nations Convention on Conditions for Registration of Ships*, UNITED NATIONS TREATY COLLECTION, http://treaties.un.org/Pages/ViewDetails.aspx?src=TREATY&mtdsg_no=XII-7&chapter=12&lang=en (last visited Jan. 15, 2011) (listing countries that have signed or ratified the convention).

involving pirate radio stations broadcasting into state territory from offshore is instructive. Pirate radio saw its zenith in Europe in the mid-1960s.¹⁸⁵ In reaction to the sedate, state-owned-monopoly radio stations found in most of Europe, the pirate stations emulated mainstream American stations, playing rock with disc jockeys.¹⁸⁶ By locating offshore, the pirate ships broadcasted in apparent violation of a tight-knit scheme of national, regional, and international regulations that divided bandwidth and often-protected state-owned stations from competition.¹⁸⁷ Stopping these broadcasts proved difficult.¹⁸⁸ Suggestions that the coastal state could exercise jurisdiction over these vessels were countered by the argument that the flag state enjoyed exclusive enforcement jurisdiction.¹⁸⁹ In many cases, the broadcasters would take on a flag of convenience from a state with no ability or inclination to enforce restrictions on unauthorized broadcasting.¹⁹⁰

The 1965 European Agreement for the Prevention of Broadcasts Transmitted from Stations Outside National Territories (“European Pirate Radio Agreement”) requires that signatory flag states punish pirate broadcasters found on their own ships.¹⁹¹ Article 2 provides that each state criminalize pirate stations on its vessels and aircraft¹⁹² and make

¹⁸⁵ See Robertson, *supra* note 75, at 75–76 (noting that the two most successful pirate radio stations in Europe during this time had “an audience of over 8,000,000 listeners”). According to Robertson, the first pirate broadcasting began in the late 1950s and mostly ended by 1979. *Id.* at 71.

¹⁸⁶ *Id.* at 72.

¹⁸⁷ Reuland, *supra* note 170, at 1224–25. For additional discussion of pirate broadcasting and international law, see N. March Hunnings, *Pirate Broadcasting in European Waters*, 14 INT’L & COMP. L.Q. 410, 410–20 (1965); Robertson, *supra* note 75, at 72–76; H.F. van Panhuys & Menno J. van Emde Boas, *Legal Aspects of Pirate Broadcasting: A Dutch Approach*, 60 AM. J. INT’L L. 303, 309–11 (1966); Delbert D. Smith, *Pirate Broadcasting*, 41 S. CALIF. L. REV. 769, 769–72 (1968); Mitchell J. Hanna, Comment, *Controlling “Pirate” Broadcasting*, 15 SAN DIEGO L. REV. 547, 547–48 (1978).

¹⁸⁸ See Reuland, *supra* note 170, at 1225 (“Efforts to curb pirate radio have so far met with limited success.”).

¹⁸⁹ *Id.*

¹⁹⁰ See *id.* (“Often . . . the pirate broadcasting ship is registered to a state unable or simply unwilling to cooperate in the suppression of this activity.”).

¹⁹¹ European Agreement for the Prevention of Broadcasts Transmitted from Stations Outside National Territories arts. 2–3, *opened for signature* Jan. 22, 1965, 634 U.N.T.S. 239. Article 1 provides:

This Agreement is concerned with broadcasting stations which are installed or maintained on board ships, aircraft, or any other floating or airborne objects and which, outside national territories, transmit broadcasts intended for reception or capable of being received, wholly or in part, within the territory of any Contracting Party, or which cause harmful interference to any radio-communication service operating under the authority of a Contracting Party in accordance with the Radio Regulations.

Id. at art. 1.

¹⁹² Article 2 provides, in part: “Each Contracting Party undertakes to take appropriate steps to make punishable as offences, in accordance with its domestic law, the establishment or operation of broadcasting stations referred to in Article 1, as well as acts of collaboration knowingly performed.”

Id. at art. 2(1).

collaboration illegal.¹⁹³ Collaboration includes:

- a. the provision, maintenance or repairing of equipment;
- b. the provision of supplies;
- c. the provision of transport for, or the transporting of, persons, equipment or supplies;
- d. the ordering or production of material of any kind, including advertisements, to be broadcast;
- e. the provision of services concerning advertising for the benefit of the stations.¹⁹⁴

Article 3 then requires that each signatory apply the law to nationals on its “territory, ships, or aircraft” and outside its territories who violate the laws “on any ships, aircraft or any other floating or airborne object.”¹⁹⁵ In addition, the state must apply the law to non-nationals “on its territory, ships or aircraft, or on board any floating or airborne object under its jurisdiction.”¹⁹⁶ The agreement does not allow enforcement against a foreign flagged vessel, even if the flag state is a signatory.¹⁹⁷ Thus, although the agreement creates an obligation to prescribe and enforce laws against private radio broadcasters and their collaborators under traditional jurisdictional notions, it does not expand the state’s jurisdiction to handle the pirate radio problem. Nevertheless, the United Kingdom used such restrictions effectively against pirate radio stations transmitting into England.¹⁹⁸

The European Economic Community members brought the pirate radio broadcasts issue to the UNCLOS negotiations.¹⁹⁹ Without opposition and little discussion, Article 109 was adopted,²⁰⁰ requiring that all states cooperate to suppress “unauthorized broadcasting from the high seas”²⁰¹

¹⁹³ *Id.*

¹⁹⁴ *Id.* at art. 2(2).

¹⁹⁵ *Id.* at art. 3(a).

¹⁹⁶ *Id.* at art. 3(b).

¹⁹⁷ Article 3, which contains the Convention’s application terms, makes no provision for enforcement on foreign flagged vessels, absent another traditional basis of jurisdiction. *Id.* at art. 3.

¹⁹⁸ See Howard A. Bender, Note, *The Case of the Sarah: A Testing Ground for the Regulation of Radio Piracy in the United States*, 12 FORDHAM INT’L L.J. 67, 88–89 (1988) (arguing that the United States should adopt legislation similar to the British law).

¹⁹⁹ Robertson, *supra* note 75, at 99.

²⁰⁰ *Id.* at 99–100.

²⁰¹ Article 109 of the UNCLOS provides:

1. All States shall cooperate in the suppression of unauthorized broadcasting from the high seas.
2. For the purposes of this Convention, “unauthorized broadcasting” means the transmission of sound radio or television broadcasts from a ship or installation on the high seas intended for reception by the general public contrary to international regulations, but excluding the transmission of distress calls.
3. Any person engaged in unauthorized broadcasting may be prosecuted before

and allowing prosecution of such activities by the flag state, the state of registry, the state of which the violator is a national, the state receiving the unauthorized broadcast, or any state with which legitimate broadcasting is interrupted.²⁰² These jurisdictional states may board, arrest, and prosecute the perpetrator and confiscate her equipment.²⁰³ This provision can be used against any UNCLOS party, currently 160 nations.²⁰⁴

With the advent of satellite radio, the Internet, and other developing dissemination technologies, the need for tight control of unauthorized radio has lessened.²⁰⁵ Nevertheless, these provisions indicate how an international body might address the data ship problem.

V. SERVER SHIPS, CYBERLAW, AND THE LAW OF THE SEA

The ocean-based server ship benefits Internet users, the Internet itself, the environment, and the vessel's owner. Internet users are always seeking more bandwidth, and the ability to move the server ship freely across previously unavailable expanses should decrease the distances that information must cross.²⁰⁶ More server farms could further increase the growth of cloud computing.²⁰⁷ In addition, emergency responders and military leaders will value the ability to provide computing power on site.²⁰⁸ More data centers, in previously untapped areas, will make the Internet a more effective medium for communication and world trade. Additional server farms will create new pathways through which information can flow, allowing for greater speed and reliability.²⁰⁹ These advantages will ultimately inure to the server ship owner, who will profit from the better service to customers and will also benefit from decreased

the court of:

- (a) the flag State of the ship;
- (b) the State of registry of the installation;
- (c) the State of which the person is a national;
- (d) any State where the transmissions can be received; or
- (e) any State where authorized radio communication is suffering interference.

4. On the high seas, a State having jurisdiction in accordance with paragraph 3 may, in conformity with article 110, arrest any person or ship engaged in unauthorized broadcasting and seize the broadcasting apparatus.

UNCLOS, *supra* note 15, at art. 109.

²⁰² *Id.* at art. 109(3).

²⁰³ *Id.* at art. 109(4).

²⁰⁴ These nations include convenience-flag states such as Liberia, Honduras, the Bahamas, St. Vincent & the Grenadines, Belize, and Panama. *United Nations Convention on the Law of the Sea*, UNITED NATIONS TREATY COLLECTION, http://treaties.un.org/Pages/ViewDetailsIII.aspx?src=UNTSO&mtdsg_no=XXI-6&chapter=21&Temp=mtdsg3&lang=en#Participants (last visited Jan. 15, 2011) (listing the parties to the UNCLOS).

²⁰⁵ See Robertson, *supra* note 75, at 71–72 (noting that pirate radio filled a need not met by “existing broadcasting facilities” at the time of its peak in popularity).

²⁰⁶ See *supra* note 33 and accompanying text.

²⁰⁷ See *supra* notes 22–26 and accompanying text.

²⁰⁸ See *supra* note 50 and accompanying text.

²⁰⁹ See *supra* notes 22–34 and accompanying text.

energy costs for powering and cooling the servers.

Apart from these practical advantages, the floating farms will also promote environmental efficiencies. Perhaps the biggest land-based server problem has been the adverse environmental impact. Data centers are energy hogs, producing tremendous amounts of heat.²¹⁰ Using renewable power resources, such as the wind, waves, or tides, will greatly reduce the environmental impact of these servers. The same can be said of using ocean waters to cool the servers.

In general, traditional notions of prescriptive jurisdiction will allow coastal states to regulate the server ship's activities.²¹¹ A territorial effects test should allow states to create the applicable norms.²¹² The information being sent into the receiving state would satisfy the effects requirement.²¹³ The state's ability to regulate the conduct of its nationals or vessels provides another basis for effective prescriptive jurisdiction.²¹⁴ Enforcement presents more difficult questions. Within the inland and territorial seas, these vessels should presume that the full force of the coastal state is available.²¹⁵ With the exception of resource issues, such as energy production, the vessel should be able to exercise high seas freedoms in the EEZ and over the continental shelf. In the contiguous zone, the coastal state can exercise jurisdiction to prevent violations of a limited group of laws in the territorial sea; rarely would a server ship be affected.²¹⁶ Although a data center vessel on the high seas should be able to act independently of any jurisdiction other than its flag state,²¹⁷ other states will be motivated to attempt regulation.

Interesting similarities exist among these high seas rights and those espoused by some Internet law writers. Rejection of territorial control was a central tenet of early Internet thinkers,²¹⁸ who argued that the sheer

²¹⁰ See *supra* notes 39–40 and accompanying text.

²¹¹ See *supra* notes 61–92 and accompanying text.

²¹² See *supra* notes 68–69 and accompanying text.

²¹³ See *supra* notes 68–69 and accompanying text.

²¹⁴ See *supra* notes 71–78 and accompanying text.

²¹⁵ See *supra* notes 111–42 and accompanying text.

²¹⁶ See *supra* notes 143–45 and accompanying text.

²¹⁷ See *supra* notes 166–71 and accompanying text.

²¹⁸ GOLDSMITH & WU, *supra* note 53, at 13–14; Thomas Schultz, *Carving up the Internet: Jurisdiction, Legal Orders, and the Private/Public International Law Interface*, 19 EUR. J. INT'L L. 799, 802 (2008). As Johnson and Post stated in their influential article:

Cyberspace radically undermines the relationship between legally significant (online) phenomena and physical location. The rise of the global computer network is destroying the link between geographical location and: (1) the *power* of local governments to assert control over online behavior; (2) the *effects* of online behavior on individuals or things; (3) the *legitimacy* of a local sovereign's efforts to regulate global phenomena; and (4) the ability of physical location to give *notice* of which sets of rules apply. The Net thus radically subverts the system of rule-making based on borders between physical spaces, at least with respect to the claim that Cyberspace should naturally be governed by territorially defined rules.

number of transnational Internet communications would make it impossible for national governments to control them.²¹⁹ The Internet's very structure, with its ability to route communications around blocked or non-functional grid portions, would make it impossible for governments to interfere.²²⁰ Because the physical location of the machine providing the network is unimportant,²²¹ some concluded that the Internet itself should provide its own governance, not subject to national jurisdiction.²²² One influential Internet writer, John Barlow, relied on the natural law of the Internet, to create the often-cited *Declaration of the Independence of Cyberspace*:

Governments of the Industrial World, you weary giants of flesh and steel, I come from Cyberspace, the new home of Mind. On behalf of the future, I ask you of the past to leave us alone. You are not welcome among us. You have no sovereignty where we gather.

We have no elected government, nor are we likely to have one, so I address you with no greater authority than that with which liberty itself always speaks. I declare the global social space we are building to be naturally independent of the tyrannies you seek to impose on us. You have no moral right to rule us nor do you possess any methods of enforcement we have true reason to fear.

Governments derive their just powers from the consent of the governed. You have neither solicited nor received ours. We did not invite you. You do not know us, nor do you know our world. Cyberspace does not lie within your borders. Do not think that you can build it, as though it were a public construction project. You cannot. It is an act of

David R. Johnson & David Post, *Law and Borders—The Rise of Law in Cyberspace*, 48 STAN. L. REV. 1367, 1370 (1996).

²¹⁹ GOLDSMITH & WU, *supra* note 53, at 2; *see also* LAWRENCE LESSIG, CODE VERSION 2.0, at 3 (2006) (“The claim for cyberspace was not just that government would not regulate cyberspace—it was that government *could not* regulate cyberspace. Cyberspace was, by nature, unavoidably free.”). Professor Lessig points out the inconsistency in relying on nature in this context:

Nature. Essence. Innate. The way things are. This kind of rhetoric should raise suspicions in any context. It should especially raise suspicion here. If there is any place where nature has no rule, it is in cyberspace. If there is any place that is constructed, cyberspace is it. Yet the rhetoric of “essence” hides this constructedness. It misleads our intuitions in dangerous ways.

Id. at 31.

²²⁰ GOLDSMITH & WU, *supra* note 53, at 2–3.

²²¹ Johnson & Post, *supra* note 218, at 1370–71.

²²² *Id.* at 1387–91.

nature and it grows itself through our collective actions.²²³

This idealistic optimism was soon met with a dose of reality.²²⁴ Through technical Internet developments, the state is now able to determine the Internet user's identity, location, and activities.²²⁵ Although the nation-state cannot likely control every Internet element, states can regulate intermediaries such as Internet service providers, search engines, financial providers, and even websites with property or people within the state, making it possible for the nation to exercise jurisdiction over these Internet choke points.²²⁶ After all, Internet service is simply not possible absent territorial contacts with the ultimate user. State desire to control, along with technological developments allowing Internet providers to differentiate regional access, have created the expectation of compliance with local regulations.²²⁷ Of course, in many instances a state will lack the necessary connection to control Internet entities.²²⁸ Even so, the threat of control combined with the ability to tailor Internet content provides a powerful combination for the application of national norms.

This ability to use coercive measures at certain links in the Internet chain may be part of what motivates Google to look to alternatives apparently beyond national reach.²²⁹ As discussed above, server ships

²²³ John Perry Barlow, *A Declaration of the Independence of Cyberspace*, ELEC. FRONTIER FOUND. (Feb. 8, 1996), <https://projects.eff.org/~barlow/Declaration-Final.html>.

²²⁴ See Schultz, *supra* note 218, at 804 (describing the global response to online communication as from other countries as "a movement for cultural and nationalistic withdrawal").

²²⁵ See LESSIG, *supra* note 219, at 43–56 (describing the methods by which Internet users can be identified).

²²⁶ See *supra* notes 58–59 and accompanying text.

²²⁷ Of course, there are those that resist this level of local control. See, e.g., David G. Post, *Governing Cyberspace: Law*, 24 SANTA CLARA COMPUTER & HIGH TECH. L.J. 883, 889–94 (2008) (describing competing theories regarding jurisdictional control over Internet content). This Article takes no position on the wisdom of applying national laws to the Internet versus an Internet providing its own governance, only recognizing that current developments seem to establish that nations do have the ability to regulate many facets of cyberspace.

²²⁸ See *id.* at 892 (quoting a professor who argues that for "almost all [Internet] users, there will be no threat of extraterritorial legal liability because of a lack of presence in the regulating jurisdictions").

²²⁹ Google's recent dispute with China over Internet censorship, ending with Google closing down its China search engine, is but one example of the reasons why Google may wish to escape the bonds of national jurisdiction. Google has rerouted traffic to its site in Hong Kong, which is not subject to censorship. Elinor Mills, *In Post-Google China, Censorship Is Unfazed*, CNET NEWS (Mar. 26, 2010, 4:14 AM), http://news.cnet.com/8301-27080_3-20001212-245.html.

The author describes China's sophisticated ability to stop undesirable Internet traffic:

There are a handful of Internet access "choke points" in China, where all the traffic enters and exits to the outside world. "All countries connect virtually all of their IP addresses through at most dozens of ISPs, but China's network is the most centralized of any large country, with only four ISPs connecting more than 90 percent of its IP addresses to the rest of the Internet," Roberts said.

The Great Firewall is the system of gateways, routers, and servers that China uses to keep objectionable content from reaching users inside the country. Authorities mirror the stream of traffic flowing into the domestic Internet and determine what portions of a Web page the government wants to block, Lih said.

If the traffic is blocked at the domain name system level, users may get a "site

operating on the seas owe their duty of loyalty primarily to their flag state, a relationship with relatively little international regulation.²³⁰ Despite states' efforts to assert national jurisdiction over greater parts of the seas, Grotius's classic view of *mare liberum* continues to provide open access to important routes of international intercourse today. Most of the world's trade moves by ship.²³¹ International rules allowing national interference over this crucial highway of commerce could have a detrimental effect on the global economy. To the extent that the law of the sea expands the right of non-flag states to stop vessels, it could create a drag on trade; after all, the impressive expansion of global commerce since World War II, including development of national economies around the world, is undoubtedly due in no small part to the free movement of goods across the oceans.²³² Today, the massive amounts of oil and natural gas moved by ships create a special concern for maintaining the unfettered flow of energy, a strategic resource.²³³ In addition, territorialization of the seas could limit access to a large portion of the earth's surface, hindering research and development.

The free movement of naval vessels is important to national and international security. Although state jurisdiction may prove helpful in protecting coastal state security, it may collectively have a detrimental effect on international security arrangements.²³⁴ To the extent that U.S. and other naval vessels may be prohibited from crossing the seas, they may be less responsive in dealing with emergencies, including humanitarian missions, U.N. enforcement actions, and peacekeeping efforts.²³⁵ If denied access, more powerful nations may feel the need to use military force against assertions of national jurisdiction, leading to unnecessary

not found" message; if the IP address is blocked the message may say "site unreachable;" and if the URL is blocked or a page contains sensitive content a "connection reset error" message may be displayed, according to Lih.

"China's Great Firewall system is so sophisticated and massive, it can tailor blocking for each individual Web surfer because it monitors a person's surfing activity to sites outside of China's domestic Internet, right down to what's contained inside the web page"

Id.

²³⁰ See *supra* notes 173–84 and accompanying text.

²³¹ The International Maritime Organization estimates that more than ninety percent of world trade moves by ship. Int'l Maritime Org., *Introduction to IMO*, IMO.ORG, <http://www.imo.org> (last visited Jan. 15, 2011) (follow "ABOUT IMO" hyperlink).

²³² See S. Jayakumar, *Keynote Address*, in CENTER FOR OCEANS LAW AND POLICY, FREEDOM OF SEAS, PASSAGE RIGHTS AND THE 1982 LAW OF THE SEA CONVENTION 17, 18 (Myron H. Nordquist et al. eds., 2009) ("The navigational freedoms and passage rights which are guaranteed by UNCLOS have, in my view, underpinned this unprecedented period of global economic growth and prosperity").

²³³ See *id.* at 19 ("[N]avigational freedom is . . . vital to the energy security of States given that much of the world's energy resources are transported around the globe by sea.").

²³⁴ See Oxman, *supra* note 108, at 840–41 (discussing the importance of global mobility as a means of responding to security threats).

²³⁵ *Id.*

conflict.²³⁶

The twentieth century saw the largest grab for national control of maritime territory since Grotius's time. The territorial sea, which was traditionally limited to the three-mile range of ancient cannon, grew to twelve miles in the UNCLOS.²³⁷ New entities for state control were created for the contiguous zone, EEZ, and continental shelf.²³⁸ As one author explained:

The territorial temptation thrust seaward with a speed and geographic scope that would be the envy of the most ambitious conquerors in human history. The effective start of this process—President Truman's claim to the continental shelf in 1945—was so quickly accepted and emulated by other coastal states that the emergence of the regime of the continental shelf, in derogation of the principle of *mare liberum*, has been cited as an example of instant customary law. The Truman Proclamation unleashed a quarter-century of territorial and quasi-territorial claims to the high seas so vast that, at the dawn of the Third United Nations Conference on the Law of the Sea, the leader of the Canadian delegation, Ambassador J. Alan Beesley, could quip that he comes to bury Grotius, not to praise him.²³⁹

By the century's end, high sea freedoms, both in terms of territory and substance, had seriously declined. One might argue that modern problems require this additional exercise of jurisdiction by coastal states. Establishing an EEZ will encourage the efficient utilization of resources.²⁴⁰ Maritime pollution needs to be controlled.²⁴¹ Radio pirates are a nuisance. On the other hand, does it make sense to address these complex challenges by expanding national jurisdiction over huge portions of the world's waterways?

How will the international community react to the new technologies that are venturing out onto the seas? The reaction to pirate radio stations provides an intriguing clue. The European Pirate Radio Agreement

²³⁶ Citing André Siegfried, Professor Dupuy notes that "wars took place to block maritime routes and political strategies attempted to protect them." RENÉ-JEAN DUPUY, *THE LAW OF THE SEA: CURRENT PROBLEMS* 9 (1974).

²³⁷ See *supra* notes 123–25 and accompanying text.

²³⁸ See *supra* notes 143–53 and accompanying text.

²³⁹ Oxman, *supra* note 108, at 832 (footnotes omitted). Another claims that following the UNCLOS, the "concept of the freedom of navigation has now become obsolete." Hasjim Djalal, *Remarks on the Concept of "Freedom of Navigation"*, in CENTER FOR OCEANS LAW AND POLICY, *supra* note 232, at 65, 74.

²⁴⁰ See DAMROSCH, *supra* note 118, at 1416–17 (describing how exclusive zones protect states' interests in the viability of living resources in adjacent waters).

²⁴¹ UNCLOS pollution provisions can be found at Articles 217 through 233. UNCLOS, *supra* note 15, at arts. 217–33.

provides that each signatory state agrees to criminalize certain behaviors under its own laws and enforce them against its citizens and vessels, using a traditional jurisdictional model for the prevention of pirate communications.²⁴² Prescriptive jurisdiction will generally exist to regulate the abhorred conduct. Although enforcement jurisdiction issues will continue to exist, the treaty recognizes that these can often be resolved by restricting the collaborators' land-bound activities.²⁴³ By cutting the pirate station off from personnel, equipment, services, and supplies, the agreement makes it difficult for the pirate to continue her behavior. Punishing land-based advertisers makes a bad situation even worse by cutting off the pirate station's financial lifeline. Assuming the signatories' good-faith compliance, the treaty provides an effective mechanism for controlling unauthorized radio communications. The European Pirate Radio Agreement does this without curtailing high seas freedoms, making no attempt to provide the coastal state with additional zones of jurisdiction or undercut the flag states' rights to exclusively control vessels of their own nationality. The Europeans adopted a narrowly-tailored plan that was to address the specific issue that faced them without altering the basic tenets of the law of the sea.

Article 109 of the UNCLOS takes a different tack. Rather than leaving the enforcement of broadcasting laws to traditional notions of international jurisdiction, it allows any state receiving the unauthorized transmission or experiencing interference with its own legitimate broadcasts to arrest and seize persons or vessels on the high seas. Article 109 does not require that the flag state give permission or even receive notice before enforcement actions are taken.²⁴⁴ This is a radical change in the notion of freedom of the seas. Pirate radio stations are being treated in much the same way as piracy or the slave trade, even though the implicated issues are far less serious than these heinous crimes. One author has questioned the wisdom of allowing additional state jurisdiction over pirate radio operators:

[A]rticle 109 establishes a troubling precedent. If the nations of the world, particularly those that regard themselves as guardians of the freedom of the seas, are willing to accept such a significant exception to the principle of the exclusive jurisdiction of the flag state over ships on the high seas on the basis of such weak justification to solve a largely nonexistent problem, other steadfastly held principles may be in similar jeopardy. One can hope that article 109 does not represent a general trend away from exclusive flag-state

²⁴² *Supra* notes 185–98 and accompanying text.

²⁴³ *Supra* notes 185–98 and accompanying text.

²⁴⁴ UNCLOS, *supra* note 15, at art. 109.

jurisdiction²⁴⁵

Indeed, Article 109 has been cited as support for the general proposition that the international community is now willing to contravene *mare liberum* by extending national jurisdiction over vessels on the high seas.²⁴⁶ In the end, the jurisdiction provided to the coastal states constitutes a major diminution in high seas freedom, a freedom whose traditional exclusions had previously been limited to flag state jurisdiction, piracy, the slave trade, and self-defense.²⁴⁷

Any extension of state jurisdiction over the ocean must balance the need for regulation against the benefits of preserving the traditional freedom of the seas. If the threat is particularly dangerous, new international solutions may be needed. Key issues such as marine pollution or preservation of world fishing stocks may provide a legitimate argument for some contravention of high seas freedoms. Other problems, such as pirate radio, do not present the same level of danger to the world community. High seas freedoms, and their related benefits, are far more compelling in the international context than any barriers created by exclusive flag state jurisdiction against enforcement of unauthorized broadcasting. This is particularly true when one considers that the European Pirate Radio Agreement can effectively control the pirate radio problem without undercutting crucial international legal principles. The agreement permits states to enforce their laws within their territories and on their ships, and they can pursue entities within their jurisdiction that support the outlawed activity, even when that activity falls outside the jurisdiction.

To the extent these problems are caused by the flag system's failure to provide reasonable rules for nationality and regulation of ships, these should be addressed.²⁴⁸ Strengthening genuine links requirements and enforcing the flag state's regulatory obligations are a much more direct way of addressing the problems created by flags of convenience.

It is impossible to foresee the future technologies that will find their way to the oceans. Clearly, the Internet has had a much greater impact on the human condition than pirate radio stations ever did. The next invention or discovery may be even more significant. In any of these cases, the same analysis should apply. Freedoms should be preserved unless an overwhelming need to curtail them outweighs the crucial trade and security interests protected by high seas freedoms. In the pirate radio or server ship

²⁴⁵ Robertson, *supra* note 75, at 100.

²⁴⁶ See, e.g., Christopher P. Mooradian, Note, *Protecting "Sovereign Rights": The Case for Increased Coastal State Jurisdiction over Vessel-Source Pollution in the Exclusive Economic Zone*, 82 B.U. L. REV. 767, 787 (2002) (arguing in favor of additional state jurisdiction over pollution in the EEZ).

²⁴⁷ Robertson, *supra* note 75, at 99.

²⁴⁸ See *supra* notes 172–84 and accompanying text.

situation, no such need exists because the state already has an effective mechanism for controlling local radio or Internet content through traditional jurisdictional means. Now that Internet providers can identify where a user is located, the Internet has become more territorial in nature. A user doing a search in Europe will see very different results than those the same search produces in the United States.²⁴⁹ Moreover, the websites are likely to be in the user's language,²⁵⁰ and the substantive content will be different, as well.²⁵¹ The technology that allows such differentiation also permits a provider to create websites that comply with local laws, eliminating the likelihood of being pulled in different directions by diverse cultures and legal systems.²⁵² No longer a unique entity, the Internet operates in the physical world, and like any business entity, a participant must comply with the countries' laws where they do business.

This new Internet also means that the local government can assert its own laws. Internet access necessitates intermediaries who are subject to local jurisdiction. There will be Internet service providers, search engines, advertisers, and merchants, all of whom may be subject to local jurisdiction. These would be similar to the collaborators targeted by the European Pirate Radio Agreement. To the extent that any one of these can escape the jurisdiction, others will still be subject to national regulation. Since other remedies already exist, there is no compelling policy for a derogation of high seas freedoms.

Assuming that an extraordinary need for more dramatic action did exist, it is important to consider what standards should guide that response. Greater state control of the seas is not necessarily the best way to solve the international problems created by the Internet. Ideally, global issues call for systemic solutions on a worldwide basis, as opposed to numerous, probably inconsistent, restrictions. Even if individual coastal states enact regulations, they may lack the resources or will to protect the identified interest. The extension of EEZ rights to coastal states, for example, has not effectively remedied over-fishing and resource utilization issues.²⁵³ In addition, it cannot be assumed that the coastal state will use its newfound power appropriately. A nation lacking resources may be unable to enforce newly-acquired jurisdictional bases. Another state with less than noble motivations may use its extended reach to harass shipping, making trade

²⁴⁹ See GOLDSMITH & WU, *supra* note 53, at 61 (describing how technology allows Google to target ads geographically).

²⁵⁰ See *id.* at 50–51 (describing how Microsoft and Yahoo!, for example, have created multiple versions of their products written in different languages).

²⁵¹ See *id.* at 51 (“[L]ocal variations translate into different preferences and expectations among Net users in different places.”).

²⁵² See *id.* at 58–60 (describing methods of online geographical identification).

²⁵³ See Donna R. Christie, *It Don't Come EEZ: The Failure and Future of Coastal State Fisheries Management*, 14 J. TRANSNAT'L L. & POL'Y 1, 3 (2004) (discussing the continuing decline of EEZ fisheries stocks).

more difficult. Finally, states may use legitimate extensions of jurisdiction as an excuse for ever-expanding claims for additional power. These potential—and even likely—eventualities underscore the wisdom of protecting long-valued freedoms rather than pushing them aside to give states more options for local enforcement.

The UNCLOS has given unprecedented control to the states, and Article 109 is a prime example of this unnecessary and undesirable cession. By subjecting valuable international interests to greater state control, the convention is subverting hundreds of years of history to the coastal states' relatively shortsighted demands. Although it is hard to imagine reaching complete worldwide agreement on Internet content, new international mechanisms could still eventually be created to regulate agreed-upon core Internet principles.²⁵⁴ The primary issue is not the law of the sea, but the Internet's content and control. As a result, the resolution should not interfere with high seas freedoms. For the most part, national rules can be enforced under current jurisdictional norms to reflect the needs of varying communities. When they cannot, an international solution should be narrowly tailored so as not to undercut the longstanding premise of *mare liberum*. High seas freedoms helped make global commerce the success it is today; a policy that advocates a lesser vision of ocean access would be a profound mistake.

VI. CONCLUSION

Since before the time of Grotius, a battle has raged between those who advocate high seas freedoms to facilitate international commerce and security and those who prefer to carve the oceans' regions into separate fiefdoms. The former view minimizes each individual nation's control in favor of global systematic efficiencies; the latter puts a premium on state power at the expense of international cooperation. For most of modern history, *mare liberum* has been the rule, but the twentieth century saw major encroachments on this notion. The UNCLOS embodies many of these, extending coastal state jurisdiction to include a wider territorial sea, a contiguous zone, the EEZ, and the continental shelf. In addition, high seas freedoms have been minimized to deal with problems such as marine pollution and pirate radio stations.

Today, technology is changing the face of commerce from moment to

²⁵⁴ One thing that both Internet idealists and those claiming that the Internet is subject to the same jurisdictional issues as any other business seem to agree on is that an international solution harmonizing various national approaches to Internet problems would be inadvisable. See GOLDSMITH & WU, *supra* note 53, at 150–52 (“[D]eeply held differences in values, even among democracies, lie behind conflicts of laws. A bordered Internet is valuable precisely because it permits people of different value systems to coexist on the same planet.”); Post, *supra* note 227, at 894 (stating that few people give credence to the argument that a single global law governing the Internet is the correct solution).

moment, and undiscovered developments lie just beyond the horizon. Numerous new ideas for ocean use are at hand, including the notion that the seas would be an excellent location for movable server farms, powered and cooled by renewable ocean resources. Portable and green, these server ships may attempt to avoid state control over the Internet, just as Internet pioneers saw cyberspace as a place free from traditional national norms. Nevertheless, as international networks have evolved, states have insisted that the Internet be responsive to local laws reflecting domestic concerns. The data center vessel might be an effective strategy to reclaim some of the freedom envisioned in earlier times.

Although server ships could probably not avoid national jurisdiction to prescribe their behavior, enforcement could prove to be another matter. A server ship operating under the high seas regime would most likely be exclusively subject to the flag state's enforcement power; adversely affected states accordingly could not pursue violations of local laws. In contrast, the UNCLOS specifically empowers injured coastal states to stop, search, and arrest vessels and personnel involved in illegal broadcasting. This provision presents a significant departure from the traditional high seas freedoms and the correlative policies that support them.

Because these freedoms are so important to international trade and security, they should only be curtailed when a different international regulatory approach becomes absolutely necessary. The harm created by these new technologies must be weighed against the benefits preserved by maintaining open oceans. In the case of national regulation of server farms, the importance of the centuries-old *mare liberum* outweighs the need for states to exercise local control over server ships, particularly when the coastal state has other effective means for furthering its interests. The Internet exists beyond the cloud; traditional jurisdictional principles should reach one or more of the requisite service links, including Internet service providers, search engines, advertisers, merchants, and the like. Intrastate personnel or property of such intermediaries may also provide a basis for enforcement jurisdiction. It may be possible for certain links to avoid local jurisdiction, but some intrastate presence is inevitable. This will give the nation a legitimate foundation on which to enforce its own norms without undercutting age-old freedom of the seas principles.

New uses for the seas should always take the same balanced approach. Before entertaining the idea of subverting high seas freedoms, the regulatory need should be weighed against the importance of these freedoms. Assuming there is a need for action, the international community should be slow to grant additional state powers in derogation of *mare liberum*. Instead, the international community should seek a conclusion that more pointedly addresses the issue without denigrating the highly-valued foundation of open-water access.