Critical Infrastructure: Mapping the Leaky Plumbing of US Hegemony

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Geopolitical mappings of the world can say as much about the vulnerabilities of hegemony as about aspirations to power. Mappings of US geostrategic interests are no exception. Recent national security priorities, the details of which were revealed in leaked diplomatic cables, include the identification of sites around the world deemed critical to the US (US Department of State 2009). From beaches where trans-oceanic cables emerge, to factories making vaccines, to maritime routes and ports, sites of particular vulnerability are assembled. The cartographic effect of this assemblage is a partial and highly distributed mapping of the fragile material underpinnings of US power.

The Critical Foreign Dependencies Cable

Created on 18 February 2009, and released in December 2010 by Wikileaks, cable 09STATE15113 was an "action request" sent to all US diplomatic posts. The request, coming from the Department of Homeland Security (DHS) and the State Department (DOS), was for diplomats to generate a list of "critical foreign dependencies", understood to be "critical infrastructure and key resources [CIKR] located abroad". As the cable explains, *critical infrastructure* is defined in the USA Patriot Act of 2001 as "systems and assets, whether physical or virtual, so vital to the United States the incapacitation or destruction of such systems and assets would have a debilitating impact on security, national economic security, national public health or safety, or any combination of those matters". *Key resources*, the cable notes, are defined in the Homeland Security Act of 2002 as "publicly or privately controlled resources essential to the minimal operations of the economy and the government". The previous year, a similar request sent to US posts had generated the 2008 Critical Foreign Dependencies list, the first of its kind. This list of critical sites such as mines, vaccine manufacturing

Antipode Vol. 00 No. 0 2011 ISSN 0066-4812, pp 1–6
doi: 10.1111/j.1467-8330.2011.00931.x

facilities, undersea communication cables, and dams, was attached to the leaked 2009 cable.

The cable was part of the Critical Foreign Dependencies Initiative (CFDI), laid out in the 2009 National Infrastructure Protection Plan (NIPP). The NIPP's objective is "protecting and ensuring the resiliency of the critical infrastructure and key resources (CIKR) of the United States" (DHS 2009:1). The plan frames the *criticality* of sites and resources in terms of US political, economic, and health security, noting that terrorist attacks or natural disasters affecting CIKR could "produce cascading effects far beyond the targeted sector and physical location of the incident" (DHS 2009:1). While the NIPP focuses on *domestic* concerns, the CFDI, with its attention to *foreign* sites, is laid out as a critical sub-program. The action request of cable 09STATE15113 falls under Phase I of the CFDI: the annual updating of the National Critical Foreign Dependencies List (DHS 2009:41). In Phase II, the DHS and the DOS were to prioritize the list based on the "overall criticality" of the sites, plus "foreign partner willingness and capability to engage in collaborative risk management activities" (DHS 2009:41). The ultimate goal (Phase III) would involve "leveraging" the list in "US bilateral and multilateral incident and risk management with foreign partners" (DHS 2009:41).

In short, cable 09STATE15113 provides us with a glimpse, through perhaps the basement window, of a program (CFDI) that is itself not secret, and whose ultimate results—international public–private cooperation for the protection of infrastructure and resources deemed to be of top priority—the cable does not come close to unmasking. This cable does, however, provide insight into the nature of US understandings of vulnerability in a networked world.

Mapping Critical Infrastructure

Thus, the 2008 National Critical Foreign Dependencies List accompanying the cable can be read as an internal map of US susceptibility. But unlike grand geostrategic mappings of threat and allegiance (eg mappings produced by Thomas P. Barnett; see Roberts, Secor and Sparke 2003), this is a map representing a "bottom up" geostrategic cartography based on dozens of lists submitted by US embassy staffers. When the action request arrived at embassies across the world, the response would have been shaped by a host of on-the-ground contingencies: how busy the embassy staff were, the particular approach the staff member took to the request (whom they consulted, etc), and conditions within the host country that might limit access and information. Given the variability in possible approaches, the resulting list is as much about the differences in individualized responses as it is a product of the categories of US homeland security discourse (mobilized in CIKR).

Figure 1: Map of critical infrastructure and key resources based on cable 09STATE15113 (FloatingSheep.org 2010)

The text of the cable itself reflects the dispersed and uncoordinated nature of its data's origins; its punctuation is inconsistent, and there are several errors of fact (eg Lee 2010). Perhaps more importantly, there is tremendous variation in the nature of the list's entries. Some were specific, with pithy explanations, such as "used to treat snakebites" and with pinpointed locations; while others simply made reference to a site, such as "Bauxite Mine" but gave no sub-national location. Some responses provided an extensive list of ports while other embassies in countries with ports of similar or even larger size did not identify them as CIKR. Despite these inconsistencies, it is possible to create a map of the sites included in the 2008 list (see Figure1, based on FloatingSheep.org 2010).[1]

Interpreting the Map

The map that was created (see Figure 1) is geopolitical. However, it is not a mapping of strategic spaces (Mackinder), of global spaces of danger (Barnett), nor is it a mapping of friends and enemies, marking and designating insides and outsides. Rather, the map's pattern is highly distributed and discontinuous. It is a map of scattered places networked via the logic of vulnerability rather than swathes of spaces. The map throws into relief the mundane material geographies of production, trade, and communication that are taken to underpin US economic security and US public health. It is a map of the increasingly leaky plumbing of US geopolitical and geoeconomic hegemony.

Classic geostrategic concerns feature prominently on the map. These include busy straits (eg Hormuz, Gibraltar, and Bab al-Mendeb), shipping canals (notably the Suez and Panama Canals), overseas ports, and strategic minerals. Following traditional geopolitical framings, Africa is primarily represented as a source of key raw materials: manganese, bauxite, chromite, platinum and palladium mines. Particular (albeit not all) pipelines transporting oil or gas are listed, such as the

Druzbha pipeline that carries Russian (and Kazakh) oil to Europe, and the Baku–Tbilisi–Ceyhan pipeline that carries oil from the Caspian to the Mediterranean. A Siberian junction of gas pipelines leading to Europe is noted as being the "most critical gas facility in the world". While not delivering oil or gas directly to the USA, these arteries are deemed to be significant—indeed critical—to US security.

Beyond these classical strategic concerns, the map also represents at least two types of newer vulnerabilities. Overseas biomedical facilities such as those manufacturing certain pharmaceutical products, including insulin, antidotes, and vaccines, are identified as being of critical importance to the USA. Certainly, mappings like that of Barnett include threatening flows of disease, but the cable's map shows the inverse, identifying vulnerability in the production and trade of medications.

The circulation of digitized information marks a second newly emergent geopolitical vulnerability. Global communication infrastructure dominates the map, with more communications locations than the number of shipping, port, minerals and industrial sites combined. Over 70 communication-related locations (landfall for undersea cables, satellite ground stations) are identified. Several of the cables crossing the North Atlantic Ocean—carrying everything from Facebook interactions to over $3.5 trillion a day in foreign exchange dealings (Mahlknecht 2011; PriMetrica, Inc 2011)—make landfall in close proximity to one another and in many cases they run in the same conduit to key inland destinations such as the City of London or Wall Street. This geography is the result of uncoordinated business decisions and reflects least-cost calculations and right of way easements. A recent industry report also noted the resultant systemic vulnerability:

> At a global level, the overall interconnectivity of the continents violates a fundamental reliability design principle—avoid single points of failure. There are several geopolitical chokepoints that funnel these critical cable paths together. A single disaster in such an area could cause catastrophic loss of regional and global connectivity (Rauscher 2010).

These vulnerabilities were made plain when in December 2006 an earthquake ruptured four cables on the sea floor of the Luzon Strait south of Taiwan. Hong Kong's financial sector came to an abrupt halt and phone and Internet traffic was interrupted in Taiwan, China, Vietnam, Japan, the Philippines and Singapore. Although industry experts identify multiple choke points worldwide (Gady 2010), the CIKR listing only includes those cables that link to US territory, unlike oil pipelines which are deemed critical whether or not they flow directly to the USA. Together with the emphasis on the actual landfall locations of communications systems (rather than the arguably more vulnerable

locations farther inland where multiple cables come together), the map suggests that older habits of geopolitical mappings persist. While the foreign landfall locations of cables originating in the USA may loom large symbolically, in reality the value of a functional global network and its vulnerability is considerably more complex and challenging to secure.

Conclusions

Cables, pipelines, and ships are the material elements of connection. They enable the global flows deemed critical to US geoeconomic and geopolitical power and security. Cable 09STATE15133—transmitted to US embassies around the world, cached by a US Army Private, made globally accessible by Wikileaks, and then transferred from server to server to evade censorship—is itself a product of and an element within the networked world that it maps (as is our map—Figure 1). As an action request, the cable represents the first phase in a project that globalizes homeland security; the Critical Foreign Dependencies Initiative exists as a sub-program within a *national* level initiative (NIPP) and is pursued at the intersection of the DHS and the DOS. The resulting list maps the world from the perspective of US security, but not from the typical geopolitical perspective of threat and allegiance. Instead, the map marks the points and passages that define US hegemony's vulnerability and dependency. If the enemy—terrorism, disease, or natural disaster—cannot itself be mapped, then the geostrategic map can only fixate on the fail points and potential targets. Other leaked cables might give some sense of how exactly this information is to be "leveraged" and with whom as part of the US DHS's risk management approach to vulnerability in a networked age. Perhaps not surprisingly, however, this map of homeland-security-beyond-the-homeland nonetheless marks the territorial boundaries of the USA. Because embassies in Mexico and Canada listed border crossings as part of their assessment of CIKR, the US land border itself emerges, from the outside in, as a critical foreign dependency. And because none of the sites marked are within US boundaries (by definition), the territorial USA pops out of the map like a missing puzzle piece, wholly delineated and complete: the blank space from which to assess the criticality of the world's cables, pipes, mines and factories upon which it depends.

Endnote

[1] This map was created after a round of data cleaning and classification (based on interpretations of category terms used in the cable). Using an online gazetteer (worldatlas.com) and information from Wikipedia entries an approximate latitude and longitude was calculated for each site. This dataset of x, y coordinates and classifications was then exported via a perl script into the open mapping format of KML used in Google Earth and Google Maps. The map was posted to a blogging platform and publicized via Twitter and Facebook. Using this combination of free online software and services allowed for the creation and distribution of the map within 36 hours of the cable's release.

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