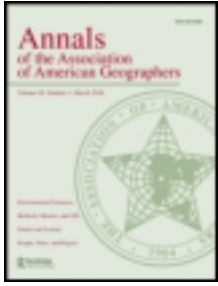


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The New Political Economy of Geographical Intelligence

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A troubling new political economy of geographical intelligence has emerged in the United States over the last two decades. The contours of this new political economy are difficult to identify due to official policies keeping much relevant information secret. The U.S. intelligence community increasingly relies on private corporations, working as contractors, to undertake intelligence work, including geographical intelligence (formally known as GEOINT). In this article we first describe the geography intelligence “contracting nexus” consisting of tens of thousands of companies (including those in the geographical information systems and mapping sector), universities and nonprofits receiving Department of Defense and intelligence agency funding. Second, we discuss the “knowledge nexus” to conceptualize how geographical knowledge figures in current U.S. intelligence efforts, themselves part of the U.S. war on terror and counterinsurgency (COIN). To analyze the contracting nexus we compiled and examined extensive data on military and intelligence contracts, especially those contracts awarded by the country’s premier geographical intelligence agency, the National Geospatial-Intelligence Agency (NGA), for satellite data. To analyze the knowledge nexus we examined recent changes in the type of geographical knowledges enrolled in and produced by the U.S. intelligence community. We note a shift from an emphasis on areal and cultural expertise to a focus on calculative predictive spatial analysis in geographical intelligence. Due to a lack of public oversight and accountability, the new political economy of geographical intelligence is not easy to research, yet there are reasons to be troubled by it and the violent surveillant state it supports. *Key Words:* *geographical intelligence, geographical knowledge, GEOINT, government contracting, National Geospatial-Intelligence Agency.*

过去二十多年来,美国出现令人堪忧的崭新地理情报政治经济。此一新的政治经济图像并不容易辨识,因为官方政策对相关的资讯进行保密。美国的情报社群,逐渐仰赖私人企业以承包商的角色进行情报工作,其中包含了地理情报(正式名为GEOINT)。我们在本文中首先描述地理情报一系列的“合约纽结”,该纽结由接受国防部与情报单位赞助的成千上万公司(包含在地理信息系统与製图部门的公司)、大学与非营利组织所构成。再者,我们探讨“知识纽结”,用以概念化地理学知识在美国当前的情报工作中所扮演的角色,这些工作隶属于美国反恐战争与反叛乱工作(COIN)的一部分。我们大量收集并检视军事及情报的合约资料,特别是由国家最高地理情报单位“国家地理空间情报局(NGA)”所授予的卫星数据,用以分析合约纽结。在分析知识纽结方面,我们检视晚近由美国情报社群编入或生产的地理知识种类变化。我们注意到,地理情报从强调区域和文化的专业,转变为着重计算性的预防性空间分析。由于缺乏公共监督和可问责性,新的地理情报政治经济并不容易进行研究,但我们仍需担忧此一课题及其所支持的暴力监控国家。 *关键词:* *地理情报, 地理知识, GEOINT (地理空间情报), 政府合约, 国家地理空间情报局。*

Una nueva e inquietante economía política de la inteligencia geográfica ha hecho su aparición en los Estados Unidos durante las dos últimas décadas. No es fácil identificar los contornos de esta nueva economía política debido a políticas oficiales que mantienen secreta la información más relevante. Cada vez más la comunidad de la inteligencia de los EE.UU. depende de corporaciones privadas, que trabajan como contratistas cuandoquiera se necesite trabajo de inteligencia, la inteligencia geográfica incluida (formalmente conocida como GEOINT). En este artículo primero que todo describimos el “nexo contratista” de la inteligencia geográfica, el cual consiste en decenas de miles de compañías (incluso aquellas en los sistemas de información geográfica y el sector cartográfico), universidades y entidades no lucrativas, que reciben financiación del Departamento de Defensa y de la agencia de inteligencia. En segundo término, discutimos el “nexo del conocimiento” para conceptualizar cómo figura el conocimiento geográfico dentro de los actuales empeños de la inteligencia de EE.UU., ellos mismos una parte de la guerra norteamericana contra el terrorismo y de la contrainsurgencia (COIN). Para analizar el nexo contratista compilamos y examinamos una gran cantidad de datos sobre contratos militares y de inteligencia, en especial aquellos adjudicados por la principal entidad de inteligencia geográfica del país, la Agencia Nacional de Inteligencia Geoespacial (NGA), para datos satelitales. Para analizar el nexo del conocimiento examinamos

los cambios recientes en el tipo de conocimientos geográficos escogidos y producidos por la comunidad de la inteligencia norteamericana. Notamos un cambio apreciable en el énfasis sobre experticia regional y cultural, por una mayor atención sobre un bien calculado análisis espacial predictivo en términos de inteligencia geográfica. Debido a la falta de visibilidad y responsabilidad pública, la nueva economía política de inteligencia geográfica no es fácil de investigar, pero aun así hay buenas razones de preocupación por ésta y por el violento estado vigilante que ella apoya. *Palabras clave: inteligencia geográfica, conocimiento geográfico, GEOINT, contratación gubernamental, Agencia Nacional de Inteligencia Geoespacial.*

Two events in 2012 provide entry points into the emerging political economy of geographical intelligence in the United States. First, in May two companies, little known to the public but then worth a combined \$1.23 billion in market capitalization, tendered hostile bids to buy each other. After the bids were initially rejected, in July the companies agreed to merge, which they did 30 January 2013. The companies, GeoEye and DigitalGlobe, have been the two key commercial providers of satellite imagery to the United States intelligence community (IC) and will now operate as a monopoly contractor to the IC, known as DigitalGlobe (trading as DGI with a \$2.2 billion market capitalization). Second, it was revealed that the Bush administration began—and the Obama administration expanded—the use of unmanned aerial vehicles (UAVs or drones) to attack targets based on “pattern of life” or “signature strike” analysis using surveillance and geographical intelligence to kill or capture targets.¹ The new “kill/capture” policy supersedes previous policies, under which only positively identified targets who appeared on secret Central Intelligence Agency (CIA) and Joint Special Operations Command (JSOC) lists could be attacked (Frontline 2011; Entous, Gorman, and Barnes 2012).

These two developments are part of a huge political economy of geographical intelligence contracting that has barely been examined by scholars. The United States government spends nearly \$80 billion a year on intelligence alone, employs hundreds of thousands of personnel and contractors, and has issued over 1 million Top Secret security clearances to contractors. The Department of Defense (DOD), which has a fiscal year (FY) 2013 budget of \$633 billion, has made contracts with more than 50,000 companies since 2000. Private corporations are embedded in the IC so much that stock prices of companies producing remote sensing and geospatial data are monitored by congress. Indeed, three quarters of the imagery utilized by the National Geospatial-Intelligence Agency (NGA) derives from nongovernment or commercial sources. Geographical knowledges are also deeply embedded in the IC, play-

ing a key role in the intelligence that enables kill and capture. This article casts light on the often shadowy world of intelligence contracting and details the role that geography plays in its enablement.

Obstacles to scholarship on intelligence include the lack of public oversight in the world of intelligence and pronounced governmental efforts to prosecute unauthorized disclosures (“leaks”). Nonetheless, geographers are well positioned to contribute to a critical analysis of the political economy of intelligence in the contemporary United States. First, our discipline is not confined to the world of academe, as geographers find opportunities to apply their skills in a range of governmental and military agencies and in a rapidly expanding world of private contracting companies dedicated to gathering and analyzing intelligence. Second, although geographical knowledge has long been central to intelligence and the intelligence community, recently developed technologies and associated practices of intelligence gathering and analysis have resulted in the military enrolling and redefining the very tools, methods, and concepts that form the heart of our discipline.

Scant literature exists on contemporary geographical intelligence and contracting. Sources include industry newspapers (e.g., Jones 2011), congressional testimony (e.g., Dugan 2011), documents obtained through Freedom of Information Act (FOIA) requests (e.g., NGA 2009, 2010), and declassified documents (e.g., CIA 2004). Consequently, researchers have preferred historical studies where there is more likelihood of records being declassified. Examples of research investigating relevant aspects of the Cold War include Cloud’s work on the secret CORONA satellite program (J. Cloud 2001, 2006) and Farish’s rich description of the militarization of geographical knowledge (Farish 2010; see also Barnes 2006; Barnes and Crampton 2011).

Trends in military contracting in general have received some attention from scholars (Singer 2003; Stanger 2009; Bruneau 2011; Vitale 2011). Geographers were major contributors to a critical literature on the regional implications of defense spending and contracting that developed in the 1980s and 1990s.

More recently, Pinkerton, Young, and Dodds (2011) have provided critical analyses of defense contracting. Adding to this literature is Gallaher's (2012) pioneering research on private military contractors. Such work brings into question the Office of Management and Budget's (OMB) position that a bright line should be maintained between "inherently governmental" activities and permissibly contracted activities (Voelz 2009; Gale 2011) and highlights the prevalence of cost overruns and financial malfeasance on the part of contractors (Shorrock 2008).

There is also a small but growing body of work that critically examines the current relationship between geographical knowledge and changes underway in military strategy (Woodward 2005; Flint and Bernazzoli 2009; Flint et al. 2009; Farish and Vitale 2011; Kirsch and Flint 2011; Belcher 2012), with some recent excellent analyses focusing on drone warfare (Adey, Whitehead, and Williams 2011; Anderson 2011; Gregory 2011; Williams 2011; Shaw 2012; Shaw and Akhter 2012), but this literature has not offered a sustained analysis of the role of intelligence or of the IC. The literature that connects state practices of security and violence, although offering incisive analyses of geographical aspects of these themes, has not yet considered intelligence (Cowen and Gilbert 2008; Ingram and Dodds 2009; Fluri 2011). Research linking the geopolitical and the geoeconomic also has not systematically analyzed intelligence (Roberts, Secor, and Sparke 2003; Cowen and Smith 2009). Our analysis seeks to extend insights drawn from these diverse literatures to critically analyze contemporary currents reshaping the political economy of U.S. intelligence.

In this article we document the political economy of geographical intelligence in the contemporary United States. We focus on the IC and pay particular attention to the key role of geographical intelligence, designated formally as GEOINT, in the prosecution of America's war on terror and counterinsurgency (COIN). Our discussion covers two main interrelated facets of the political economy of the U.S. IC. These are the nexus of contracting between government and corporations and the parallel nexus of knowledge between academic production of geographical knowledge and the IC. We provide our interpretation and analysis of IC geographical intelligence contracting, focusing on the NGA, and one particularly significant 2010 contract known as EnhancedView, awarded to GeoEye and DigitalGlobe. We then examine recent policy and doctrinal shifts toward an increased enrollment of geographical

knowledge within the military and the IC, focusing on the spatial analysis of data being generated by aerial sensors.

The Intelligence Community

In the United States there are sixteen member agencies of the IC, consisting of about 100,000 "core" governmental personnel (Negroponte 2006) overseen by the Office of the Director of National Intelligence (ODNI).² Some members of the IC are well known, such as the CIA and Federal Bureau of Investigation (FBI). Some became better known after 11 September 2001 (hereinafter 9/11), including the National Security Agency (NSA). Some remain almost unknown, such as the National Reconnaissance Office (NRO), established in 1961 but declassified only in 1992 (Richelson 1998). The NGA quietly provides geographic intelligence, including that mobilized in the 2011 killing of Osama bin Laden. The NRO, NGA, CIA, and NSA work on national interests, including the design, launching, and operation of surveillance ("spy") satellites (NRO); the production and analysis of GEOINT (NGA); the collection of human intelligence and covert actions (CIA); and the interception and decryption of signals, e-mails, and phone calls (NSA). Some IC members operate solely as military service intelligence organizations, whereas others are in the civilian sector (e.g., Homeland Security or the FBI). The CIA is an example of an IC agency that operates in both civilian and military spheres; the 60 percent of its officers who have joined the agency since 9/11 increasingly focus on counterterrorism and secret drone strikes rather than traditional intelligence (Pincus 2012).

U.S. intelligence is organized into two main programs: the National Intelligence Program (NIP) and the Military Intelligence Program (MIP). Some IC agencies fall neatly into one or the other program; in other areas, there is overlap. Until 2010 the total sum spent on these two programs was only sporadically released because the MIP portion was classified. Following the recommendation of the 9/11 Commission and budget authorization laws, the government disclosed that the total intelligence budget in 2010 was \$80.1 billion: \$53.1 billion for the NIP and \$27 billion for the MIP (DOD 2010; ODNI 2010). The nine years after 9/11 saw ramped-up intelligence efforts funded by a flood of money (Priest and Arkin 2011). The current Director of National Intelligence, James R. Clapper, has warned that intelligence

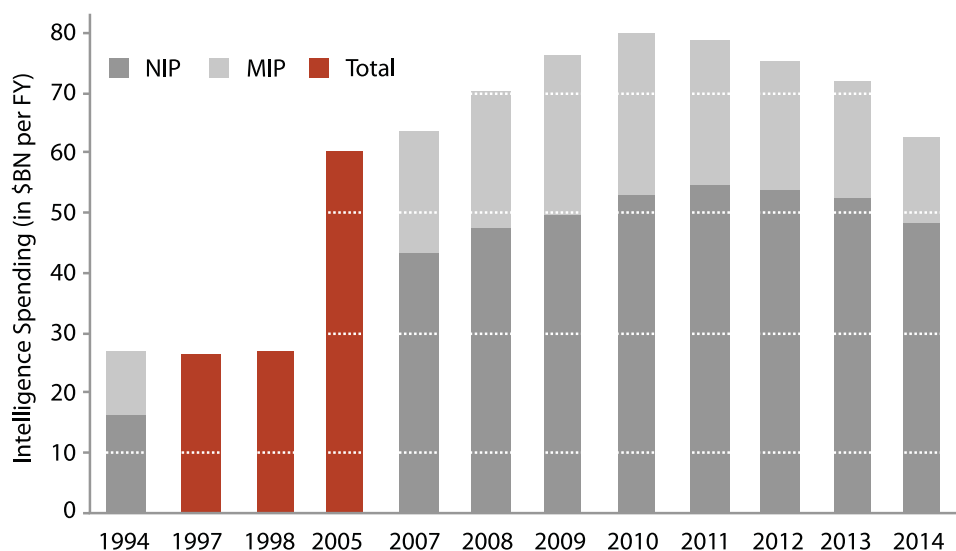


Figure 1. Total intelligence spending, 1994–2014 (2013 and 2014 are requested budgets). *Note:* NIP = National Intelligence Program; MIP = Military Intelligence Program. *Source:* Data for 2005 are imputed from a Defense Intelligence Agency document posted online (see Chapter 1, Shorrock 2008). Data for 1994 were mistakenly published by a Congressional Committee. Other years: Department of Defense (2010, 2012) and Office of the Director of National Intelligence (2010, 2012b). (Color figure available online.)

budgets will decline “in the double digits, with a B (for billion)” over the next decade (Zakaria 2011). The main IC contractor lobbying group, the Intelligence and National Security Alliance (INSA), predicts that there will be significant reductions in spending on national security (INSA 2011). Total spending still far exceeds what it was prior to 9/11, however (see Figure 1).

INSA’s interest in the intelligence budget is a reflection of the concerns of its 150 corporate members who operate as contractors and form a “shadow IC” hand in hand with the official IC agencies.

The Intelligence Contracting Nexus

The history of private contractors’ involvement with the U.S. military is very long, stretching back even to the Revolutionary War. More recently, the March 2003 invasion and subsequent occupation of Iraq dramatically increased the U.S. military’s reliance on private contractors in the battlefield itself (Gallaher 2012; Roberts 2012). The role of private security contractors proved particularly controversial as it came to light that employees of contractors CACI International Inc. and Titan Corporation were involved in the torture of prisoners in Abu Ghraib prison and that employees of Blackwater USA killed civilians in Iraq (Bruneau 2011).

Beyond the battlefield, there are many forms of military and intelligence contracting. *Commercial contractors* provide items such as heating, lighting, food, and information technology support; *commodity contractors*

provide equipment (e.g., satellites), and *core contractors* provide “direct technical, managerial, administrative support” (ODNI 2009, 4). As of March 2011, the DOD had more contractor personnel in Afghanistan and Iraq than uniformed personnel (Schwartz and Swain 2011). Contracts can be structured in different ways; for example, firm-fixed-price or cost-plus, which allow incentives and award fees. These are regulated through a 2,000-page document known as the Federal Acquisition Regulation.

The amount of military contracting spending in the private sector and its range of activities is staggering. Between FY 2000 and FY 2012 the DOD spent more than \$3.75 trillion on contracts. Contractors range from massive corporations such as Lockheed-Martin (recipient of over \$293 billion in DOD contracts), to a large number of medium to small contractors such as the geographical information systems (GIS) company Esri, which received a total of \$806 million in contracts over that same period (\$437 million from the DOD).³ In all, more than 50,000 companies hold contracts with the DOD. All states receive DOD contracting funds, but the bulk of funding flows to half a dozen states, each having received over \$1 trillion in contracts since 2000.

Since the First Gulf War, the increasing U.S. militarization has been achieved through outsourcing or contracting, in particular via the controversial Logistics Civilian Augmentation Program (LOGCAP). The first LOGCAP contract (awarded in 1992 and worth \$815 million) was to Kellogg Brown & Root Inc. (KBR), then a subsidiary of Halliburton (of which LOGCAP architect Dick Cheney was CEO from 1995–2000;

Schneider and Ricks 2000; Shorrock 2008). Subsequent LOGCAPs were awarded to DynCorp and Halliburton in 2001 (Singer 2003). Although in 1996 the Defense Science Board Task Force on Outsourcing and Privatization cited savings of up to \$7 billion to \$12 billion annually resulting from privatization, it has become clear that without sufficient oversight, cost-plus contracts lead to significant waste and cost overruns in military contracting.

There is no reason to think that intelligence contracting is without such problems. In the next section we examine in more detail how today's patterns and practices of contracting in intelligence arose.

Origins and Rise of Intelligence Contracting

The modern history of IC contracting (in broadest terms the commercialization of government intelligence activities) begins at least two decades ago. Commercialization of geospatial imagery was a priority during the G. H. W. Bush and Clinton administrations, as signaled by the passage of the Land Remote Sensing Policy Act of 1992 (U.S. Congress 1992) and the issuance of Presidential Directive 23 in 1994. Among other features, the Act transferred authority for the Landsat program (then the country's premier unclassified remote sensing platform) to NASA and the DOD. It stated that "commercialization of land remote sensing should remain a long-term goal of U.S. policy" and permitted for the first time the licensing of "private sector parties to operate remote sensing space systems" (U.S. Congress 1992). The 1994 Presidential Directive's fundamental goal was "to support and to enhance U.S. industrial competitiveness" in remote sensing, a sector then estimated to reach \$5 billion to \$15 billion by 2000, a significant underestimate (Berger 1994).

How big is the intelligence contracting industry? Shorrock (2008) has estimated that some 70 percent of the IC budget is contracted out, but this figure is impossible to confirm and proportions are likely to vary by agency.⁴ In a highly unusual public act, the then-Director of the Defense Intelligence Agency (DIA) Lt. Gen. Michael Maples revealed in 2004 that contractors accounted for 35 percent of the workforce in the DIA (Maples 2004). In 2012, the NRO reported that contractors made up 63 percent of its workforce (NRO 2011). We also know that the number of persons holding security clearances in this country exceeds 4.8 million, including more than 1.4 million Top Se-

cret clearances (ODNI 2011, 2012a) and that at least 1.07 million of these were held by contractors (~22 percent).⁵

The use of contractors in intelligence is widespread, although as the overall growth in spending on intelligence has slowed since 2010, debate over the more expensive contracts has sharpened. The Obama administration proposed cutting FY 2013 funding for commercial imagery satellites in half to about \$250 million from \$540 million (Risen 2012). These "drastic cutbacks to commercial imagery" have not met with approval in Congress. The Senate Armed Services Committee (SASC) condemned "chaotic lurches" in government policy regarding geographical intelligence contracting and chastised DNI Clapper for rejecting a proposal to meet intelligence imagery needs through commercial sources, which would have doubled imagery capacity (U.S. SASC 2012, 172). This unusually public disagreement revealed deep divisions between the military (who favor commercial imagery) and the intelligence community (which would like to save money by using the NRO; Risen 2012). Commercial imagery is not classified and can be shared with allies. Currently, fully three quarters of NGA imagery needs are met through commercial remote sensing, amounting to 425 terabytes of data annually by 2012 (NGA 2009). The SASC continued by noting that the "wild swing" in government policy had the result that the stock price of GeoEye and DigitalGlobe "plummeted" (U.S. SASC 2012, 274), as Figure 2 shows. Congressional concern with stock prices is far from being an oddity if understood in the context of the contracting nexus.

The intelligence contracting nexus is part of what Priest and Arkin (2011) call an "alternative geography" of U.S. intelligence; a "top-secret world" of intelligence and security in thousands of locations. This is a geography expressive of political power at a number of levels, with complex multiplier effects that are as much political as they are economic.

NGA and the EnhancedView Contract

By far the most expensive component of the IC budget is satellite imagery.⁶ As the SASC's deliberations demonstrate, there is debate about whether designing, building, launching, and maintaining the fleet of surveillance satellites is best handled via contracting or not. In 2012, for example, the Senate Intelligence Committee admirably cited the case of the SpaceX company, saying, "The U.S. government has much to gain with the success of SpaceX," comparing the

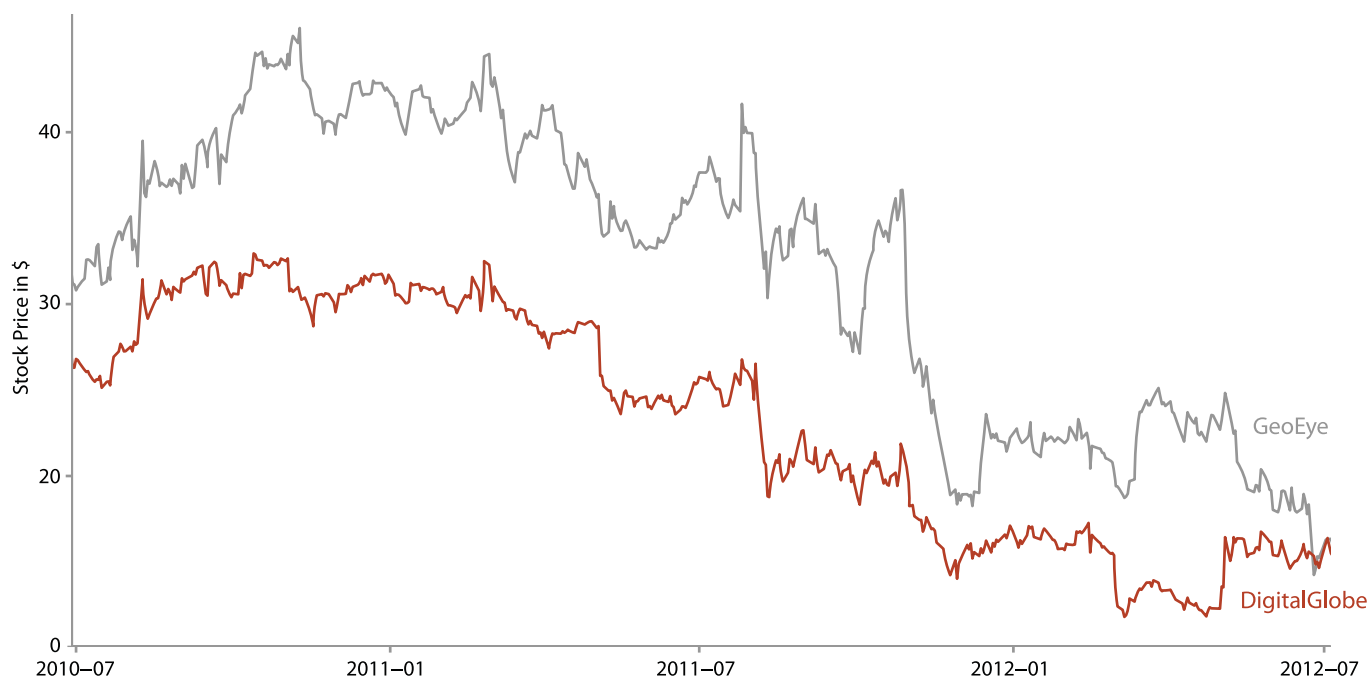


Figure 2. Stock prices of GeoEye and DigitalGlobe, July 2010–June 2012. Source: Yahoo! Finance (n.d.). (Color figure available online.)

company's results favorably to more expensive government satellite programs (U.S. Congress, Senate 2012b, 16). Several members of the Committee went on to express concern that the merger of GeoEye and DigitalGlobe "may result in the reduction of an American industrial base that creates high-tech jobs at home and has produced a nascent, yet innovative industry that has outpaced foreign competition" (U.S. Congress, Senate 2012b, 21). Contracting for satellite imagery has become a feature of the political landscape recognized by elected officials.

The NGA is the country's main geographical intelligence agency, the world's largest user of GIS, and is responsible for coordinating intelligence satellite imagery (satellite deployment is handled by the NRO). Set up in 2003, and merging several existing agencies, the NGA's primary mission is combat support of military operations. The NGA's creation enabled the solidification of "an innovative and sophisticated new discipline that then NGA director James Clapper formally christened as geospatial intelligence, or GEOINT" (NGA 2011a).⁷

Today, the NGA employs approximately 16,000 people, about two thirds of whom work at the newly opened headquarters at Fort Belvoir, Virginia. Built at a cost of \$2.55 billion, the facility is the largest project by the Army Corps of Engineers since the completion of the Pentagon in 1943 and is the third

largest facility in the National Capital Region.⁸ The NGA has four other facilities (Springfield, Virginia; St. Louis, Missouri; Arnold, Missouri; and Gila Bend, Arizona). The budget of the NGA is classified, but estimates range from \$3 billion to \$5 billion annually (Shorrock 2008). According to Shorrock (2008, 184), "about half" of the NGA employees are contractors.

We have traced \$6,756,564,435 in spending by the NGA between 2000 and 2006, covering 11,831 contracts, 486 grants, and 3 "other." The companies most frequently contracted with were DigitalGlobe and GeoEye (ranks one and two) with GIS company Esri at rank ten. Beginning with FY 2007, the NGA received permission to withhold the amount and number of contracts it has. Thus, FY 2006 is the last date for which figures are officially available, and in that year the NGA outsourced over \$1.4 billion. It is possible, however, to gain a partial picture of NGA contracting by using financial reports submitted to the Securities and Exchange Commission (SEC) and by using government bidding data on contracts issued by the NGA when they are made public.⁹ Using Federal Business Opportunities (FBO) data we can track, albeit imperfectly, NGA contracting activity after the 2006 cutoff date, as shown in Figure 3.

Although dollar amounts are not consistently available for these bids, the NGA issues several hundred contracts a year, which indicates a robust contracting

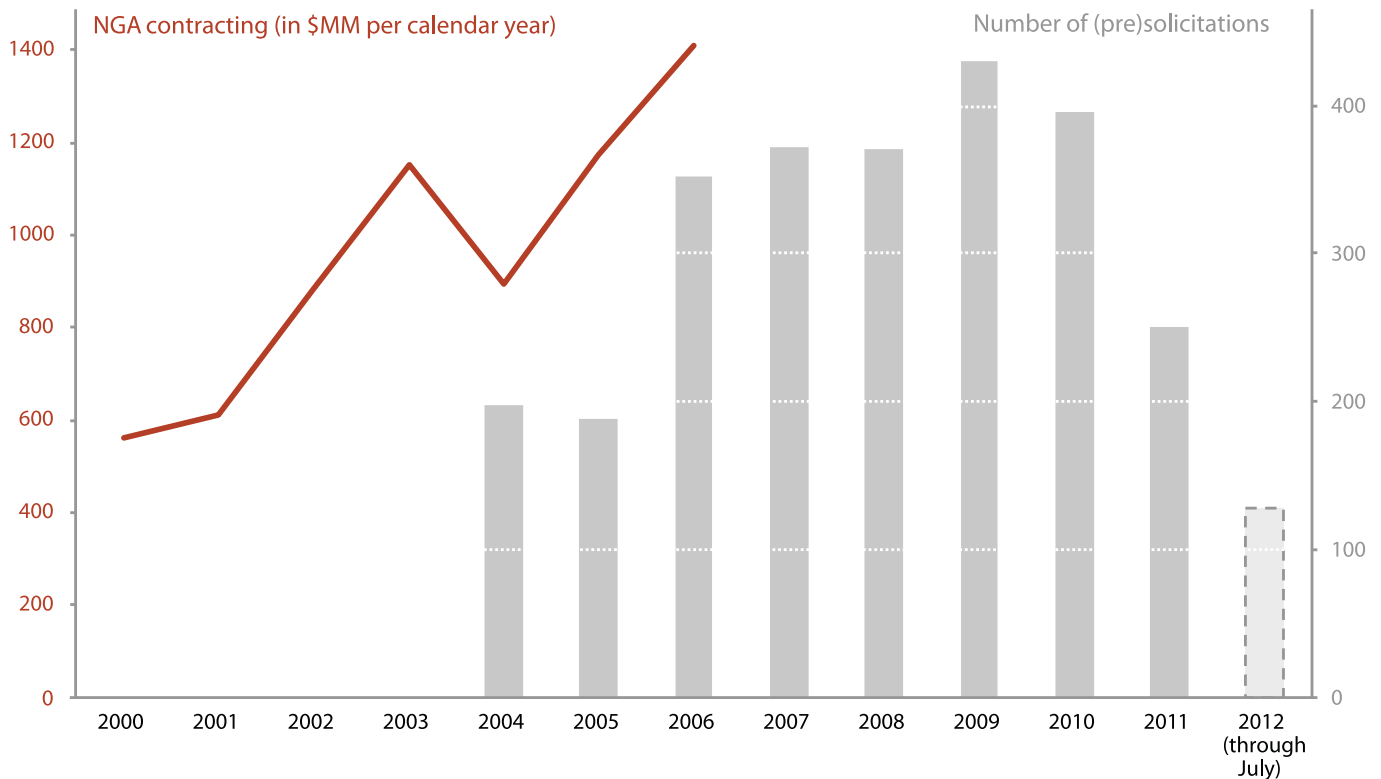


Figure 3. National Geospatial-Intelligence Agency (NGA) contract spending and number of contract bids. *Source:* Federal Procurement Database (fpdb.gov) and Federal Business Opportunities Database (fbo.gov). (Color figure available online.)

commitment of over \$1 billion per year. Although this is liable to continue to decline as the 9/11 largesse is reined in, the award in 2010 of the EnhancedView contract (probably the NGA’s single largest contract) indicates that there remained considerable funding and policy approval for outsourcing geographical intelligence. Critically, congress also specified in the FY 2013 Defense Authorization Bill that the Secretary of Defense and DNI shall “sustain” the EnhancedView program capacity (although not necessarily the funds) previously approved (U.S. Congress, Senate 2012c, 324).

The original EnhancedView contract was awarded in August 2010 jointly to GeoEye and DigitalGlobe for a total sum of \$7.3 billion. Both were fairly small companies with histories of involvement in intelligence contracting and the construction, launch, and maintenance of surveillance satellites. GeoEye (formerly Space Imaging and ORBIMAGE) was best known for its IKONOS and GeoEye-1 satellites. DigitalGlobe (formerly Earth-Watch) was known for, among other things, providing high-resolution imagery to Keyhole Corporation, which became Google Earth (see Table 1).

The EnhancedView program was a response to the failed Future Imagery Architecture (FIA) plan, can-

celed by the government in 2005 after prime contractor Boeing went well over budget and fell behind schedule. The failure of FIA seriously damaged the NRO and its mission partner, the NGA, and left the United States with significantly outdated technology. The commercialization of satellite imagery meant that imagery

Table 1. Duopoly or monopoly?

	DigitalGlobe	GeoEye
Rank, value of National Geospatial-Intelligence Agency contracts 2011	1	2
Number of employees, Q1 2012	708	743
Market capitalization, \$ millions, Q1 2012	747.57	423.52
Headquarters	Longmont, CO	Herndon, VA
Color imagery library, coverage in km ²	2.2 billion	650 million
Percentage of total revenue from contracts, FY 2011	77	64
Value of Enhanced View contract, \$ billions	3.5	3.8

Note: FY = fiscal year.

provided by the NRO could be integrated through a Commercial Remote Sensing System (CRSS) known as the “two-plus-two” strategy (Brinton 2009). Under this compromise strategy, the NRO would buy and operate two “exquisite-class spy satellites” (KH-11s with electro-optical imaging) to be built by Lockheed Martin,¹⁰ and the NGA would buy data from commercial vendors equivalent to the output of two spacecraft (Brinton 2009). This agreement appeared to settle the commercial imagery policy debate until looming budget reductions in FY 2013 reopened it.

The EnhancedView award to DigitalGlobe and GeoEye came as no surprise. In many ways, these two companies *are* the market in the United States.¹¹ The GeoEye award was especially unsurprising: James R. Clapper, the former Director of the NGA and now DNI, was a member of its Board of Directors in 2006–2007. Both DigitalGlobe and GeoEye had previously received contracts from the NGA through its Commercial Remote Sensing (CRS) program. These included the ClearView and NextView contracts of 2003, which were directed at investing in higher resolution imagery (at least 0.5-m panchromatic or black and white) and were worth some \$146.4 million per year to each company (Ferster 2010).

EnhancedView represented significant sales of satellite imagery worth some \$150 million per year for GeoEye, which would have increased to \$183.6 million per year following successful launch of GeoEye-2. The NGA also agreed to pay GeoEye \$337 million to help develop GeoEye-2. Following the merger, however, GeoEye-2 will be mothballed in favor of WorldView 3, a DigitalGlobe satellite with much lower resolution built by Ball Aerospace. (The company plans to spend \$230 million on the satellite in 2013 on projected revenues of \$635–\$660 million.) It is unclear how much NGA has already paid out for GeoEye-2. GeoEye-1 currently offers an industry-best resolution of 0.41 m but is enjoined by law from publicly selling imagery below 0.5 m in resolution. GeoEye has superior imagery resolution that can reveal finer details on the ground, but DigitalGlobe has superior coverage (it claims its image library constitutes 80 percent of all commercial imagery). In reality, no satellite-based technical capability will satisfy the nation’s surveillance requirements, a point we return to later in this article.

Even without the merger between the two companies, they heavily depend on the government for their profitability, and the government is heavily dependent on them. Prior to the merger, the firms’ percentage of

total revenue from government contracts ranged from 51 to 77 percent. According to SEC filings, GeoEye received 64 percent of its total revenue in FY 2011 directly from the U.S. government (the remainder is earned through sales to commercial resellers and foreign government agencies). DigitalGlobe reported an even higher proportion in FY 2011; 77 percent of its revenues came from U.S. government (defense and intelligence) sources. Dependence on government contracts was much lower in 2005 (51 and 62 percent, respectively). Following the merger, DigitalGlobe reports that half its revenue is still government derived (two thirds of this from EnhancedView). With the onset of EnhancedView, almost all government contracting in this sector is brought together under a single contract. In FY 2011, 96.5 percent of the companies’ government contract revenue was received via the EnhancedView contract. This explains why the stock market reacts nervously to any sign of decreased EnhancedView funding. Figures 4 and 5 indicate the share of funding to GeoEye and DigitalGlobe from the NGA and from government sources as a whole. The NGA, for its part, can only fulfill its need for high volumes of detailed satellite imagery by contracting out to these companies.

The wider implications of the contractor nexus for our understanding of state power and the geoeconomics of the U.S. military are several. First, the codependence of the contracting firms and the project of intelligence undermines any idea that there is a “market” for satellite imagery. Instead, there are very few companies who enjoy a cozy relationship with a small number of government procurement offices, blurring any assumed lines between government and private corporations. Second, the mixture of interests and secrecy represented in this nexus threatens the liberal democratic principles of U.S. political life. The revolving door between government, the military, the IC, and private contractors raises serious conflicts of interest (U.S. Congress, Senate 2012a). Third, intelligence contracting is symptomatic of the massive redistribution and consolidation of class power that Harvey characterizes as central to U.S. neoliberal capitalism. In 2007 it was estimated that contractors absorb all taxes paid by everyone with incomes under \$100,000, some 90 percent of all U.S. taxpayers (Bartlett and Steele 2007), an unaccountable and opaque fiscal form of “accumulation by dispossession” (Harvey 2007, 178). Fourth, the nexus is territorialized. The fortunes of whole regions are caught in the contractor regime (Lutz 2011; Priest and Arkin 2011). We return to this point in the next section on the “knowledge nexus.”

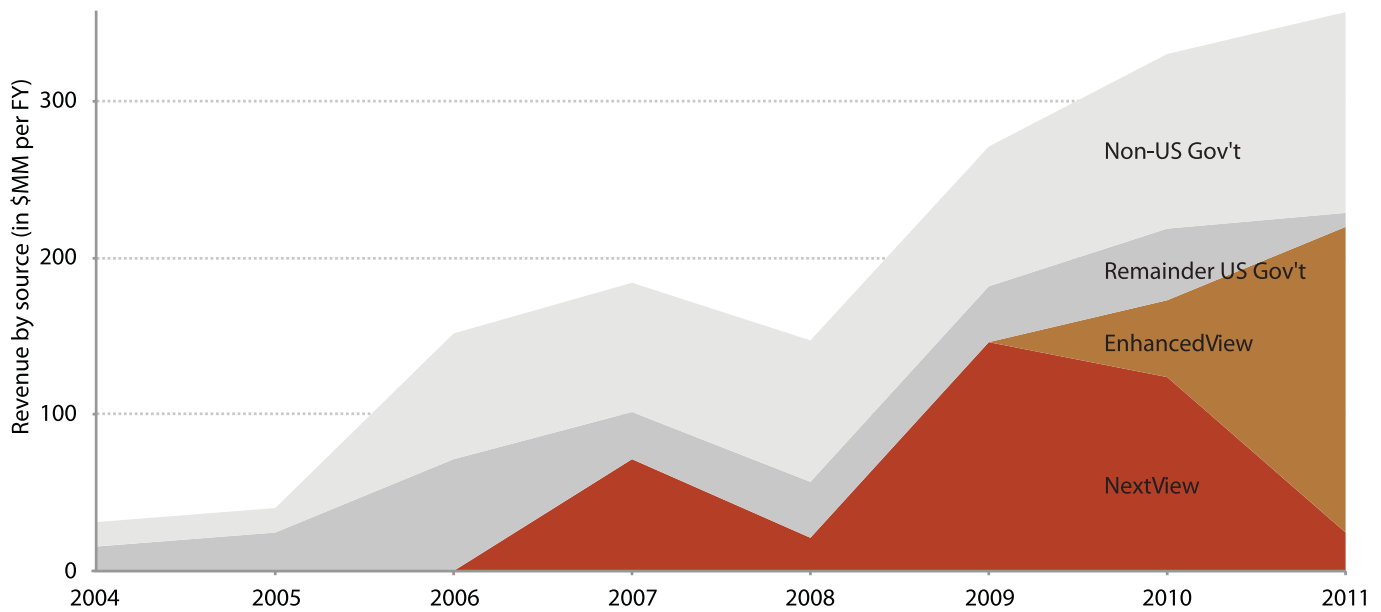


Figure 4. GeoEye sources of revenue, FY 2005–2011. FY = fiscal year. Source: Securities and Exchange Commission (<http://www.sec.gov/>). (Color figure available online.)

Human Geography and the Intelligence Knowledge Nexus

The knowledge nexus is intertwined with the contracting nexus; they are different aspects of the same

developing complex. The knowledge nexus (like the contracting nexus) includes state agencies, components of the IC, and the U.S. military. The knowledge nexus also includes public and quasi-public entities including some affiliated with universities, as well as private

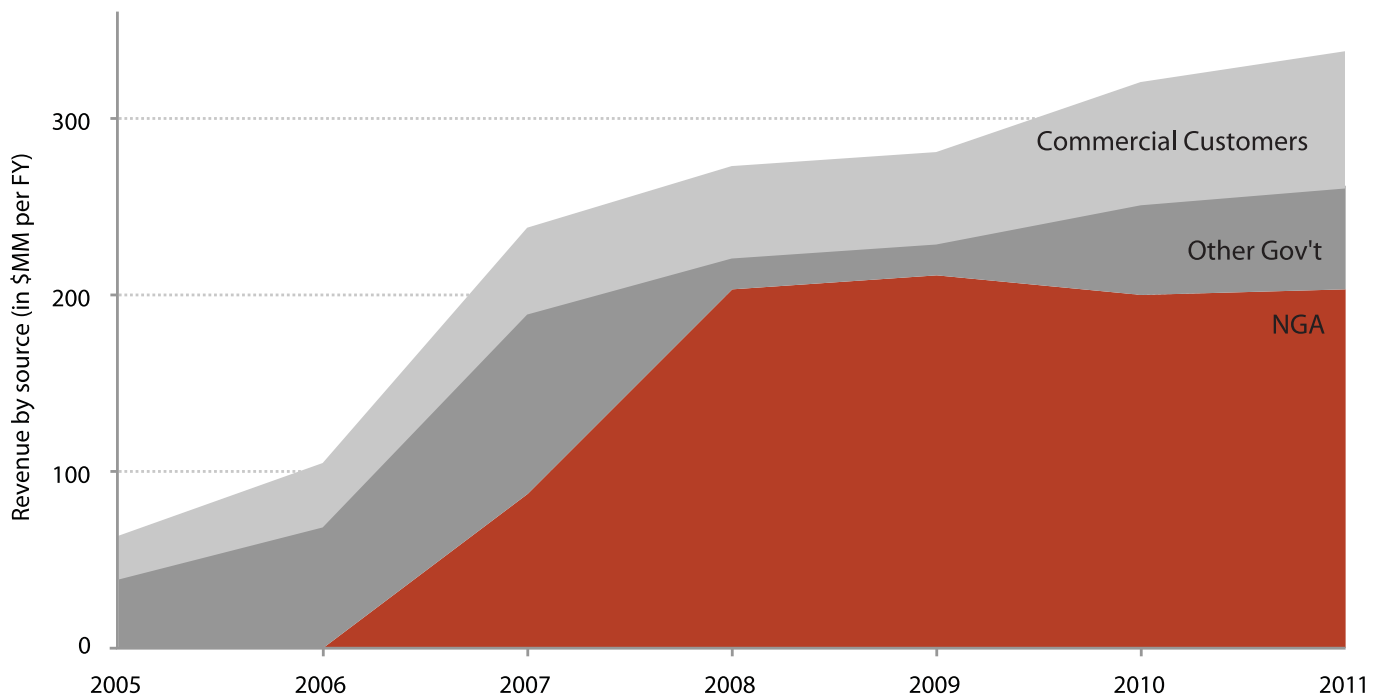


Figure 5. DigitalGlobe sources of revenue, FY 2005–2011. Note: NGA = National Geospatial-Intelligence Agency; FY = fiscal year. Source: Securities and Exchange Commission (<http://www.sec.gov/>). (Color figure available online.)

entities, firms, and organizations and research groups or think tanks (e.g., the influential Center for New American Security, funded by an array of contractors and the U.S. military), all of which are staffed by increasing numbers of back office “war workers” (Lutz 2011). In this technical and managerial nexus (Shaw 2012), there arises a specific political–economic form in which spatially competent technological workers exert disproportionate influence in “code-space” (Thrift 2004, 600; see also Kitchin and Dodge 2011).

The knowledge nexus has evolved as part of the shift in policy and doctrine noted earlier. Although there may be a tendency to overemphasize the break, the shift from “regular” to “irregular” warfare—a type of war in which the main U.S. task is COIN—was significant. The official doctrinal document marking this shift was the Army and Marine Field Manual, known by its title: *Counterinsurgency* (U.S. Department of the Army 2007). Early COIN entailed a refocus from “kinetic” firepower to a strategy aimed at working with local populations to win “hearts and minds.” Although COIN was often promoted as less costly than kinetic warfare, it might be better understood as a redirection of economic flows, as it has relied on a vast expansion of contracting. As of March 2011, the DOD had more contractor personnel in Afghanistan and Iraq than uniformed personnel, according to the Congressional Report Service (Schwartz and Swain 2011). COIN enrolled geographers and others directly, as it entailed familiarity with the languages and dialects, social orders, and customs of local populations. As much as they needed data from satellites, aircrafts, drones, or ground sensors, commanders also required area experts with “insight into cultures, perceptions, values, beliefs, interests and decision-making processes of individuals and groups” (U.S. Department of the Army 2007, 80). In sum, it was argued that “successful conduct of COIN operations depends on *thoroughly understanding the society and culture* within which they are conducted” (U.S. Department of the Army 2007, 40, italics added).

During the late 2000s, scholars challenged one small component of the “cultural turn” COIN signaled. Known as the Human Terrain System (HTS), this experimental “intelligence support” program was founded in 2007 to train civilians at Fort Leavenworth (headquarters of the Army Training and Doctrine Command, TRADOC) for tours of duty embedded with troops—initially in Iraq and then in Afghanistan (“Human Terrain System” 2011; Price 2011). In 2010 the HTS became a permanent DOD program funded at about \$150 million annually (Hamilton 2011; McFate

and Fondacaro 2011). The HTS exemplifies the blurred distinctions between military and civilian, with some academics becoming geographical intelligence contractors whose research directly “supports military decision-making” (Hamilton 2011). The work of civilian social scientists in the service of battlefield commanders has been controversial (American Anthropological Association 2007). Nonetheless, not only has the HTS program been made permanent, it has expanded with about thirty-one teams of five to eight personnel currently deployed in Afghanistan (Hamilton 2011).

The American Geographical Society’s Bowman Expeditions also came out of Fort Leavenworth (with funding from the Fort Leavenworth–based Foreign Military Studies Office) and, although they are not institutionally connected to the HTS (Dobson 2009), they echo the HTS language in their claim to produce “digital human terrain” mappings (Demarest 1998; Herlihy et al. 2008). Bowman Expedition leaders see “human terrain . . . at the very core of geographic scholarship” (Herlihy et al. 2008) and their project has involved dozens of academic geographers from at least nine U.S. universities (Wainwright 2013). The NGA’s own in-house training program in human geography treats human geography in a similar fashion, seeing it as amassing social data to produce mappings of human terrain (NGA 2011b). Yet as notorious as the HTS and Bowman Expeditions have become, they are just the tip of the iceberg when it comes to the imbrication of geography in the contemporary world of intelligence.

In fact, intelligence based on areal expertise about human terrain is a type of GEOINT that is being rapidly overshadowed by a different type of geographical knowledge. The current era is one in which there is tremendous growth in remote and technical “back office” GEOINT aimed at processing the vast amounts of data generated by a proliferating aerial sensor regime. It is through the enormous, and largely contracted, efforts of spatial analysts to develop sophisticated processing technologies to turn satellite, spy plane, and drone image feeds into usable intelligence that geographical knowledges have assumed an even more central, if shadowy, role in the political economy of U.S. intelligence in the contemporary era.

GEOINT and Moving Targets

To understand how geographical knowledges currently are being enrolled and developed in the IC, we identify two aspects of the evolving knowledge nexus through which its form and implications can be

identified. First, there has been a shift in GEOINT from an understanding of spatial data as locational and static to one where space is not so much a plane of discrete identified locations but, rather, a field of motion. *Movement* is now the overarching motif of GEOINT's geographical imagination. By those inside GEOINT, this is sometimes described as a paradigm change from feature-based GEOINT to activity-based GEOINT, understood as part of a more general doctrine of activity-based intelligence (ABI; Biltgen and Tomes 2010). It is not that the precision science of pinpointing accurate absolute locations has gone away, because the new activity-based GEOINT is itself based on such knowledge and technologies. Activity-based GEOINT is, to use Thrift's phrasing, not "in opposition to the grid of calculation" of the earlier feature- and location-based GEOINT but, rather, is "an outgrowth of the new capacities that it brings into existence" (Thrift 2004, 598).

The political economy of this is undergirded by the runaway technological abilities of proliferating sensors and their aerial carriers or "platforms" (satellites, UAVs, drones), which are generating and delivering more and more data. The range of sensors now deployed includes electro-optical and infrared (EO/IR) sensors, synthetic aperture radars, and sensors that can detect chemicals or radiation (CBRN sensors). Data from well-known drones such as the Predator and Reaper join data coming from sensors on UAV helicopters such as the A-160 Hummingbird, lower altitude small drones such as Wasps and Ravens, higher altitude sensors, such as those attached to U-2 spy planes and to long-endurance UAVs such as the Global Hawk, and from those in space (e.g., from satellites and from Boeing X-37 spacecraft). All of these are elements in what McCoy (2012) identifies as a "triple canopy" of weaponized surveillance capacity, stretching vertically from the Earth's surface through the stratosphere to outer space (Cheseboro 2011; and see Elden [2012] on vertical geopolitics; Adey, Whitehead, and Williams 2011). See Figure 6. Unprecedented amounts of data from sensors are pouring into the IC. The *New York Times* reported, for example, that the amount of data collected just by U.S. Air Force drones over Afghanistan tripled between 2007 and 2009, swamping analysts (Drew 2010).

This vertically stacked, proliferating sensor regime is key among the rapidly developing technologies aimed at realizing wide area persistent surveillance (WAPS). Persistent surveillance is understood to be a potentially "transformational" capacity to achieve "near perfect knowledge" that will "remove uncertainty" even as its proponents in the IC admit that "[p]ersistent

surveillance in its objective form does not exist today" (Pendall 2005, 41; see also Williams 2011). Achieving the utopian project of persistent surveillance or the so-called "unblinking eye" is a priority of the GEOINT community.

It is here that geographical knowledges are really being put to work. In the process they are being rapidly refashioned, as complex fast-flowing streams of spatial data that are sorted and resorted, made interoperable, and mapped as surfaces that cannot just show locations but can track movements. The problem is not so much to find a needle in a haystack. Rather, the issue is how to track thousands of moving needles in haystacks that themselves are not static and to identify which needles are likely to pose a threat (and thus the "needles" are always potential targets, a point we come back to later). As U.S. Army Major General Pendall put it, the idea behind WAPS is that "the targeted entity will be unable to move, hide, disperse, deceive, or otherwise break contact with the focused intelligence system" (Pendall 2005, 41).

In GEOINT, the emphasis is on software that can integrate and parse the incoming data into actionable spatial intelligence by discriminating among billions of movements to identify those that are suspicious. The analysis of a dense field of complex, fast, moving elements; of networks, connections, disconnections, reconnections, joinings, and splittings demands discrimination. To sort out which movements, which elements, and which dynamic networks are of interest is a necessary first step in tracing or tracking. This is the project of *activity recognition* enabled by automated moving object detection and tracking systems. Also called *nodal analysis*, such geographical work is designed to make a "shadowy foe" more "visible and vulnerable" by revealing "patterns of life" and thus taking him or her from being a "foe" hiding in the shadows to a visible *target* (Flynn, Juergens, and Cantrell 2008, 56; see also Amoore 2009; Adey, Whitehead, and Williams 2011).

These efforts are visual and cartographic but also fundamentally algorithmic (Amoore 2009). They are very much in line with Thrift's identification of contemporary society as "in thrall to a security-entertainment complex, an era of permanent and pervasive war and permanent and pervasive entertainment, both sharing the linked values of paranoid vigilance . . . and the *correct identification of the potential of each moment*" (Thrift 2011, 11, italics added).

Intelligence contractors are exploiting synergies between security and entertainment technologies and are

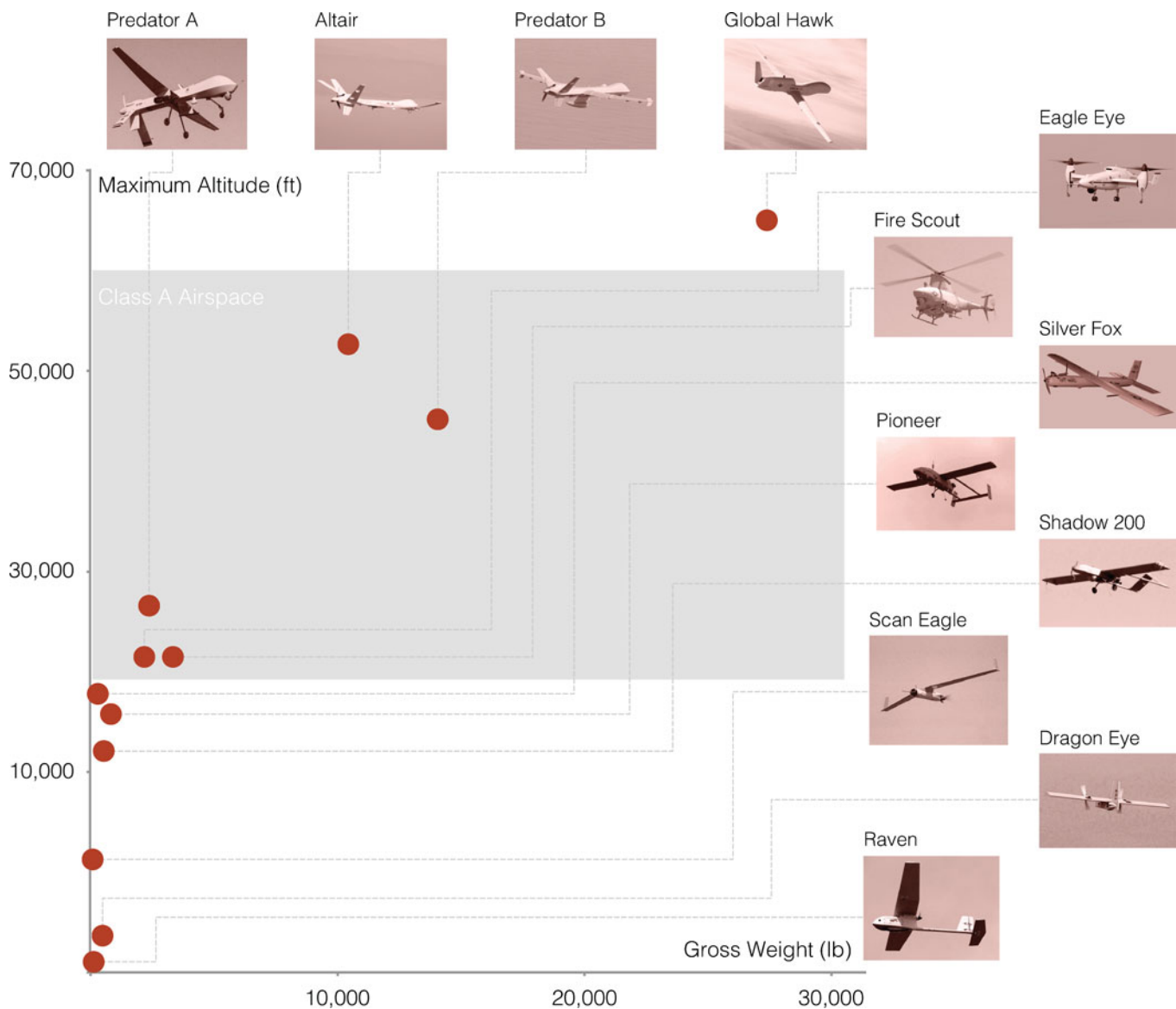


Figure 6. The “triple canopy” of drone and satellite coverage. Adapted from Cheseboro (2011). (Color figure available online.)

rapidly developing sophisticated tagging and tracing software that can geocode, sort, and recombine the huge amounts of data arriving from the skies. Related synergies with the data mining industry have received particular attention because it appears that the use of commercial data aggregators by the IC is widespread (Calabrese 2012). Under new rules announced in March 2012, established by the U.S. Attorney General, the DNI, and the National Counterterrorism Center (NCTC), the latter may search data on U.S. and non-U.S. citizens merely if it says it involves terrorism (Calabrese 2012).

Spatial Analysis: Patterns of Life and Signature Strikes

Pattern-of-life analysis merges and sorts spatial and temporal data and produces understandable simplified visual representations that can be the basis for decision and action. Included in a basic pattern of life analysis would be information about a person’s daily everyday movements, his or her “frequented locations,” interactions with “family and associates,” and “personal habits,” all of which is used to “predict a person’s behavior based on habit or schedule” and to

recognize any deviations from these routines (phrases from Mason, Foss, and Lam 2011). It is possible, for example, to delimit a “geofence” and then tracking analysis would “detect when people, assets, or vehicles go outside an allowable area or enter a restricted area” (Esri 2012). As Crandall (2005) has observed, “Tracking is an anticipatory form of seeing—a form of seeing that is always ahead of itself” (20). Complex geoprocessing capabilities are being developed that can conduct operations that build on a merger of geospatial referencing and basic GIS with network analysis and predictive analysis (NGA 2011b, 6; see also Crandall 2010). The mode and purpose of surveillance has shifted from the posture of the “unblinking eye” to the “smart eye” that pays attention to “the frequency of change” in network topologies and their constituent traffic (see Defense Science Board 2011, Table 4).

This is sophisticated spatial analysis, the kind of geographical knowledge creation and application that firms such as Esri are keen to take on (Mason, Foss, and Lam 2011; Mollenkopf 2012). Contractors, as well as other elements of the IC knowledge nexus, are busy inventing and refining moving object detection and patterns of life analytics or “devices” that produce the inscriptions that, in turn, produce the targets demanded by the U.S. war machine. “[A]n inscription device is any item of apparatus or particular configurations of such items which can transform a material substance into a figure or diagram” (Latour and Woolgar 1986, 51). GEOINT is formed through a series of inscription devices, then, from aerial sensors, transmitters, analytical software, and the standard map or “specialized product” (Joint Chiefs of Staff 2012) to the drone pilot or the field commander. The step of enrolling a human decision maker could be bypassed, as visual tracking analytic systems can be self-learning to alter the “rules” under which events trigger actions (Crandall 2010). Given that tracking systems themselves are embedded in and enabling of “kill chains” that involve “humanoid” robotic weapons, this is especially alarming (Human Rights Watch 2012).

Pattern-of-life analysis allows the practice known as *signature strikes*. Such killings are of persons whose identity is not known and are differentiated from *personality strikes* in which the targets’ identities are known. Signature strikes are justified because they are understood to be aimed at “people whose actions over time have made it obvious that they are a threat” (U.S. official, quoted in D. S. Cloud 2010), in other words, human beings who have been rendered into targets by geospatial tracking

and pattern-of-life analysis. Although officially neither confirmed nor denied, signature strikes have become increasingly common under Obama’s kill–capture policy (Becker and Shane 2012).

The spatial analysis that is central to GEOINT is a joined-up geography done far away from the battlefield. Activity-based intelligence and pattern-of-life analytics turn the deluge of data into instrumental spatialized knowledge through the technological capacity of contracted analysts. This work relies less on areal specialists in the field (as in the earlier phase of COIN) and more on technologies and analysts in ordinary corporate and government offices. These back office geographical war-workers (Lutz 2011) can be found throughout the United States, but there are undoubtedly concentrations of them in particular regions such as northern Virginia and Maryland.

The so-called surgical strikes that form an increasing centerpiece to the Obama administration could not be performed otherwise. Joining multiple forms of geographical knowledges (GEOINT, SIGINT, HUMINT) permits both the sorting and discrimination and the targeting and killing. As Pentagon advisor Lt. Colonel John Nagl explained, “Counterinsurgency doctrine believes in killing people, it just believes in killing the right people” (Frontline 2011).

Locating enemies makes the *disposition matrix*, as the kill list is now called, actionable. The knowledge nexus we are discussing turns a list or a matrix into a coherent picture, transforming a material substance into a compelling image that at once permits action to be taken and justified (see Latour and Woolgar 1986, 51). The list or matrix, as a geospatial product, becomes an “operational menu,” “a single, continually evolving database in which biographies, locations, known associates and affiliated organizations are all catalogued. So are strategies for taking targets down, including extradition requests, capture operations and drone patrols” (Miller 2012). The disposition matrix is compiled by the NCTC, a secret and largely unaccountable agency (part of the DNI), and is the basis for weekly meetings at the White House. Investments in streamlining the kill–capture policy are solidifying trends toward “a surveillance state” centered on a “secretive, unaccountable judicial body that analyzes who you are and then decrees what should be done with you, how you should be ‘disposed’ of, beyond the reach of any minimal accountability or transparency” (Greenwald 2012).

GEOINT and the knowledge nexus are calculative practices of government. Like other calculative

practices, notably insurance, this is a practice of risk management (not elimination), in this case designed to minimize risk to U.S. military operatives and their allies. And, like insurance, patterns-of-life calculations are probabilistic, calculating the probable outcomes of current and past patterns. GEOINT thus is an “anticipatory” intelligence (Anderson 2011), committed to rendering human lives into patterns of life and to the production of operationable inscriptions that offer predictive analysis (Joint Chiefs of Staff 2012, IV-9). If for Gregory (2008) “cultural knowledge [is] not a substitute for killing but rather, in certain circumstances, a prerequisite for its refinement” (9), the same is true for the probabilistic and calculative forms of geographical knowledge currently being generated in the IC knowledge nexus.

There are constant flows of people and ideas in and out of the IC agencies and commercial GEOINT contractors. Academic geography is part of this. Several U.S. geography departments have developed curricula in intelligence; for example, at Brigham Young University, Geospatial Intelligence is one of six possible undergraduate tracks. Prospective students are informed that the track will prepare them for jobs with “federal intelligence agencies, military, private contractors” (Brigham Young University 2012). GEOINT Certificates accredited by the U.S. Geospatial Intelligence Foundation (USGIF) include those offered at George Mason, Penn State, the University of Texas at Dallas, and the University of Missouri. The NGA recently awarded \$443,000 to Fayetteville State University to develop one there. The USGIF’s academic advisory board includes members from government, academe, and IC contractors (USGIF 2012).

Despite the claims of some (e.g., Dobson 2009), the enrollment of “cultural” approaches and the associated emphasis on more robust human geographical areal knowledge in earlier phases of COIN cannot be understood as part of some more humane or less violent approach to war and national security (Gregory 2008, 2010; Belcher 2012). Likewise, although it might result in fewer U.S. military casualties, the work of geographical knowledges in producing the intelligence that undergirds the production of the disposition matrix and enables the kill–capture program can in no way be understood as somehow removed from culpability for the thousands of documented killings of civilians, including children, that have occurred under this program (Benjamin 2012; Bureau of Investigative Journalism 2012).

Conclusion: Protecting the Secret Surveillant State

My administration is committed to creating an unprecedented level of openness in government. . . . Openness will strengthen our democracy and promote efficiency and effectiveness in government. (Obama 2009)

In addition to tracing the contours of a consolidating political economy of the U.S. intelligence industry, undertaking this research has highlighted troubling trends regarding government openness. In December 2007 the Pentagon instituted new regulations, which dramatically decreased oversight of unclassified information about intelligence contracting. A new online public database on contracting expenditures (USAspending.gov) is incomplete; several defense intelligence agencies—the NGA, the DIA, and the Counterintelligence Field Activity (CIFA)—received permission to opt out of reporting their contracts, even though they had reported this information previously (Aftergood 2007). Since 2006 the NGA has not reported even on its *unclassified* contracting activities. Government overclassification of “secrets” is widely acknowledged to be rampant, and declassification deadlines are routinely missed.¹²

At a time when new coalitions of interest are emerging around the political economy of intelligence, decreases in public accountability are disturbing. The increasing alignment of the interests of contractors, government agencies, universities, and even—given the agglomerations that characterize the geography of contract dollars’ destinations—elected officials certainly raises the stakes for oversight. But the Obama administration has aggressively prosecuted whistleblowers, including Thomas Drake (NSA) and Jeffrey Sterling (CIA), using the 1917 Espionage Act. In early 2013 Bradley Manning entered a plea bargain with the government admitting he had leaked State Department cables and the “Collateral murder” video footage to WikiLeaks. Ironically, the only people prosecuted for alleged waterboarding by the CIA are those who brought it to light, not those who might have carried it out. In the FY 2013 Intelligence Authorization Act, congress also considered giving agency heads power to deny pensions to persons considered to have violated nondisclosure agreements, without specifying the standard for that determination. The suggestion was dropped after Senator Ron Wyden placed a hold on the bill (Aftergood 2012a, 2012b).

The Intelligence Committee itself rarely holds public hearings and did not do so for these new provisions. A senior NRO official is facing a criminal investigation over contracting practices (Taylor 2012). In the mid-1990s, the NRO's director and deputy director were fired over accounting irregularities, but information that would allow the public to know about these recent developments is not available.

Of larger concern, the once controversial Patriot Act was quietly renewed in 2011 and contains many provisions for secretly collecting information within the United States. Oversight agencies, such as the FISA Court, rarely report publicly. Congress has consistently refused to allow nonsensitive FISA information to be available, including information on the wiretapping of U.S. citizens (a challenge to this by the American Civil Liberties Union was denied by the Supreme Court in February 2013). Also unknown is whether activities such as warrantless wiretapping by the NSA (code-named "Ragtime" by the NSA), which the Bush administration was forced to confirm following a 2005 report in the *New York Times* (Risen and Lichtblau 2005), are still continuing. The government reserves the right to conduct sweeping searches and issue "National Security Letters" (which come with a gag order) under the Patriot Act, but ordinary citizens can know very little about the activities of the intelligence community.¹³ In July 2012 the government admitted to Senator Ron Wyden for the first time that the constitutional privacy rights of Americans were violated on at least one occasion by domestic surveillance but provided no details (ODNI 2012c).

Abroad, the Obama administration is routinizing the kill-capture program and has claimed the right to kill people, including U.S. citizens, without trial, charge, or evidence (e.g., the assassination of Anwar Al-Awlaki and, in a separate drone strike, his sixteen-year-old son). Geographical knowledge underpins kill-capture, as do the growing surveillance drone and sensor industries, but given the current trends to protect such activities from scrutiny, the needed critical analysis of such industries is likely to face difficulties of the sorts we faced in our analysis of NGA contracts after 2006. A widely accepted definition of intelligence is that it reduces uncertainty (Fingar 2011); the irony of this definition is that the intelligence community, which spends billions of dollars of public money each year, is one of the least knowable of human enterprises. As we have argued, a key trend in this shadowy world of the political economy of intelligence is the militarization and corporatization of geography knowledges that is far more extensive than previously acknowledged.

Regarding the extensive nature of intelligence contracting documented in this article, we are not arguing, as some do, that the state is *weakening* its power because of outsourcing (Stanger 2009). Nor are we arguing that capital is simply seeking to exploit the state to address its own crises of accumulation. Rather, the state is complicit in what Hannah (2010, 101) calls a shift in "epistemic sovereignty." There is a tremendous transfer and concentration of wealth in the hands of contractors, on the one hand, and on the other little or no concern for the limits of this market, either in terms of environmental or human well-being or (from its perspective) the insecurities it might bring. As such, it could be that these practices of national security are not sustainable in the long term.

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Notes

1. Despite its name, no captures are known to date in more than 400 covert drone strikes in Pakistan, Yemen, and Somalia. According to the Bureau of Investigative Journalism, between 3,000 and 4,600 people have been killed in those countries.
2. The Office of the Director of National Intelligence (ODNI) contains the National Counterterrorism Center (NCTC) and oversees the National Intelligence Program (NIP).
3. Data from the Federal Procurement Data System-Next Generation (FPDS-NG). For a fuller discussion of DOD contracting, see Turse (2008).
4. In an interview in 2008, the Associate Director of National Intelligence for Human Capital confirmed that there are around 100,000 government personnel in the IC and another 37,000 "core" contractors. He estimated the cost per civilian government worker at \$125,000 and \$207,000 per contractor (Sanders 2008). If correct, that would indicate an IC salary budget of approximately \$20 billion per year.
5. The number is at least this high because the government was unable to categorize 327,000 clearances as either a government employee or contractor (ODNI 2012a).

6. A 1996 report revealed that the NRO funding levels were six times that of the Defense Mapping Agency (as the NGA was called at the time) and twice as much as that of the CIA and NSA (Commission on the Roles and Capabilities of the U.S. Intelligence Community 1996).
7. Title 10 USC §467 (National Geospatial-Intelligence Agency—Definitions 2004) defines GEOINT as “exploitation and analysis of imagery and geospatial information to describe, assess, and visually depict physical features and geographically referenced activities on the earth.”
8. The move was part of the 2005 Base Realignment and Closure and suffered significant cost overruns of 128 percent (General Accountability Office 2012).
9. For example, in 2004 the NGA issued a presolicitation for a Global Geospatial Intelligence contract with Esri, to extend through January 2013. This was apparently for the PALENTERRA software and database that has been implemented for the USGS National Map.
10. According to satellite observers, the first KH-11 to launch since 2005 was NRO L-49 on 20 January 2011 (Ray 2011).
11. See http://www.spacenews.com/earth_observation/enhancedview-awards-carefully-structured.html
12. In 2012 the U.S. government spent about \$13 billion on protecting classified information, double the amount a decade ago (Shane 2012).
13. Some senators, notably Paul (R-KY) and Wyden (D-OR) have raised objections to the search powers of the Patriot Act. Paul held up the renewal vote for several days in 2011. In March 2013 Senator Paul filibustered the nomination of John O. Brennan as director of the CIA for almost thirteen hours in protest at the administration’s lack of transparency over its legal authorities to use UAVs to kill individuals.

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