## 1NC

### NC—AT: Grid

#### No grid impact.

Koerth 18 – Maggie Koerth, formerly known as Maggie Koerth-Baker, is an American science journalist. She is a senior science editor at FiveThirtyEight and was previously a science editor at Boing Boing and a monthly columnist for The New York Times Magazine, August 13th ("Hacking The Electric Grid Is Damned Hard", FiveThirtyEight, Available online at https://fivethirtyeight.com/features/hacking-the-electric-grid-is-damned-hard/, Accessed 10-17-2020)

But, surprisingly, some electrical system experts are thinking about it in a different way. Cyberattacks on the grid are a real risk, they told me. But the worst-case scenarios we’re imagining aren’t that likely. Nor is this a short-term crisis, with risks that can be permanently solved. Bringing down the grid is a lot harder than just flicking a switch, but the danger is real — and it may never go away. Representatives from two nonprofit organizations — both of which play large roles in how the electric grid is regulated and maintained — said it is easier to imagine disaster scenarios than create one. “There’ve been some very sensational books out there about the grid going dark because someone’s got their finger ready over a mouse and everything is going to turn off at the same time,” said Bill Lawrence, vice president and chief security officer at the North American Electric Reliability Corporation, the regulatory authority that sets and enforces technological standards for utility companies across the continent. “The grid does not work that way.” Our electric infrastructure is chock-full of both redundancies and regional variations — two things that impede widespread sabotage. That’s not to say that the grid isn’t under attack. Lawrence acknowledged that there is interest in “trying to hurt us from a distance.” But he emphasized there have not yet been any successful attacks — meaning hackers haven’t caused any blackouts. Chart, bar chart

Description automatically generated They’ve been poking at our critical infrastructure for a long while. Incident reports published by the Industrial Control Systems Cyber Emergency Response Team — a division of Homeland Security that does training and responds to cyberattacks on critical infrastructure — suggest that electricity, oil and natural gas infrastructure have been routinely targeted for years.1 There are dozens of these attacks reported to ICS-CERTS annually. However, it would be difficult for these attacks to lead to wide-scale blackouts, according to Lawrence and Candace Suh-Lee, who leads a cybersecurity research team at the Electric Power Research Institute, a nonprofit research and development lab. And that’s true even if hackers do eventually succeed in taking control of some electric systems. It helps that the North American electric grid is both diverse in its engineering and redundant in its design. For instance, the Ukrainian attacks are often cited as evidence that hundreds of thousands of Americans could suddenly find themselves in the dark because of hackers. But Lawrence considers the Ukrainian grid a lot easier to infiltrate than the North American one. That’s because Ukraine’s infrastructure is more homogeneous, the result of electrification happening under the standardizing eye of the former Soviet Union, he told me. The North American grid, in contrast, began as a patchwork of unconnected electric islands, each designed and built by companies that weren’t coordinating with one another. Even today, he said, the enforceable standards set by NERC don’t tell you exactly what to buy or how to build. “So taking down one utility and going right next door and doing the same thing to that neighboring utility would be an extremely difficult challenge,” he said. Meanwhile, the electric grid already contains a lot of redundancies that are built in to prevent blackouts caused by common problems like broken tree limbs or heat waves — and those redundancies would also help to prevent a successful cyberattack from affecting a large number of people. Suh-Lee pointed to an August 2003 blackout that turned the lights off on 50 million people on the east coast of the U.S. and Canada. “When we analyzed it, there was about 17 different things lined up that went wrong. Then it happened,” she said. Hackers wouldn’t necessarily have control over all the things that would have to go wrong to create a blackout like that. In contrast, Suh-Lee said, scenarios that sound like they should lead to major blackouts … haven’t. Take the 2013 Metcalf incident, where snipers physically attacked 17 electric transformers in Silicon Valley. Surrounding neighborhoods temporarily lost power, but despite huge energy demand in the region, “the big users weren’t even aware Metcalf had happened,” she said. Difficult isn’t the same as impossible, Suh-Lee told me. Depending on where an attack happened and how people responded, you could get the stuff of our nightmares. Lawrence repeatedly invoked the phrase “knock on wood” as he talked about the possibility of infiltrations of electric infrastructure turning into real-world blackouts. That’s why there’s a lot of effort going into research, monitoring and preparation for cyberattacks. Lawrence’s team, for instance, is gearing up for an event that’s held every other year and is sort of like war games for the electric grid. And the Department of Energy is planning a similar event, focused on figuring out what it takes to reboot after a hacker-caused blackout. But that preparation doesn’t mean we’ll eventually solve this problem, either, Suh-Lee said. If the chances of a cinematic disaster are low, the chances of a theatrical hero on a white horse riding in to save the day are even lower. Making the grid stronger and more resilient also means making it more digital — the work that’s being done to improve the infrastructure has also created new opportunities for hackers to break in. And the risk of attack is here to stay. Security improvements are “never going to completely eliminate the risk,” she said. “The risk is out there and people will find a new way to attack.” We’ll be living with cyber threats to the grid for the rest of our lives.

#### The grid is strong now---energy efficiency, new tech, and cycle generation.

Krysti Shallenberger 17, Utility Dive associate editor, 1-5-2017, "Predictions 2017: 8 sector insiders on what's next for power markets and regulation," Utility Dive, http://www.utilitydive.com/news/predictions-2017-8-sector-insiders-on-whats-next-for-power-markets-and-re/433358/

The traditional drivers of infrastructure additions were load growth and connecting distant generation sources to population centers. However, that has changed. Load growth is negligible in many areas. (At PJM we forecast peak load growth of less than half of one percent per year.) At the same time, more efficient technology, specifically energy efficiency and new natural gas combined cycle generation closer to load centers, has changed power flow patterns, which reduces the need for additional large-scale transmission expansion projects. The reduction in larger scale projects has allowed focus to be shifted to resolving aging infrastructure concerns on lower-voltage facilities. More efficient technologies, the capacity performance construct and upgrades to the system have made the grid increasingly robust and resilient. Last summer, for example, was the first time PJM met a peak demand of more than 150,000 megawatts without invoking emergency procedures and while net exporting power.

### NC—AT: Food

#### No impact in the 1AC

### NC—AT: Space War

#### No space war – it’s hype and systems are redundant

Johnson-Freese and Hitchens 16 [Dr. Joan Johnson-Freese is a member of the Breaking Defense Board of Contributors, a Professor of National Security Affairs at the Naval War College and author of Space Warfare in the 21st Century: Arming the Heavens. Views expressed are those of the author alone. Theresa Hitchens is a Senior Research Scholar at the Center for International and Security Studies at Maryland (CISSM), and the former Director of the United Nations Institute for Disarmament Research (UNIDIR) in Geneva, Switzerland. Stop The Fearmongering Over War In Space: The Sky’s Not Falling, Part 1. December 27, 2016. https://breakingdefense.com/2016/12/stop-the-fearmongering-over-war-in-space-the-skys-not-falling-part-1/]

In the last two years, we’ve seen rising hysteria over a future war in space. Fanning the flames are not only dire assessments from the US military, but also breathless coverage from a cooperative and credulous press. This reporting doesn’t only muddy public debate over whether we really need expensive systems. It could also become a self-fulfilling prophecy. The irony is that nothing makes the currently slim possibility of war in space more likely than fearmongering over the threat of war in space.

Two television programs in the past two years show how egregious this fearmongering can get. In April 2015, the CBS show 60 Minutes ran a segment called “The Battle Above.” In an interview with General John Hyten, the then-chief of U.S. Air Force Space Command, it came across loud and clear that the United States was being forced to prepare for a battle in space — specifically against China — that it really didn’t want.

It was explained by Hyten and other guests that China is building a considerable amount of hardware and accumulating significant know-how regarding space, all threatening to space assets Americans depend on every day. If viewers weren’t frightened after watching the segment, it wasn’t for lack of trying on the part of CBS.

Using terms like “offensive counterspace” as a 1984 NewSpeak euphemism for “weapons,” it was made clear that the United States had no choice but to spend billions of dollars on offensive counterspace technology to not just thwart the Chinese threat, but control and dominate space. While it didn’t actually distort facts — just omit facts about current U.S. space capabilities — the segment was basically a cost-free commercial for the military-industrial complex.

In retrospect though, “The Battle Above” was pretty good compared to CNN’s recent special, War in Space: The Next Battlefield. The latter might as well have been called Sharknado in Space – because the only far-out weapons technology our potential adversaries don’t have, according to the broadcast, seems to be “sharks with frickin’ laser beams attached to their heads!”

First, CNN needs to hire some fact checkers. Saying “unlike its adversaries, the U.S. has not yet weaponized space” is deeply misleading, like saying “unlike his political opponents, President-Elect Donald Trump has not sprouted wings and flown away”: A few (admittedly alarming) weapons tests aside, no country in the world has yet weaponized space. Contrary to CNN, stock market transactions are not timed nor synchronized through GPS, but a closed system. Cruise missiles can find their targets even without GPS, because they have both GPS and precision inertial measurement units onboard, and IMUs don’t rely on satellite data. Oh, and the British rock group Pink Floyd holds the only claim to the Dark Side of the Moon: There is a “far side” of the Moon — the side always turned away from the Earth — but not a “dark side” — which would be a side always turned away from the Sun.

More nefariously, the segment sensationalized nuggets of truth within a barrage of half-truths, backed by a heavy bass, dramatic soundtrack (and gravelly-voiced reporter Jim Sciutto) and accompanied by sexy and scary visuals.

Make no mistake there are dangers in space, and the United States has the most to lose if space assets are lost. The question is how best to protect them. Here are a few facts CNN omitted.

The Reality

The U.S. has all of the technologies described on the CNN segment and deemed potentially offensive: maneuverable satellites, nano-satellites, lasers, jamming capabilities, robotic arms, ballistic missiles that can be used as anti-satellite weapons, etc. In fact, the United States is more technologically advanced than other countries in both military and commercial space.

That technological superiority scares other countries; just as the U.S. military space community is scared of other countries obtaining those technologies in the future. The U.S. military space budget is more than 10 times greater than that of all the countries in the world combined. That also causes other countries concern.

More unsettling still, the United States has long been leery of treaty-based efforts to constrain a potential arms race in outer space, as supported by nearly every other country in the world for decades. Indeed, under the administration of George W. Bush, the U.S. talking points centered on the mantra “there is no arms race in outer space,” so there is no need for diplomat instruments to constrain one. Now, a decade later, the U.S. military – backed by the Intelligence Community which operates the nation’s spy satellites – seems to be shouting to the rooftops that the United States is in danger of losing the space arms race already begun by its potential adversaries. The underlying assumption — a convenient one for advocates of more military spending — is that now there is nothing that diplomacy can do.

However, it must be remembered that most space-related technologies – with the exception of ballistic missiles and dedicated jammers – have both military and civil/commercial uses; both benign — indeed, helpful — and nefarious uses. For example, giving satellites the ability to maneuver on orbit can allow useful inspections of ailing satellites and possibly even repairs.

Further, the United States is not unable to protect its satellites, as repeated during the CNN broadcast by various interviewees and the host. Many U.S. government-owned satellites, including precious spy satellites, have capabilities to maneuver. Many are hardened against electro-magnetic pulse, sport “shutters” to protect optical “eyes” from solar flares and lasers, and use radio frequency hopping to resist jamming.

Offensive weapons, deployed on the ground to attack satellites, or in space, are not a silver bullet. To the contrary, U.S. deployment of such weapons may actually be detrimental to U.S. and international security in space (as we argued in a recent Atlantic Council publication, Towards a New National Security Space Strategy). Further, there are benefits to efforts started by the Obama Administration to find diplomatic tools to restrain and constrain dangerous military activities in space.

These diplomatic efforts, however, would be undercut by a full-out U.S. pursuit of “space dominance.” This includes dialogue with China, the lack of which Gen. William Shelton, retired commander of Air Force Space Command, lamented in the CNN report.

Given CNN’s “cast,” the spin was not surprising. Starting with Ghost Fleet author Peter Singer set the sensationalist tone, which never altered. The apocalyptic opening, inspired by Ghost Fleet, posited a scenario where all U.S. satellites are taken off-line in nearly one fell swoop. Unless we are talking about an alien invasion, that scenario is nigh on impossible. No potential adversary has such capabilities, nor will they ever likely do so. There is just too much redundancy in the system.

#### No space war – prefer data over political rhetoric

Klimas interviewing Weeden 18 [Brian Weeden, smart space guy. Is the space war threat being hyped? August 3, 2018. https://www.politico.com/story/2018/08/03/space-war-threat-hype-force-760781]

There’s been increasing rhetoric...about the militarization of space and the potential for conflicts on Earth to extend into space. That’s driven in part by reports about anti-satellite testing in Russia and China...The report really grew out of our frustration at the level of publicly available information on this topic.

A lot of what you get are public statements from military leadership or politicians, or sometimes news articles talking about something and it’s really hard to get down to details and...sort through what might be real, what might be hype. Our goal was to dig into the open source material and see what we could determine from a factual standpoint was really going on -- what types of capabilities were being developed and how might they be used in a future conflict.

Ultimately we hoped that would lead to a more informed debate about what U.S. strategy should be to address those threats.

What sort of feedback have you gotten so far?

A lot of the feedback has been either informal or private because a lot of the issues we talk about, people in the government research using classified materials. So it’s difficult for them to give detailed feedback.

In general, the feedback we’ve gotten has been pretty positive. People have said they like the fact that this sort of stuff is being put in the public domain and encouraged us to continue.

Were your findings better or worse than the picture public discourse paints?

In general, it’s a little bit better. A lot of political rhetoric and news stories focus on the most extreme examples, so using kinetic weapons to blow up satellites. While there is research and development going on to develop those capabilities, what we found is there’s yet to be any publicly-known example of them being used.

What is being used and what seems to be of the most utility are the non-kinetic things, like jamming and cyber attacks. The good news is we have yet to see the most destructive kinetic attacks that can cause really harmful long-term damage to the space environment, but unfortunately we are seeing non-kinetic attacks being used, and that’s likely to continue.

#### MAD checks space escalation – nuclear response and debris

Bowen 18 [Bleddyn Bowen, Lecturer in International Relations at the University of Leicester. The Art of Space Deterrence. February 20, 2018. https://www.europeanleadershipnetwork.org/commentary/the-art-of-space-deterrence/]

Fourth, the ubiquity of space infrastructure and the fragility of the space environment may create a degree of existential deterrence. As space is so useful to modern economies and military forces, a large-scale disruption of space infrastructure may be so intuitively escalatory to decision-makers that there may be a natural caution against a wholesale assault on a state’s entire space capabilities because the consequences of doing so approach the mentalities of total war, or nuclear responses if a society begins tearing itself apart because of the collapse of optimised energy grids and just-in-time supply chains. In addition, the problem of space debris and the political-legal hurdles to conducting debris clean-up operations mean that even a handful of explosive events in space can render a region of Earth orbit unusable for everyone. This could caution a country like China from excessive kinetic intercept missions because its own military and economy is increasingly reliant on outer space, but perhaps not a country like North Korea which does not rely on space. The usefulness, sensitivity, and fragility of space may have some existential deterrent effect. China’s catastrophic anti-satellite weapons test in 2007 is a valuable lesson for all on the potentially devastating effect of kinetic warfare in orbit.

#### Space deterrence failures only cause limited conflicts

Bloomfield 13 [Lincoln Palmer Bloomfield Jr. is a United States Defense Department and State Department official. Bloomfield was educated at Harvard University, graduating cum laude with an A.B. in 1974. He later attended The Fletcher School of Law and Diplomacy at Tufts University, receiving an M.A. in Law and Diplomacy in 1980. Bloomfield is also a member of the Board of Directors of the Henry L. Stimson Center. Anti-satellite Weapons, Deterrence and Sino-American Space Relations. September 2013. www.nuclearfiles.org/menu/key-issues/space-weapons/issues/Anti-Satellite%20Weapons,%20Deterrence%20and%20Sino-American%20Space%20Relations.pdf]

If a breakdown in space deterrence occurs, it could be as a result of seeking tactical advantage in conjunction with limited military operations. Alternatively, a breakdown of space deterrence could be a defensive act for signaling purposes, as has often been postulated with a breakdown of nuclear deterrence. In either case, deterrence breakdowns are most likely to happen on a limited scale alongside attempts to maintain, as much as possible, the military use of space. While worst-case scenarios appear implausible, there may well be a greater potential ambit for limited warfare in space, since satellite interference and disruption can be reversible. The requirements to shore up deterrence or to compensate for a breakdown of deterrence in these scenarios are far more modest than the requirements to deal with worst cases.

#### Mutual dependence on space infrastructure prevents war

Triezenberg 17 [Bonnie Triezenberg is a senior engineer at RAND. Previously, she was the senior technical fellow at the Boeing Company, specializing in agile systems and software development. She received a B.S. in aerospace engineering from the University of Michigan, an M.S. in systems science from the University of California-Los Angeles, and a Ph.D. in policy analysis from the Pardee RAND Graduate School. Deterring Space War. 2017. https://www.rand.org/content/dam/rand/pubs/rgs\_dissertations/RGSD400/RGSD400/RAND\_RGSD400.pdf]

The above discussion suggests that a likely means to achieve deterrence of acts of war in outer space is to increase civilian dependence on space to support day-to-day life—if everyone on earth is equally dependent on space, no one has an incentive to destroy space. Largely by accident, this dependence appears to have, in fact, occurred. The space age was born in an age of affluence and rapid economic expansion; space quickly became a domain of international commerce as well as a domain of national military use. Space assets and the systems they enable have transformed social, infrastructure and information uses perhaps more visibly than they have transformed military uses. In fact, in the current satellite database published by the Union of Concerned Scientists, of the 1461 satellites in orbit 40% support purely commercial ventures, while only 16% have a strictly military use.46 The first commercial broadcast by a satellite in geo-synchronous orbit was of international news between Europe and the United States.47 The first telephony uniting the far flung islands of Indonesia was enabled by satellite48. Those of us who are old enough remember the 1960s “magic” of intercontinental phone calls and international “breaking news” delivered by satellite. Today, most social and infrastructure uses of space are taken for granted - even in remote locales of Africa, people expect to be able to monitor the weather, communicate seamlessly with colleagues and to find their way to new and unfamiliar locations using the GPS in their phones. All of us use space every day.49 These unrestricted economic and social uses of space may be the best deterrent, making everyone on all sides of combat equally dependent on space and heightening the taboo against weaponizing space or threatening space assets with weapons.

#### That’s uniquely seen as not escalatory – military planning proves

Wright et al 5 [David Wright is a nationally known expert on the technical aspects of nuclear weapons policy, missile defense systems, missile proliferation, and space weapons. Dr. Wright was a senior research analyst with the Federation of American Scientists and served as an SSRC-MacArthur fellow at Harvard’s Kennedy School of Government. PhD in Physics from Cornell. Laura Grego is a senior scientist in the Global Security Program at the Union of Concerned Scientists. Lisbeth Gronlund was an SSRC-MacArthur Foundation fellow in international peace and security at the University of Maryland. The Physics of Space Security. 2005. https://www.ucsusa.org/sites/default/files/legacy/assets/documents/nwgs/physics-space-security.pdf]

Temporary and reversible interference with a satellite system is likely to be less provocative than destructive attacks. Such interference can, in some cases, be plausibly deniable. And it would not damage the space environment by generating debris. These techniques seem to be favored by military planners in the United States and elsewhere. Moreover, temporary interference with a satellite’s mission, particularly over one’s own territory, is likely to be perceived as defensive and legitimate in a way that permanently disabling the satellite would not.

## NC – Sats Bad

### 1NC – Fracking

#### Satellite loss shuts down global fracking

Les Johnson 13, Deputy Manager for NASA's Advanced Concepts Office at the Marshall Space Flight Center, Co-Investigator for the JAXA T-Rex Space Tether Experiment and PI of NASA's ProSEDS Experiment, Master's Degree in Physics from Vanderbilt University, Popular Science Writer, and NASA Technologist, Frequent Contributor to the Journal of the British Interplanetary Sodety and Member of the American Institute of Aeronautics and Astronautics, National Space Society, the World Future Society, and MENSA, Sky Alert!: When Satellites Fail, p. 99-105

Energy, environment, farming, mining, land use. All of these areas and more are now inextricably linked to satellite data and would be devastated should that flow of data stop. Environmental Monitoring Oh how complacent we've become. We take for granted that we will have instant images from space showing a volcanic eruption somewhere in the South Pacific within hours of learning that it happened. When the BP oll spill happened in the Gulf of Mexico in 2010, satellite images were used in conjunction with aircraft and ships to monitor the extent and evolving nature of the spill (Figures 10.1 and 10.2). The data were also used to direct the ships that were attempting to clean up the spill, to warn fishermen of areas in which it would be dangerous to fish, and to generally monitor the extent of the disaster. This is the type of data we get from space in a field known as remote sensing. Remote sensing is, well, exactly what its name implies. With it, you gather data, or sense, usually in the form of electromagnetic radiation (light), remotely - that is, you are not physically touching what you are looking at. Satellite remote sensing began shortly after we began launching satellites and many industries are now totally dependent upon having the capability. We use satellites, like the venerable Landsat series, to study the Earth m unprecedented detail. Since 1972, Landsat satellites have taken millions of high resolution images of the Earth's surface, allowing comprehensive studies of how the land has changed due to human intervention (deforestation, agriculture, settlement, etc.) and natural processes (desertification, floods, etc.). The best way to understand how useful Landsat and similar data can be to governments at all levels is best illustrated by looking at 14then and now" photographs. For example, Africa's Lake Chad has been shrinking for 40 years, as the desert has encroached on this once plentiful inland freshwater lake. Forty years ago, there were about 15,000 square miles of water within the lake. Now, it is less than 500 square miles (Figure 10.3) [1]. And what is the practical side of this particular bit of information? Governments use this type of satellite imagery to avoid human tragedy. Hundreds of thousands of people, if not millions, depend upon the waters of Lake Chad for agriculture, industry, and personal hygiene. With the lake going dry, how has this impacted on their livelihoods, their families, and their very lives? The European Space Agency (ESA) is freely providing satellite data to developing countries as they search for new sources of drinking water. For example, ESA assessed data obtained from space over Nigeria to find over 90 new freshwater sources within that country. After ground teams visited the new sites, all were confirmed to contain fresh water. This was no accident. These were satellites with sensors developed for just such purposes in mind [2]. Desertification is but one example of changing climates affecting people's everyday lives. What about more direct observations of our impact on the planet? Figures 10.4 and 10.5 show the scarring of the Earth's surface as a result of surface mining in West Virginia. This is not a polemic against mining; rather, it is an observation that we can use satellite imagery to monitor such mining and be mindful of its impact on the environment. Other than taking pictures of surface features, like lakes and open pit mines, how are satellites monitoring the Earth's changing climate? In just about every way, by: monitoring global land, sea, and atmospheric temperatures; measuring yearly average rainfall amounts just about everywhere on the globe; measuring glaciation rates; measuring sea surface heights; and more. Remote sensing is more than taking pictures of the Earth in the visible part of the spectrum. We can learn a great deal from looking at part of the spectrum that our eyes cannot see - but our instruments can. Shown in Figure 10.6 is a composite image of the Earth's surface showing the average land-surface temperature at night. The data came from two NASA satellites, Terra and Aqua, as they orbit the Earth in a polar orbit. (This means that they circle the Earth from top to bottom, passing over both the North and South Poles with each complete orbit.) Terra's orbit is such that it passes from the north to the south across the equator in the morning; Aqua passes south to north over the equator in the afternoon. Taken together, they observe the Earth's surface in its entirety every two days. Data sets such as this exist for just about any day of the year and can show either night-time lows or daytime highs. By looking in different parts of the spectrum, like the infrared light discussed above, we can make observations as described in Table 10.1. Pollution Monitoring As emerging countries industrialize, they also become polluters. Many of these countries are not exactly forthright about releasing air-pollution details to the media, so much of our awareness of the rising pollution there is anecdotal - typically m the form of stories told by people who have visited these countries and seen the extreme pollution at first hand. This, by the way, is not exactly scientific. Using satellites, and not relying on either the governments in question or second-hand stories, we can accurately assess the pollution levels there and elsewhere. Using satellite images to measure the amount of light absorbed or blocked by fine particulates in the atmosphere, otherwise known as air pollution, you can determine not only what the airborne pollutant might be, but also its size. And, by looking at the overall light blockage, an accurate estimate of the amount of pollution in the air can also be made. Recent studies show that many of these countries are covered in a pollution cloud that countries in the developed world would deem extremely harmful. And how do we know this with scientific certainty? From satellite measurements. Energy Production The recent boom in the production of shale oil in the United States and elsewhere is due in large part to the identification and geolocation of promising geologic formations for test drilling and fracking. "Fracking" is a somewhat new term that comes from the phrase "hydraulic fracturing". In fracking, massive amounts of previously unusable reservoirs of oil and natural gas are released for capture, sale, and transport from deposits deep within the Earth - many located at least a mile below the surface. In the United States alone, there may be as much as 750 trillion cubic feet of natural gas within shale deposits releasable by fracking [3]. How do energy companies know where to look for these deposits? In large part, by analyzing satellite imagery. According to Science Daily (26 February 2009), a new map of the Earth's gravitational field based on satellite measurements makes it much less resource intensive to find new oil deposits. The map will be particularly useful as the ice melts in the oil-rich Arctic regions. The easy-to-find oilfields have already been found. To fuel the growing world economy, those harder-to-find deposits must be located and tapped - which is why satellite imagery is so important. Take away this and other satellite-dependent techniques of oil and gas exploration and the world economy will feel the impact through higher oil and natural gas prices.

#### Fracking makes extinction inevitable.

Rev. Mac Legerton 18, Co-Founder and Executive Director of the Center for Community Action, Member of the Board of Directors of the NC Climate Solutions Coalition, Member of the Board of Directors of the Windcall Institute, “Will The U.S. Blaze A Trail To Mass Extinction?”, APPPL News, 1/15/2018, https://www.apppl.org/news/will-the-u-s-blaze-a-trail-to-mass-extinction/

As an elder, I now realize that there is even a greater threat to humanity and life on Earth than nuclear war—though, unlike a nuclear exchange, this threat is a slow-motion catastrophe. Can you guess what it is? Here’s a clue: it is something with which most people don’t have a personal relationship. Tragically, some persons remain in total denial of its validity, much less its present danger. And that’s the problem – that’s why this threat needs to be more seriously addressed on the local, state, national, and international level. What is it? It’s the slow-motion but rapidly growing catastrophe of climate change. There’s now good news amidst this seemingly overwhelming challenge. But the answer may surprise you. Today we know what is the #1 preventable cause of climate change. It’s not coal, it’s not nuclear, and it’s not oil and gasoline. It’s actually the use of the very fuel that is touted as being cleaner, greener, and cheaper than all the rest. This fuel is called “Natural Gas”. Let’s start with its name – “Natural Gas”. What is “natural gas”? There’s actually nothing “natural” about it when it is forcibly extracted from the ground through hydraulic fracturing, commonly known as “fracking”. When something is forcibly ruptured from deep within the earth with the use of toxic chemicals, the last name you would use for it is “natural”. Fracking disrupts the geologic fault lines causing earthquakes, uses millions of gallons of fresh water that becomes permanently poisoned by unknown, cancer-producing chemicals added to it, creates air pollution during the drilling process, increases the risk of injury and explosions, raises major health risks to both people and place in close proximity to it, and changes the nature of both neighborhoods and landscapes. Fracking also leaves a massive carbon footprint of drilling wells as deep as 8,000 feet and then drilling horizontally over 10,000 feet; On top of all this, it leaks major amounts of gas into the environment. So, what is this gas? It is 90-95% methane gas which is a hydrocarbon compound made up of one carbon atom and four hydrogen atoms (CH4). It releases carbon into the atmosphere and produces carbon dioxide (C02) just like coal does when it is burned. Methane is not its trace element–it is its undisputed compound of this fossil fuel product. If a compound is 90-95% of a product, it makes sense to call it by that name. Doesn’t it? Well, actually not if you want people to believe and think that it is something that it is not. It is un-natural methane gas produced under massive and highly toxic pressure and hazardous conditions. Now that we know what this gas is, what does it do to the atmosphere and climate that is so dangerous? This hydrocarbon has properties that block the radiation of heat from Earth’s surface 100 times more effectively than CO2 (released from burning coal) during its first 10 years of release and 86 times more effectively in its first 20 years. Because of the climate emergency underway, the first 10 or 20 years matter most. When utility companies and the larger fossil fuel companies state that they are committed to lowering carbon emissions, this just isn’t true. They are radically escalating the most dangerous and worst of all fossil fuels in relation to its impact on the climate. Now the industry wants to expand production of methane gas all over the world by calling it “the most environmentally friendly fossil fuel”and a “bridge fuel” that we can safely use until we transition to 100% renewable energy sources. Why would a major business industry want to call its product by another name? Perhaps for the same reason that the tobacco industry did not like the term “coffin nails” or “cancer sticks” for cigarettes. Honestly, there’s a striking similarity between what are called cigarettes and natural gas. When both were produced and named, their harm was not fully known. Once the industries promoting them learned of their significant harm, they did everything they could to hide this knowledge from the public. They even hired scientists to deny their dangers. The tobacco industry was eventually sued, the truth was acknowledged, and billions of dollars were paid out in the tobacco settlement. This same scenario that occurred with the tobacco industry needs to occur with methane gas and the fossil fuel industry. The major difference in these two scenarios is that that this fossil fuel product doesn’t just threaten the lives of individuals who voluntarily breathe it in – it threatens the lives of not only every human being, but also all life on the planet. The outcome of this scenario needs to be a moratorium and eventual end to all use of methane gas as an energy source. For the sake of all of us, our communities, and world, the sooner the better. This abomination is different. There is no time to waste.

### 1NC – Mining

#### Loss of satellites will shut down terrestrial mining

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Resource Location

Looking for rare minerals to be mined for our many gadgets, household appliances, and industrial machines? Soil type is often a strong indicator of whether or not underground deposits of metals and minerals are located. By using satellite data to identify promising surface structural features and different soil types, mining companies can better identify promising mining locations, wasting less time and effort in finding the best places to obtain much-needed industrial resources. Without satellite images, the finding and assessment of promising new mines would grind to a halt as the industries retooled back into the days of much slower and labor-intensive field surveys (but without GPS!).

#### Amazon mining will cause extinction

Charito Ushiñahua 11, Anthropologist Working for the Preservation of Indigenous Amazonian Cultures, “Yanomami Indians: The Fierce People?”, http://www.amazon-indians.org/yanomami.html

A mineralogical survey of the northern Amazon by the Brazilian government in 1975 revealed the presence of gold ore in the Roraima region of Brazil. By the early 1980's, miners in search of gold began invading the Yanomami territory in Brazil and by 1987 it had become a full-fledged gold rush. Over 30,000 prospectors entered Yanomami lands and established over a hundred clandestine mining operations. The resulting massacres and diseases brought by these invaders is estimated to have caused the death of over 2,000 Yanomami. One of the problems with gold mining is the environmental destruction it causes. In order to separate gold from rocks and soil, mercury is used. Mercury in the rivers and streams bio-accumulates and permeates the entire ecosystem. The mercury accumulates in predators and hunters (such as the Yanomami) higher up the food chain and creates a neurotoxin that causes birth defects and abnormal child development. The Yanomami have had increased child mortality rates while their birth rates have declined putting their very existence into risk. Moreover, malaria increased in the area due to the stagnant pools left by the miners that increase the mosquito populations that are vectors of the disease. Some have estimated that malaria is responsible for the deaths of about 13% of the Yanomami population every year. However, the negative influence of the miners extends beyond physical health. Their introduction of alcohol and other western goods has had an immense negative effect on Yanomami society itself. In response to the crisis created by the gold miners, in 1992 the Yanomami territory was protected by the Brazilian government by creating a federal indigenous reserve. However, the gold miners were not happy about the creation of the reserve and in July, 1993, a group of miners tried to exterminate an entire village in what has become to be known as the "Haximu Massacre." At lease 16 Yanomami were killed in what many have called genocide. Some of the miners were tried and convicted and after numerous appeals on the 7th of August, 2006 the Brazilian Supreme Federal Court reaffirmed that the crime known as the Haximu Massacre and upheld the ruling sentencing the miners to 19 years in prison for genocide. However, to this day there is political pressure by the mining industry to reduce the Yanomami territory and allow commercial mining operations on their lands. In the year 2000, a journalist named Patrick Tierney published a book called, "Darkness in El Dorado," and accused anthropologist Napoleon Chagnon and his colleague geneticist James Neel of numerous misdeeds, among them intentionally creating an epidemic of measles among the Yanomami people in order to study the effects of natural selection on primitive societies. Tierney states that the resulting epidemic caused the death of hundreds of Yanomami. Incredibly, Tierney charged that the experiments were funded by the US Atomic Energy Commission, who sought to model the societal consequences of mass mortality caused by nuclear war. In addition to the measles epidemic, Tierney charged that Chagnon mischaracterized the Yanomami as "The Fierce People" when in fact it was Chagnon who was causing the violence by introducing enormous amounts of western goods such as machetes into the Yanomami society, thus stimulating warfare over the introduced goods. Tierney also accused Chagnon of fraud by staging films, such as "The Axe Fight" that he helped produce. The journalist charged that the anthropologist prescripted the films and that they were not spontaneous as portrayed. Tierney's book caused an uproar in the anthropological community and the American Anthropological Association (AAA) got involved in the debate. In fact, the AAA convened a special commission to investigate the allegations against Chagnon and Neel. The report by the AAA issued in May, 2002 exonerated the anthropologist and geneticist from causing a measles epidemic among the Yanomami. Nonetheless, the AAA criticized some aspects of Chagnon's research, including his portrayal of the Yanomami as "The Fierce People," and his bribing of Venezuelan officials. However, the AAA debate was not over and three years later in June, 2005 they rescinded the acceptance of the 2002 report. As someone who is working to support indigenous people, I would like to point out that over the many years since publishing his first book on the Yanomami (whose revenues made him a millionaire), Chagnon has failed to bring significant aid to the Yanomami people. In fact, he sought to damage the indigenous movement by publicly criticizing Davi Kopenawa, a Yanomami activist who helped establish the Yanomami reserve in Brazil. One might ask if it was proper behavior for an anthropologist to hurt the efforts of an indigenous Amazonian activist attempting to defend his people. Interestingly, the Yanomami leader Davi Kopenawa has predicted the destruction of the entire human race if the Amazon Rainforest is destroyed. Kopenawa states, "The forest-land will only die if it is destroyed by whites. Then, the creeks will disappear, the land will crumble, the trees will dry and the stones of the mountains will shatter under the heat. The xapiripë spirits who live in the mountain ranges and play in the forest will eventually flee. Their fathers, the shamans, will not be able to summon them to protect us. The forest-land will become dry and empty. The shamans will no longer be able to deter the smoke-epidemics and the malefic beings who make us ill. And so everyone will die." Many ecologists seem to agree with Kopenawa, believing that the Amazon Rainforest are the "lungs of the Earth" and that if the Amazon is destroyed, it will cause a global ecological disaster resulting in the eventual destruction of the human race.

#### Antarctic mining causes nuclear war.

David W. Floren 1, J.D. from the University of Oregon, “Antarctic Mining Regimes: An Appreciation of the Attainable”, Journal of Environmental Law and Litigation, Fall, Volume 16, Number 2, 467-513

Concern for the quality of the environment provides a great reason for a mining moratorium, but additional justifications exist. Critics of CRAMRA worry about Antarctica becoming a "scene [or] object of international discord." n221 Largely ignored in the ATS debate is the real danger an introduction of mining and fossil fuel facilities and infrastructure would pose to the integrity of the peacekeeping goals of the ATS. n222 Such facilities and their transportation mechanisms (pipelines, tankers, etc.) will be important targets for destruction or seizure during any armed conflict involving any nation reliant on Antarctic mineral and fossil fuel resources. Article I bans, "inter alia, any measures of a military nature, such as the establishment of military bases and fortifications, the carrying out of military maneuvers, as well as the testing of any type of weapons." n223 Although mining qua mining is clearly not military in nature, the simple existence of mining facilities necessarily entails certain consequences. The history of armed conflict shows the increasingly vital role played by mineral and energy resource facilities in sustaining wartime economies. n224 Such facilities have always been selected as priority targets in military planning and strategy sessions, and the absence of major civilian targets in Antarctica further emphasizes the focus on mining facilityes. Target status is inseparable from the existence of productive mining and fossil fuel facilities, n225 and target priority grows with [\*504] distance from large human population centers. n226 Compounding this problem is the possibility that nuclear weapons might be used. The remoteness and inaccessibility of targets in the AT Area, n227 combined with the tiny number of anticipated human casualties boosts the likelihood that tactical nuclear weaponry would be engaged to achieve top military priorities, despite AT obligations n228 and other international accords discouraging their use. n229

### 1NC – Drones

#### Loss of satellites shuts down drones

Daniel Ventre 11, Engineer for CNRS and Researcher for CESDIP, Cyberwar and Information Warfare, p. 198-199

The introduction of cyberspace operations is part of a specific context; a major evolution in the operation environment and the nature of the conflicts, which make irregular wars the rule, and make regular actors the exception to the rule. But the battle against unconventional, non-state governed, irregular actors raises specific problems: there are multiple actors, unpredictable at that, who do not abide by the same rules. New orders in conflicts are imposing the implementation of an ever more important need for information, and information collection and processing. Networks now have an incredible importance. The document refers to the growing threats against American heritage: the USA is a target and the increasing amount of attacks against their networks is indeed the proof of this. There are many obstacles which need to be removed before they can achieve real superiority and freedom to act, especially as vulnerable points may originate within the very operations of the armed forces. An example of this is the vulnerability of using products (software and hardware), commercial products (off-the-shelf), and sometimes even foreign products123. This brings to mind the fact that the US Air Force uses commercial, even foreign, applications for its cyberspace operations.

Information space extends to space124, particularly via communication and observation satellites125. Satellites are the keystone to the cyberspace and communication systems, but also the security system: monitoring (Echelon network is the symbol), observation, communication. These are at the heart of the C4ISR systems, without which a concept such as network-centric warfare could not exist. There would be no drones without satellites. It is even a question of extending the Internet to extra-atmospheric space. Projects in this vein (Interplanetary Networks) were being formed in the 1990s, but ran into several technical difficulties (delays in important transmissions due to high distances and costs) [GEL 06]. NASA dedicates a few pages on its website to this project126. The development of communication systems based on the infrastructures in extra-atmospheric space will also raise questions for legal, geopolitical and geostrategic domains: questions of seizing this space, questions of regulation of human activity in this space, of sovereignty, new territoriality and independence.

#### Drones escalate every hotspot.

Zenko and Kreps 14 Micah - Douglas Dillon fellow in the Center for Preventive Action at the Council on Foreign Relations, PhD in political science from Brandeis University; \*Sarah - Stanton nuclear security fellow at the Council on Foreign Relations, assistant professor in the department of government and an adjunct professor at Cornell Law School, BA from Harvard University, MSc from Oxford University, and PhD from Georgetown University; “Limiting Armed Drone Proliferation," Council on Foreign Relations, June 2014, http://aspheramedia.com/wp-content/uploads/2014/12/Limiting\_Armed\_Drone\_Proliferation\_CSR69.pdf

The inherent advantages of drones will not alone make traditional interstate warfare more likely—such conflicts are relatively rare anyway, with only one active interstate conflict in both 2012 and 2013.20 Nor will the probable type, quantity, range, and lethality of armed drones that states possess in coming decades make a government more likely to attempt to defeat an opposing army, capture or control foreign territory, or remove a foreign leader from power. However, misperceptions over the use of armed drones increase the likelihood of militarized disputes with U.S. allies, as well as U.S. military forces, which could lead to an escalating crisis and deeper U.S. involvement. Though surveillance drones can be used to provide greater stability between countries by monitoring ceasefires or disputed borders, armed drones will have destabilizing consequences. Arming a drone, whether by design or by simply putting a crude payload on an unarmed drone, makes it a weapon, and thereby a direct national security threat for any state whose border it breaches. Increased Frequency of Interstate and Intrastate Force For the United States, drones have significantly reduced the political, diplomatic, and military risks and costs associated with the use of military force, which has led to a vast expansion of lethal operations that would not have been attempted with other weapons platforms. Aside from airstrikes in traditional conflicts such as Libya, Iraq, and Afghanistan—where one-quarter of all International Security Assistance Force (ISAF) airstrikes in 2012 were conducted by drones—the United States has conducted hundreds in non-battlefield settings: Pakistan (approximately 369), Yemen (approximately 87), Somalia (an estimated 16), and the Philippines (at least 1, in 2006).21 Of the estimated 473 non-battlefield targeted killings undertaken by the United States since November 2002, approximately 98 percent were carried out by drones. Moreover, despite maintaining a “strong preference” for capturing over killing suspected terrorists since September 2011, there have been only 3 known capture attempts, compared with 194 drone strikes that have killed an estimated 1,014 people, 86 of whom were civilians.22 Senior U.S. civilian and military officials, whose careers span the pre– and post–armed drone era, overwhelmingly agree that the threshold for the authorization of force by civilian officials has been significantly reduced. Former secretary of defense Robert Gates asserted in October 2013, for example, that armed drones allow decision-makers to see war as a “bloodless, painless, and odorless” affair, with technology detaching leaders from the “inevitably tragic, inefficient, and uncertain” consequences of war.23 President Barack Obama admitted in May 2013 that the United States has come to see armed drones “as a cure-all for terrorism,” because they are low risk and instrumental in “shielding the government” from criticisms “that a troop deployment invites.”24 Such admissions from leaders of a democratic country with a system of checks and balances point to the temptations that leaders with fewer institutional checks will face. President Obama and his senior aides have stated that the United States is setting precedents with drones that other states may emulate.25 If U.S. experience and Obama’s cautionary words are any guide, states that acquire armed drones will be more willing to threaten or use force in ways they might not otherwise, within both interstate and intrastate contexts. States might undertake cross-border, interstate actions less discriminately, especially in areas prone to tension. As is apparent in the East and South China Seas, nationalist sentiments and the discovery of untapped, valuable national resources can make disputes between countries more likely. In such contested areas, drones will enable governments to undertake strike missions or probe the responses of an adversary—actions they would be less inclined to take with manned platforms. According to the Central Intelligence Agency (CIA), there are approximately 430 bilateral maritime boundaries, most of which are not defined by formal agreements between the affected states.26 Beyond the cases of East Asia, other cross-border flashpoints for conflict where the low-risk proposition of drone strikes would be tempting include Russia in Georgia or Ukraine, Turkey in Syria, Sudan within its borders, and China on its western periphery. In 2013, a Chinese counternarcotics official revealed that his bureau had considered attempting to kill a drug kingpin named Naw Kham, who was hiding in a remote region in northeastern Myanmar, by using a drone carrying twenty kilograms of dynamite. “The plan was rejected, because the order was to catch him alive,” the official recalled.27 With armed drones, China might make the same calculation that the United States has made—that killing is more straightforward than capturing—in choosing to target ostensibly high-threat individuals with drone strikes. China’s demonstrated willingness to employ armed drones against terrorists or criminals outside its borders could directly threaten U.S. allies in the region, particularly if the criterion China uses to define a terrorist does not align with that of the United States or its allies. Domestically, governments may use armed drones to target their perceived internal enemies. Most emerging drone powers have experienced recent domestic unrest. Turkey, Russia, Pakistan, and China all have separatist or significant opposition movements (e.g., Kurds, Chechens, the Taliban, Tibetans, and Uighurs) that presented political and military challenges to their rule in recent history. These states already designate individuals from these groups as “terrorists,” and reserve the right to use force against them. States possessing the lower risk—compared with other weapons platforms—capability of armed drones could use them more frequently in the service of domestic pacification, especially against time-sensitive targets that reside in mountainous, jungle, or other inhospitable terrain. Compared with typical methods used by military and police forces to counter insurgencies, criminals, or terrorists—such as ground troops and manned aircraft— unmanned drones provide significantly greater real-time intelligence through their persistent loiter time and responsiveness to striking an identified target. Increased Risk of Misperception and Escalation Pushing limits in already unstable regions is complicated by questions raised regarding rules of engagement: how would states respond to an armed drone in what they contend is their sovereign airspace, and how would opposing sides respond to counter-drone tactics? Japanese defense officials claim that shooting down Chinese drones in what Japan contends is its airspace is more likely to occur than downing manned aircraft because drones are not as responsive to radio or pilot warnings, thereby raising the possibility of an escalatory response.28 Alternatively, Japan might misidentify a Chinese manned fighter as an advanced drone and fire on it, especially if the aircraft’s radar signature is not sufficiently distinctive or if combat drones routinely fly over the disputed area. Thus, the additional risks associated with drone strikes, combined with the lack of clarity on how two countries would react to an attempted downing of a drone, create the potential for miscalculation and subsequent escalation. As U.S. Air Force commanders in South Korea noted, a North Korean drone equipped with chemical agents would not have to kill many or even any people on the peninsula to terrorize the population and escalate tensions.29 This scenario points to the spiraling escalatory dynamic that could be repeated—likely intensified in the context of armed drones—in other tension-prone areas, such as the Middle East, South Asia, and Central and East Africa, where the mix of low-risk and ambiguous rules of engagement is a recipe for escalation. Not all of these contingencies directly affect U.S. interests, but they would affect treaty allies whose security the United States has an interest in maintaining. Compared with other weapons platforms, current practice repeatedly demonstrates that drones make militarized disputes more likely due to a decreased threshold for the use of force and an increased risk of miscalculation. Increased Risk of Lethality The proliferation of armed drones will increase the likelihood of destabilizing or devastating one-off, high-consequence attacks. In March 2013, Senator Dianne Feinstein (D-CA) observed of drones: “In some respects it’s a perfect assassination weapon. . . . Now we have a problem. There are all these nations that want to buy these armed drones. I’m strongly opposed to that.”30 The worst-case contingency for the use of armed drones, albeit an unlikely circumstance, would be to deliver weapons of mass destruction. Drones are, in many ways, the perfect vehicle for delivering biological and chemical agents.31 A WMD attack, or even the assassination of a political leader, another troubling though unlikely circumstance, would have tremendous consequences for regional and international stability. Deterring such drone-based attacks will depend on the ability of the United States and other governments to accurately detect and attribute them. Technical experts and intelligence analysts disagree about the extent to which this will be possible, but the difficulties lie in the challenges of detecting drones (they emit small radar, thermal, and electron signatures, and can fly low), determining who controlled it (they can be programmed to fly to a preset GPS coordinate), or assigning ownership to a downed system (they can be composed of commercial, off-the-shelf components).32 It is equally noteworthy that civilian officials or military commanders have almost always used armed drones in ways beyond their initially intended applications. Drones do not simply fulfill existing mission requirements; they create new and unforeseen ones, and will continue to do so in the future. Furthermore, U.S. officials would be misguided to view future uses of armed drones solely through the prism of how the United States has used them—for discrete military operations in relatively benign air-defense environments. The potential for misperception is compounded by the fact that few governments seeking or acquiring armed drones have publicly articulated any strategy for how they will likely use them. Conversely, the uncertainty about how other countries will use drones provides the United States with an opportunity to shape drone doctrines, especially for U.S. allies interested in procuring drones from U.S. manufacturers.

### 1NC – 5G

#### 5G is coming online globally via satellites---extinction.

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Executive summary

Telecommunications companies worldwide, with the support of governments, are poised within the next two years to roll out the fifth-generation wireless network (5G). This is set to deliver what is acknowledged to be unprecedented societal change on a global scale. We will have “smart” homes, “smart” businesses, “smart” highways, “smart” cities and self-driving cars. Virtually everything we own and buy, from refrigerators and washing machines to milk cartons, hairbrushes and infants’ diapers, will contain antennas and microchips and will be connected wirelessly to the Internet. Every person on Earth will have instant access to super-high-speed, low- latency wireless communications from any point on the planet, even in rainforests, mid-ocean and the Antarctic.

What is not widely acknowledged is that this will also result in unprecedented environmental change on a global scale. The planned density of radio frequency transmitters is impossible to envisage. In addition to millions of new 5G base stations on Earth and 20,000 new satellites in space, 200 billion transmitting objects, according to estimates, will be part of the Internet of Things by 2020, and one trillion objects a few years later. Commercial 5G at lower frequencies and slower speeds was deployed in Qatar, Finland and Estonia in mid-2018. The rollout of 5G at extremely high (millimetre wave) frequencies is planned to begin at the end of 2018.

Despite widespread denial, the evidence that radio frequency (RF) radiation is harmful to life is already overwhelming. The accumulated clinical evidence of sick and injured human beings, experimental evidence of damage to DNA, cells and organ systems in a wide variety of plants and animals, and epidemiological evidence that the major diseases of modern civilization—cancer, heart disease and diabetes—are in large part caused by electromagnetic pollution, forms a literature base of well over 10,000 peer-reviewed studies.

If the telecommunications industry’s plans for 5G come to fruition, no person, no animal, no bird, no insect and no plant on Earth will be able to avoid exposure, 24 hours a day, 365 days a year, to levels of RF radiation that are tens to hundreds of times greater than what exists today, without any possibility of escape anywhere on the planet. These 5G plans threaten to provoke serious, irreversible effects on humans and permanent damage to all of the Earth’s ecosystems.

### 1NC – Poppy

#### Satellites drive poppy eradication

Xiangyu Liu 18, Institute of Remote Sensing and Digital Earth, Chinese Academy of Sciences and University of Chinese Academy of Sciences, et al., “Opium Poppy Detection Using Deep Learning”, Remote Sensing, Volume 10, Number 12, https://www.mdpi.com/2072-4292/10/12/1886/htm

5. Conclusions

Using satellite remote sensing has become a mainstream approach for monitoring poppy cultivation. However, identifying the location of poppy parcels and mapping their spatial distribution are of great practical significance for local governments making and implementing eradication plans. In order to obtain the specific location coordinates of poppy parcels, we used deep learning-based object detection to detect the location of target poppy parcels in remote sensing images and obtain a spatial distribution map of the poppy growing area. We also compared and analyzed the model performance in different situations using verification areas in Phongsali. It was found that for the region in Phongsali, our method can not only detect poppy parcel locations with a higher precision and recall (95% and 85%, respectively), it also performs well on other types of satellite images and at other spatial resolutions. Compared to existing monitoring methods, our work has three unique points: (1) it can obtain the specific location coordinates of poppy parcels by automatic feature extraction from training data; (2) it provides a quantitative analysis of prediction performance for different parameters; and (3) it performs well on satellite images of different types and varying spatial resolution. In future work, our detection method will be utilized to monitor poppy parcels in different areas, and more experiments will be conducted to verify the applicability of our model to other types of satellite images.

#### That crushes Afghan stability

Dr. Vanda Felbab-Brown 17, Senior Fellow in the Center for 21st Century Security and Intelligence in the Foreign Policy Program at Brookings, PhD in Political Science from MIT, “Afghanistan’s Opium Production is Through The Roof—Why Washington Shouldn’t Overreact”, Brookings Report, 11/21/2017, https://www.brookings.edu/blog/order-from-chaos/2017/11/21/afghanistans-opium-production-is-through-the-roof-why-washington-shouldnt-overreact/

The diversity of the Taliban’s income portfolio is has important implications for counternarcotics and counterinsurgency strategies, especially since eliminating the Taliban’s financial base through counternarcotics efforts is often seen as a key element of the counterinsurgency strategy. There is simply no easy way to bankrupt the Taliban by wiping out the opium poppy economy. And as discussed below, any such move would be disastrous for the counterinsurgency efforts.

There is simply no easy way to bankrupt the Taliban by wiping out the opium poppy economy.

The Taliban is not the only group profiting from the opiate business in Afghanistan. So are various criminal gangs, which often are connected to the government, the Afghan police, tribal elites, and many ex-warlords-cum-government-officials. Many of these powerbrokers are also key anti-Taliban counterinsurgency actors, including in the north of the country where opium too has expanded.

NO MAGIC BULLET

Most counternarcotics measures adopted since 2001 have been ineffective or counterproductive economically, politically, and with respect to counterinsurgency and stabilization efforts.

Eradication and bans on opium poppy cultivation, often borne by the poorest and most socially marginalized, have generated extensive political capital for the Taliban and undermined counterinsurgency. They sparked provincial revolts, alienated the rural population from the Afghan government, and drove the rural population into Taliban hands. The Taliban presented itself as a protector of the people’s poppies and cast the Afghan government and its international sponsors as apostates and infidels trying to kill the Afghan people with hunger.

The Obama administration’s decision to defund centrally-led eradication was a courageous break with U.S. counternarcotics dogma, and such a policy is still correct today. Aerial spraying would be the only way to do any large-scale eradication since manual eradication teams have been attacked. That would be disastrous from the counterinsurgency perspective, since it would cement the Taliban’s political capital rather than bankrupting it. Eradication never bankrupted insurgents anywhere, not even in Colombia. Nor is it sustainable without an end to conflict.

#### Global nuclear war

Caroline Wadhams 14, Senior Fellow at the Center for American Progress, Senior Advisor in the Office of the Quadrennial Diplomacy and Development Review (QDDR) in the Department of State, “Afghans Find Their Way”, Center American Progress, 3/14/2014, <https://www.americanprogress.org/issues/security/report/2014/03/10/85598/afghans-find-their-way/>

Both unifying and centrifugal forces exist simultaneously in Afghanistan, and which forces will prove stronger as international troops draw down remains unknown. Based on consultations with Afghan civil society members; Afghan and international governmental officials; members of the Afghan National Security Forces, or ANSF; and NATO-ISAF officials in Afghanistan and the United States, it is clear that unifying forces in Afghanistan have strengthened since 2001 and may be able to prevent a return to an expanded civil war. These unifying forces are Afghans who have become stakeholders in the current political system. They include young people, the media, many Afghan women and representatives of organized Afghan women’s groups, traditional leaders and new civil society groups, Afghan government officials, and members of the Afghan National Security Forces. They wish to build upon and improve the current system, rather than overthrow it and begin anew.

Afghanistan’s stability remains in the national security interest of the United States. Expanded conflict in Afghanistan has the potential to not only reverse numerous developmental gains for Afghans but also to spill over into nuclear-armed Pakistan and throughout the region. Insecurity in Afghanistan could drive refugees across Afghanistan’s borders and enable violent militant groups to flourish, including Al Qaeda-affiliated groups, placing strains on Afghanistan’s neighbors. As in the past, regional countries—including India, Pakistan, Russia, and Iran—may decide to back their respective proxies, thereby leading to Afghanistan’s further fragmentation and tensions among countries.

### 1NC – Agriculture

#### Satellites are crucial for large, industrial megafarms

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Agriculture

To feed the Earth's growing population affordably, farming has gone from a mostly decentralized, family-owned business to corporate farming on a scale never before imagined. These industrial megafarms are a primary reason that many people in the world can enjoy plentiful and varied foods at a reasonable cost. On this scale, deciding what crop to plant in a given field is not just business - it's science. And the science relies, in large part, on data from space.

Companies such as the Satellite Imaging Corporation (SIC) provide data from space on overall crop health, soil analysis, and irrigation impacts and efficiencies. From space, you can easily map soil variations, finding areas rich in organic matter and others less so - this allows optimized planting to take advantage of crops that thrive in any given soil environment. Very large farms also use satellite images to assess the overall health of their crops by land area, spotting those that are being impacted by non-optimal soil moisture content, etc., allowing the farmer to take corrective action while there is still time to save the crop.

#### Extinction.

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We hear a lot about how we’re running out of antibiotics. But we are also doomed to run out of pesticides, because insects inevitably develop resistance, whether toxic chemicals are sprayed directly or genetically engineered into the plants. Worse yet, weeds, insects, and fungus develop resistance in just 5 years on average, which has caused the chemicals to grow increasingly lethal over the past 60 years. And it takes on average eight to ten years to identify, test, and develop a new pesticide, though that isn’t long enough to discover the long-term toxicity to humans and other organisms. And this devil’s bargain hasn’t even provided most of the gains in crop yields, which is due to natural-gas and phosphate fertilizers plus soil-crushing tractors and harvesters that can do the work of millions of men and horses quickly on farms that grow only one crop on thousands of acres. Yet before pesticides, farmers lost a third of their crops to pests, after pesticides, farmers still lose a third of their crops. Even without pesticides, industrial agriculture is doomed to fail from extremely high rates of soil erosion and soil compaction at rates that far exceed losses in the past, since soil couldn’t wash or blow away as easily on small farms that grew many crops. But pest killing chemicals are surely accelerating the day of reckoning sooner rather than later. Enormous amounts of toxic chemicals are dumped on land every year — over 1 billion pounds are used in the United State (US) every year and 5.6 billion pounds globally (Alavanja 2009). This destroys the very ecosystems that used to help plants fight off pests, and is a major factor biodiversity loss and extinction. Evidence also points to pesticides playing a key role in the loss of bees and their pollination services. Although paleo-diet fanatics won’t mind eating mostly meat when fruit, vegetable, and nut crops are gone, they will not be so happy about having to eat more carbohydrates. Wheat and other grains will still be around, since they are wind-pollinated. Agricultural chemicals render land lifeless and toxic to beneficial creatures, also killing the food chain above — fish, amphibians, birds, and humans (from cancer, chronic disease, and suicide). Surely a day is coming when pesticides stop working, resulting in massive famines. But who is there to speak for the grandchildren? And those that do speak for them are mowed down by the logic of libertarian capitalism, which only cares about profits today. Given that a political party is now in power in the U.S. that wants to get rid of the protections the Environmental Protection Agency (EPA) and other agencies provide, may make matters worse if agricultural chemicals are allowed to be more toxic, long-lasting, and released earlier, before being fully tested for health effects. Meanwhile chemical and genetic engineering companies are making a fortune, because the farmers have to pay full price, since the pests develop resistance long before a product is old enough to be made generically. Except for glyphosate, but weeds have developed resistance. Predictably. In fact, the inevitability of resistance has been known for nearly seven decades. In 1951, as the world began using synthetic chemicals, Dr. Reginald Painter at Kansas State University published “Insect Resistance in Crop Plants”. He made a case that it would be better to understand how a crop plant fought off insects, since it was inevitable that insects would develop genetic or behavioral resistance. At best, chemicals might be used as an emergency control measure. Farmers will say that we simply must carry on like this, there’s no other choice. But that’s simply not true. Consider the corn rootworm, that costs farmers about $2 billion a year in lost crops despite spending hundreds of millions on chemicals and the hundreds of millions of dollars chemical companies spend developing new chemicals. To lower the chances of corn pests developing resistance, corn crops were rotated with soybeans. Predictably, a few mutated to eat soybeans plus changed their behavior. They used to only lay eggs on nearby corn plants, now they disperse to lay eggs on soybean crops as well. Worse yet, corn is more profitable than soy and many farmers began growing continuous corn. Already the corn rootworm is developing resistance to the latest and greatest chemicals. But the corn rootworm is not causing devastation in Europe, because farms are smaller and most farmers rotate not just soy, but wheat, alfalfa, sorghum and oats with corn (Nordhaus 2017). Before planting, farmers try to get rid of pests that survived the winter and apply fumigants to kill fungi and nematodes, and pre-emergent chemicals to reduce weed seeds from emerging. Even farmers practicing no-till farming douse the land with herbicides by using GMO herbicide-resistant crops. Then over the course of crop growth, farmers may apply several rounds of additional pesticides to control different pests. For example, cotton growers apply chemicals from 12 to 30 times before harvest. Currently, the potential harm is only assessed for 2 to 3 years before a permit is issued, even though the damage might occur up to 20 years later. Although these chemicals appear to be just like antibiotics, that isn’t entirely true. We develop some immunity to a disease after antibiotics help us recover, but a plant is still vulnerable to the pests and weeds with the genetics or behavior to survive and chemical assault. Although there are thousands of chemical toxins, what matters is how they kill, their method of action (MOA). For herbicides there are only 29 MOAs, for insecticides, just 28. So if a pest develops resistance to one chemical within an MOA, it will be resistant to all of the thousands of chemicals within that MOA. The demand for chemicals has also grown due the high level of bioinvasive species. It takes a while to find native pests and make sure they won’t do more harm than good. In the 1950s there were just three main corn pests. By 1978 there were 40, and they vary regionally. For example, California has 30 arthropods and over 14 fungal diseases to cope with. When I was learning how to grow food organically back in the 90s, I remember how outraged organic farmers were that Monsanto was going to genetically engineer plants to have the Bt bacteria in them. This is because the only insecticide organic farmers can use is Bt bacteria, because it is found in the soil. It’s natural. Organic farmers have been careful to spray only in emergencies so that insects didn’t develop resistance to their only remedy. Since 1996, GMO plants have been engineered to have Bt in them, and predictably, insects have developed resistance. For example, in 2015, 81% of all corn was planted with genetically engineered Bt. But corn earworms have developed resistance, especially in North Carolina and Georgia, setting the stage for damage across the nation. Five other insects have developed resistance to Bt as well. GMO plants were also going to reduce pesticide use. They did for a while, but not for long. Chemical use has increased 7% to 202,000 tons a year in the past 10 years. Resistance can come in other ways than mutations. Behavior can change. Cockroach bait is laced with glucose, so cockroaches that developed glucose-aversion now no longer take the bait. It is worth repeating that chemicals and other practices are ruining the long-term viability of agriculture. Here is how author Dyer explains it: “Ultimately the practice of modern farming is not sustainable” because “the damage to the soil and natural ecosystems is so great that farming becomes dependent not on the land but on the artificial inputs into the process, such as fertilizers and pesticides. In many ways, our battle against the diverse array of pest species is a battle against the health of the system itself. As we kill pest species, we also kill related species that may be beneficial. We kill predators that could assist our efforts. We reduce the ecosystem’s ability to recover due to reduced diversity, and we interfere with the organisms that affect the biogeochemical processes that maintain the soils in which the plants grow. Soil is a complex, multifaceted living thing that is far more than the sum of the sand, silt, clay, fungi, microbes, nematodes, and other invertebrates. All biotic components interact as an ecosystem within the soil and at the surface, and in relation to the larger components such as herbivores that move across the land. Organisms grow and dig through the soil, aerate it, reorganize it, and add and subtract organic material. Mature soil is structured and layered and, very importantly, it remains in place. Plowing of the soil turns everything upside down. What was hidden from light is exposed. What was kept at a constant temperature is now varying with the day and night and seasons. What cannot tolerate drying conditions at the surface is likely killed. And very sensitive and delicate structures within the soil are disrupted and destroyed. Conventional tillage disrupts the entire soil ecosystem. Tractors and farm equipment are large and heavy; they compact the soil, which removes air space and water-holding capacity. Wind and water erosion remove the smallest soil particles, which typically hold most of the micronutrients needed by plants. Synthetic fertilizers are added to supplement the loss of oil nutrients but often are relatively toxic to many soil organisms. And chemicals such as pre-emergents, fumigants, herbicides, insecticides, acaricides, fungicides, and defoliants eventually kill all but the most tolerant or resistant soil organisms. It does not take long to reduce a native, living, dynamic soil to a relatively lifeless collection of inorganic particles with little of the natural structure and function of undisturbed soil”. When I told my husband all the reasons we use agricultural chemicals and the harm done, my husband got angry and said “Farmers aren’t stupid, that can’t be right!” I think there are a number of reasons why farmers don’t go back to sustainable organic farming. First, there is far too much money to be made in the chemical herbicide, pesticide, and insecticide industry to stop this juggernaut. After reading Lessig’s book “Republic, Lost”, one of the best, if not the best book on campaign finance reform, I despair of campaign financing ever happening. So chemical lobbyists will continue to donate enough money to politicians to maintain the status quo. Plus the chemical industry has infiltrated regulatory agencies via the revolving door for decades and is now in a position to assassinate the EPA, with newly appointed Scott Pruitt, who would like to get rid of the EPA. Second, about half of farmers are hired guns. They don’t own the land and care about passing it on in good health to their children. They rent the land, and their goal, and the owner’s goal is for them to make as much profit as possible. Third, renters and farmers both would lose money, maybe go out of business in the years it would take to convert an industrial monoculture farm to multiple crops rotated, or an organic farm. Fourth, it takes time to learn to farm organically properly. So even if the farmer survives financially, mistakes will be made. Hopefully made up for by the higher price of organic food, but as wealth grows increasingly more unevenly distributed, and the risk of another economic crash grows (not to mention lack of reforms, being in more debt now than 2008, etc). Fifth, industrial farming is what is taught at most universities. There are only a handful of universities that offer programs in organic agriculture. Sixth, subsidies favor large farmers, who are also the only farmers who have the money to profit from economies of scale, and buy their own giant tractors to farm a thousand acres of monoculture crops. Industrial farming has driven 5 million farmers off the land who couldn’t compete with the profits made by larger farms in the area. But farmers will have to go organic whether they like it or not It’s hard to say whether this will happen because we’ve run out of pesticides, whether from resistance or a financial crash reducing new chemical research, or whether peak oil, peak coal, and peak natural gas will cause the decline of chemical farming. Agriculture uses about 15 to 20% of fossil fuel energy, from natural gas fertilizer, oil-based chemicals, farm vehicle and equipment fuel, the agricultural cold chain, distribution, packaging, refrigeration, and cooking to name a few of the uses. At some point of fossil decline, there won’t be enough fuel or pesticides to continue business as usual. Farmers will be forced to go organic at some point. Wouldn’t it be easier to start the transition now?

### 1NC – Latin America

#### Satellite data ratchets up drug eradication efforts

Kieron Monks 14, Writer for CNN, The Guardian, and Prospect Magazine, BA from the University of Nottingham, “Spy Satellites Fighting Crime From Space”, CNN, 8/12/2014, https://www.cnn.com/2014/08/11/tech/innovation/spy-satellites-fighting-crime-from-space/index.html

The Alayed case is one of several pilot schemes the company is running with police forces and security agencies. A key focus is on organized crime, trafficking and smuggling. The satellites have been put to work on the illegal fishing industry, worth up to $23 billion a year, tracking ships to witness crimes in real time.

"We can identify a specific ship and monitor its behaviour from port to port. We can see if it meets another vessel in a strange way and offloads cargo, or fishes in water it's not allowed to," says Hilton.

In addition to improved resolution, SA Catapult is benefiting from a steady increase in the number of Earth observation satellites, with launches set to double over the next decade, making more data available as well as bringing down the cost. This progress is also enabling the growth of rivals such as U.S. firm Digital Globe, while the Asian market is also expanding.

Some experts believe space surveillance could become industry standard. "The technologies that Catapult is developing will have broad application not only for national and international police organizations but also for anyone working in international security," said Patricia Lewis, research director of International Security at think tank Chatham House. Drug trafficking and arms reduction treaties are among the priority applications, says Lewis.

Read this: Robot furniture builds itself

It will soon be cost effective for police forces to buy their own satellites, predicts Ray Purdy, expert on satellites and the law at University College London. Purdy has been able to monitor criminal activity -- such as large-scale illegal waste disposal -- through satellite surveillance, which would have allowed police to cheaply and easily strengthen existing cases.

"I've gone back and looked at crimes after a prosecution and in some cases you can see illegal activity a year before, which could have allowed a greater conviction," he said. "In other cases we found people resumed criminal activity immediately after they were prosecuted."

#### That backfires, destabilizing Latin America

Barney Lerten 19, Reporter for KTVZ News, “Computer Model: Big Cocaine Busts Backfire Big-Time”, KTVZ News 21, 4/3/2019, https://www.ktvz.com/news/osu-computer-model-big-cocaine-busts-backfire-big-time/1065357402

Efforts to curtail the flow of cocaine into the United States from South America have made drug trafficking operations more widespread and harder to eradicate, according to new research published this week in Proceedings of the National Academy of Sciences.

The National Science Foundation supported the study, which included an Oregon State University geographer and was led by Nicholas Magliocca from University of Alabama. The collaboration also included researchers from The Ohio State University, Northern Arizona University, Arizona State University, Texas State University-San Marcos, the University of Wyoming and the U.S. Fish and Wildlife Service.

“It really is surprising how the model matches our observations,” said David Wrathall of OSU’s College of Earth, Ocean and Atmospheric Sciences. “Our team consists of researchers who worked in different parts of Central America during the 2000s and witnessed a massive surge of drugs into the region that coincided with a reinvigoration of the war on drugs. We asked ourselves: did drug interdiction push drug traffickers into these places?”

The findings are important because after five decades, the United States’ war on drugs has yet to prove itself effective or cost-efficient for dealing with cocaine trafficking, the researchers note. The study comes at a time of increased attention on Central American migrants fleeing drug-related violence in their home countries.

The scientists developed a computer model named NarcoLogic that shows how drug traffickers respond to interdiction strategies and tactics. It differs from previous approaches because it models local- and network-level trafficking dynamics at the same time.

Interdiction efforts are linked to the spread and fragmentation of trafficking routes – a phenomenon known as the “balloon and cockroach effect.” When interdiction efforts are focused in one location, drug traffickers simply relocate.

“Between 1996 and 2017, the Western Hemisphere transit zone grew from 2 million to 7 million square miles, making it more difficult and costly for law enforcement to track and disrupt trafficking networks,” Wrathall said. “But as trafficking spread, it triggered a host of smuggling-related collateral damages: violence, corruption, proliferation of weapons, and extensive and rapid environmental destruction, which has been the focus of my work.”

#### Nuclear war

Dr. Andrew F. Krepinevich 14, Jr., President of the Center for Strategic and Budgetary Assessments, M.P.A. and Ph.D. from Harvard University, and Eric Lindsey, Analyst at the Center for Strategic and Budgetary Assessments, M.A. in Strategic Studies and International Economics from the Johns Hopkins School of Advanced International Studies (SAIS), “Hemispheric Defense in the 21st Century”, 1/9/2014, https://csbaonline.org/research/publications/hemispheric-defense-in-the-21st-century

As the previous chapter demonstrates, for the past two hundred years the principal cause of concern for U.S. defense policymakers and planners thinking about Latin America has been the prospect that great powers outside the Western Hemisphere could exploit the military weakness and internal security challenges of the states within it to threaten U.S. security. While there is reason for optimism about the future of Latin America,58 there is also cause for concern. The region faces enduring obstacles to economic59 and political development60 as well as signi􀂿cant internal security challenges. As General John Kelly, the commander of U.S. Southern Command (SOUTHCOM)61 noted in his March 2013 posture statement before Congress, Latin America: 􀀾I􀁀s a region of enormous promise and exciting opportunities, but it is also one of persistent challenges and complex threats. It is a region of relative peace, low likelihood of interstate con􀃀icts, and overall economic growth, yet is also home to corrosive criminal violence, permissive environments for illicit activities, and episodic political and social protests.62 The instability and non-traditional security challenges that General Kelly cites provide potential opportunities for the United States’ major rivals to (borrowing a term from Monroe’s declaration) “interpose” themselves into the region and, by so doing, threaten regional stability and U.S. security. Two discernible trends suggest that current and prospective Eurasian rivals could seek to exploit regional conditions and dynamics in ways that could impose immense costs on the United States and divert its attention from more distant theaters overseas. The first trend is a return to a heightened level of competition among the “great powers” following two decades of U.S. dominance. The second trend concerns the growing cost of projecting power by traditional military means due to the proliferation of “anti-access/area-denial” (A2/AD) capabilities in general, and precision-guided munitions (PGMs) in particular. These trends suggest that, despite a possible decline in relative U.S. power, external forces will continue to 􀂿nd it beyond their means to threaten the hemisphere through traditional forms of power projection. Far more likely is a return of a competition similar to that which the United States engaged in with the Soviet Union during the Cold War. During that period both powers sought to avoid direct con􀃀ict with the other, given the risks of escalation to nuclear con􀃀ict. Instead each focused primarily on gaining an advantage over the other through the employment of client states and non-state groups as proxies. Proxies were employed for reasons other than avoiding a direct clash, such as gaining positional advantage (e.g., enabling the sponsor to establish bases in its country, as the Soviets did in Cuba). Proxies were also employed as a means of diverting a rival’s attention from what was considered the key region of the competition and to impose disproportionate costs on a rival (e.g., Moscow’s support of 􀀱orth Vietnam as a means of drawing o􀌆 U.S. resources from Europe). This chapter outlines trends in the Western Hemisphere security environment that outside powers may seek to exploit to advance their objectives in ways that threaten regional stability and U.S. security. This is followed by a discussion of how these external powers might proceed to do so. Seeds of Instability Crime, Illicit Networks, and Under-Governed Areas Latin America has a long history of banditry, smuggling, and organized crime. As in the case of Pancho Villa and the 1916-1917 Punitive Expedition, these activities have occasionally risen to a level at which they in􀃀uence U.S. national security calculations. Rarely, however, have these activities been as pervasive and destabilizing as they are today. Although a wide variety of illicit activity occurs in Latin America, criminal organizations conducting drug tra􀌇cking are the dominant forces in the Latin American underworld today, accounting for roughly 􀀇􀀗0 billion per year63 of an estimated 􀀇100 billion in annual illicit trade.6􀀗 Since the Colombian cartels were dismantled in the 1990s, this lucrative trade has been dominated by powerful Mexican cartels whose operations extend across the length and breadth of Mexico, as well as up the supply chain into the cocaine-producing regions of the Andean Ridge and through their wholesale and retail drug distribution networks across the United States.65 The cartels, along with countless smaller criminal organizations, comprise what the head of SOUTHCOM has described as, 􀀾a􀁀n interconnected system of arteries that traverse the entire Western Hemisphere, stretching across the Atlantic and Paci􀂿c, through the Caribbean, and up and down 􀀱orth, South, and Central America . . . 􀀾a􀁀 vast system of illicit pathways 􀀾that is used􀁀 to move tons of drugs, thousands of people, and countless weapons into and out of the United States, Europe, and Africa with an e􀌇ciency, payload, and gross pro􀂿t any global transportation company would envy.66 That being said, the drug tra􀌇cking underworld is by no means a monolithic entity or cooperative alliance. Rather, it is a fractious and brutally competitive business in which rival entities are constantly and literally 􀂿ghting to maximize their share of the drug trade and for control of the critical transshipment points, or plazas, through which it 􀃀ows. To attack their competitor’s operations and protect their own operations from rivals and the Mexican government’s crackdown that began in 2006, the cartels have built up larger, better armed, and more ruthless forces of hired gunmen known as sicarios. Using the billions of dollars generated by their illicit activities, they have acquired weapons and equipment formerly reserved for state armies or state-sponsored insurgent groups, including body armor, assault ri􀃀es, machine guns, grenades, landmines, anti-tank rockets, mortars, car bombs, armored vehicles, helicopters, transport planes, and—perhaps most remarkably—long-range submersibles.67 The cartels’ pro􀂿ts have also enabled them to hire former police and military personnel, including members of several countries’ elite special operations units68 and, in several cases, active and former members of the U.S. military.69 These personnel bring with them—and can provide to the cartels—a level of training and tactical pro􀂿ciency that can be equal or superior to those of the government forces they face. As a result of this pro􀂿ciency and the military-grade weapons possessed by the cartels, more than 2,500 Mexican police o􀌇cers and 200 military personnel were killed in confrontations with organized crime forces between 2008 and 2012 along with tens of thousands of civilians.70 In the poorer states of Central America, state security forces operate at an even greater disadvantage.71 While their paramilitary forces enable the cartels to dominate entire cities and large remote areas through force and intimidation, they are not the only tool available. The cartels also leverage their immense wealth to buy the silence or support of police and government o􀌇cials who are often presented with a choice between plata o plomo—“silver or lead.” According to the head of the Mexican Federal Police, around 2010 the cartels were spending an estimated 􀀇100 million each month on bribes to police.72 By buying o􀌆 o􀌇cials—and torturing or killing those who cannot be corrupted—the cartels have greatly undermined the e􀌆ectiveness of national government forces in general and local police in particular. This, in turn, has undermined the con􀂿dence of the population in their government’s willingness and ability to protect them. Through these means and methods the cartels have gained a substantial degree of de facto control over many urban and rural areas across Mexico, including major cities and large swathes of territory along the U.S.-Mexico border. In many of these crime-ridden areas the loss of con􀂿dence in the government and police has prompted the formation of vigilante militias, presenting an additional challenge to government control.73 Meanwhile, in the “northern triangle” of Central America (the area comprising Guatemala, Honduras, and El Salvador through which the cartels transship almost all cocaine bound for Mexico and the United States) the situation is even more dire. Approximately 90 percent of crimes in this area go unpunished, while in Guatemala roughly half the country’s territory is e􀌆ectively under drug tra􀌇ckers’ control.7􀀗 Further south, similar pockets of lawlessness exist in coca-growing areas in Colombia, Venezuela, Ecuador, Peru, and Bolivia. In Colombia and along its borders with Venezuela, Ecuador, and Peru, much of the coca-growing territory remains under the control of the Revolutionary Armed Forces of Colombia, or FARC. A guerrilla organization founded in the 1960s as a Marxist-Leninist revolutionary movement dedicated to the overthrow of the Colombian government, the FARC embraced coca growing in the 1990s as a means of funding its operations and has subsequently evolved into a hybrid mix of left-wing insurgent group and pro􀂿t-driven cartel.76 This hybrid nature has facilitated cooperation between the FARC and ideological sympathizers like the Bolivarian Alliance, Hezbollah, Al Qaeda in the Islamic Maghreb, and other extremist groups77 as well as with purely criminal organizations like the Mexican cartels. Although the FARC has been greatly weakened over the past decade and no longer poses the existential threat to the Colombian government that it once did, it remains 􀂿rmly in control of large tracts of coca-producing jungle, mostly straddling the borders between Colombia and FARC supporters Venezuela and Ecuador. In summary, organized crime elements have exploited under-governed areas to establish zones under their de facto control. In so doing they pose a signi􀂿cant and growing threat to regional security in general and U.S. interests in particular. As SOUTHCOM commander General Kelly recently observed: 􀀾T􀁀he proximity of the U.S. homeland to criminally governed spaces is a vulnerability with direct implications for U.S. national security. I am also troubled by the signi􀂿cant criminal capabilities that are available 􀀾within them􀁀 to anyone—for a price. Transnational criminal organizations have access to key facilitators who specialize in document forgery, trade-based money laundering, weapons procurement, and human smuggling, including the smuggling of special interest aliens. This criminal expertise and the ability to move people, products, and funds are skills that can be exploited by a variety of malign actors, including terrorists.78 Hezbollah and the Bolivarian Alliance Hezbollah in Latin America 􀀱on-state entities recognized by the U.S. as terrorist organizations also operate in the region, most notably Lebanon-based Hezbollah, an Iranian client group. Hezbollah maintains an active presence in the tri-border area (TBA) of South America— the nexus of Argentina, Brazil, and Paraguay—stretching back to the 1980s. The TBA has traditionally been under-governed and is known by some as “the United 􀀱ations of crime.”79 Eight syndicate groups facilitate this activity in South America’s so-called “Southern Cone,” overseeing legitimate businesses along with a wide range of illegal activities to include money laundering, drug and arms traf- 􀂿cking, identity theft and false identi􀂿cation documents, counterfeiting currency and intellectual property, and smuggling. 􀀱ot surprisingly they are linked to organized crime and to non-state insurgent and terrorist groups, such as the FARC.80 Estimates are that over 􀀇12 billion in illicit transactions are conducted per year, a sum exceeding Paraguay’s entire GDP by a substantial amount.81 Hezbollah achieved notoriety in the region in 1992 when it bombed the Israeli embassy in Argentina. This was followed with the bombing of the AMIA Jewish community center in Buenos Aires two years later. Like many other terrorist organizations, as Hezbollah expanded it established relationships with drug cartels82 that it supports in a variety of ways. For example, the cartels have enlisted Hezbollah, known for its tunnel construction along the Israeli border, for help in improving their tunnels along the U.S.-Mexican border. In 2008, Hezbollah helped broker a deal in which one of Mexico’s major drug cartels, Sinaloa, sent members to Iran for weapons and explosives training via Venezuela using Venezuelan travel documents. 83 As the locus of the drug trade and other illegal cartel activities moved north into Central America and Mexico, Hezbollah has sought to move with it with mixed success. In October 2011, Hezbollah was linked to the e􀌆orts of an Iranian-American to conspire with Iranian agents to assassinate the Saudi ambassador to the United States. The plot involved members of the Los Zetas Mexican drug cartel.8􀀗 The would-be assassin, Mansour Arbabsiar, had established contact with his cousin, a Quds Force85 handler, Gen. Gholam Shakuri. The plot is believed by some to be part of a wider campaign by the Quds Force and Hezbollah to embark on a campaign of violence extending beyond the Middle East to other Western targets, including those in the United States.86 In early September 2012, Mexican authorities arrested three men suspected of operating a Hezbollah cell in the Yucatan area and Central America, including a dual U.S.-Lebanese citizen linked to a U.S.-based Hezbollah money laundering operation. 87A few months later, in December 2012, Wassim el Abd Fadel, a suspected Hezbollah member with Paraguayan citizenship, was arrested in Paraguay. Fadel was charged with human and drug tra􀌇cking and money laundering. Fadel reportedly deposited the proceeds of his criminal activities—ranging from 􀀇50-200,000 per transaction—into Turkish and Syrian bank accounts linked to Hezbollah. In summary, Hezbollah has become a 􀂿xture in Central and Latin America, expanding both its activities and in􀃀uence over time. It has developed links with the increasingly powerful organized crime groups in the region, particularly the narco cartels, along with radical insurgent groups such as the FARC and states like Venezuela who are hostile to the United States and its regional partners. Hezbollah’s principal objectives appear to be undermining U.S. in􀃀uence in the region, imposing costs on the United States, and generating revenue to sustain its operations in Latin America and elsewhere in the world. These objectives are shared by Iran, Hezbollah’s main state sponsor. The Bolivarian Alliance As noted above, geographic, economic, and cultural factors have traditionally helped to prevent the emergence in Latin America of any real military rival to the United States. Although there are no traditional military threats in the region, there are indigenous states whose actions, policies, and rhetoric challenge regional stability and U.S. security. Over the past decade, several states have come together to form the Bolivarian Alliance of the Americas (ALBA), an organization of left-leaning Latin American regimes whose overarching purpose is to promote radical populism and socialism, foster regional integration, and reduce what they perceive as Washington’s “imperialist” influence in the region.89 Since its founding by Hugo Chavez of Venezuela and Fidel Castro of Cuba in December 200􀀗, the Bolivarian Alliance has expanded to include Antigua and Barbuda, Bolivia, Dominica, Ecuador, 􀀱icaragua, and Saint Vincent and the Grenadines. Although the members of the Bolivarian Alliance are militarily weak and pose almost no traditional military threat to the United States or its allies in the region,90 they challenge American interests in the region in other ways. First, they espouse an anti-American narrative that finds substantial support in the region and consistently oppose U.S. efforts to foster cooperation and regional economic integration.91 Second, in their efforts to undermine the government of Colombia, which they consider to be a U.S. puppet, ALBA states provide support and sanctuaries within their borders to coca growers, drug traffickers, other criminal organizations, and the FARC.92 Links to Hezbollah have also been detected.93 Perhaps of greatest concern, they have aligned themselves closely with Iran, inviting it and Syria to participate as “observer states” in the alliance. Other worrisome ALBA activities involve lifting visa requirements for Iranian citizens and hosting large numbers of Iranian diplomats and commercial exchange members that some observers believe to be Iranian intelligence and paramilitary Quds Force operatives.9􀀗 By hosting and cooperating with both foreign agents and violent non-state actors, the ALBA states have come to function as critical nodes in a network of groups hostile to the United States. A Coming Era of Proxy Wars in the Western Hemisphere? History shows that Washington has often emphasized an indirect approach to meeting challenges to its security in Latin America. Yet the United States has not shied away from more direct, traditional uses of force when interests and circumstances dictated, as demonstrated over the past half century by U.S. invasions of the Dominican Republic (1965), Grenada (1983), and Panama (1989) and the occupation of Haiti (199􀀗).Yet several trends seem likely to raise the cost of such operations, perhaps to prohibitive levels. Foremost among these trends is the diffusion of precision-guided weaponry to state and non-state entities. 92 The Second Lebanon War as “Precursor” War A precursor of this trend can be seen in the Second Lebanon War between Israel and Hezbollah.95 During the con􀃀ict, which lasted less than 􀂿ve weeks, irregular Hezbollah forces held their own against the highly regarded Israeli Defense Force (IDF), demonstrating what is now possible for non-state entities to accomplish given the proliferation of militarily-relevant advanced technologies. Hezbollah’s militia engaged IDF armor columns with salvos of advanced, man-portable, antitank guided missiles and other e􀌆ective anti-armor weapons (e.g. rocket-propelled grenades (RPGs) with anti-armor warheads) in great numbers. When the IDF employed its ground forces in southern Lebanon, its armored forces su􀌆ered severe losses; out of the four hundred tanks involved in the 􀂿ghting in southern Lebanon, forty-eight were hit and forty damaged.96 Hezbollah’s defensive line was also well equipped with latest-generation thermal and low-/ no-light enhanced illumination imaging systems, while frontline units were connected to each other and higher command elements via a proprietary, 􀂿ber-optic based communications network, making collection of communications tra􀌇c by Israeli intelligence extremely di􀌇cult. Perhaps most important, Hezbollah possessed thousands of short- and medium- range rockets, often skillfully hidden below ground or in bunkers that made detection from overhead surveillance platforms nearly impossible. During the brief con􀃀ict Hezbollah’s forces 􀂿red some four thousand unguided rockets of various types that hit Israel. Hezbollah’s rocket inventory enabled its forces to attack targets throughout the northern half of Israel. Over nine hundred rockets hit near or on buildings, civilian infrastructure, and industrial plants. Some two thousand homes were destroyed, and over 􀂿fty Israelis died with several thousand more injured. The casualties would undoubtedly been greater if between 100,000 and 250,000 Israeli civilians had not 􀃀ed their homes. Haifa, Israel’s major seaport had to be shut down, as did its oil re􀂿nery.97 Hezbollah also employed several unmanned aerial vehicles for surveillance of Israel, as well as C-802 anti-ship cruise missiles used to attack and damage an Israeli corvette. 98 The G-RAMM Battlefield The brief war between Israel and Hezbollah suggests that future irregular forces may be well-equipped with enhanced communications, extended-range surveillance capabilities, and precision-guided rockets, artillery, mortars and missiles (G-RAMM) 99 able to hit targets with high accuracy at ranges measured from the tens of kilometers perhaps up to a hundred kilometers or more. In projecting power against enemies equipped in this manner and employing these kinds of tactics U.S. forces—as well as other conventional forces— will find themselves operating in a far more lethal battlefield than those in either of the Gulf wars or in stability operations in Afghanistan and Iraq. Moreover, currently constituted conventional forces typically depend on large fixed infrastructure (e.g., military bases, logistics depots, ports, airfields, railheads, bridges) to deploy themselves and sustain combat operations. These transportation and support hubs also serve as the nodes through which internal commerce and foreign trade moves within a country. This key, fixed infrastructure will almost certainly prove far more difficult to defend against irregular forces armed with G-RAMM weaponry. Indeed, had Hezbollah’s “RAMM” inventory had only a small fraction of G-RAMM munitions, say 10-20 percent, it would have been able to in􀃀ict far greater damage than it did historically to Israeli population centers, key government facilities, military installations, and essential commercial assets such as ports, air􀂿elds, and industrial complexes. An irregular enemy force armed with G-RAMM capabilities in substantial numbers could seriously threaten Latin American governments as well as any U.S. (or external great power) forces and support elements attempting a traditional intervention operation. Implications for the U.S. and Other Major Powers The preceding narrative suggests that the combat potential of irregular forces is likely to increase dramatically in the coming years. As this occurs, the cost of operating conventional forces—especially ground forces—and defending key military support infrastructure is likely to rise substantially. Given these considerations the United States and other major powers external to the Western Hemisphere will have strong incentives to avoid the use of conventional forms of military power, particularly large ground forces, in favor of employing irregular proxy forces to advance their interests. Moreover, the high cost and questionable bene􀂿t of the campaigns in Afghanistan and Iraq are likely to create strong domestic opposition in the United States to such operations for some time to come. This must be added to the United States’ greatly diminished 􀂿scal standing that has led to large cuts in planned investments in defense. These factors suggest that Washington will be much less likely to engage in direct military action in Latin America in the coming years than historically has been the case. At the same time, rivals of the United States like China and Russia may be incentivized by these trends, as well as the United States’ overwhelming military dominance in the Western Hemisphere, to avoid the direct use of force to expand their in􀃀uence in Latin America. Instead, like some of the Bolivarian Alliance members, they appear likely to follow the path taken by the Soviet Union during the Cold War and Iran today: supporting non-state proxies to impose disproportionate costs on the United States and to distract Washington’s resources and attention from other parts of the world. This is not to say that Beijing, Moscow, and Tehran would eschew future opportunities to establish bases in Latin America. As in the past, such bases can support efforts to accomplish several important objectives. They can, for example, further insulate a Latin American regime from the threat of direct U.S. military intervention, since Washington would have to account for the possibility that the conflict would lead to a direct confrontation with a more capable and potentially nuclear-armed power.100 Bases in the hemisphere can also enable external powers to conduct military assistance activities, such as training, more easily. Electronic surveillance of the United States and Latin American states could be accomplished more cheaply and e􀌆ectively from forward positions. Finally, certain kinds of military capabilities, such as long-range ballistic missiles and attack submarines, could be pro􀂿tably stationed in Latin America by powers external to that region, particularly if they intended to create the option of initiating con􀃀ict at some future date. These reasons, among others, have made preventing an extra-hemispheric power from establishing bases in Latin America an enduring U.S. priority. Players in a Latin American Great Game Given current trends, several powers external to the region may, either now or over the coming decade, have both the motive and the means to employ both state and non-state proxies in Latin American to achieve their interests. Principal among them is Iran, which is already engaged in supporting proxies against the United States and its partners in the Middle East and has long been developing proxies in Latin America. Additionally, there are reasons to think that China and Russia may be interested in cultivating and supporting Latin American proxies as well.

## New

#### High food prices solve rural poverty in India – reject other studies, they don’t assume wage adjustment

Jacoby 13 (Hana, Agriculture and Rural Development Unit, Development Research Group @ The World Bank, “Food Prices, Wages, and Welfare in Rural India”, The World Bank Development Research Group Agriculture and Rural Development Team) //BS 2-3-2018

Aside from direct income effects for consumers and producers, as in the textbook partial equilibrium analysis (e.g., Singh, Squire, Strauss, 1986, Deaton, 1989), higher agricultural prices, in principle, induce three types of indirect, or general equilibrium, effects concomitant with higher wages: (1) higher labor income; (2) lower capital (land) income due to higher labor costs; (3) higher prices for nontradables. To account for these channels in a manner that is both theoretically coherent and transparent, I integrate a standard three-sector, specific factors, general equilibrium model of wage determination (Jones, 1971,1975) into an otherwise conventional (first-order) household welfare change calculation.4 I use this generalization of Deaton (1989) to examine the distributional impacts of higher agricultural prices in rural India. Appealing to the widely noted geographical immobility of labor across rural India,5 I apply the specific factors model at the district level, treating each of these administrative units for theoretical purposes as a separate country with its own labor force but with open commodity trade across its borders.6 Thus, I allow that the elasticity of the rural wage with respect to an index of agricultural prices is not a single number for India as a whole, but varies with the structure of the particular (district) labor market. Moreover, under certain assumptions on the technology and preferences, I obtain a readily interpretable closed-form solution for this elasticity as a function of parameters that I can easily calculate from microdata. My empirical analysis shows that nominal wages for manual labor across rural India respond elastically to higher agricultural prices. In particular, wages rose faster in the districts growing relatively more of the crops that experienced comparatively large run-ups in price over the 2004-5 to 2009-10 period. Moreover, the magnitude of these wage responses is broadly consistent with a specific-factors model in which labor is perfectly mobile across production sectors. Indeed, I also explore a version of the theoretical model in which labor markets are segmented so that workers cannot shift from agriculture to the services or manufacturing sectors. This alternative labor market assumption turns out to have significantly different welfare implications in the Indian context than the unsegmented case. Fortunately, it has different empirical implications as well: Under labor market segmentation, nonagricultural wages (for manual labor) respond to changes in agricultural prices with a relatively low elasticity, as intersectoral spillovers are muted, if not nugatory. The evidence, however, is inconsistent with this strong form of segmentation. Existing studies of the relationship between agricultural commodity prices and rural wages are based on aggregate time series data from countries that were effectively autarkic in the main food staple (pre-1980s Bangladesh in Boyce and Ravallion, 1991, and Rashid, 2002; the Philippines in Lasco et al., 2008), thus raising serious endogeneity concerns. A closely related and much larger literature based on micro-data considers the labor market effects of trade liberalization (see Goldberg and Pavcnik, 2007, for a review).7 My estimation strategy follows the “differential exposure approach” employed in studies of the local wage impacts of tariff reform (most recently in Topalova, 2010, McCaig, 2011, and Kovak, 2011). Instead of considering the interaction between changes in industry protection rates and local industry composition (as in these papers), I exploit the huge variation across Indian districts in the crop composition of agricultural production coupled with differences in the magnitude of wholesale price changes across crops. Of course, price changes observed in local domestic markets cannot be treated as exogenous and must be instrumented for. In rural India, the elastic rural wage response to changes in agriculture’s terms of trade has striking distributional implications. Higher food prices, rather than reducing the welfare of the rural poor as indicated by the conventional approach, which ignores wage impacts, would actually benefit both rich and poor alike, even though the latter are typically not net sellers of food.8

#### Poverty in India drives the Naxal insurgency – causes nuclear war

Ehtisham 13 (Hasan, MSc in Defence and Strategic studies, “Is India’s nuclear arsenal safe?,” <http://blogs.tribune.com.pk/story/18875/is-indian-nuclear-arsenal-safe/>) //BS 2-3-2018

There are huge nuclear security issues in India because it is prone to insurgent groups and separatist rebels. According to the Daily Mail’s reports, most of India’s top nuclear facilities are located in exceedingly Naxal terrorist struck districts of India or in the “Red Corridor”. Some of the sensitive nuclear installations situated in this “Red Corridor” are, Uranium Corporation Of India Limited, Talcher Heavy Water Plant, Institute of Physics, Ceramatic Fuel Fabrication Facility, Nuclear Fuel Complex, Seha Institute of Nuclear Physics, Atomic Minerals Directorate and many more. Around 90% of the Red Corridor areas are a ‘No Go Zones’ for the Indian troops and Air Force. The Naxal rebels are in full control and there is no writ of the Indian government in these areas. The shocking aspect of Daily Mail’s report is that some Indian nuclear scientists are reportedly assisting Naxal rebels to learn to utilise and transport uranium. On the other hand, many of India’s missile facilities are located in either the Red Corridor or in the areas controlled by Hindu radicals and militant organisations. There are reported cases of the abduction of nuclear scientists from these areas, which is a very disturbing situation with respect to the safety and security of nuclear weapons. Any nuclear accident in India could have a serious impact on its neighbouring countries and hence, the insufficient safety and security measures are of great concern to Pakistan. Just imagine if a nuclear weapon fell in the hands of Indian terrorists; this could lead to an accidental nuclear war between Pakistan and India. Likewise, an accident at a nuclear power plant could release radiation that may not respect any borders.

#### Indo-Pak conflict escalates – worse than other conflicts

Barno 15 (David, distinguished practitioner & scholar in residence at the School of International Service at American University, “A nuclear war between India and Pakistan is a very real possibility,” <http://qz.com/541502/a-nuclear-war-between-india-and-pakistan-is-a-very-real-possibility/>) //BS 2-3-2018

A “pink flamingo” is a term recently coined by Frank Hoffman to describe predictable but ignored events that can yield disastrous results. Hoffman argues that these situations are fully visible, but almost entirely ignored by policymakers. Pink flamingos stand in stark contrast to “black swans“—the unpredictable, even unforeseeable shocks whose outcomes may be entirely unknown. The tense nuclear stand-off between India and Pakistan may be the most dangerous pink flamingo in today’s world. The Indian subcontinent—home to both India and Pakistan—remains among the most dangerous corners of the world, and continues to pose a deep threat to global stability and the current world order. Their 1,800-mile border is the only place in the world where two hostile, nuclear-armed states face off every day. And the risk of nuclear conflict has only continued to rise in the past few years, to the point that it is now a very real possibility. India and Pakistan have fought three wars since they gained independence in 1947, including one that ended in 1971 with Pakistan losing approximately half its territory (present-day Bangladesh). Today, the disputed Line of Control that divides the disputed Kashmir region remains a particularly tense flashpoint. Both the Kargil crisis of 1999 and the 2001 attack on the Indian Parliament by Pakistan-supported militants brought both nations once again to the brink of war. Yet, unlike earlier major wars, these two crises occurred after both India and Pakistan became nuclear-armed states. Quick and forceful diplomatic intervention played a pivotal role in preventing a larger conflict from erupting during each crisis. These stakes are even higher, and more dangerous, today. Since 2004, India has been developing a new military doctrine called Cold Start, a limited war option designed largely to deter Islamabad from sponsoring irregular attacks against New Delhi. It involves rapid conventional retaliation after any such attack, launching a number of quick armoured assaults into Pakistan and rapidly securing limited objectives that hypothetically remain below Pakistan’s nuclear threshold. In accordance with this doctrine, the Indian military is meant to mobilise half a million troops in less than 72 hours. The problem is, unlike its neighbours India and China, Pakistan has not renounced the first use of nuclear weapons. Instead, Pakistani leaders have stated that they may have to use nuclear weapons first in order to defend against a conventional attack from India. Therefore, both to counter Cold Start and help to offset India’s growing conventional superiority, Pakistan has accelerated its nuclear weapons programme—and begun to field short-range, low yield tactical nuclear weapons. Some observers now judge this nuclear programme to be the fastest growing in the world. Pakistan will reportedly have enough fissile material by 2020 to build more than 200 nuclear warheads—more than the UK plans to have by that time. It is not simply the pace of the build-up that should cause concern. Pakistan’s arsenal of short-range tactical nuclear weapons is a game changer in other ways. Pakistan clearly intends to use these weapons—on its own soil if necessary—to counter Cold Start’s plan for sudden Indian armoured thrusts into Pakistan. The introduction of these weapons has altered the long-standing geometry between the two nuclear powers and increases the risk of escalation to a nuclear exchange in a crisis. Beyond the risks of runaway nuclear escalation, Pakistan’s growing tactical nuclear weapons programme also brings a wide array of other destabilising characteristics to this already unstable mix: the necessity to position these short-range weapons close to the border with India, making them more vulnerable to interdiction; the need to move and disperse these weapons during a crisis, thereby signalling a nuclear threat; and the prospects of local commanders being given decentralised control of the weapons—a “use it or lose it” danger if facing an Indian armoured offensive. Furthermore, large numbers of small nuclear weapons scattered at different locations increase the risk that some will fall into the hands of violent extremists. A terrorist group gaining control of a nuclear weapon remains one of the most frightening potential spin-offs of the current arms race. Perhaps the most dangerous scenario that could lead to catastrophe is a replay of the 2008 Mumbai terrorist attacks. In November 2008, 10 terrorists launched attacks that left 166 people dead before the last of attackers were finally killed by Indian security forces almost 60 hours after the attacks began. By that time, there was strong evidence that the attackers were Pakistani and belonged to a Pakistan-supported militant group. Indian public outrage and humiliation were overwhelming. Only through the combination of diplomatic pressure from the US and immense restraint exerted by then-Indian prime minister Manmohan Singh was an Indian retaliatory strike averted. The chances of such Indian government restraint in a similarly deadly future scenario are unlikely. Experts such as Stephen Cohen of the Brookings Institution and former US ambassador to India Robert Blackwill agree that if there were another Mumbai, Indian prime minister Narendra Modi would not step back from using military force in response, unlike his predecessors. Indian public opinion would demand retaliation, especially after the unpopular degree of restraint exercised by the Singh government after the Mumbai attacks. But there remains no meaningful senior-level dialogue between the two states—last August’s planned meeting between the two national security advisers was cancelled after disagreements about Kashmiri separatists.