Google's True Origin Closely Linked to the CIA

It has long been rumored that Google may have ties to the CIA or some other Deep State agency. US and European politicians have called for ways to protect NSA-style snooping, and to advance the capacity to intrude on internet privacy by outlawing encryption. One idea is to establish a telecoms partnership that would unilaterally delete content deemed to "fuel hatred and violence" in situations considered "appropriate." Heated discussions are going on at the government and parliamentary level to explore cracking down on lawyer-client confidentiality.

What any of this would have done to prevent the Charlie Hebdo attacks remains a mystery, especially given that we already know the terrorists were on the radar of French intelligence for up to a decade.

There is little new in this story. The 9/11 atrocity was the first of many terrorist attacks, each succeeded by the dramatic extension of draconian state powers at the expense of civil liberties, backed up with the projection of military force in regions identified as hotspots harboring terrorists. Yet there is little indication that this tried and tested formula has done anything to reduce the danger. If anything, we appear to be locked into a deepening cycle of violence with no clear end in sight.

As our governments push to increase their powers, *INSURGE INTELLIGENCE* can now reveal the vast extent to which the US intelligence community is implicated in nurturing the web platforms we know today, for the precise purpose of utilizing the technology as a mechanism to fight global 'information war' — a war to legitimize the power of the few over

the rest of us. The lynchpin of this story is the corporation that in many ways defines the 21st century with its unobtrusive omnipresence: Google.

Google styles itself as a friendly, funky, user-friendly tech firm that rose to prominence through a combination of skill, luck, and genuine innovation. This is true. But it is a mere fragment of the story. In reality, Google is a smokescreen behind which lurks the US military-industrial complex.

The inside story of Google's rise revealed here for the first time, opens a can of worms that goes far beyond Google, unexpectedly shining a light on the existence of a parasitical network driving the evolution of the US national security apparatus, and profiting obscenely from its operation.

The shadow network

For the last two decades, US foreign and intelligence strategies have resulted in a global 'war on terror' consisting of prolonged military invasions in the Muslim world and comprehensive surveillance of civilian populations. These strategies have been incubated, if not dictated, by a secret network inside and beyond the Pentagon.

Established under the Clinton administration, consolidated under Bush, and firmly entrenched under Obama, this bipartisan network of mostly neoconservative ideologues sealed its dominion inside the US Department of Defense (DoD) by the dawn of 2015, through the operation of an obscure corporate entity outside the Pentagon, but run by the Pentagon.

In 1999, the CIA created its own venture capital investment firm, In-Q-Tel, to fund promising start-ups that might create technologies useful for intelligence agencies. But the inspiration for In-Q-Tel came earlier when the Pentagon set up its own private sector outfit.

Known as the 'Highlands Forum,' this private network has operated as a bridge between the Pentagon and powerful American elites outside the military since the mid-1990s. Despite changes in civilian administrations, the network around the Highlands Forum has become increasingly successful in dominating US defense policy.

Giant defense contractors like Booz Allen Hamilton and Science Applications International Corporation are sometimes referred to as the 'shadow intelligence community' due to the revolving doors between them and government, and their capacity to simultaneously influence and profit from defense policy. But while these contractors compete for power and money, they also collaborate where it counts. The Highlands Forum has for 20 years provided an off the recording space for some of the most prominent members of the shadow intelligence community to convene with senior US government officials, alongside other leaders in relevant industries.

I first stumbled upon the existence of this network in November 2014, when I reported for VICE's *Motherboard* that US defense secretary Chuck Hagel's newly announced 'Defense

Innovation Initiative' was really about building Skynet — or something like it, essentially to dominate an emerging era of automated robotic warfare.

That story was based on a little-known Pentagon-funded 'white paper' published two months earlier by the National Defense University (NDU) in Washington DC, a leading US military-run institution that, among other things, generates research to develop US defense policy at the highest levels. The white paper clarified the thinking behind the new initiative, and the revolutionary scientific and technological developments it hoped to capitalize on.

The Highlands Forum

The co-author of that NDU white paper is Linton Wells, a 51-year veteran US defense official who served in the Bush administration as the Pentagon's chief information officer, overseeing the National Security Agency (NSA) and other spy agencies. He still holds active top-secret security clearances, and according to a report by *Government Executive* magazine in 2006 he chaired the 'Highlands Forum', founded by the Pentagon in 1994.

New Scientist magazine (paywall) has compared the Highlands Forum to elite meetings like "Davos, Ditchley and Aspen," describing it as "far less well known, yet… arguably just as influential a talking shop." Regular Forum meetings bring together "innovative people to consider interactions between policy and technology. Its biggest successes have been in the development of high-tech network-based warfare."

Given Wells' role in such a Forum, perhaps it was not surprising that his defense transformation white paper was able to have such a profound impact on the actual Pentagon policy. But if that was the case, why had no one noticed?

Despite being sponsored by the Pentagon, I could find no official page on the DoD website about the Forum. Active and former US military and intelligence sources had never heard of it, and neither did national security journalists. I was baffled.

The Pentagon's intellectual capital venture firm

In the prologue to his 2007 book, *A Crowd of One: The Future of Individual Identity*, John Clippinger, an MIT scientist of the Media Lab Human Dynamics Group, described how he participated in a "Highlands Forum" gathering, an "invitation-only meeting funded by the Department of Defense and chaired by the assistant for networks and information integration." This was a senior DoD post overseeing operations and policies for the Pentagon's most powerful spy agencies including the NSA, the Defense Intelligence Agency (DIA), among others. Starting from 2003, the position was transitioned into what is now the undersecretary of defense for intelligence. The Highlands Forum, Clippinger wrote, was founded by a retired US Navy captain named Dick O'Neill. Delegates include senior US military officials across numerous agencies and divisions — "captains, rear admirals, generals, colonels, majors and commanders" as well as "members of the DoD leadership."

What at first appeared to be the Forum's main website describes Highlands as "an informal cross-disciplinary network sponsored by Federal Government," focusing on "information, science and technology." Explanation is sparse, beyond a single 'Department of Defense' logo.

But Highlands also has another website describing itself as an "intellectual capital venture firm" with "extensive experience assisting corporations, organizations, and government leaders." The firm provides a "wide range of services, including: strategic planning, scenario creation and gaming for expanding global markets," as well as "working with clients to build strategies for execution." 'The Highlands Group Inc.,' the website says, organizes a whole range of Forums on these issue.

For instance, in addition to the Highlands Forum, since 9/11 the Group runs the 'Island Forum,' an international event held in association with Singapore's Ministry of Defense, which O'Neill oversees as "lead consultant." The Singapore Ministry of Defense website describes the Island Forum as "patterned after the Highlands Forum organized for the US Department of Defense." Documents leaked by NSA whistleblower Edward Snowden confirmed that Singapore played a key role in permitting the US and Australia to tap undersea cables to spy on Asian powers like Indonesia and Malaysia.

The Highlands Group website also reveals that Highlands is partnered with one of the most powerful defense contractors in the United States. Highlands is "supported by a network of companies and independent researchers," including "our Highlands Forum partners for the past ten years at SAIC; and the vast Highlands network of participants in the Highlands Forum."

SAIC stands for the US defense firm, Science Applications International Corporation, which changed its name to Leidos in 2013, operating SAIC as a subsidiary. SAIC/Leidos is among the top 10 largest defense contractors in the US, and works closely with the US intelligence community, especially the NSA. According to investigative journalist Tim Shorrock, the first to disclose the vast extent of the privatization of US intelligence with his seminal book *Spies for Hire*, SAIC has a "symbiotic relationship with the NSA: the agency is the company's largest single customer and SAIC is the NSA's largest contractor."

The full name of Captain "Dick" O'Neill, the founding president of the Highlands Forum, is Richard Patrick O'Neill, who after his work in the Navy joined the DoD. He served his last post as deputy for strategy and policy in the Office of the Assistant Secretary for Defense for Command, Control, Communications and Intelligence, before setting up Highlands.

The Club of Yoda

But Clippinger also referred to another mysterious individual revered by Forum attendees:

> "He sat at the back of the room, expressionless behind thick, black-rimmed glasses. I never heard him utter a word… Andrew (Andy) Marshall is an icon within DoD. Some call him Yoda, indicative of his mythical inscrutable status… He had served many administrations and was widely regarded as above

> partisan politics. He was a supporter of the Highlands Forum and a regular fixture from its beginning."

Since 1973, Marshall has headed up one of the Pentagon's most powerful agencies, the Office of Net Assessment (ONA), the US defense secretary's internal 'think tank' which conducts highly classified research on future planning for defense policy across the US military and intelligence community. The ONA has played a key role in major Pentagon strategy initiatives, including Maritime Strategy, the Strategic Defense Initiative, the Competitive Strategies Initiative, and the Revolution in Military Affairs.

Andrew ‘Yoda’ Marshall, head of the Pentagon’s Office of Net Assessment (ONA) and co-chair of the Highlands Forum, at an early Highlands event in 1996 at the Santa Fe Institute. Marshall is retiring as of January 2015

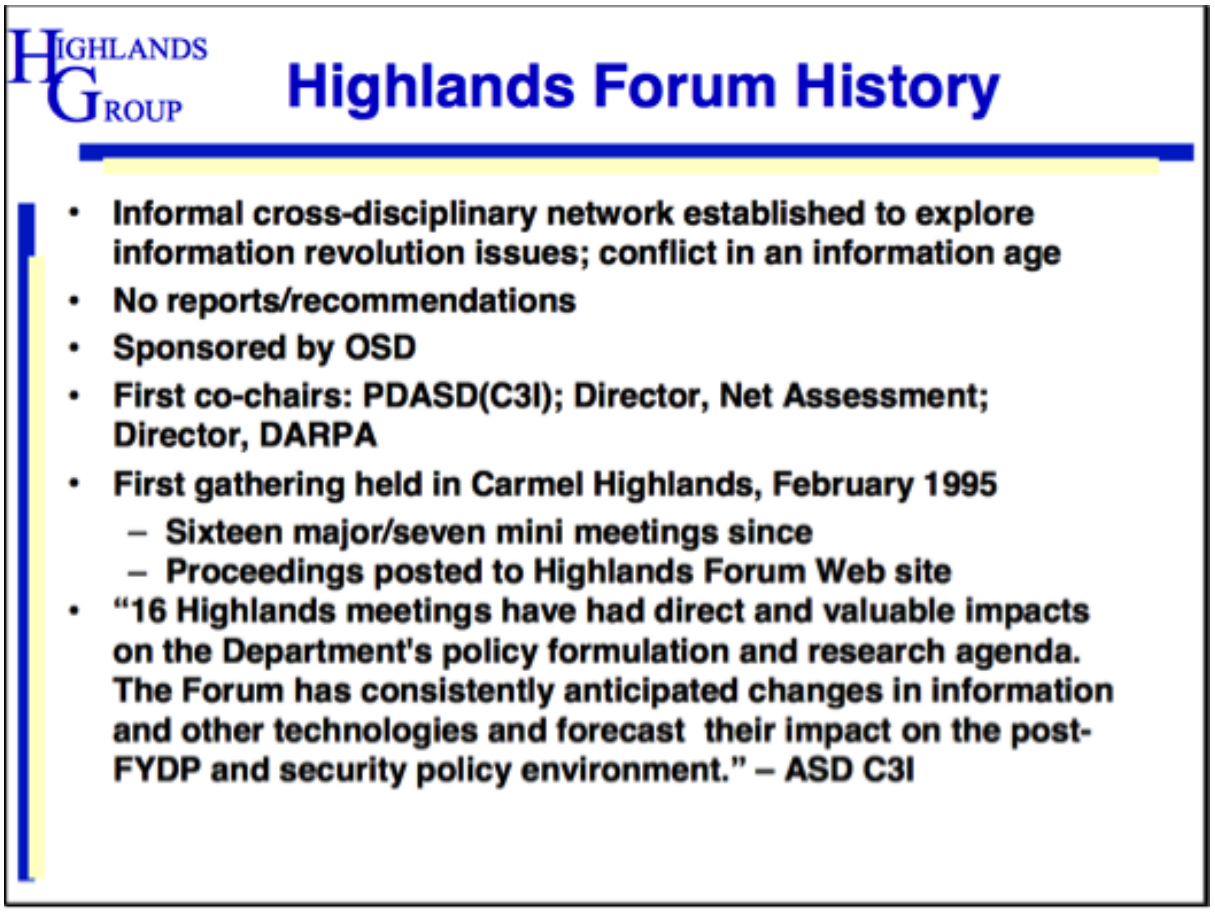
In a rare 2002 profile in *Wired*, reporter Douglas McGray described Andrew Marshall, now 93 years old, as “the DoD’s most elusive” but “one of its most influential” officials. McGray added that “Vice President Dick Cheney, Defense Secretary Donald Rumsfeld, and Deputy Secretary Paul Wolfowitz” — widely considered the hawks of the neoconservative movement in American politics — were among Marshall’s “star protégés.”

Speaking at a low-key Harvard University seminar a few months after 9/11, Highlands Forum founding president Richard O’Neill said that Marshall was much more than a “regular fixture” at the Forum. “Andy Marshall is our co-chair, so indirectly everything that we do goes back into Andy’s system,” he told the audience. “Directly, people who are in the Forum meetings may be going back to give briefings to Andy on a variety of topics and to synthesize things.” He also said that the Forum had a third co-chair: the director of the Defense Advanced Research and Projects Agency (DARPA), which at that time was a Rumsfeld appointee, Anthony J. Tether. Before joining DARPA, Tether was vice president of SAIC’s Advanced Technology Sector.

Anthony J. Tether, director of DARPA and co-chair of the Pentagon's Highlands Forum from June 2001 to February 2009

The Highlands Forum's influence on US defense policy has thus operated through three main channels: its sponsorship by the Office of the Secretary of Defense (around the middle of last decade this was transitioned specifically to the Office of the Undersecretary of

Defense for Intelligence, which is in charge of the main surveillance agencies); its direct link to Andrew 'Yoda' Marshall's ONA; and its direct link to DARPA.



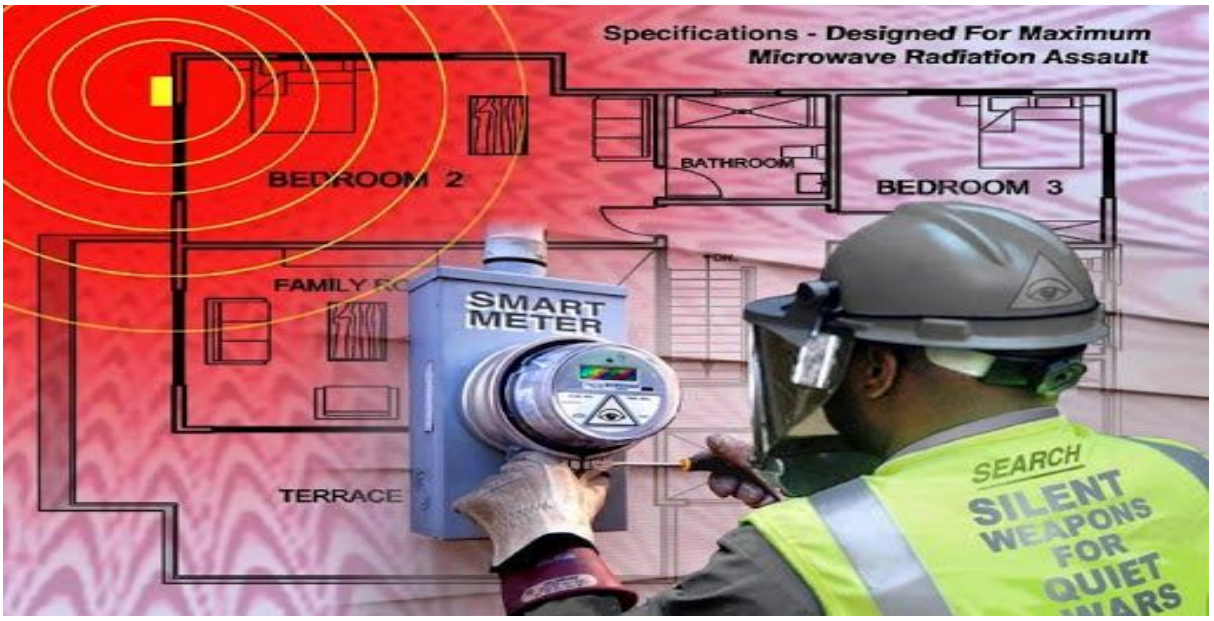
A slide from Richard O'Neill's presentation at Harvard University in 2001

According to Clippinger in *A Crowd of One*, "what happens at informal gatherings such as the Highlands Forum could, over time and through unforeseen curious paths of influence, have enormous impact, not just within the DoD but throughout the world." He wrote that the Forum's ideas have "moved from being heretical to mainstream. Ideas that were anathema in 1999 had been adopted as policy just three years later."

Although the Forum does not produce "consensus recommendations," its impact is deeper than a traditional government advisory committee. "The ideas that emerge from meetings are available for use by decision-makers as well as by people from the think tanks," according to O'Neill:

> "We'll include people from Booz, SAIC, RAND, or others at our meetings… We welcome that kind of cooperation, because, truthfully, they have the gravitas. They are there for the long haul and are able to influence government policies with real scholarly work… We produce ideas and interaction and networks for these people to take and use as they need them."

My repeated requests to O'Neill for information on his work at the Highlands Forum were ignored. The Department of Defense also did not respond to multiple requests for information and comment on the Forum.



Information warfare

The Highlands Forum has served as a two-way 'influence bridge': on the one hand, for the shadow network of private contractors to influence the formulation of information operations policy across US military intelligence; and on the other, for the Pentagon to influence what is going on in the private sector. There is no clearer evidence of this than the truly instrumental role of the Forum in incubating the idea of mass surveillance as a mechanism to dominate information on a global scale.

In 1989, Richard O'Neill, then a US Navy cryptologist, wrote a paper for the US Naval War College, *'Toward a methodology for perception management.'* In his book, *Future Wars*, Col. John Alexander, then a senior officer in the US Army's Intelligence and Security Command (INSCOM), records that O'Neill's paper for the first time outlined a strategy for "perception management" as part of information warfare (IW). O'Neill's proposed strategy identified three categories of targets for IW: adversaries, so they believe they are vulnerable; potential partners, "so they perceive the cause [of war] as just"; and finally, civilian populations and the political leadership so they "perceive the cost as worth the effort." A secret briefing based on O'Neill's work "made its way to the top leadership" at DoD. "They acknowledged that O'Neill was right and told him to bury it.

Except the DoD didn't bury it. Around 1994, the Highlands Group was founded by O'Neill as an official Pentagon project at the appointment of Bill Clinton's then defense secretary William Perry — who went on to join SAIC's board of directors after retiring from government in 2003.

In O'Neill's own words, the group would function as the Pentagon's 'ideas lab'. According to *Government Executive*, military and information technology experts gathered at the first Forum meeting "to consider the impacts of IT and globalization on the United States and on warfare. How would the Internet and other emerging technologies change the world?" The meeting helped plant the idea of "network-centric warfare" in the minds of "the nation's top military thinkers."

Excluding the public

Official Pentagon records confirm that the Highlands Forum's primary goal was to support DoD policies on O'Neill's specialism: information warfare. According to the Pentagon's 1997 *Annual Report to the President and the Congress* under a section titled 'Information Operations,' (IO) the Office of the Secretary of Defense (OSD) had authorized the "establishment of the Highlands Group of key DoD, industry, and academic IO experts" to coordinate IO across federal military intelligence agencies.

The following year's DoD annual report reiterated the Forum's centrality to information operations: "To examine IO issues, DoD sponsors the Highlands Forum, which brings together government, industry, and academic professionals from various fields."

Notice that in 1998, the Highlands 'Group' became a 'Forum.' According to O'Neill, this was to avoid subjecting Highlands Forums meetings to "bureaucratic restrictions." What he was alluding to was the Federal Advisory Committee Act (FACA), which regulates the way the US government can formally solicit the advice of special interests.

Known as the 'open government' law, FACA requires that US government officials cannot hold closed-door or secret consultations with people outside government to develop policy. All such consultations should take place via federal advisory committees that permit public scrutiny. FACA requires that meetings be held in public, announced via the Federal Register, that advisory groups are registered with an office at the General Services Administration, among other requirements intended to maintain accountability to the public interest.

But *Government Executive* reported that "O'Neill and others believed" such regulatory issues "would quell the free flow of ideas and no-holds-barred discussions they sought." Pentagon lawyers had warned that the word 'group' might necessitate certain obligations and advised running the whole thing privately: "So O'Neill renamed it the Highlands Forum and moved into the private sector to manage it as a consultant to the Pentagon." The Pentagon Highlands Forum thus runs under the mantle of O'Neill's 'intellectual capital venture firm,' 'Highlands Group Inc.'

In 1995, a year after William Perry appointed O'Neill to head up the Highlands Forum, SAIC — the Forum's "partner" organization — launched a new Center for Information Strategy and Policy under the direction of "Jeffrey Cooper, a member of the Highlands Group who advises senior Defense Department officials on information warfare issues." The Center had precisely the same objective as the Forum, to function as "a clearinghouse to bring together the best and brightest minds in information warfare by sponsoring a continuing series of

seminars, papers and symposia which explore the implications of information warfare in depth." The aim was to "enable leaders and policymakers from government, industry, and academia to address key issues surrounding information warfare to ensure that the United States retains its edge over any and all potential enemies."

Despite FACA regulations, federal advisory committees are already heavily influenced, if not captured, by corporate power. So in bypassing FACA, the Pentagon overrode even the loose restrictions of FACA, by permanently excluding any possibility of public engagement.

O'Neill's claim that there are no reports or recommendations is disingenuous. By his own admission, the secret Pentagon consultations with industry that have taken place through the Highlands Forum since 1994 have been accompanied by regular presentations of academic and policy papers, recordings and notes of meetings, and other forms of documentation that are locked behind a login only accessible by Forum delegates. This violates the spirit, if not the letter, of FACA — in a way that is patently intended to circumvent democratic accountability and the rule of law.

The Highlands Forum doesn't need to produce consensus recommendations. Its purpose is to provide the Pentagon a shadow social networking mechanism to cement lasting relationships with corporate power, and to identify new talent, that can be used to fine-tune information warfare strategies in absolute secrecy.

Total participants in the DoD's Highlands Forum number over a thousand, although sessions largely consist of small closed workshop style gatherings of maximum 25–30 people, bringing together experts and officials depending on the subject. Delegates have included senior personnel from SAIC and Booz Allen Hamilton, RAND Corp., Cisco, Human Genome Sciences, eBay, PayPal, IBM, Google, Microsoft, AT&T, the BBC, Disney, General Electric, Enron, among innumerable others; Democrat and Republican members of Congress and the Senate; senior executives from the US energy industry such as Daniel Yergin of IHS Cambridge Energy Research Associates; and key people involved in both sides of presidential campaigns.

Other participants have included senior media professionals: David Ignatius, associate editor of the *Washington Post* and at the time the executive editor of the *International Herald Tribune*; Thomas Friedman, long-time *New York Times* columnist; Arnaud de Borchgrave, an editor at *Washington Times* and *United Press International*; Steven Levy, a former *Newsweek* editor, senior writer for *Wired* and now chief tech editor at *Medium*; Lawrence Wright, staff writer at the *New Yorker*; Noah Shachtmann, executive editor at the *Daily Beast*; Rebecca McKinnon, co-founder of *Global Voices Online*; Nik Gowing of the BBC; and John Markoff of the *New York Times.*

Due to its current sponsorship by the OSD's undersecretary of defense for intelligence, the Forum has inside access to the chiefs of the main US surveillance and reconnaissance agencies, as well as the directors and their assistants at DoD research agencies, from DARPA to the ONA. This also means that the Forum is deeply plugged into the Pentagon's policy research task forces.

Google: seeded by the Pentagon

In 1994 — the same year the Highlands Forum was founded under the stewardship of the Office of the Secretary of Defense, the ONA, and DARPA — two young PhD students at Stanford University, Sergey Brin and Larry Page, made their breakthrough on the first automated web crawling and page ranking application. That application remains the core component of what eventually became Google's search service. Brin and Page had performed their work with funding from the Digital Library Initiative (DLI), a multi-agency program of the National Science Foundation (NSF), NASA and DARPA.

But that's just one side of the story.

Throughout the development of the search engine, Sergey Brin reported regularly and directly to two people who were not Stanford faculty at all: Dr. Bhavani Thuraisingham and Dr. Rick Steinheiser. Both were representatives of a sensitive US intelligence community research program on information security and data-mining.

Thuraisingham is currently the Louis A. Beecherl distinguished professor and executive director of the Cyber Security Research Institute at the University of Texas, Dallas, and a sought-after expert on data-mining, data management and information security issues. But in the 1990s, she worked for the MITRE Corp., a leading US defense contractor, where she managed the Massive Digital Data Systems initiative, a project sponsored by the NSA, CIA, and the Director of Central Intelligence, to foster innovative research in information technology.

"We funded Stanford University through the computer scientist Jeffrey Ullman, who had several promising graduate students working on many exciting areas," Prof. Thuraisingham told me. "One of them was Sergey Brin, the founder of Google. The intelligence community's MDDS program essentially provided Brin seed-funding, which was supplemented by many other sources, including the private sector."

This sort of funding is certainly not unusual, and Sergey Brin's being able to receive it by being a graduate student at Stanford appears to have been incidental. The Pentagon was all over computer science research at this time. But it illustrates how deeply entrenched the culture of Silicon Valley is in the values of the US intelligence community.

In an extraordinary document hosted by the website of the University of Texas, Thuraisingham recounts that from 1993 to 1999, "the Intelligence Community [IC] started a program called Massive Digital Data Systems (MDDS) that I was managing for the Intelligence Community when I was at the MITRE Corporation." The program funded 15 research efforts at various universities, including Stanford. Its goal was developing "data management technologies to manage several terabytes to petabytes of data," including for "query processing, transaction management, metadata management, storage management, and data integration."

At the time, Thuraisingham was chief scientist for data and information management at MITRE, where she led team to research and development efforts for the NSA, CIA, US Air

Force Research Laboratory, as well as the US Navy's Space and Naval Warfare Systems Command (SPAWAR) and Communications and Electronics Command (CECOM). She went on to teach courses for US government officials and defense contractors on data-mining in counter-terrorism.

In her University of Texas article, she attaches a copy of an abstract of the US intelligence community's MDDS program that had been presented to the "Annual Intelligence Community Symposium" in 1995. The abstract reveals that the primary sponsors of the MDDS program were three agencies: the NSA, the CIA's Office of Research & Development, and the intelligence community's Community Management Staff (CMS) which operates under the Director of Central Intelligence. Administrators of the program, which provided funding of around 3–4 million dollars per year for 3–4 years, were identified as Hal Curran (NSA), Robert Kluttz (CMS), Dr. Claudia Pierce (NSA), Dr. Rick Steinheiser (ORD — standing for the CIA's Office of Research and Development), and Dr. Thuraisingham herself.

Thuraisingham goes on in her article to reiterate that this joint CIA-NSA program partly funded Sergey Brin to develop the core of Google, through a grant to Stanford managed by Brin's supervisor Prof. Jeffrey D. Ullman:

> "In fact, the Google founder Mr. Sergey Brin was partly funded by this program while he was a PhD student at Stanford. He together with his advisor Prof. Jeffrey Ullman and my colleague at MITRE, Dr. Chris Clifton [Mitre's chief scientist in IT], developed the Query Flocks System which produced solutions for mining large amounts of data stored in databases. I remember visiting Stanford with Dr. Rick Steinheiser from the Intelligence Community and Mr. Brin would rush in on roller blades, give his presentation and rush out. In fact the last time we met in September 1998, Mr. Brin demonstrated to us his search engine which became Google soon after."

Brin and Page officially incorporated Google as a company in September 1998, the very month they last reported to Thuraisingham and Steinheiser. 'Query Flocks' was also part of Google's patented 'PageRank' search system, which Brin developed at Stanford under the CIA-NSA-MDDS program, as well as with funding from the NSF, IBM and Hitachi. That year, MITRE's Dr. Chris Clifton, who worked under Thuraisingham to develop the 'Query Flocks' system, co-authored a paper with Brin's supervisor, Prof. Ullman, and the CIA's Rick Steinheiser. Titled 'Knowledge Discovery in Text,' the paper was presented at an academic conference.

"The MDDS funding that supported Brin was significant as far as seed-funding goes, but it was probably outweighed by the other funding streams," said Thuraisingham. "The duration of Brin's funding was around two years or so. In that period, I and my colleagues from the MDDS would visit Stanford to see Brin and monitor his progress every three months or so. We didn't supervise exactly, but we did want to check progress, point out potential problems

and suggest ideas. In those briefings, Brin did present to us on the query flocks research, and also demonstrated to us versions of the Google search engine."

Brin thus reported to Thuraisingham and Steinheiser regularly about his work developing Google.

Since the publication of this article, Prof. Thuraisingham has amended her article referenced above. The amended version includes a new modified statement, followed by a copy of the original version of her account of the MDDS. In this amended version, Thuraisingham rejects the idea that the CIA funded Google, and says instead:

> "In fact Prof. Jeffrey Ullman (at Stanford) and my colleague at MITRE Dr. Chris Clifton together with some others developed the Query Flocks System, as part of MDDS, which produced solutions for mining large amounts of data stored in databases. Also, Mr. Sergey Brin, the cofounder of Google, was part of Prof. Ullman's research group at that time. I remember visiting Stanford with Dr. Rick Steinheiser from the Intelligence Community periodically and Mr. Brin would rush in on roller blades, give his presentation and rush out. During our last visit to Stanford in September 1998, Mr. Brin demonstrated to us his search engine which I believe became Google soon after…
>
> There are also several inaccuracies in Dr. Ahmed's article (dated January 22, 2015). For example, the MDDS program was not a 'sensitive' program as stated by Dr. Ahmed; it was an Unclassified program that funded universities in the US. Furthermore, Sergey Brin never reported to me or to Dr. Rick Steinheiser; he only gave presentations to us during our visits to the Department of Computer Science at Stanford during the 1990s. Also, MDDS never funded Google; it funded Stanford University."

Here, there is no substantive factual difference in Thuraisingham's accounts, other than to assert that her statement associating Sergey Brin with the development of 'query flocks' is mistaken. Notably, this acknowledgment is derived not from her own knowledge, but from this very article quoting a comment from a Google spokesperson.

However, the bizarre attempt to disassociate Google from the MDDS program misses the mark. Firstly, the MDDS never funded Google, because, during the development of the core components of the Google search engine, there was no company incorporated with that name. The grant was instead provided to Stanford University through Prof. Ullman, through whom some MDDS funding was used to support Brin who was co-developing Google at the time.

Secondly, Thuraisingham then adds that Brin never "reported" to her or the CIA's Steinheiser, but admits he "gave presentations to us during our visits to the Department of Computer Science at Stanford during the 1990s." It is unclear, though, what the distinction is here between reporting, and delivering a detailed presentation — either way, Thuraisingham confirms that she and the CIA had taken a keen interest in Brin's development of Google.

Thirdly, Thuraisingham describes the MDDS program as “unclassified,” but this does not contradict its “sensitive” nature. As someone who has worked for decades as an intelligence contractor and advisor, Thuraisingham is surely aware that there are many ways of categorizing intelligence, including ‘sensitive but unclassified.’ A number of former US intelligence officials I spoke to said that the almost total lack of public information on the CIA and NSA’s MDDS initiative suggests that although the program was not classified, it is likely instead that its contents were considered sensitive, which would explain efforts to minimize transparency about the program and the way it fed back into developing tools for the US intelligence community.

Fourthly, and finally, it is important to point out that the MDDS abstract which Thuraisingham includes in her University of Texas document states clearly not only that the Director of Central Intelligence’s CMS, CIA and NSA were the overseers of the MDDS initiative, but that the intended customers of the project were “DoD, IC, and other government organizations”: the Pentagon, the US intelligence community, and other relevant US government agencies.

In other words, the provision of MDDS funding to Brin through Ullman, under the oversight of Thuraisingham and Steinheiser, was fundamental because they recognized the potential utility of Brin’s work developing Google to the Pentagon, intelligence community, and the federal government at large.

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The MDDS programme is actually referenced in several papers co-authored by Brin and Page while at Stanford, specifically highlighting its role in financially sponsoring Brin in the development of Google. In their 1998 paper published in the *Bulletin of the IEEE Computer Society Technical Committeee on Data Engineering*, they describe the automation of methods to extract information from the web via “Dual Iterative Pattern Relation Extraction,” the development of “a global ranking of Web pages called PageRank,” and the use of PageRank “to develop a novel search engine called Google.” Through an opening footnote, Sergey Brin confirms he was “Partially supported by the Community Management Staff’s Massive Digital Data Systems Program, NSF grant IRI-96–31952” — confirming that Brin’s work developing Google was indeed partly-funded by the CIA-NSA-MDDS program.

This NSF grant identified alongside the MDDS, whose project report lists Brin among the students supported (without mentioning the MDDS), was different to the NSF grant to Larry Page that included funding from DARPA and NASA. The project report, authored by Brin’s supervisor Prof. Ullman, goes on to say under the section ‘Indications of Success’ that “there are some new stories of startups based on NSF-supported research.” Under ‘Project Impact,’ the report remarks: “Finally, the google project has also gone commercial as Google.com.”

Thuraisingham’s account, including her new amended version, therefore demonstrates that the CIA-NSA-MDDS program was not only partly funding Brin throughout his work with Larry Page developing Google, but that senior US intelligence representatives including a CIA official oversaw the evolution of Google in this pre-launch phase, all the way until the company was ready to be officially founded. Google, then, had been enabled with a

“significant” amount of seed-funding and oversight from the Pentagon: namely, the CIA, NSA, and DARPA.

The DoD could not be reached for comment.

When I asked Prof. Ullman to confirm whether or not Brin was partly funded under the intelligence community’s MDDS program, and whether Ullman was aware that Brin was regularly briefing the CIA’s Rick Steinheiser on his progress in developing the Google search engine, Ullman’s responses were evasive: “May I know whom you represent and why you are interested in these issues? Who are your ‘sources’?” He also denied that Brin played a significant role in developing the ‘query flocks’ system, although it is clear from Brin’s papers that he did draw on that work in co-developing the PageRank system with Page.

When I asked Ullman whether he was denying the US intelligence community’s role in supporting Brin during the development of Google, he said: “I am not going to dignify this nonsense with a denial. If you won’t explain what your theory is, and what point you are trying to make, I am not going to help you in the slightest.”

The MDDS abstract published online at the University of Texas confirms that the rationale for the CIA-NSA project was to “provide seed money to develop data management technologies which are of high-risk and high-pay-off,” including techniques for “querying, browsing, and filtering; transaction processing; accesses methods and indexing; metadata management and data modelling; and integrating heterogeneous databases; as well as developing appropriate architectures.” The ultimate vision of the program was to “provide for the seamless access and fusion of massive amounts of data, information and knowledge in a heterogeneous, real-time environment” for use by the Pentagon, intelligence community and potentially across government.

These revelations corroborate the claims of Robert Steele, former senior CIA officer and a founding civilian deputy director of the Marine Corps Intelligence Activity, whom I interviewed for *The Guardian* last year on open source intelligence. Citing sources at the CIA, Steele had said in 2006 that Steinheiser, an old colleague of his, was the CIA’s main liaison at Google and had arranged early funding for the pioneering IT firm. At the time, *Wired* founder John Batelle managed to get this official denial from a Google spokesperson in response to Steele’s assertions:

> “The statements related to Google are completely untrue.”

This time around, despite multiple requests and conversations, a Google spokesperson declined to comment.

Total Information Awareness

A call for papers for the MDDS was sent out via email list on November 3rd 1993 from senior US intelligence official David Charvonia, director of the research and development coordination office of the intelligence community’s CMS. The reaction from Tatu Ylonen (celebrated inventor of the widely used secure shell [SSH] data protection protocol) to his

colleagues on the email list is telling: “Crypto relevance? Makes you think whether you should protect your data.” The email also confirms that defense contractor and Highlands Forum partner, SAIC, was managing the MDDS submission process, with abstracts to be sent to Jackie Booth of the CIA’s Office of Research and Development via a SAIC email address.

By 1997, Thuraisingham reveals, shortly before Google became incorporated and while she was still overseeing the development of its search engine software at Stanford, her thoughts turned to the national security applications of the MDDS program. In the acknowledgments to her book, *Web Data Mining and Applications in Business Intelligence and Counter-Terrorism (2003)*, Thuraisingham writes that she and “Dr. Rick Steinheiser of the CIA, began discussions with Defense Advanced Research Projects Agency on applying data-mining for counter-terrorism,” an idea that resulted directly from the MDDS program which partly funded Google. “These discussions eventually developed into the current EELD (Evidence Extraction and Link Detection) program at DARPA.”

So the very same senior CIA official and CIA-NSA contractor involved in providing the seed-funding for Google were simultaneously contemplating the role of data-mining for counter-terrorism purposes and were developing ideas for tools actually advanced by DARPA.

Today, as illustrated by her recent oped in the *New York Times*, Thuraisingham remains a staunch advocate of data-mining for counter-terrorism purposes, but also insists that these methods must be developed by the government in cooperation with civil liberties lawyers and privacy advocates to ensure that robust procedures are in place to prevent potential abuse. She points out, damningly, that with the quantity of information being collected, there is a high risk of false positives.

In 1993, when the MDDS program was launched and managed by MITRE Corp. on behalf of the US intelligence community, University of Virginia computer scientist Dr. Anita K. Jones — a MITRE trustee — landed the job of DARPA director and head of research and engineering across the Pentagon. She had been on the board of MITRE since 1988. From 1987 to 1993, Jones simultaneously served on SAIC’s board of directors. As the new head of DARPA from 1993 to 1997, she also co-chaired the Pentagon’s Highlands Forum during the period of Google’s pre-launch development at Stanford under the MDSS.

Thus, when Thuraisingham and Steinheiser were talking to DARPA about the counter-terrorism applications of MDDS research, Jones was DARPA director and Highlands Forum co-chair. That year, Jones left DARPA to return to her post at the University of Virgina. The following year, she joined the board of the National Science Foundation, which of course had also just funded Brin and Page, and also returned to the board of SAIC. When she left DoD, Senator Chuck Robb paid Jones the following tribute : “She brought the technology and operational military communities together to design detailed plans to sustain US dominance on the battlefield into the next century.”

On the board of the National Science Foundation from 1992 to 1998 (including a stint as chairman from 1996) was Richard N. Zare. This was the period in which the NSF sponsored

Sergey Brin and Larry Page in association with DARPA. In June 1994, Prof. Zare, a chemist at Stanford, participated with Prof. Jeffrey Ullman (who supervised Sergey Brin's research), on a panel sponsored by Stanford and the National Research Council discussing the need for scientists to show how their work "ties to national needs." The panel brought together scientists and policymakers, including "Washington insiders."

DARPA's EELD program, inspired by the work of Thuraisingham and Steinheiser under Jones' watch, was rapidly adapted and integrated with a suite of tools to conduct comprehensive surveillance under the Bush administration.

According to DARPA official Ted Senator, who led the EELD program for the agency's short-lived Information Awareness Office, EELD was among a range of "promising techniques" being prepared for integration "into the prototype TIA system." TIA stood for Total Information Awareness, and was the main global electronic eavesdropping and data-mining program deployed by the Bush administration after 9/11. TIA had been set up by Iran-Contra conspirator Admiral John Poindexter, who was appointed in 2002 by Bush to lead DARPA's new Information Awareness Office.

The Xerox Palo Alto Research Center (PARC) was another contractor among 26 companies (also including SAIC) that received million dollar contracts from DARPA (the specific quantities remained classified) under Poindexter, to push forward the TIA surveillance program in 2002 onwards. The research included "behavior-based profiling," "automated detection, identification and tracking" of terrorist activity, among other data-analyzing projects. At this time, PARC's director and chief scientist was John Seely Brown. Both Brown and Poindexter were Pentagon Highlands Forum participants — Brown on a regular basis until recently.

TIA was purportedly shut down in 2003 due to public opposition after the program was exposed in the media, but the following year Poindexter participated in a Pentagon Highlands Group session in Singapore, alongside defense and security officials from around the world. Meanwhile, Ted Senator continued to manage the EELD program among other data-mining and analysis projects at DARPA until 2006, when he left to become a vice president at SAIC. He is now a SAIC/Leidos technical fellow.

Google, DARPA and the money trail

Long before the appearance of Sergey Brin and Larry Page, Stanford University's computer science department had a close working relationship with US military intelligence. A letter dated November 5th 1984 from the office of renowned artificial intelligence (AI) expert, Prof Edward Feigenbaum, addressed to Rick Steinheiser, gives the latter directions to Stanford's Heuristic Programming Project, addressing Steinheiser as a member of the "AI Steering Committee." A list of attendees at a contractor conference around that time, sponsored by the Pentagon's Office of Naval Research (ONR), includes Steinheiser as a delegate under the designation "OPNAV Op-115" — which refers to the Office of the Chief of Naval

Operations' program on operational readiness, which played a major role in advancing digital systems for the military.

From the 1970s, Prof. Feigenbaum and his colleagues had been running Stanford's Heuristic Programming Project under contract with DARPA, continuing through to the 1990s. Feigenbaum alone had received around over $7 million in this period for his work from DARPA, along with other funding from the NSF, NASA, and ONR.

Brin's supervisor at Stanford, Prof. Jeffrey Ullman, was in 1996 part of a joint funding project of DARPA's Intelligent Integration of Information program. That year, Ullman co-chaired DARPA-sponsored meetings on data exchange between multiple systems.

In September 1998, the same month that Sergey Brin briefed US intelligence representatives Steinheiser and Thuraisingham, tech entrepreneurs Andreas Bechtolsheim and David Cheriton invested $100,000 each in Google. Both investors were connected to DARPA.

As a Stanford PhD student in electrical engineering in the 1980s, Bechtolsheim's pioneering SUN workstation project had been funded by DARPA and the Stanford computer science department — this research was the foundation of Bechtolsheim's establishment of Sun Microsystems, which he co-founded with William Joy.

As for Bechtolsheim's co-investor in Google, David Cheriton, the latter is a long-time Stanford computer science professor who has an even more entrenched relationship with DARPA. His bio at the University of Alberta, which in November 2014 awarded him an honorary science doctorate, says that Cheriton's "research has received the support of the US Defense Advanced Research Projects Agency (DARPA) for over 20 years."

In the meantime, Bechtolsheim left Sun Microsystems in 1995, co-founding Granite Systems with his fellow Google investor Cheriton as a partner. They sold Granite to Cisco Systems in 1996, retaining significant ownership of Granite, and becoming senior Cisco executives.

An email obtained from the Enron Corpus (a database of 600,000 emails acquired by the Federal Energy Regulatory Commission and later released to the public) from Richard O'Neill, inviting Enron executives to participate in the Highlands Forum, shows that Cisco and Granite executives are intimately connected to the Pentagon. The email reveals that in May 2000, Bechtolsheim's partner and Sun Microsystems co-founder, William Joy — who was then chief scientist and corporate executive officer there — had attended the Forum to discuss nanotechnology and molecular computing.

In 1999, Joy had also co-chaired the President's Information Technology Advisory Committee, overseeing a report acknowledging that DARPA had:

> "… revised its priorities in the 90's so that all information technology funding was judged in terms of its benefit to the warfighter."

Throughout the 1990s, then, DARPA's funding to Stanford, including Google, was explicitly about developing technologies that could augment the Pentagon's military intelligence operations in war theatres.

The Joy report recommended more federal government funding from the Pentagon, NASA, and other agencies to the IT sector. Greg Papadopoulos, another of Bechtolsheim's colleagues as then Sun Microsystems chief technology officer, also attended a Pentagon Highlands' Forum meeting in September 2000.

In November, the Pentagon Highlands Forum hosted Sue Bostrom, who was vice president for the internet at Cisco, sitting on the company's board alongside Google co-investors Bechtolsheim and Cheriton. The Forum also hosted Lawrence Zuriff, then a managing partner of Granite, which Bechtolsheim and Cheriton had sold to Cisco. Zuriff had previously been an SAIC contractor from 1993 to 1994, working with the Pentagon on national security issues, specifically for Marshall's Office of Net Assessment. In 1994, both the SAIC and the ONA were, of course, involved in co-establishing the Pentagon Highlands Forum. Among Zuriff's output during his SAIC tenure was a paper titled *'Understanding Information War'*, delivered at a SAIC-sponsored US Army Roundtable on the Revolution in Military Affairs.

After Google's incorporation, the company received $25 million in equity funding in 1999 led by Sequoia Capital and Kleiner Perkins Caufield & Byers. According to *Homeland Security Today*, "A number of Sequoia-bankrolled start-ups have contracted with the Department of Defense, especially after 9/11 when Sequoia's Mark Kvamme met with Defense Secretary Donald Rumsfeld to discuss the application of emerging technologies to warfighting and intelligence collection." Similarly, Kleiner Perkins had developed "a close relationship" with In-Q-Tel, the CIA venture capitalist firm that funds start-ups "to advance 'priority' technologies of value" to the intelligence community.

John Doerr, who led the Kleiner Perkins investment in Google obtaining a board position, was a major early investor in Becholshtein's Sun Microsystems at its launch. He and his wife Anne are the main funders behind Rice University's Center for Engineering Leadership (RCEL), which in 2009 received $16 million from DARPA for its platform-aware-compilation-environment (PACE) ubiquitous computing R&D program. Doerr also has a close relationship with the Obama administration, which he advised shortly after it took power to ramp up Pentagon funding to the tech industry. In 2013, at the Fortune Brainstorm TECH conference, Doerr applauded "how the DoD's DARPA funded GPS, CAD, most of the major computer science departments, and of course, the Internet."

From inception, in other words, Google was incubated, nurtured and financed by interests that were directly affiliated or closely aligned with the US military intelligence community: many of whom were embedded in the Pentagon Highlands Forum.

Google captures the Pentagon

In 2003, Google began customizing its search engine under special contract with the CIA for its Intelink Management Office, "overseeing top-secret, secret and sensitive but unclassified

intranets for CIA and other IC agencies," according to *Homeland Security Today.* That year, CIA funding was also being "quietly" funneled through the National Science Foundation to projects that might help create "new capabilities to combat terrorism through advanced technology."

The following year, Google bought the firm Keyhole, which had originally been funded by In-Q-Tel. Using Keyhole, Google began developing the advanced satellite mapping software behind Google Earth. Former DARPA director and Highlands Forum co-chair Anita Jones had been on the board of In-Q-Tel at this time, and remains so today.

Then in November 2005, In-Q-Tel issued notices to sell $2.2 million of Google stocks. Google's relationship with US intelligence was further brought to light when an IT contractor told a closed Washington DC conference of intelligence professionals on a not-for-attribution basis that at least one US intelligence agency was working to "leverage Google's [user] data monitoring" capability as part of an effort to acquire data of "national security intelligence interest."

A photo on Flickr dated March 2007 reveals that Google research director and AI expert Peter Norvig attended a Pentagon Highlands Forum meeting that year in Carmel, California. Norvig's intimate connection to the Forum as of that year is also corroborated by his role in guest editing the 2007 Forum reading list.

The photo below shows Norvig in conversation with Lewis Shepherd, who at that time was senior technology officer at the Defense Intelligence Agency, responsible for investigating, approving, and architecting "all new hardware/software systems and acquisitions for the Global Defense Intelligence IT Enterprise," including "big data technologies." Shepherd now works at Microsoft. Norvig was a computer research scientist at Stanford University in 1991 before joining Bechtolsheim's Sun Microsystems as senior scientist until 1994, and going on to head up NASA's computer science division.

Norvig shows up on O'Neill's Google Plus profile as one of his close connections. Scoping the rest of O'Neill's Google Plus connections illustrates that he is directly connected not just to a wide range of Google executives, but also to some of the biggest names in the US tech community.

Those connections include Michele Weslander Quaid, an ex-CIA contractor and former senior Pentagon intelligence official who is now Google's chief technology officer where she is developing programs to "best-fit government agencies' needs"; Elizabeth Churchill, Google director of user experience; James Kuffner, a humanoid robotics expert who now heads up Google's robotics division and who introduced the term 'cloud robotics'; Mark Drapeau, director of innovation engagement for Microsoft's public sector business; Lili Cheng, general manager of Microsoft's Future Social Experiences (FUSE) Labs; Jon Udell, Microsoft 'evangelist'; Cory Ondrejka, vice president of engineering at Facebook; to name just a few.

In 2010, Google signed a multi-billion dollar no-bid contract with the NSA's sister agency, the National Geospatial-Intelligence Agency (NGA). The contract was to use Google Earth for

visualization services for the NGA. Google had developed the software behind Google Earth by purchasing Keyhole from the CIA venture firm In-Q-Tel.

Then a year after, in 2011, another of O'Neill's Google Plus connections, Michele Quaid — who had served in executive positions at the NGA, National Reconnaissance Office and the Office of the Director of National Intelligence — left her government role to become Google 'innovation evangelist' and the point-person for seeking government contracts. Quaid's last role before her move to Google was as a senior representative of the Director of National Intelligence to the Intelligence, Surveillance, and Reconnaissance Task Force, and a senior advisor to the undersecretary of defense for intelligence's director of Joint and Coalition Warfighter Support (J&CWS). Both roles involved information operations at their core. Before her Google move, in other words, Quaid worked closely with the Office of the Undersecretary of Defense for Intelligence, to which the Pentagon's Highlands Forum is subordinate. Quaid has herself attended the Forum, though precisely when and how often I could not confirm.

In March 2012, then DARPA director Regina Dugan — who in that capacity was also co-chair of the Pentagon Highlands Forum — followed her colleague Quaid into Google to lead the company's new Advanced Technology and Projects Group. During her Pentagon tenure, Dugan led on strategic cybersecurity and social media, among other initiatives. She was responsible for focusing "an increasing portion" of DARPA's work "on the investigation of offensive capabilities to address military-specific needs," securing $500 million of government funding for DARPA cyber research from 2012 to 2017.

Regina Dugan, former head of DARPA and Highlands Forum co-chair, now a senior Google executive — trying her best to look the part

By November 2014, Google's chief AI and robotics expert James Kuffner was a delegate alongside O'Neill at the Highlands Island Forum 2014 in Singapore, to explore 'Advancement in Robotics and Artificial Intelligence: Implications for Society, Security and Conflict.' The event included 26 delegates from Austria, Israel, Japan, Singapore, Sweden, Britain and the US, from both industry and government. Kuffner's association with the Pentagon, however, began much earlier. In 1997, Kuffner was a researcher during his Stanford PhD for a Pentagon-funded project on networked autonomous mobile robots, sponsored by DARPA and the US Navy.

Rumsfeld and persistent surveillance

In sum, many of Google's most senior executives are affiliated with the Pentagon Highlands Forum, which throughout the period of Google's growth over the last decade, has surfaced repeatedly as a connecting and convening force. The US intelligence community's incubation of Google from inception occurred through a combination of direct sponsorship and informal networks of financial influence, themselves closely aligned with Pentagon interests.

The Highlands Forum itself has used the informal relationship building of such private networks to bring together defense and industry sectors, enabling the fusion of corporate and military interests in expanding the covert surveillance apparatus in the name of national security. The power wielded by the shadow network represented in the Forum can, however, be gauged most clearly from its impact during the Bush administration, when it played a direct role in literally writing the strategies and doctrines behind US efforts to achieve 'information superiority.'

In December 2001, O'Neill confirmed that strategic discussions at the Highlands Forum were feeding directly into Andrew Marshall's DoD-wide strategic review ordered by President Bush and Donald Rumsfeld to upgrade the military, including the Quadrennial Defense Review — and that some of the earliest Forum meetings "resulted in the writing of a group of DoD policies, strategies, and doctrine for the services on information warfare." That process of "writing" the Pentagon's information warfare policies "was done in conjunction with people who understood the environment differently — not only US citizens, but also foreign citizens, and people who were developing corporate IT."

The Pentagon's post-9/11 information warfare doctrines were, then, written not just by national security officials from the US and abroad: but also by powerful corporate entities in the defense and technology sectors.

In April that year, Gen. James McCarthy had completed his defense transformation review ordered by Rumsfeld. His report repeatedly highlighted mass surveillance as integral to DoD transformation. As for Marshall, his follow-up report for Rumsfeld was going to develop a blueprint determining the Pentagon's future in the 'information age.'

O'Neill also affirmed that to develop information warfare doctrine, the Forum had held extensive discussions on electronic surveillance and "what constitutes an act of war in an information environment." Papers feeding into US defense policy written through the late 1990s by RAND consultants John Arquilla and David Rondfeldt, both longstanding Highlands Forum members, were produced "as a result of those meetings," exploring policy dilemmas on how far to take the goal of 'Information Superiority.' "One of the things that was shocking to the American public was that we weren't pilfering Milosevic's accounts electronically when we in fact could," commented O'Neill.

Although the R&D process around the Pentagon transformation strategy remains classified, a hint at the DoD discussions going on in this period can be gleaned from a 2005 US Army School of Advanced Military Studies research monograph in the DoD journal, *Military Review*, authored by an active Army intelligence officer.

"The idea of Persistent Surveillance as a transformational capability has circulated within the national Intelligence Community (IC) and the Department of Defense (DoD) for at least three years," the paper said, referencing the Rumsfeld-commissioned transformation study.

The Army paper went on to review a range of high-level official military documents, including one from the Office of the Chairman of the Joint Chiefs of Staff, showing that "Persistent Surveillance" was a fundamental theme of the information-centric vision for defense policy across the Pentagon.

We now know that just two months before O'Neill's address at Harvard in 2001, under the TIA program, President Bush had secretly authorized the NSA's domestic surveillance of Americans without court-approved warrants, in what appears to have been an illegal modification of the ThinThread data-mining project — as later exposed by NSA whistleblowers William Binney and Thomas Drake.

The surveillance-startup nexus

From here on, Highlands Forum partner SAIC played a key role in the NSA roll out from inception. Shortly after 9/11, Brian Sharkey, chief technology officer of SAIC's ELS3 Sector (focusing on IT systems for emergency responders), teamed up with John Poindexter to propose the TIA surveillance program. SAIC's Sharkey had previously been deputy director of the Information Systems Office at DARPA through the 1990s.

Meanwhile, around the same time, SAIC vice president for corporate development, Samuel Visner, became head of the NSA's signals-intelligence programs. SAIC was then among a consortium receiving a $280 million contract to develop one of the NSA's secret eavesdropping systems. By 2003, Visner returned to SAIC to become director of strategic planning and business development of the firm's intelligence group.

That year, the NSA consolidated its TIA programme of warrantless electronic surveillance, to keep “track of individuals” and understand “how they fit into models” through risk profiles of American citizens and foreigners. TIA was doing this by integrating databases on finance, travel, medical, educational and other records into a “virtual, centralized grand database.”

This was also the year that the Bush administration drew up its notorious Information Operations Roadmap. Describing the internet as a “vulnerable weapons system,” Rumsfeld’s IO roadmap had advocated that Pentagon strategy “should be based on the premise that the Department [of Defense] will ‘fight the net’ as it would an enemy weapons system.” The US should seek “maximum control” of the “full spectrum of globally emerging communications systems, sensors, and weapons systems,” advocated the document.

The following year, John Poindexter, who had proposed and run the TIA surveillance program via his post at DARPA, was in Singapore participating in the Highlands 2004 Island Forum. Other delegates included then Highlands Forum co-chair and Pentagon CIO Linton Wells; president of notorious Pentagon information warfare contractor, John Rendon; Karl Lowe, director of the Joint Forces Command (JFCOM) Joint Advanced Warfighting Division; Air Vice Marshall Stephen Dalton, capability manager for information superiority at the UK Ministry of Defense; Lt. Gen. Johan Kihl, Swedish army Supreme Commander HQ’s chief of staff; among others.

As of 2006, SAIC had been awarded a multi-million dollar NSA contract to develop a big data-mining project called ExecuteLocus, despite the colossal $1 billion failure of its preceding contract, known as ‘Trailblazer.’ Core components of TIA were being “quietly continued” under “new code names,” according to *Foreign Policy’s* Shane Harris, but had been concealed “behind the veil of the classified intelligence budget.” The new surveillance program had by then been fully transitioned from DARPA’s jurisdiction to the NSA.

This was also the year of yet another Singapore Island Forum led by Richard O’Neill on behalf of the Pentagon, which included senior defense and industry officials from the US, UK, Australia, France, India and Israel. Participants also included senior technologists from Microsoft, IBM, as well as Gilman Louie, partner at technology investment firm Alsop Louie Partners.

Gilman Louie is a former CEO of In-Q-Tel — the CIA firm investing especially in start-ups developing data mining technology. In-Q-Tel was founded in 1999 by the CIA’s Directorate of Science and Technology, under which the Office of Research and Development (ORD) — which was part of the Google-funding MDSS program — had operated. The idea was to essentially replace the functions once performed by the ORD, by mobilizing the private sector to develop information technology solutions for the entire intelligence community.

Louie had led In-Q-Tel from 1999 until January 2006 — including when Google bought Keyhole, the In-Q-Tel-funded satellite mapping software. Among his colleagues on In-Q-Tel’s board in this period were former DARPA director and Highlands Forum co-chair Anita Jones (who is still there), as well as founding board member William Perry: the man who had appointed O’Neill to set-up the Highlands Forum in the first place. Joining Perry as a founding In-Q-Tel board member was John Seely Brown, then chief scientist at Xerox Corp

and director of its Palo Alto Research Center (PARC) from 1990 to 2002, who is also a long-time senior Highlands Forum member since inception.

In addition to the CIA, In-Q-Tel has also been backed by the FBI, NGA, and Defense Intelligence Agency, among other agencies. More than 60 percent of In-Q-Tel's investments under Louie's watch was "in companies that specialize in automatically collecting, sifting through and understanding oceans of information," according to Medill School of Journalism's News21, which also noted that Louie himself had acknowledged it was not clear "whether privacy and civil liberties will be protected" by government's use of these technologies "for national security."

The transcript of Richard O'Neill's late 2001 seminar at Harvard shows that the Pentagon Highlands Forum had first engaged Gilman Louie long before the Island Forum, in fact, shortly after 9/11 to explore "what's going on with In-Q-Tel."

That Forum session focused on how to "take advantage of the speed of the commercial market that wasn't present inside the science and technology community of Washington" and to understand "the implications for the DoD in terms of the strategic review, the QDR, Hill action, and the stakeholders." Participants of the meeting included "senior military people," combatant commanders, "several of the senior flag officers," some "defense industry people" and various US representatives including Republican Congressman William Mac Thornberry and Democrat Senator Joseph Lieberman.

Both Thornberry and Lieberman are staunch supporters of NSA surveillance and have consistently acted to rally support for pro-war, pro-surveillance legislation. O'Neill's comments indicate that the Forum's role is not just to enable corporate contractors to write Pentagon policy, but to rally political support for government policies adopted through the Forum's informal brand of shadow networking.

Repeatedly, O'Neill told his Harvard audience that his job as Forum president was to scope case studies from real companies across the private sector, like eBay and Human Genome Sciences, to figure out the basis of US 'Information Superiority' — "how to dominate" the information market — and leverage this for "what the president and the secretary of defense wanted to do with regard to transformation of the DoD and the strategic review."

By 2007, a year after the Island Forum meeting that included Gilman Louie, Facebook received its second round of $12.7 million worth of funding from Accel Partners. Accel was headed up by James Breyer, former chair of the National Venture Capital Association (NVCA) where Louie also served on the board while still CEO of In-Q-Tel. Both Louie and Breyer had previously served together on the board of BBN Technologies — which had recruited ex-DARPA chief and In-Q-Tel trustee Anita Jones.

Facebook's 2008 round of funding was led by Greylock Venture Capital, which invested $27.5 million. The firm's senior partners include Howard Cox, another former NVCA chair who also sits on the board of In-Q-Tel. Apart from Breyer and Zuckerberg, Facebook's only other board member is Peter Thiel, co-founder of defense contractor Palantir which provides all sorts of data-mining and visualization technologies to US government, military and

intelligence agencies, including the NSA and FBI, and which itself was nurtured to financial viability by Highlands Forum members.

Palantir co-founders Thiel and Alex Karp met with John Poindexter in 2004, according to *Wired*, the same year Poindexter had attended the Highlands Island Forum in Singapore. They met at the home of Richard Perle, another Andrew Marshall acolyte. Poindexter helped Palantir open doors, and to assemble "a legion of advocates from the most influential strata of government." Thiel had also met with Gilman Louie of In-Q-Tel, securing the backing of the CIA in this early phase.

And so we come full circle. Data-mining programs like ExecuteLocus and projects linked to it, which were developed throughout this period, apparently laid the groundwork for the new NSA programs eventually disclosed by Edward Snowden. By 2008, as Facebook received its next funding round from Greylock Venture Capital, documents and whistleblower testimony confirmed that the NSA was effectively resurrecting the TIA project with a focus on Internet data-mining via comprehensive monitoring of e-mail, text messages, and Web browsing.

We also now know thanks to Snowden that the NSA's XKeyscore 'Digital Network Intelligence' exploitation system was designed to allow analysts to search not just Internet databases like emails, online chats and browsing history, but also telephone services, mobile phone audio, financial transactions and global air transport communications — essentially the entire global telecommunications grid. Highlands Forum partner SAIC played a key role, among other contractors, in producing and administering the NSA's XKeyscore, and was recently implicated in NSA hacking of the privacy network Tor.

The Pentagon Highlands Forum was therefore intimately involved in all this as a convening network—but also quite directly. Confirming his pivotal role in the expansion of the US-led global surveillance apparatus, then Forum co-chair, Pentagon CIO Linton Wells, told FedTech magazine in 2009 that he had overseen the NSA's rollout of "an impressive long-term architecture last summer that will provide increasingly sophisticated security until 2015 or so."

The Goldman Sachs connection

When I asked Wells about the Forum's role in influencing US mass surveillance, he responded only to say he would prefer not to comment and that he no longer leads the group.

As Wells is no longer in government, this is to be expected — but he is still connected to Highlands. As of September 2014, after delivering his influential white paper on Pentagon transformation, he joined the Monterey Institute for International Studies (MIIS) Cyber Security Initiative (CySec) as a distinguished senior fellow.

Sadly, this was not a form of trying to keep busy in retirement. Wells' move underscored that the Pentagon's conception of information warfare is not just about surveillance, but about the exploitation of surveillance to influence both government and public opinion.

The MIIS CySec initiative is now formally partnered with the Pentagon Highlands Forum through a Memorandum of Understanding signed with MIIS provost Dr Amy Sands, who sits on the Secretary of State's International Security Advisory Board. The MIIS CySec website states that the MoU signed with Richard O'Neill:

> "… paves the way for future joint MIIS CySec-Highlands Group sessions that will explore the impact of technology on security, peace and information engagement. For nearly 20 years the Highlands Group has engaged private sector and government leaders, including the Director of National Intelligence, DARPA, Office of the Secretary of Defense, Office of the Secretary of Homeland Security and the Singaporean Minister of Defence, in creative conversations to frame policy and technology research areas."

Who is the financial benefactor of the new Pentagon Highlands-partnered MIIS CySec initiative? According to the MIIS CySec site, the initiative was launched "through a generous donation of seed funding from George Lee." George C. Lee is a senior partner at Goldman Sachs, where he is chief information officer of the investment banking division, and chairman of the Global Technology, Media and Telecom (TMT) Group.

But here's the kicker. In 2011, it was Lee who engineered Facebook's $50 billion valuation, and previously handled deals for other Highlands-connected tech giants like Google, Microsoft and eBay. Lee's then boss, Stephen Friedman, a former CEO and chairman of Goldman Sachs, and later senior partner on the firm's executive board, was a also founding board member of In-Q-Tel alongside Highlands Forum overlord William Perry and Forum member John Seely Brown.

In 2001, Bush appointed Stephen Friedman to the President's Intelligence Advisory Board, and then to chair that board from 2005 to 2009. Friedman previously served alongside Paul Wolfowitz and others on the 1995–6 presidential commission of inquiry into US intelligence capabilities, and in 1996 on the Jeremiah Panel that produced a report to the Director of the National Reconnaisance Office (NRO) — one of the surveillance agencies plugged into the Highlands Forum.

Friedman was on the Jeremiah Panel with Martin Faga, then senior vice president and general manager of MITRE Corp's Center for Integrated Intelligence Systems — where Thuraisingham, who managed the CIA-NSA-MDDS program that inspired DARPA counter-terrorist data-mining, was also a lead engineer.

In the footnotes to a chapter for the book, *Cyberspace and National Security (*Georgetown University Press), SAIC/Leidos executive Jeff Cooper reveals that another Goldman Sachs senior partner Philip J. Venables — who as chief information risk officer leads the firm's programs on information security — delivered a Highlands Forum presentation in 2008 at what was called an 'Enrichment Session on Deterrence.' Cooper's chapter draws on

Venables' presentation at Highlands "with permission." In 2010, Venables participated with his then boss Friedman at an Aspen Institute meeting on the world economy. For the last few years, Venables has also sat on various NSA cybersecurity award review boards.

In sum, the investment firm responsible for creating the billion-dollar fortunes of the tech sensations of the 21st century, from Google to Facebook, is intimately linked to the US military intelligence community; with Venables, Lee and Friedman either directly connected to the Pentagon Highlands Forum, or to senior members of the Forum.

Fighting terror with terror

The convergence of these powerful financial and military interests around the Highlands Forum, through George Lee's sponsorship of the Forum's new partner, the MIIS Cysec initiative, is revealing in itself.

MIIS Cysec's director, Dr, Itamara Lochard, has long been embedded in Highlands. She regularly "presents current research on non-state groups, governance, technology and conflict to the US Office of the Secretary of Defense Highlands Forum," according to her Tufts University bio. She also, "regularly advises US combatant commanders" and specializes in studying the use of information technology by "violent and non-violent sub-state groups."

Dr. Lochard maintains a comprehensive database of 1,700 non-state groups including "insurgents, militias, terrorists, complex criminal organizations, organized gangs, malicious cyber actors and strategic non-violent actors," to analyze their "organizational patterns, areas of cooperation, strategies and tactics." Notice, here, the mention of "strategic non-violent actors" — which perhaps covers NGOs and other groups or organizations engaged in social political activity or campaigning, judging by the focus of other DoD research programs.

As of 2008, Lochard has been an adjunct professor at the US Joint Special Operations University where she teaches a top-secret advanced course in 'Irregular Warfare' that she designed for senior US special forces officers. She has previously taught courses on 'Internal War' for senior "political-military officers" of various Gulf regimes.

Her views thus disclose much about what the Highlands Forum has been advocating all these years. In 2004, Lochard was co-author of a study for the US Air Force's Institute for National Security Studies on US strategy toward 'non-state armed groups.' The study on the one hand argued that non-state armed groups should be urgently recognized as a 'tier one security priority,' and on the other that the proliferation of armed groups "provides strategic opportunities that can be exploited to help achieve policy goals. There have and will be instances where the United States may find collaborating with armed group is in its strategic interests."

But "sophisticated tools" must be developed to differentiate between different groups and understand their dynamics, to determine which groups should be countered, and which could be exploited for US interests. "Armed group profiles can likewise be employed to

identify ways in which the United States may assist certain armed groups whose success will be advantageous to US foreign policy objectives."

In 2008, Wikileaks published a leaked restricted US Army Special Operations field manual, which demonstrated that the sort of thinking advocated by the likes of Highlands expert Lochard had been explicitly adopted by US special forces.

Lochard's work thus demonstrates that the Highlands Forum sat at the intersection of advanced Pentagon strategy on surveillance, covert operations, and irregular warfare: mobilizing mass surveillance to develop detailed information on violent and non-violent groups perceived as potentially threatening to US interests, or offering opportunities for exploitation, thus feeding directly into US covert operations.

That, ultimately, is why the CIA, the NSA, the Pentagon, spawned Google. So they could run their secret dirty wars with even greater efficiency than ever before.

https://medium.com/insurge-intelligence/how-the-cia-made-google-e836451a959e

https://www.brighteon.com/4c269952-d5af-4010-b374-04c2847dca07

Two decades ago, the US intelligence community worked closely with Silicon Valley in an effort to track citizens in cyberspace. And Google is at the heart of that origin story. Some of the research that led to Google's ambitious creation was funded and coordinated by a research group established by the intelligence community to find ways to track individuals and groups online.

The intelligence community hoped that the nation's leading computer scientists could take non-classified information and user data, combine it with what would become known as the internet, and begin to create for-profit, commercial enterprises to suit the needs of both the

intelligence community and the public. They hoped to direct the supercomputing revolution from the start in order to make sense of what millions of human beings did inside this digital information network. That collaboration has made a comprehensive public-private mass surveillance state possible today.

The story of the deliberate creation of the modern mass-surveillance state includes elements of Google's surprising, and largely unknown, origin. It is a somewhat different creation story than the one the public has heard, and explains what Google cofounders Sergey Brin and Larry Page set out to build, and why.

But this isn't just the origin story of Google: It's the origin story of the mass-surveillance state, and the government money that funded it.

Backstory: The intelligence community and Silicon Valley

In the mid 1990s, the intelligence community in America began to realize that they had an opportunity. The supercomputing community was just beginning to migrate from university settings into the private sector, led by investments from a place that would come to be known as Silicon Valley.

The intelligence community wanted to shape Silicon Valley's efforts at their inception so they would be useful for homeland security purposes.

A digital revolution was underway: one that would transform the world of data gathering and how we make sense of massive amounts of information. The intelligence community wanted to shape Silicon Valley's supercomputing efforts at their inception so they would be useful for both military and homeland security purposes. Could this supercomputing network, which would become capable of storing terabytes of information, make intelligent sense of the digital trail that human beings leave behind?

Answering this question was of great interest to the intelligence community.

Intelligence-gathering may have been *their* world, but the Central Intelligence Agency (CIA) and the National Security Agency (NSA) had come to realize that their future was likely to be profoundly shaped outside the government. It was at a time when military and intelligence budgets within the Clinton administration were in jeopardy, and the private sector had vast resources at their disposal. If the intelligence community wanted to conduct mass surveillance for national security purposes, it would require cooperation between the government and the emerging supercomputing companies.

To do this, they began reaching out to the scientists at American universities who were creating this supercomputing revolution. These scientists were developing ways to do what no single group of human beings sitting at work stations in the NSA and the CIA could ever hope to do: gather huge amounts of data and make intelligent sense of it.

A rich history of the government's science funding

There was already a long history of collaboration between America's best scientists and the intelligence community, from the creation of the atomic bomb and satellite technology to efforts to put a man on the moon.

The internet itself was created because of an intelligence effort.

In fact, the internet itself was created because of an intelligence effort: In the 1970s, the agency responsible for developing emerging technologies for military, intelligence, and national security purposes—the Defense Advanced Research Projects Agency (DARPA)—linked four supercomputers to handle massive data transfers. It handed the operations off to the National Science Foundation (NSF) a decade or so later, which proliferated the network across thousands of universities and, eventually, the public, thus creating the architecture and scaffolding of the World Wide Web.

Silicon Valley was no different. By the mid 1990s, the intelligence community was seeding funding to the most promising supercomputing efforts across academia, guiding the creation of efforts to make massive amounts of information useful for both the private sector as well as the intelligence community.

They funded these computer scientists through an unclassified, highly compartmentalized program that was managed for the CIA and the NSA by large military and intelligence contractors. It was called the Massive Digital Data Systems (MDDS) project.

The Massive Digital Data Systems (MDDS) project

MDDS was introduced to several dozen leading computer scientists at Stanford, CalTech, MIT, Carnegie Mellon, Harvard, and others in a white paper that described what the CIA, NSA, DARPA, and other agencies hoped to achieve. The research would largely be funded and managed by unclassified science agencies like NSF, which would allow the architecture to be scaled up in the private sector if it managed to achieve what the intelligence community hoped for.

"Not only are activities becoming more complex, but changing demands require that the IC [Intelligence Community] process different types as well as larger volumes of data," the intelligence community said in its 1993 MDDS white paper. "Consequently, the IC is taking a proactive role in stimulating research in the efficient management of massive databases and ensuring that IC requirements can be incorporated or adapted into commercial products. Because the challenges are not unique to any one agency, the Community Management Staff (CMS) has commissioned a Massive Digital Data Systems [MDDS] Working Group to address the needs and to identify and evaluate possible solutions."

Over the next few years, the program's stated aim was to provide more than a dozen grants of several million dollars each to advance this research concept. The grants were to be directed largely through the NSF so that the most promising, successful efforts could be

captured as intellectual property and form the basis of companies attracting investments from Silicon Valley. This type of public-to-private innovation system helped launch powerful science and technology companies like Qualcomm, Symantec, Netscape, and others, and funded the pivotal research in areas like Doppler radar and fiber optics, which are central to large companies like AccuWeather, Verizon, and AT&T today. Today, the NSF provides nearly 90% of all federal funding for university-based computer-science research.

The CIA and NSA's end goal

The research arms of the CIA and NSA hoped that the best computer-science minds in academia could identify what they called "birds of a feather:" Just as geese fly together in large V shapes, or flocks of sparrows make sudden movements together in harmony, they predicted that like-minded groups of humans would move together online. The intelligence community named their first unclassified briefing for scientists the "birds of a feather" briefing, and the "Birds of a Feather Session on the Intelligence Community Initiative in Massive Digital Data Systems" took place at the Fairmont Hotel in San Jose in the spring of 1995.

The intelligence community named their first unclassified briefing for scientists the "birds of a feather" briefing.

Their research aim was to track digital fingerprints inside the rapidly expanding global information network, which was then known as the World Wide Web. Could an entire world of digital information be organized so that the requests humans made inside such a network be tracked and sorted? Could their queries be linked and ranked in order of importance? Could "birds of a feather" be identified inside this sea of information so that communities and groups could be tracked in an organized way?

By working with emerging commercial-data companies, their intent was to track like-minded groups of people across the internet and identify them from the digital fingerprints they left behind, much like forensic scientists use fingerprint smudges to identify criminals. Just as "birds of a feather flock together," they predicted that potential terrorists would communicate with each other in this new global, connected world—and they could find them by identifying patterns in this massive amount of new information. Once these groups were identified, they could then follow their digital trails everywhere.

Sergey Brin and Larry Page, computer-science boy wonders

In 1995, one of the first and most promising MDDS grants went to a computer-science research team at Stanford University with a decade-long history of working with NSF and DARPA grants. The primary objective of this grant was "query optimization of very complex queries that are described using the 'query flocks' approach." A second grant—the DARPA-NSF grant most closely associated with Google's origin—was part of a coordinated effort to build a massive digital library using the internet as its backbone. Both grants funded

research by two graduate students who were making rapid advances in web-page ranking, as well as tracking (and making sense of) user queries: future Google cofounders Sergey Brin and Larry Page.

The research by Brin and Page under these grants became the heart of Google: people using search functions to find precisely what they wanted inside a very large data set. The intelligence community, however, saw a slightly different benefit in their research: Could the network be organized so efficiently that individual users could be uniquely identified and tracked?

This process is perfectly suited for the purposes of counter-terrorism and homeland security efforts: Human beings and like-minded groups who might pose a threat to national security can be uniquely identified online before they do harm. This explains why the intelligence community found Brin's and Page's research efforts so appealing; prior to this time, the CIA largely used human intelligence efforts in the field to identify people and groups that might pose threats. The ability to track them virtually (in conjunction with efforts in the field) would change everything.

It was the beginning of what in just a few years' time would become Google. The two intelligence-community managers charged with leading the program met regularly with Brin as his research progressed, and he was an author on several other research papers that resulted from this MDDS grant before he and Page left to form Google.

The grants allowed Brin and Page to do their work and contributed to their breakthroughs in web-page ranking and tracking user queries. Brin didn't work for the intelligence community—or for anyone else. Google had not yet been incorporated. He was just a Stanford researcher taking advantage of the grant provided by the NSA and CIA through the unclassified MDDS program.

Left out of Google's story

The MDDS research effort has never been part of Google's origin story, even though the principal investigator for the MDDS grant specifically named Google as directly resulting from their research: "Its core technology, which allows it to find pages far more accurately than other search engines, was partially supported by this grant," he wrote. In a published research paper that includes some of Brin's pivotal work, the authors also reference the NSF grant that was created by the MDDS program.

Instead, every Google creation story only mentions just one federal grant: the NSF/DARPA "digital libraries" grant, which was designed to allow Stanford researchers to search the entire World Wide Web stored on the university's servers at the time. "The development of the Google algorithms was carried on a variety of computers, mainly provided by the NSF-DARPA-NASA-funded Digital Library project at Stanford," Stanford's Infolab says of its origin, for example. NSF likewise only references the digital libraries grant, not the MDDS grant as well, in its own history of Google's origin. In the famous research paper, "The Anatomy of a Large-Scale Hypertextual Web Search Engine," which describes the creation

of Google, Brin and Page thanked the NSF and DARPA for its digital library grant to Stanford. But the grant from the intelligence community's MDDS program—specifically designed for the breakthrough that Google was built upon—has faded into obscurity.

Google has said in the past that it was not funded or created by the CIA. For instance, when stories circulated in 2006 that Google had received funding from the intelligence community for years to assist in counter-terrorism efforts, the company told Wired magazine founder John Battelle, "The statements related to Google are completely untrue."

Did the CIA directly fund the work of Brin and Page, and therefore create Google? No. But were Brin and Page researching precisely what the NSA, the CIA, and the intelligence community hoped for, assisted by their grants? Absolutely.

The CIA and NSA funded an unclassified, compartmentalized program designed from its inception to spur something that looks almost exactly like Google.

To understand this significance, you have to consider what the intelligence community was trying to achieve as it seeded grants to the best computer-science minds in academia: The CIA and NSA funded an unclassified, compartmentalized program designed from its inception to spur the development of something that looks almost exactly like Google. Brin's breakthrough research on page ranking by tracking user queries and linking them to the many searches conducted—essentially identifying "birds of a feather"—was largely the aim of the intelligence community's MDDS program. And Google succeeded beyond their wildest dreams.

The intelligence community's enduring legacy within Silicon Valley

Digital privacy concerns over the intersection between the intelligence community and commercial technology giants have grown in recent years. But most people still don't understand the degree to which the intelligence community relies on the world's biggest science and tech companies for its counter-terrorism and national-security work.

Civil-liberty advocacy groups have aired their privacy concerns for years, especially as they now relate to the Patriot Act. "Hastily passed 45 days after 9/11 in the name of national security, the Patriot Act was the first of many changes to surveillance laws that made it easier for the government to spy on ordinary Americans by expanding the authority to monitor phone and email communications, collect bank and credit reporting records, and track the activity of innocent Americans on the Internet," says the ACLU. "While most Americans think it was created to catch terrorists, the Patriot Act actually turns regular citizens into suspects."

When asked, the biggest technology and communications companies—from Verizon and AT&T to Google, Facebook, and Microsoft—say that they never deliberately and proactively offer up their vast databases on their customers to federal security and law enforcement

agencies: They say that they only respond to subpoenas or requests that are filed properly under the terms of the Patriot Act.

But even a cursory glance through recent public records shows that there is a treadmill of constant requests that could undermine the intent behind this privacy promise. According to the data-request records that the companies make available to the public, in the most recent reporting period between 2016 and 2017, local, state and federal government authorities seeking information related to national security, counter-terrorism or criminal concerns issued more than 260,000 subpoenas, court orders, warrants, and other legal requests to Verizon, more than 250,000 such requests to AT&T, and nearly 24,000 subpoenas, search warrants, or court orders to Google. Direct national security or counter-terrorism requests are a small fraction of this overall group of requests, but the Patriot Act legal process has now become so routinized that the companies each have a group of employees who simply take care of the stream of requests.

In this way, the collaboration between the intelligence community and big, commercial science and tech companies has been wildly successful. When national security agencies need to identify and track people and groups, they know where to turn – and do so frequently. That was the goal in the beginning. It has succeeded perhaps more than anyone could have imagined at the time.

https://prepareforchange.net/2020/01/18/googles-true-origin-partly-lies-in-cia-and-nsa-research-grants/