

ONLINE SATELLITE AND AERIAL IMAGES: ISSUES AND ANALYSIS

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I. INTRODUCTION

The Greek astronomer and geographer Claudius Ptolemy, who developed the first maps depicting a spherical world,¹ would be in awe at the map and navigational features available today. With technological achievements in satellites, global information systems, aviation, digital photography, computer technology, and telecommunications, high resolution satellite images and aerial photographs are now available to virtually anyone and everyone.

On June 28, 2005, Google announced the launch of Google Earth, a satellite imagery-based mapping product that combines 3-D buildings and terrain with mapping capability.² Some of the world's largest and most influential technology groups, including Microsoft, and Yahoo! have also delved into online satellite and aerial imagery services.³

The ability for the general public to access and view high resolution satellite images and photographs via the Internet raises serious privacy and safety concerns. This article provides an overview of the satellite and imagery industry with an emphasis on recent search engine applications. It will further discuss potential theories of liability associated with online satellite and aerial images, along with an analysis of the evidentiary issues relating to these images. Since existing laws fall short in safeguarding individual privacy rights and protecting against possible threats to public safety when applied to online mapping, Congress should act now to regulate the unfettered dissemination of satellite and aerial images on the Internet.

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1. A. Jon Kimerling, *Cartographic Methods for Determining the Qibla*, 101 J. GEOGRAPHY 20 (2002).

2. Dan Nguyen, *Google Goes Gaga on Maps the 3-D Imagery is Flexible—And Out Before Microsoft*, SACRAMENTO BEE, June 30, 2005, at D1.

3. See John Sirman, *Law Firms Test the Waters*, 69 TEX. B.J. 842, 842 (2006) (referring to Google, Yahoo!, and Microsoft as Internet giants).

II. OVERVIEW OF ONLINE SATELLITE AND AERIAL IMAGERY INDUSTRY

Satellite and aerial imagery is a burgeoning multi-billion dollar industry. Aerial and satellite imagery is also commonly known as remote sensing.⁴ “Space-based remotely sensed imagery [first] became commercially available . . . in 1972 with the advent of the United States of America’s (U.S.) Earth Resources Technology Satellite (ERTS).”⁵ Since 1972, the private satellite industry continued to grow and expand. According to the Satellite Industry Association (SIA), the premier trade organization representing the global commercial satellite industry, the 2005 total worldwide satellite industry exceeded \$88 billion in revenues with \$52.8 billion in revenues derived from satellite services, such as satellite imagery.⁶ Until the dawn of the new millennia, only military analysts, spies, specialist academics, and GIS professionals had access to satellite images.

Police and law enforcement officials have increasingly relied on satellite and aerial imagery in recent years. During the 2002 Washington D.C. sniper attacks, Pentagon and National Security Agency (NSA) officials “met to consider whether spy satellites would be useful in hunting down the snipers.”⁷ Law enforcement officials now routinely utilize satellite imagery for a variety of enforcement actions.⁸

With the advent of Google Earth and other websites that feature similar applications, online satellite imagery opens the door to many commercial and consumer applications.⁹ As with other new technological achievements, increased access to information also creates a need to clarify and address privacy, safety, and national security concerns. There is also the risk that online predators, criminals, terrorists, and voyeurs might use the satellite and aerial images for a host of deleterious motives. In fact, in January 2007, terrorists attacked British bases in Basra, Iraq, using aerial

4. See, e.g., Kenneth J. Markowitz, *Legal Challenges and Market Rewards to the Use and Acceptance of Remote Sensing and Digital Information as Evidence*, 12 DUKE ENVTL. L. & POL’Y F. 219, 221-25 (2002) (describing satellite imaging applications).

5. Michael R. Hoversten, *U.S. National Security and Government Regulation of Commercial Remote Sensing from Outer Space*, 50 A.F. L. REV. 253, 253 (2001).

6. See FUTRON CORP., SATELLITE INDUSTRY ASS’N, STATE OF THE SATELLITE INDUSTRY REPORT 6, 7 (2006), available at http://www.futron.com/pdf/resource_center/reports/SIA_2005_Indicators.pdf.

7. Patrick Korody, *Satellite Surveillance Within U.S. Borders*, 65 OHIO ST. L.J. 1627, 1628 (2004).

8. See *id.*

9. See Chris Gaither, *Office-Chair Explores Google from the Sky*, L.A. TIMES, Feb. 2, 2007, Business Section (noting the practical uses of Google Earth).

footage displayed by Google Earth to pinpoint their attacks, according to United Kingdom army intelligence sources.¹⁰ The possibility now exists that terrorists and insurgents could use Google Earth or a similar online service to plan attacks within the United States and threaten homeland security. Since the presence of online satellite and aerial images jeopardizes privacy, safety, and national security, Congress should act now to address these issues before it is too late.

Google, Microsoft, and Yahoo! are among the most popular commercial entities that offer satellite and aerial imagery services. Each of their services will be discussed below.

A. GOOGLE EARTH

Google Earth combines photographs taken by both satellites and aircraft.¹¹ Google Earth offers high resolution imagery (greater than 1-meter per pixel which provides an aerial view of approximately 1500 feet) for thousands of cities with plans to expand its coverage area in the future.¹² While Google Earth images are not displayed in real time, the photographs are updated on a rolling basis with images taken sometime in the past three years.¹³ Google obtains satellite images through DigitalGlobe, a satellite company based in Longmont, Colorado.¹⁴ According to the New York Times, "Google Earth . . . offers satellite and mapping data for the entire world, albeit with varying degrees of clarity. It has two simple-sounding but fascinating features: a tilt view, which approximates a 3-D perspective on terrain, and a flying view, which approximates the look of flying from point to point."¹⁵ Google Earth, which now has 200 million users, started in the intelligence community, in a CIA-backed firm called Keyhole that Google acquired in 2004.¹⁶ Google Earth has established itself as an industry leader in online satellite and aerial imagery.

10. *Terrorists in Iraq Using Google Earth*, KUWAIT TIMES, Jan. 14, 2007, available at <http://google.webmasterswatch.com/2007/01/14/terrorists-in-iraq-use-google-earth-report-kuwait-times/> [hereinafter *Terrorists Using Google Earth*].

11. See Common Questions about Google Earth, <http://earth.google.com/faq.html> (last visited Apr. 2, 2007).

12. *Id.*

13. *Id.*

14. William J. Broad, *North Korea's Nuclear Intentions, Out There for All to See*, N.Y. TIMES, Oct. 8, 2006, at 45.

15. James Fallows, *Now, If My Software Only Had a Brain*, N.Y. TIMES, Aug. 7, 2005, at 33.

16. Sara Kehaulani Goo & Alec Klein, *Google Makes Its Pitch to Expand Federal Business*, WASH. POST, Feb. 28, 2007 at D3.

B. Microsoft LIVE LOCAL

In an effort to compete with Google Earth, Microsoft unveiled Windows Live Local (formerly MSN Virtual Earth) on December 8, 2005.¹⁷ Microsoft's Windows Live Local or Live Search Maps combines road and aerial images as well as unique bird's eye and 3-D view maps for select areas.¹⁸ In July 2006, Microsoft added real-time traffic flow and incident reporting.¹⁹ The inclusion of real-time images for traffic flow indicates the industry trend in the future for other real-time images.

C. YAHOO! MAPS

Internet giant Yahoo! also launched its own satellite imagery service on its Yahoo! Maps Beta site in April 2006.²⁰ Similar to Google Earth and Windows Live Local, Yahoo! provides free satellite images to the lower forty-eight states and medium level resolution to the rest of the world.²¹ While Google Earth and Microsoft Live Local allow the user to zoom in, Yahoo! does not presently provide a zoom in feature, but Yahoo! provides greater coverage than Google or Microsoft.²² Yahoo!'s maps do not yet contain live satellite images. "Yahoo! Maps uses among the freshest data available, and tries to keep data as up to date as possible. Most of our data is less than 2 years old, however some data, especially in the less populated areas, can be older."²³

D. A9.COM

A9.com, Inc., a subsidiary of Amazon.com, previously offered an online imagery service similar to Google Earth and Local Live.²⁴ To boost its local online advertising market and e-commerce, "A9 had mounted cameras to trucks, and used global positioning system units to capture

17. Verne Kopytoff, *Microsoft to Offer Aerial Views on its Maps Realistic Images of Skyscrapers Highlight Search Service Competing with Google Earth*, S.F. CHRON., Dec. 8, 2005, at C1.

18. See Live Search, <http://local.live.com> (last visited Mar. 30, 2007) (providing search options for road, aerial, and hybrid images).

19. *Microsoft Updated Windows Live Local*, GEO WORLD, July, 1, 2006, at 11.

20. *Yahoo Added Satellite Imagery to a Beta Version*, WASH. INTERNET DAILY, Apr. 13, 2006.

21. See *id.*

22. Doug Stanley, *And the Webby Awards for this Year Are*, TAMPA TRIB., Apr. 17, 2006, at 3.

23. Yahoo! Maps Help, <http://help.yahoo.com/l/us/yahoo/maps/broadband/imagdates.html> (last visited Apr. 2, 2007).

24. Monica Soto Ouchi, *A9.com's Features Scaled Back; Amazon.com Subsidiary/New Interface Reduces it to a Meta-Search Engine*, SEATTLE TIMES, Oct. 3, 2006, at E1.

street-level images of businesses in more than a dozen U.S. cities.”²⁵ Based on stiff competition from Google, and not based on privacy concerns, A9.com and Amazon decided to discontinue its mapping services and focus on online retail.²⁶

E. GEOEYE

GeoEye, “formed as a result of the ORBIMAGE acquisition of Space Imaging, which was completed in January 2006,” claims that it is now the “largest commercial remote sensing company in the world.”²⁷ GeoEye “has long-term contracts in place with Microsoft and Yahoo! as a supplier of commercial satellite imagery for mapping services” with imagery for search engines from the GeoEye archive of imagery which consists of some 278 million square kilometers.²⁸ Like other commercial satellite companies, GeoEye has plans for additional improvements in satellite technology with even greater resolution. In 2007, GeoEye plans to launch a new satellite, GeoEye-1, which will capture image details up to 0.41-meters for panchromatic images, and 1.65-meters for multispectral images.²⁹

F. OTHER COMMERCIAL PROVIDERS

Many other commercial entities provide satellite and aerial images. Some of these providers include Pictometry, ESRI, DigitalGlobe, and GlobeXplorer. DigitalGlobe, based on Longmont, Colorado, claims that it provides the highest resolution satellite imagery available commercially.³⁰ Meanwhile, GlobeXplorer boasts that it delivers the world’s largest online library of aerial and satellite imagery and maps.³¹

G. NASA WORLD WIND

Governmental entities have also ventured into the online world of satellite imagery. The National Aeronautics and Space Administration (NASA) has its own version of online satellite imagery through World Wind. World Wind allows visitors to zoom from satellite altitude into any

25. *Id.*

26. *Id.*

27. Geoeeye: Corporate Information, <http://www.geoeeye.com/corporate/default.htm> (last visited Mar. 30, 2007).

28. *Id.*

29. GeoEye Satellite Imagery Products, <http://www.geoeeye.com/products/imagery/default.htm> (last visited Mar. 30, 2007).

30. Digital Globe: About Us, <http://www.digitalglobe.com/about/index.shtml> (last visited Mar. 30, 2007).

31. GlobeXplorer: Our Company, <http://www.globexplorer.com/company/index.shtml> (last visited Mar. 30, 2007).

place on Earth. Leveraging Landsat satellite imagery and Shuttle Radar Topography Mission data, World Wind permits website visitors “to experience Earth terrain in visually rich 3D.”³² Version 1.3.4 of NASA’s World Wind uses “satellite imagery from a variety of sources” and “allows users to swoop down from a global view of the Earth to particular areas of interest.”³³ The new version released in May 2006 “offers the ability to create ‘movies’ by scripting the application to rapidly scroll through camera positions.”³⁴

H. COMMERCIAL APPLICATIONS

Satellite and aerial images on the Internet have many useful commercial applications. In a statement before the House Armed Services Subcommittee on Strategic Forces on June 21, 2006, Edward Morris, Director of the Office of Space Commercialization with the National Oceanic and Atmospheric Administration and Information Service, stated:

[C]ommercial satellite imagery has a multitude of ground-based applications spanning many sectors of the nation’s economy. Farmers use it to monitor crops for blight and other problems and to deploy localized remedies when needed. Land use managers use it to assess and plan city growth. Insurance companies use before-and-after imagery to verify damage claims after floods, hurricanes, and other disasters. The media routinely adds satellite imagery to news reports to illustrate where important events have occurred. Software developers incorporate satellite imagery into flight simulators, games, and even wireless handheld devices.

Satellite imagery is most useful when combined with GPS, electronic maps, and localized data into a geographic information system (GIS). Perhaps the most popular example of this is the Google Earth application, which recently made commercial satellite imagery freely available to almost anyone on the planet via the Internet. Other examples include Microsoft’s Virtual Earth and Yahoo’s similar service. These mapping portals have brought

32. NASA, *About World Wind*, <http://ti.arc.nasa.gov/projects/worldwind/> (last visited Mar. 30, 2007).

33. Brad Grimes & Joab Jackson, *NASA Gets Down To Earth*, GOV’T COMPUTER NEWS, May 22, 2006, available at <http://www.gcn.com/print/2513/40794-1.html>.

34. *Id.*

satellite imagery “down to Earth” and have increased public awareness of space-based imagery across the globe.³⁵

Some of the industries that can potentially benefit from Google Earth Pro, a premium-paid service on Google Earth, include commercial real estate, residential real estate, architecture/engineering, insurance, media, defense/intelligence, homeland security, public sector, and state and local government.³⁶ The real estate industry has started to harness the power of online satellite and aerial images by providing images for agents and prospective purchasers.³⁷ In February 2007, Google Earth conducted a two-day sales meeting with nearly 200 federal contractors, engineers and uniformed military members highlighting the benefits of Google Earth to military and civilian agencies along with the intelligence community.³⁸ The presence of satellite and aerial images on the Internet provides an opportunity for exponential growth and opportunity for both private and public sectors.

III. PRIVACY, PUBLIC SAFETY, AND NATIONAL SECURITY CONCERNS

Although the availability of online satellite and aerial images brings many beneficial commercial applications, the images may also be used for improper means. It has been noted that “[n]ever before have searchable databases of detailed pictures covering wide swaths of urban areas been readily available like this to the public . . . [a]nd that has privacy advocates worried about the risks of such picture perfect exposure to vulnerable citizens such as women in domestic violence shelters.”³⁹ Although A9.com agreed to remove the images of a battered women’s shelter, there is currently no statute or regulation that would require another provider of satellite or aerial images to follow suit. Other harmful possibilities exist. Potential criminals might conduct virtual surveillance of parks, banks, schools, or government buildings using online satellite and aerial images without creating the suspicion that live surveillance might bring. Online

35. *Space and U.S. National Power: Hearing Before the Subcomm. on Strategic Forces of the H. Comm. on Armed Services*, 109th Cong. 4 (2006) (statement of Edward Morris, Dir., Office of Space Commercialization, Nat’l Oceanic & Atmospheric Admin., U.S. Dep’t of Commerce).

36. See Explore, Search, and Discover, <http://earth.google.com/industries.html> (last visited Mar. 30, 2007).

37. See Henry J. Gomez, *An Agent of Change the Web Has Transformed Today’s Real Estate Industry*, THE PLAIN DEALER (Cleveland), Mar. 19, 2007, at E1 (observing that Google Earth has rewritten the rules of residential real estate).

38. Goo & Klein, *supra* note 16, at D3.

39. *Differing Views on Images From Above; The Satellite and Aerial Photos Provide Business Opportunities, But There Are Privacy Issues*, L.A. TIMES, Jan. 16, 2006, at C2.

predators and stalkers could also use satellite and aerial images to stalk victims. Employers could track activities of their employees. Businesses could monitor the activities of competitors to gain an advantage in the market place. Privacy takes a back seat to the demand for information. For example, Google Earth could eventually identify individuals, raising the question about someone shown leaving a mental health clinic who objects to having their image available online.⁴⁰

National security could also be compromised. In January 2007, aerial footage displayed by Google Earth was used by terrorists who attacked British bases in Basra, Iraq, to pinpoint their attacks.⁴¹ Although no British soldiers were killed or injured in the attacks,⁴² imagine the hypothetical where soldiers were killed by terrorists who utilized images obtained from Google Earth. Could the families of soldiers killed in combat bring a successful civil action against Google for aiding and abetting criminal and tortious activity? Terrorists, insurgents, and other enemies of the United States could also use satellite and aerial images to plan and coordinate attacks compromising homeland security. Suppose terrorists or insurgents use images from Google Earth or another website to plan and coordinate a terrorist attack on American soil that results in the loss of life and property damage to U.S. citizens. Victims might consider bringing a civil action against the commercial provider of satellite imagery arguing that the online provider facilitated the conduct.⁴³

IV. INDUSTRY RESPONSE TO PRIVACY AND SAFETY CONCERNS

Some online providers of satellite and aerial images have responded to privacy concerns.⁴⁴ This industry response, however, lacks uniformity and fails to provide safeguards against the violation of privacy rights. The industry response also ignores public safety and national security issues.

A. GOOGLE EARTH

Google Earth has addressed some privacy concerns. In response to the question “Can someone use Google Earth for stalking or other malignant

40. See *A New Earth: Satellite Spying from the Sky from Google*, SpywareGuide.com, July 3, 2005, http://www.spywareguide.com/articles/a_new_earth_satellite_spying_f_74.html.

41. *Terrorists Using Google Earth*, *supra* note 10.

42. *Id.*

43. For a more thorough discussion of the national security implications with shared military and civil satellite systems, see Major Elizabeth Seebode Waldrop, *Integration of Military And Civilian Space Assets: Legal And National Security Implications*, 55 A.F. L. REV. 157 (2004).

44. See *infra* notes 49, 56 and accompanying text (indicating that Google Earth and Pictometry have placed limitations on images that can be viewed).

intent?" Google replies "We understand your concern and can assure you that Google Earth contains only information that is readily available from both commercial and public sources. For example, this same information is available to anyone who flies over or drives by a piece of property."⁴⁵ However, such an assertion is suspect because the ability to fly over land and photograph is not universal. While commercial entities have had access to satellite and aerial images for years, individual accessibility to satellite and aerial images to ordinary persons is a relatively new phenomenon.

For a period of time, some locations, such as the White House and the Pentagon, displayed blurred images on Google Earth.⁴⁶ The "photos of the White House . . . that the United States Geological Survey provided to Google Earth showed up with certain details obscured."⁴⁷ Google later replaced the obscured images "with unaltered photographs of the area taken by Sanborn, a mapping and imagery company."⁴⁸ The *New York Times* later reported that Vice President Dick Cheney's official residence remains obscured on Google Earth while images of the White House are clear.⁴⁹

The Indian government has complained that Google Earth contains high resolution images of military bases and government buildings that could be used by terrorists.⁵⁰ In response, Andrew McLaughlin, head of Global Public Policy of Google, told an Indian news source that "[w]e are still talking to the Indian government and the idea is to reach a resolution and to ensure that all questions are answered and concerns addressed. We have not yet decided whether or not to blur some key sites."⁵¹ Evidently, Google Earth has resisted requests to blur or obscure images.

B. MICROSOFT LIVE LOCAL

The Microsoft Online Privacy Statement also addresses certain questions relating to privacy.⁵² The official Microsoft position states:

45. Google Earth Help Center, <http://earth.google.com/support/bin/answer.py?answer=21413&topic=1140> (last visited Mar. 30, 2007).

46. Katie Hafner & Saritha Rai, *Google Offers a Bird's-Eye View, And Some Governments Tremble*, N.Y. TIMES, Dec. 20, 2005, at A1.

47. *Id.*

48. *Id.*

49. Maureen Dowd, *Vice Axes That 70's Show*, N.Y. TIMES, Dec. 28, 2005, at A19.

50. Andrew Conry-Murray, *When Google Sees Too Clearly*, NETWORK COMPUTING, Feb. 19, 2007, at 22.

51. Moumita Bakshi Chatterjee, *Google Yet to Decide on Blurring Key Indian Sites*, ECON. TIMES (India), Mar. 21, 2007.

52. Microsoft Online Privacy Statement, <http://privacy.microsoft.com/en-us/fullnotice.aspx> (last visited Mar. 30, 2007).

Mapping features on Microsoft's sites and services are based in part on the Microsoft MapPoint Web Service. The MapPoint Web Service is a set of mapping and related services that is accessed through an application such as a Web site, desktop software, or mobile application. When you submit information, such as an address to be viewed on a map, to the application, that application passes it to the MapPoint Web Service for processing.

We keep track of all requests the application you are using makes to the MapPoint Web Service. Location-related information in the request or derived from the request, such as latitude and longitude, is used for calculating payments to our data vendors so that we may operate the service. We will occasionally capture all information in the request for use in testing and maintenance of the service. This information includes the date and time of the request and location-related information you may have provided to the application such as latitude and longitude, address, place name, or the start and end address of a route.⁵³

The Windows Live Local Code of Conduct also prohibits certain conduct.⁵⁴ The Live Local Code of Conduct states, in part, that a user may not upload, post, transmit, transfer, disseminate, distribute, or facilitate distribution of any content, including text, images, sound, data, information, or software, that: . . . [i]ncites, advocates, or expresses pornography, obscenity, vulgarity, profanity, hatred, bigotry, racism, or gratuitous violence[;] . . . [m]isrepresents the source of anything you post, including impersonation of another individual or entity[;] is intended to harm or exploit minors in any way; . . . is intended to threaten, stalk, defame, defraud, degrade, victimize, or intimidate an individual or group of individuals for any reason; including age, gender, disability, sexual orientation, ethnic origin, or religion; or to incite or encourage any one else to do so.⁵⁵

While providers of online satellite and aerial images selectively protect certain government buildings such as the Vice President's residence from intrusion, private citizens are not afforded the same protection. The privacy statements from Google, Microsoft, and others fail to put into place

53. *Id.*

54. Windows Live, <http://local.live.com/> (last visited Apr. 2, 2007).

55. *Id.*

safeguards against those who might use satellite and aerial images for non-legitimate purposes.

C. OTHER COMMERCIAL PROVIDERS

Other than standard privacy policies and terms of use agreements, Yahoo! and the other providers of satellite and aerial images do not specifically address privacy concerns. Other companies also fail to specifically address privacy concerns on their respective web sites.

Pictometry, a leading provider in digital, oblique aerial imaging and provider of images for Google Earth, also addresses privacy concerns on its company website. Pictometry's position in response to the question "What about privacy issues?" states:

It is understandable that when some people first see Pictometry they may get the wrong idea that we can zoom in to recognize them, read their car's license plate, and otherwise obtain personal information from the images. While Pictometry images offer detailed information on building and property features such as roof lines, road markings, bushes and shrubs, the images cannot be viewed at sufficient levels of detail that would permit license plates to be readable or people to be recognized. Communities using Pictometry have long understood that our digital imagery, while indeed impressive at 6-inch pixel resolution, substantially deteriorates in resolution beyond this point.⁵⁶

Pictometry also provides an example on its website depicting the limits on resolution when a person zooms in on the image beyond its stated parameters of operation.⁵⁷ As of March 2007, the online mapping industry's response to privacy concerns lacks any standard protocols and fails to substantively address the potential threats to privacy, safety, and national security associated with satellite and aerial images available online.

V. THEORIES OF LIABILITY

Since industry responses will not resolve every issue and dispute, the potential for litigation involving satellite and aerial images remains a distinct possibility. Plaintiffs could seek both equitable and legal remedies. How would a court consider a homeowner's complaint seeking injunctive relief to compel Google Earth to remove detailed aerial images of a

56. Pictometry-Frequently Asked Questions, <http://www.pictometry.com/faq.asp> (last visited Mar. 30, 2007).

57. *Id.*

homeowner's property? If a person's image was also depicted in the photograph, could that individual compel the website to remove or blur the image? What if a criminal uses online mapping services to conduct surveillance and ultimately commits a crime? Could Google Earth or another similar provider of online satellite images be liable under a tort action? If government agency posts or utilizes online satellite imagery, can the public entity or its officers and agents face liability?

The potential civil liability for users, providers, and disseminators of online satellite and aerial images remains an open legal question since the availability of online remote sensory data remains in its infancy stage. To date, there are no reported cases involving Google Earth or its online competitors, yet the possibility for litigation exists. The potential causes of action associated with online satellite and aerial images include: (1) trespass; (2) nuisance; (3) invasion of privacy; (4) strict products liability; (5) violation of 42 U.S.C. § 1983; (6) patent infringement; and, (7) other miscellaneous actions.

A. TRESPASS

One possible cause of action against providers and users of online satellite and aerial images is a common law trespass claim. "The elements for the tort of trespass are a physical intrusion upon the property of another without the proper permission from the person legally entitled to possession of that property."⁵⁸

Courts have previously considered trespass actions involving aerial photographs and other images. "A landowner's property interest in land extends to the airspace directly over the property, to the extent that the airspace can be used to benefit the underlying land."⁵⁹ A property owner, therefore, owns only so much of the air space as the owner can practicably use.⁶⁰

Courts have consistently sided against property owners in trespass actions involving aerial photographs. For example, a New York court held that a movie producer's use of laser beam to create digital photographs of buildings used as background scenery did not constitute trespass.⁶¹ In *Reaver v. Martin Theatres of Florida*,⁶² the Florida Supreme Court held that "the operator of an airplane is privileged to enter the airspace above land in

58. *Hoery v. United States*, 64 P.3d 214, 217 (Colo. 2003).

59. 8A AM. JUR. 2d Aviation § 3 (2007).

60. *Id.*

61. *Sherwood 48 Associates v. Sony Corp. of America*, 213 F. Supp. 2d 376, 377 (S.D.N.Y. 2002), *rev'd on other grounds*, 76 Fed. App'x 389 (2nd Cir. (N.Y.) Sep 29, 2003).

62. 52 So.2d 682 (Fla. 1951).

possession of another, so long as he does so in a reasonable manner, at such a height as is in conformity with legislative requirements, and without interfering unreasonably with possessor's enjoyment of the surface of the earth and airspace above it."⁶³ Naturally, this is different from flying over government buildings, such as the White House, the Vice President's residence, or the Pentagon.

A court, in a possible cause of action against Microsoft, Google, one of their third-party image providers, or a user of online remote sensing would most likely look by analogy to this line of cases under a trespass action. However, a plaintiff homeowner who wants to prevent neighbors and other virtual onlookers from viewing the homeowner's backyard that is visible from above would likely be unsuccessful in arguing under a common law trespass claim. The capture of images via satellite does not unreasonably interfere with the possession, use, and enjoyment of a homeowner's property. Cases involving airport noise are illustrative.

In *Hinman v. Pacific Air Transport*,⁶⁴ the Ninth Circuit held:

We own so much of the air space above the ground as we can occupy or make use of, in connection with the enjoyment of our land. This right is not fixed. It varies with our varying needs and is coextensive with them. The owner of land owns as much of the space above him as he uses, but only so long as he uses it. All that lies beyond belongs to the world.

When it is said that man owns, or may own, to the heavens, that merely means that no one can acquire a right to the space above him that will limit him in whatever use he can make of it as a part of his enjoyment of the land. To this extent his title to the air is paramount. No other person can acquire any title or exclusive right to any space above him.⁶⁵

Similarly, the United States Supreme Court has limited the aerial rights of landowners. In 1946, the Court compared airspace to a public highway.⁶⁶ In writing the opinion for the Court, Justice William O. Douglas announced:

We have said that the airspace is a public highway. Yet it is obvious that if the landowner is to have full enjoyment of the land, he must have exclusive control of the immediate reaches of the

63. *Sherwood*, 52 So.2d at 683.

64. 84 F.2d 755 (9th Cir.1936).

65. *Hinman*, 84 F.2d at 758.

66. *United States v. Causby*, 328 U.S. 256, 264 (1946).

enveloping atmosphere. Otherwise buildings could not be erected, trees could not be planted, and even fences could not be run

The landowner owns at least as much of the space above the ground as he can occupy or use in connection with the land.⁶⁷

In sum, legal precedent appears settled that capturing and viewing satellite and aerial images of a person's private property does not rise to the level of trespass.

B. NUISANCE

Nuisance, the close cousin of trespass, lies as another potential common law action with respect to remote sensing. While a trespass action requires deprivation of the owner's use, enjoyment, and possession of the owner's property or chattel, nuisance is defined as a

condition, activity, or situation (such as a loud noise or foul odor) that interferes with the use or enjoyment of property; esp., a nontransitory condition or persistent activity that either injures the physical condition of adjacent land or interferes with its use or with the enjoyment of easements on the land or of public highways.⁶⁸

Courts have previously considered nuisance actions brought by landowners involving airports and aircraft. In this line of cases, courts have recognized that allegations of nuisance were sufficient to establish liability for nuisance where excessive noise, glaring lighting, air pollution, vibration, the frequency of the over flights, the altitude of the aircraft, the likelihood of harm or danger, and the time of day the flights were made interfered with the use and enjoyment of nearby real property.⁶⁹ However, satellite imagery does not rise to the level of a nuisance because the satellites remain in orbit. Satellites do not cause the noise, light, air pollution, or vibration caused by large commercial and military airplanes. Therefore, it is likely that a homeowner would fail in a nuisance action where the images are derived from commercial satellites.

A homeowner who brings an action where low-flying airplanes capture images that become available on the Internet might have a stronger claim than satellite-based images. If the airplanes that capture the images cause

67. *Id.*

68. BLACK'S LAW DICTIONARY 1096 (8th ed. 2004).

69. *See, e.g.*, *Brandes v. Mitterling*, 196 P.2d 464, 469 (Ariz. 1948); *Warren Twp. Sch. Dist. No. 7 v. City of Detroit*, 14 N.W.2d 134, 140 (Mich. 1944); *Ferguson v. City of Keene*, 279 A.2d 605, 608 (N.H. 1971); *see also* Jack L. Litwin, Annotation, *Airport Operations or Flight of Aircraft as Nuisance*, 79 A.L.R.3d 253, 253 (1977).

persistent and constant noise, light, air pollution, or vibration, then the homeowner might have a possible nuisance claim. Since Google Earth, Microsoft, and others do not directly employ the aviators but rather obtain the images from third party vendors, such as DigitalGlobe,⁷⁰ a homeowner would need to list all possible defendants in the complaint. While most courts would likely dismiss a nuisance action, if the airplanes that photograph the images cause persistent and constant noise, light, air pollution, and vibration, a potential nuisance action may exist.

C. INVASION OF PRIVACY

The increased availability of online high resolution satellite images, especially real-time images, raises serious privacy concerns. Section 652A of the Restatement (Second) of Torts provides that one's privacy can be invaded in one of the following four ways: (1) "unreasonable intrusion upon the seclusion of another," (2) "appropriation of the other's name or likeness," (3) "unreasonable publicity given to the other's private life," or (4) "publicity that unreasonably places the other in a false light before the public."⁷¹ Intrusion upon one's seclusion is the most applicable to satellite and aerial images. The Restatement describes invasion of privacy by intrusion as: "One who intentionally intrudes, physically or otherwise, upon the solitude or seclusion of another or his private affairs or concerns, is subject to liability to the other for invasion of his privacy, if the intrusion would be highly offensive to a reasonable person."⁷² The comments discuss the manner in which the intrusion upon one's seclusion may be accomplished:

The invasion may be by physical intrusion into a place in which the plaintiff has secluded himself, as when the defendant forces his way into the plaintiff's room in a hotel or insists over the plaintiff's objection in entering his home. It may also be by the use of the defendant's senses, with or without mechanical aids, to oversee or overhear the plaintiff's private affairs, as by looking into his upstairs windows with binoculars or tapping his telephone wires. It may be by some other form of investigation or examination into his private concerns, as by opening his private and personal mail, searching his safe or his wallet, examining his private bank account, or compelling him by a forged court order to permit an inspection of his personal documents. The intrusion itself makes the defendant subject to liability, even though there is

70. See Broad, *supra* note 14.

71. RESTATEMENT (SECOND) OF TORTS § 652A (1977).

72. *Id.* § 652B.

no publication or other use of any kind of the photograph or information outlined.⁷³

The traditional elements of liability for an invasion of privacy civil action are a public disclosure of facts which are private, secluded, or secret and facts which are offensive and objectionable to a reasonable person of ordinary sensibilities under the circumstances.⁷⁴ “The mere taking of someone’s photograph without his or her consent has not ordinarily been considered by the courts as an invasion of privacy.”⁷⁵ The taking of a person’s photograph without consent and within the privacy of the person’s home appears to constitute an invasion of that person’s privacy for which recovery may be had if the intrusion caused the subject to suffer emotional distress.⁷⁶ Although photographs from online satellite and aerial imagery websites usually depict landmarks and commercial locations, some images that are displayed identify certain types of vehicles. While photographs taken on a public street posted online would not likely constitute an invasion of privacy, taking unauthorized photographs of a private residence that causes emotional distress to an individual arguably satisfies the Restatement’s requirements for a civil action under invasion of privacy.

One might be able to conceive of a hypothetical fact pattern where a plaintiff could successfully state a claim for invasion of privacy. Suppose a satellite or aircraft captures the image of a person sunbathing in the nude in their enclosed and secluded backyard. The person who sunbathes in their enclosed backyard might legitimately claim a reasonable expectation of privacy from any onlookers. Next, suppose that the captured image is placed online and a co-worker prints and disseminates the images to the unsuspecting sunbather’s colleagues. Then, consider the possibility that the sunbather suffers physical and emotional trauma which in turn causes physical and emotional trauma to the unsuspecting plaintiff. This hypothetical might satisfy the basic elements for an invasion of privacy claim and survive a motion to dismiss. Furthermore, if the co-worker acts with actual malice, or even by conduct showing a reckless or wanton disregard of one’s rights, the court may award punitive damages.⁷⁷

One California trial court considered whether posting an aerial photograph on the Internet violated the right to privacy. Entertainer Barbara Streisand sued the creator of the non-profit California Coastal

73. *Id.* § 652B cmt. a.

74. 77 C.J.S. *Right of Privacy and Publicity* § 9 (2007).

75. Phillip G. Hassman, Annotation, *Taking Unauthorized Photographs as Invasion of Privacy*, 86 A.L.R.3d 374, § 2 (1978).

76. *Id.*

77. *See Pion v. Bean*, 833 A.2d 1248, 1259 (2003).

Records Project for including an aerial photograph of her Malibu home.⁷⁸ The court concluded the entertainer had no reasonable expectation that one's yard could not be viewed from the sky.⁷⁹ Nor was the taking of an aerial photo "highly offensive to a reasonable person."⁸⁰ Regarding the claim for invasion of privacy for public disclosure of private facts, "the court held that nothing recognized by the law as private is disclosed in this exterior photo."⁸¹ The *Streisand* case, however, was an unpublished trial court opinion that does not carry any significant legal authority. In addition, the *Streisand* case involved a public figure plaintiff who had also released photographs of her house for an article that appeared in *People* magazine.⁸² A court involving a purely private plaintiff may well reach a different result under an invasion of privacy theory than the *Streisand* decision.

A distinction between real-time and stale images can be made under an intrusion theory. Google Earth's images are not displayed in real time. Rather, Google states that "images are photographs taken by satellites and aircraft sometime in the last three years. The images in Google Earth are updated on a rolling basis."⁸³ Images from Windows Live Local are often several months old, but one Microsoft employee admitted in a news article that Microsoft would not rule out the idea of showing live aerial images sometime in the future.⁸⁴ With expanding technology and consumer demand, real time high resolution images in the future are a distinct possibility.

Whether or not the dissemination of aerial and satellite photographs on the Internet violates the right to privacy remains unsettled. Some courts might permit certain cases involving invasion of privacy claims to go to trial where issues of material facts exist, particularly in those cases involving images of persons on private property where the plaintiff suffers emotional and physical harm.

78. *Streisand v. Adelman*, Case No. SC 077 257 (Cal. Super. Ct. Dec. 31 2003).

79. *Id.*

80. *Id.*

81. *Id.*; see also Victor A. Kovner et al., *Newsgathering, Invasion of Privacy and Related Torts*, 847 PLI/Pat 521, 604 (2005).

82. See *id.*

83. Common Questions About Google Earth, <http://bbs.keyhole.com/ubb/showflat.php/Cat/0/Number/68845/an/0/page/0> (Aug. 12, 2005, 02:46).

84. See *supra* note 57.

D. STRICT PRODUCTS LIABILITY

End users of commercial imagery services might also bring an action for strict products liability. While some of the features on Google Earth and Local Live are free,⁸⁵ Google charges fees for enhanced commercial services such as Google Earth Plus, Google Earth Pro, and Google Earth Enterprise.⁸⁶

Providers of satellite images, similar to map and chart providers, could face potential liability for errors and inaccuracies. In cases involving aeronautical charts and airplane crashes, courts have recognized that providers of maps and navigational charts are subject to strict products liability and “publishers must exercise due care in the publication of vital information due to the role of the publisher in providing vital information.”⁸⁷

In certain cases, courts have upheld verdicts against publishers for errors in maps and charts. In *Saloomey v. Jeppesen & Co.*,⁸⁸ the Second Circuit affirmed a jury award of \$1.5 million against a supplier of navigational aerial charts used by airline pilots that led to an airline crash.⁸⁹ In *Brocklesby v. United States*,⁹⁰ the owner of a crashed airplane and the crewmembers’ survivors brought an action against the publisher of an allegedly defective instrument approach chart.⁹¹ The Ninth Circuit held that a “jury could reasonably have found [the publisher] negligent in failing to warn users of . . . latent defects in the chart” and upheld a verdict for \$11,630,000.⁹²

Other courts have rejected product liability claims against map publishers. In *Miller v. Rand McNally & Co.*,⁹³ the Alabama Supreme Court reviewed the appeal of a truck driver who sued a map publisher seeking to recover for injuries sustained in an automobile accident.⁹⁴ The court affirmed the trial court’s grant of summary judgment in favor of Rand

85. See generally Google Earth, <http://earth.google.com> (last visited Sept. 5, 2007); Local Search, <http://local.live.com> (last visited Apr. 3, 2007).

86. The Google Earth Product Family, <http://earth.google.com/products.html> (last visited Apr. 3, 2007).

87. Nathan D. Leadstrom, *Internet Web Sites as Products Under Strict Products Liability: A Call for an Expanded Definition of Product*, 40 WASHBURN L.J. 532, 540-41 (2001).

88. 707 F.2d 671 (2d Cir. 1983).

89. *Saloomey*, 707 F.2d at 672-74.

90. 767 F.2d 1288 (9th Cir. 1985).

91. *Brocklesby*, 767 F.2d at 1291.

92. See *id.* at 1297. For liability of aeronautical charts providers, see also *Times Mirror Co. v. Sisk*, 593 P.2d 924 (Ariz. Ct. App. 1978); *Fluor Corp. v. Jeppesen & Co.*, 170 Cal. App. 3d 468 (Cal. Ct. App. 1985); *Aetna Casualty & Surety Co. v. Jeppesen & Co.*, 642 F.2d 339 (9th Cir. 1981); *Brocklesby*, 767 F.2d at 1288.

93. 595 So.2d 1367 (Ala. 1992).

94. *Miller*, 595 So.2d at 1367.

McNally holding that the truck driver's testimony that the map depicted the intersection differently than it appeared on the ground was insufficient to establish a prima facie case under Alabama's product liability statute.⁹⁵

If a city planner or real estate developer relies on satellite images to plan a community and the images contain errors which result in increased costs, the city or developer might consider bringing an action against the online image provider under a strict product liability action. With the exception of aeronautical navigational charts, suppliers of maps and charts rarely face liability for inaccuracies under strict product liability. *Plane and Pilot*, a monthly magazine for private pilots, credits Google Earth as a helpful resource allowing pilots to observe any place in the world from a variety of perspectives, "such as from above or eye-level at a proposed cruise altitude, including 3-D terrain features."⁹⁶ Google Earth also recently added a capability "to superimpose sectional charts on the virtual terrain for pilots."⁹⁷ Akin to the cases where courts upheld verdicts for inaccuracies against publishers of aeronautical charts that resulted in plane crashes, a plaintiff who brings a civil action against an online satellite and aerial image provider such as Google Earth and Microsoft Live Local could potentially prevail under a strict product liability theory for inaccurate data. It is possible, however, that a motor vehicle traveler could reasonably rely on online mapping.

E. VIOLATION OF 42 U.S.C. § 1983

Public entities increasingly utilize satellite and aerial images on the Internet for a variety of purposes. For example, government agencies can use the images to depict fire hydrants in Chicago, view the levees in New Orleans before and after Hurricane Katrina, and help ambulance drivers locate a person in rural communities.⁹⁸ As stated above, NASA, a government entity, also provides satellite imagery services to the public. To save time and expense, property tax assessors utilize online aerial images for calculating property taxes.⁹⁹ Some county tax assessors even provide images of properties on government websites for anyone to see.¹⁰⁰

95. *Id.*

96. David Ison, *The Top 50 Aviation Websites*, PLANE AND PILOT, Feb. 1, 2007, at 49.

97. *Id.*

98. Ben Dobbin, *New York Firm's Aerial Imaging Is Becoming Indispensable Tool; Government Agencies Use Company's Pictures*, BUFFALO NEWS, May 9, 2006, at B7 (discussing the benefits of aerial images to government agencies).

99. *Id.*

100. Bob Geiger, *Hennepin County Plans Aerial Mapping of Buildings*, FINANCE AND COMMERCE DAILY NEWSPAPER, March 16, 2006.

A plaintiff may bring an action under 42 U.S.C. § 1983 for violating the constitutionally protected right of privacy against a public entity that disseminates online satellite and aerial images. A § 1983 action requires a plaintiff to show “(1) that the conduct complained of was committed by a person acting under color of state law; and (2) that the conduct deprived the plaintiff of a federal constitutional or statutory right.”¹⁰¹ “In the context of government disclosure of personal matters, an individual’s right to privacy is violated if (1) the person has a legitimate expectation of privacy and (2) that privacy interest outweighs the public need for disclosure.”¹⁰²

In *Chavez v. City of Los Angeles*,¹⁰³ a police officer brought a § 1983 action against the city alleging that the city deprived his family of its Fourth Amendment privacy rights by conducting abusive surveillance or “overflights” in city police department helicopters.¹⁰⁴ The court held that plaintiff Chavez did not prove that the City or the Los Angeles Police Department “had a custom or policy of conducting harassing overflights of officers or citizens.”¹⁰⁵ If a public entity has a custom or policy to harass a person’s constitutionally protected privacy rights, the plaintiff might survive a summary judgment motion or motion to dismiss. While most civil actions under 42 U.S.C. § 1983 against public entities will likely fail, some circumstances might exist where a plaintiff might effectively state a claim for a § 1983 action where the government intentionally harasses and invades the person’s privacy rights via online satellite and aerial images. However, this is potentially dependent upon whether the person whose rights are invaded is a public or private figure.

In a § 1983 action against a public entity or a government official for the dissemination of photographs and images displayed via the Internet, the governmental entity or public official might raise the affirmative defense of sovereign immunity or qualified immunity under the Eleventh Amendment.¹⁰⁶ “Public officials sued in their individual capacity are entitled to qualified immunity from suit . . . when performing discretionary functions, as long as their actions do not violate clearly established statutory or constitutional rights of which a reasonable person would have known.”¹⁰⁷

101. *Hydrick v. Hunter*, 449 F.3d 978, 991 (9th Cir. 2006).

102. *Cantu v. Rocha*, 77 F.3d 795, 806 (5th Cir. 1996).

103. 111 F. App’x 881, 2004 WL 2245229 (9th Cir. 2004).

104. *Chavez*, 111 F. App’x at 883.

105. *Id.*

106. *See Callahan v. Poppel*, 471 F.3d 1155, 1158 (10th Cir. 2006) (“When a suit alleges a claim against a state official in his official capacity, ‘the real party in interest in the case is the state, and the state may raise the defense of sovereign immunity under the Eleventh Amendment.’” (citing *Branson Sch. Dist. RE-82 v. Romer*, 161 F.3d 619, 631(10th Cir. 1998)).

107. 14A C.J.S. *Civil Rights* § 459 (2007).

In one case, a federal appellate court held that a police chief and a police officer were not entitled to qualified immunity in an action brought by a murder victim's husband, claiming that the police officers violated his First Amendment privacy rights by disclosing honeymoon photographs, depicting the couple naked, to people not connected with the investigation where a privacy right in such pictures was clearly established.¹⁰⁸ The individual might state a prima facie case for a violation under 42 U.S.C. § 1983 if a public official discloses satellite or aerial photographs obtained from the Internet that violate the First Amendment or the Fourth Amendment legitimate expectation of privacy and that privacy interest outweighs the public need for disclosure.

F. INTELLECTUAL PROPERTY

Since online satellite and aerial imagery uses highly sophisticated technology, the possibility for intellectual property actions also looms on the horizon. On June 5, 2006, Skyline Software Systems, Inc. filed a complaint against Keyhole, Inc. and Google, Inc. in the U.S. District Court in Massachusetts claiming that Google, which purchased Keyhole in 2004, infringed upon patents owned by Skyline Software Systems.¹⁰⁹ The complaint for patent infringement alleged:

Google and Keyhole are engaging in acts of infringement, contributory infringement, and/or inducement of infringement of Skyline's patent. On information and belief, the products of which Skyline currently is aware that infringe the '189 Patent include, but are not limited to: Keyhole Pro, Keyhole 2 Pro, Keyhole LT, Keyhole 2 LT, Keyhole NV, Keyhole 2 NV, Earthviewer, Keyhole Enterprise Client, Keyhole 2 Enterprise Client, Keyhole EC, Keyhole 2 EC, Keyhole's Enterprise Solutions products, Keyhole 2 Fusion LT, Keyhole 2 Server, Google Earth, Google Earth Plus, Google Earth Pro, and Google Earth Enterprise Solution (including Google Earth Fusion, Google Earth Server and Google Earth Enterprise Client) and services provided by Google and Keyhole in connection with these products.

On March 7, 2007, U.S. District Court Judge Woodlock granted Google's motion for summary judgment on the patent infringement issue holding that "the accused Google Earth products do not infringe this

108. *Donohue v. Hoey*, 109 F. App'x 340, 361 (10th Cir. 2004).

109. Complaint at *1, *Skyline Software Systems, Inc. v. Keyhole, Inc.*, No. 06 CA 10980 DPW (D. Mass. filed June 6, 2006).

limitation as a matter of law, because the accused products continue downloading additional blocks even when the desired resolution level has been reached (and do not stop until a higher than desired level has been reached).”¹¹⁰

Although the Skyline Software Systems litigation against Google involves one of the first cases relating to online satellite and aerial imagery services, more litigation will surely follow against other providers. The likelihood of success for future patent infringement and other intellectual property actions against online satellite and aerial imagery providers will vary according to the merits and facts of each particular case.

G. MISCELLANEOUS ACTIONS

In addition to the theories of liabilities discussed above, other potential civil actions may be available involving satellite and aerial images. Miscellaneous causes of action could include cyberstalking statutes,¹¹¹ anti-paparazzi statutes,¹¹² intentional infliction of emotional distress,¹¹³ negligence infliction of emotional distress,¹¹⁴ breach of warranty, and negligence. A person could also face prosecution under the Video Voyeurism Prevention Act.¹¹⁵

Cyberstalking is defined by the U.S. Department of Justice as “the use of the Internet, e-mail, or other electronic communication devices to stalk another person.”¹¹⁶ “Less than half of the states have enacted legislation specifically targeting cyberstalking [and] [o]f the [twenty-two] states that have enacted cyberstalking laws, the majority have merely expanded existing stalking laws to include cyberstalking.”¹¹⁷

In California, the first state to enact laws aimed at stalkers,¹¹⁸ the requirements for the tort of stalking include the following: (1) that the “defendant engaged in a pattern of conduct the intent of which was to follow, alarm, or harass the plaintiff;” (2) as “a result of that pattern of

110. Skyline Software Systems, Inc. v. Keyhole, Inc., No. 06-10980 DPW, 2007 WL 737765, at *6 (D. Mass. Mar. 7, 2007).

111. See *infra* notes 118-19 (describing California’s anti-stalking statutes).

112. See CAL. CIV. CODE § 1708.8 (West 2006).

113. See RESTATEMENT (SECOND) OF TORTS § 46 (1965).

114. See *id.* § 436A.

115. Video Voyeurism Prevention Act, 18 U.S.C. § 1801, Pub. L. No. 108-495 § 1301 (2007).

116. U.S. DEP’T OF JUSTICE, 1999 REPORT ON CYBERSTALKING: A NEW CHALLENGE FOR LAW ENFORCEMENT AND INDUSTRY (1999), available at <http://www.usdoj.gov/criminal/cybercrime/cyberstalking.htm>.

117. Shonah Jefferson, *A Survey of Cyberstalking Legislation*, 32 UWLA L. REV. 323, 324 (2001).

118. See *id.* at 328.

conduct, the plaintiff reasonably feared for his or her safety;” and, (3) the defendant made “a credible threat with the intent to place the plaintiff in reasonable fear for his or her safety[;]” or (4) the defendant “violated a restraining order.”¹¹⁹ The California anti-stalking statute defines “credible threat” as:

[V]erbal or written threat, including that communicated by means of an electronic communication device, or a threat implied by a pattern of conduct or a combination of verbal, written, or electronically communicated statements and conduct, made with the intent and apparent ability to carry out the threat so as to cause the person who is the target of the threat to reasonably fear for his or her safety or the safety of his or her immediate family.¹²⁰

However, a person who views images of another person or that person’s property via the Internet, even images captured in real-time, will not likely satisfy the credible threat element for the tort of stalking unless the person reasonably fears for his or her safety or the safety of his or her immediate family. While a potential stalker might use online satellite and aerial imagery to facilitate stalking, the act of viewing images online, by itself, fails to satisfy the requirements under statutory stalking in California unless the person reasonably fears for his or her safety or the safety of his or her immediate family.

Plaintiffs who object to online satellite and aerial images might also bring an action under California’s anti-paparazzi law¹²¹ or a similar statute. California’s anti-paparazzi law expands the liability of the paparazzi by creating a specific cause of action targeting individuals who commit a physical trespass or “constructive invasion of privacy” with the intent to capture a photograph or other image of a person engaged in a “personal or familial activity” and the invasion occurs in a manner that is “offensive to a reasonable person.”¹²² Thus, a plaintiff may bring a claim under California’s anti-paparazzi statute¹²³ if online satellite and aerial photographs depict clearly identifiable individuals who are engaged in a personal or familial activity and the invasion occurs in a manner that is offensive to a reasonable person, a possible violation of California anti-paparazzi law.

Other states should follow California’s example and adopt similar anti-paparazzi laws. Although Congress considered a federal anti-paparazzi law

119. CAL. CIV. CODE § 1708.7(a)(1)-(3).

120. *Id.* § 1708.7(b)(2).

121. *Id.* § 1708.8.

122. *Id.* § 1708.8(a).

123. *Id.*

following the death of Princess Diana of Wales, the proposed legislation failed to pass.¹²⁴

The Video Voyeurism Prevention Act of 2004¹²⁵ also serves as a potential tool against online satellite and aerial images that infringe on individual privacy rights. The statute states:

Whoever, in the special maritime and territorial jurisdiction of the United States, has the intent to capture an image of a private area of an individual without their consent, and knowingly does so under circumstances in which the individual has a reasonable expectation of privacy, shall be fined under this title or imprisoned not more than one year, or both.¹²⁶

The act applies only to public space on federal lands such as national parks and federal buildings¹²⁷ and fails to protect other locations where a person has a reasonable expectation of privacy. The term “capture, with respect to an image [under the act] means to videotape, photograph, film, record by any means, or broadcast.”¹²⁸ Under the statute, the term “capture” could potentially include satellite images or images obtained from low-flying airplanes. While most images on Google Earth and other websites display landmarks, some photographs display individuals in the frame.¹²⁹ To the extent that a website displays an image of a private area of an individual (such as the genital area) on federal lands, the website operator could face criminal prosecution under the Video Voyeurism Prevention Act.¹³⁰

Although some homeowners may want to bring an equitable action to prevent their neighbors and other onlookers from viewing their property via online satellite and aerial imagery services, the existing tort remedies of trespass and nuisance most likely would fail to bring redress for property owners. Similarly, consumers of remote sensory data would also likely fail under strict products liability. Although the tort of invasion of privacy by intrusion and 42 U.S.C. § 1983 provide some redress for persons who sustain damages, existing legal remedies fall significantly short in protecting privacy interests and public safety associated with online satellite and aerial images.

124. Clay Calvert & Robert D. Richards, *The Irony of News Coverage: How The Media Harm Their Own First Amendment Rights*, 24 HASTINGS COMM. & ENT. L.J. 215, 218 (2004).

125. 18 U.S.C.A. § 1801.

126. *Id.*

127. *Id.*

128. *Id.*

129. *See supra* note 40.

130. *See infra* note 132.

VI. EVIDENTIARY ISSUES

In addition to the theories of liability involving satellite and aerial images, the admissibility of remote sensory data retrieved on the Internet also remains an open legal question.

A. ADMISSIBILITY OF PHOTOGRAPHS IN GENERAL

The admissibility of satellite and aerial photographs as evidence depends on the same rules that govern the admissibility of ordinary photographs.¹³¹ A photograph must have a tendency to prove an issue in the case or portray certain facts relevant to a particular issue, and must accurately portray the features it is offered to show.¹³² Before a party can introduce a photograph “into evidence, the party must lay the foundation by establishing [the photograph’s] accuracy and relevance.”¹³³

B. FOURTH AMENDMENT ANALYSIS

The Fourth Amendment prohibition against unreasonable searches also arises in the context of aerial and satellite imagery when the government is a party to the action. In *Dow Chemical Co. v. United States*,¹³⁴ the United States Supreme Court held the government did not violate the Fourth Amendment when using commercial aerial photography to search a manufacturer’s private curtilage.¹³⁵ The surveillance did not constitute a search because human visualization of these protected areas was made possible with the naked eye, albeit a vastly enhanced naked eye.¹³⁶ In dicta, Chief Justice Burger specifically addressed satellite surveillance of private property:

It may well be, as the Government concedes, that surveillance of private property by using highly sophisticated surveillance equipment not generally available to the public, such as satellite technology, might be constitutionally proscribed absent a warrant. But the photographs here are not so revealing of intimate details as to raise constitutional concerns.¹³⁷

131. See FED. R. EVID. 1001(2) (“Photographs include still photographs, X-ray films, video tapes, and motion pictures.”).

132. *Lake County Forest Preserve Dist. v. Vernon Hills Dev. Corp.*, 406 N.E.2d 611, 614 (Ill. App. Ct. 1980); see also John E. Theuman, Annotation, *Admissibility in Evidence of Aerial Photographs*, 85 A.L.R.5th 671, 671 (2001).

133. Theumann, *supra* note 132, at 679.

134. 476 U.S. 227 (1986).

135. *Dow Chemical Co.*, 476 U.S. at 238-39.

136. *Id.*

137. *Id.* at 238.

The United States Supreme Court has previously addressed other types of aerial surveillance under the Fourth Amendment.¹³⁸ The Supreme Court held that naked eye observation of a backyard of a home from an aircraft at an altitude of 1000 feet does not constitute a search.¹³⁹ Similarly, the Court held that visual surveillance from a helicopter at an altitude of 400 feet of the interior of a greenhouse in the backyard of a residence was not a search requiring a warrant under the Fourth Amendment.¹⁴⁰ In *Kyllo v. United States*,¹⁴¹ the Court held that the use of a thermal-imaging device requires a warrant because the device is not in general public use, and the surveillance reveals information about the interior of the house that ordinarily only a physical search would expose.¹⁴² A reduced expectation of privacy occurs when technology becomes readily available to the general public.¹⁴³ The court in *Kyllo* found a Fourth Amendment violation because the use of a thermal-image device was not in the general public use.¹⁴⁴ Now that online satellite and aerial images have become available to the general public through Google Earth, Live Local, and other online remote sensory providers, courts will likely side with the government when confronted with a Fourth Amendment analysis to online satellite and aerial images.

Courts have also considered whether testimony by experts based on satellite imagery violates the Fourth Amendment.¹⁴⁵ In *United States v. Fullwood*,¹⁴⁶ the U.S. Court of Appeals for the Fifth Circuit held that the district court did not abuse its discretion to admit expert testimony by a government witness based on satellite imagery or remote sensing technology.¹⁴⁷

Whereas the exclusionary rule prohibits evidence illegally obtained in violation of the Fourth Amendment, the exclusionary rule does not apply in suits between private parties.¹⁴⁸ In actions between private parties, even if the court finds that the satellite image violates the Fourth Amendment, a

138. *See infra* text accompanying notes 146-49.

139. *California v. Ciraolo*, 476 U.S. 207, 214 (1986).

140. *Florida v. Riley*, 488 U.S. 445, 450-52 (1989).

141. 533 U.S. 27 (2001).

142. *Kyllo*, 533 U.S. at 34-35.

143. *Id.*

144. *Id.*

145. *See United States v. Fullwood*, 342 F.3d 409, 412 (5th Cir. 2003).

146. 342 F.3d 409 (5th Cir. 2003).

147. *Fullwood*, 342 F.3d at 412.

148. *See Honeycutt v. Aetna Ins. Co.*, 510 F.2d 340, 348 (7th Cir. 1975) (indicating that the Fourth and Fourteenth Amendments do not require exclusion of evidence obtained illegally by state police when private parties seek to introduce evidence in a civil proceeding).

party could successfully introduce into the evidence the satellite image obtained from Google Earth or a similar online service.

The Seventh Circuit, in dicta, discussed whether satellite images from Google Earth constitute a search under the Fourth Amendment.¹⁴⁹ The esteemed Justice Posner, in deciding whether a GPS tracking device placed underneath the defendant's vehicle constitutes an illegal search in violation of the Fourth Amendment, observed:

But if police follow a car around, or observe its route by means of cameras mounted on lampposts or of satellite imaging as in Google Earth, there is no search. Well, but the tracking in this case was by satellite. Instead of transmitting images, the satellite transmitted geophysical coordinates. The only difference is that in the imaging case nothing touches the vehicle, while in the case at hand the tracking device does. But it is a distinction without any practical difference.¹⁵⁰

Since satellite imaging does not constitute a search for purposes of the Fourth Amendment, courts will likely deny motions to suppress the admissibility of images obtained from Google Earth, Live Local, and similar online satellite and aerial images services.

C. JUDICIAL NOTICE

In both criminal and civil cases, parties might also petition the court to take judicial notice of satellite images accessed via the Internet. Federal Rule of Evidence 201 states that "a court shall take judicial notice if requested by a party and supplied with the necessary information."¹⁵¹ The law appears settled that courts may take judicial notice of official government maps.¹⁵² In addition, courts can take judicial notice of official government bulletins, reports, and publications as well as matters of public record.¹⁵³

Satellite images from NASA's World Wind closely parallel official government maps and government publications. The NASA's World Wind content comes from a variety of sources, including the U.S. Geological Survey and the NASA Jet Propulsion Laboratory.¹⁵⁴ Since NASA, a

149. *See* United States v. Garcia, 474 F.3d 994, 997 (7th Cir. 2007).

150. *Id.*

151. FED. R. EVID. 201(d).

152. United States v. Burch, 169 F.3d 666, 672 (10th Cir. 1999) ("[O]fficial government maps are generally an acceptable source for taking judicial notice.").

153. 31A C.J.S. *Evidence* § 40 (1996).

154. *See* World Wind Data Sources, http://www.worldwindcentral.com/wiki/World_Wind_Data_Sources (last visited Apr. 2, 2007).

government agency, provides the images for World Wind, the satellite images from World Wind are similar to official government maps, a court would likely take judicial notice of these images. Litigators who want to use satellite images as exhibits during trial could file a motion asking the court to take judicial notice of satellite images retrieved from NASA's World Wind. Meanwhile, Google Earth obtains its satellite images in partnership with DigitalGlobe, a private entity.¹⁵⁵ While judges are more likely to take judicial notice of images taken from government satellites, which are similar to government records and official government maps, judges will probably be more reluctant to take judicial notice of images obtained from non-government sources.

Besides satellite images, courts will also encounter the issue of taking judicial notice of aerial photographs obtained from the Internet. In 2002, in *Ponderosa Pines Ranch, Inc. v. Hevner*,¹⁵⁶ the Montana Supreme Court tackled the issue of whether a court could take judicial notice of aerial photographs. Justice Regnier, writing for the court, held that the trial judge properly took judicial notice of the accuracy of aerial photographs where: (1) the party who sought the introduction of the photographs proffered a certificate from the U.S. Department of Agriculture accompanying each photo; (2) a licensed surveyor testified that the photos depicted purchaser's lot and surrounding property; and, (3) the opposing party did not oppose the motion for judicial notice.¹⁵⁷ *Ponderosa Pines Ranch* also provides guidance for practitioners on how to lay forth the proper foundation for admitting aerial photographs where the party seeking to introduce the aerial photographs obtained a certificate from the U.S. Department of Agriculture accompanying each photograph and also produced the testimony of a licensed surveyor regarding the accuracy of the photographs.¹⁵⁸ Other courts will likely follow the Montana Supreme Court's analysis in deciding whether the court should take judicial notice of aerial photographs and satellite images obtained via the Internet.

The rules governing the admissibility of satellite and aerial images obtained via the Internet logically parallel the presently existing rules governing the admissibility of photographs in general. Provided a party lays the proper foundation, courts will likely admit online satellite and aerial images into evidence. Since the general public now has access to satellite and aerial images online, homeowners and others challenging the

155. *See supra* text accompanying note 14.

156. 53 P.3d 381 (Mont. 2002).

157. *Ponderosa Pines Ranch*, 53 P.3d at 385.

158. *Id.*

admissibility of the photographs have a reduced expectation of privacy and the exclusionary rule under the Fourth Amendment does not apply. In some circumstances, courts should take judicial notice of satellite and aerial images obtained online akin to taking judicial notice of official government maps and other aerial images.

VII. NEED FOR LEGISLATIVE ACTION

Current legal remedies fall short in providing safeguards against the improper use of online satellite and aerial images. The 1992 Land Remote Sensing Policy Act¹⁵⁹ currently governs licensing for all U.S. commercial remote sensing satellite systems to ensure they are operated in a manner consistent with U.S. national security, foreign policy, and economic interests. Under the 1992 Land Remote Sensing Policy Act, commercial remote-sensing licensees are required to “operate the system in such manner as to preserve the national security of the United States.”¹⁶⁰ If terrorists utilize remote sensory images to plan a terrorist attack, operators only face the possibility of losing their license under existing law.¹⁶¹ Congress and policymakers should consider amending the Land Remote Sensing Policy Act to add increased penalties for commercial remote-sensing licensees that compromise national security. Congress could also bolster individual privacy rights by creating a civil action and by providing a mechanism whereby individuals could request removal of satellite-based images available online.

A number of organizations and authors have also expressed privacy concerns about the availability of high resolution images on the Internet.¹⁶² In its 2003 annual report to the President and Congress, the Advisory Panel to Assess Domestic Response Capabilities for Terrorism Involving Weapons of Mass Destruction, a federal commission on terrorism headed by James S. Gilmore III, recognized:

It now becomes essential for the Congress to legislate and for the Department of Defense to implement through clear procedures the limitations on the use of satellite imagery and other advanced technology monitoring in the United States . . . [due to] increasing

159. 15 U.S.C. §§ 5601-5672 (2007).

160. *Id.* § 5622(b)(1).

161. *See id.* § 5601.

162. Bill Nemitz, *Does Internet Get Too Close For Comfort?*, PORTLAND PRESS HERALD, Jan. 20, 2006, at B1; Bob Drogin, *Sale to Public of Satellite Photos Debate*, L.A. TIMES, Jan. 15, 2000, at A1.

reliance on more sophisticated technology that has vast potential for invading our privacy.¹⁶³

On April 25, 2003, President Bush authorized a new national policy that established guidance and implementation actions for commercial remote sensing capabilities.¹⁶⁴ The new policy directs the government to formulate policies to “develop a long-term, sustainable relationship” between government and industry, and “provide a timely and responsive regulatory environment for licensing the operations and exports of commercial remote sensing space systems.”¹⁶⁵ The President’s national policy on commercial remote sensing, however, fails to address any concerns about privacy rights.¹⁶⁶

As technology advances with higher resolution images, privacy interests will continue to erode. Any amendments to the Land Remote Sensing Policy Act ought to create a balance between the competing interests of economic development in remote sensory data and privacy rights. Two ways in which Congress could safeguard these privacy rights are: 1) control the resolution and clarity of photographs at certain sensitive locations, and 2) establish protocols regarding the display of real-time images.

An online child predator could conduct virtual surveillance of children at certain locations such as schools and parks. Congress should pass legislation to prevent high resolution images at these locations. Other locations, such as government buildings, should also have obscured images to prevent potential surveillance and planning by terrorist groups.

Real-time images pose an even greater threat to privacy rights and public safety than stale images that are several months or several years old. Some websites have started to display real-time images for traffic reports.¹⁶⁷ More locations will continue to display live images online in the future with increased resolution and clarity. The availability of high resolution images in real-time poses a serious threat to privacy rights, especially images at private residences and images that show individuals and not just landmarks. If real-time images of private residences become available on the Internet, this would allow potential stalkers to virtually park their vehicle in front of

163. ADVISORY PANEL TO ASSESS DOMESTIC RESPONSE CAPABILITIES FOR TERRORISM INVOLVING WEAPONS OF MASS DESTRUCTION, V. FORGING AMERICA’S NEW NORMALCY: SECURING OUR HOMELAND, PRESERVING OUR LIBERTY 23 (2003), *available at* http://www.rand.org/nsrd/terrpanel/volume_v/volume_v_report_only.pdf.

164. Department of Interior, Notice of Civil Implementation Working Group—U.S. Commercial Remote Sensing Space Policy (CRSSP), 69 Fed. Reg. 67,935 (Nov. 22, 2004).

165. *Id.*

166. *See id.*

167. *See supra* text accompanying notes 18 & 19.

a person's house twenty-four hours a day and monitor any activity. Indeed, a robber or highwayman would be able to determine when a family came and left during the day, so as to predict the optimal time to ransack someone's residence.

While satellite and aerial images provide benefits for the residential real estate industry, sellers of real estate do not need live images of private residences. Real estate brokers, salespersons, and developers could still educate potential purchasers with time-delayed images. Live images that depict identifiable persons, even in open areas, pose a significant threat to public safety.

Even if Congress fails to take action, commercial providers could adopt industry standards to curtail the limits of satellite and aerial images. For example, the various companies could form a consortium and agree to a uniform privacy policy and not display images where persons could be identified in the photographs. Commercial remote sensory providers could also establish procedures that would allow for an individual to submit a request to remove or blur an image if the person feels that their safety or privacy may be threatened, particularly for images of private residences or images depicting clearly identifiable persons.

Existing law fails to safeguard the right to privacy and public safety associated with high resolution satellite and aerial images online. Therefore, Congress should take immediate action to prevent further erosion of the right to privacy and possible threats to public safety.

VIII. CONCLUSION

Online satellite and aerial imagery services such as Google Earth and MSN's Live Local provide access to images that previously were not generally available to the public. This increased availability of satellite and aerial photographs on the Internet raises concerns about privacy rights, public safety, and national security. The industry response to these concerns lacks uniformity and fails to safeguard individual privacy rights and prevent possible threats to public safety. New satellite and aerial imagery services online will likely result in litigation with plaintiffs seeking both equitable and legal remedies.

Although plaintiffs might bring actions under a variety of legal theories including nuisance, strict product liability, invasion of privacy by intrusion, 42 U.S.C. § 1983, and other miscellaneous actions, existing remedies fall short in providing redress for violations of privacy rights. Increased access to satellite and aerial imagery also raises evidentiary issues. Provided parties lay the proper foundation, courts will likely admit online satellite and aerial images into evidence. Finally, Congress and other policy makers

should take action to protect individual privacy rights and prevent possible threats to public safety and national security with online satellite and aerial photographs.