

# Stanton Nuclear Security Fellows Seminar

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## PANEL 3: Proliferation

### 1. Alexander Bollfrass, Belfer

#### *The Half-Lives of Others: Explaining the Accuracy of Nuclear Proliferation Assessments*

This memorandum introduces a project on intelligence assessments of nuclear proliferation for the Stanton Foundation's 2017 Nuclear Security Fellows Summit.

#### **How do intelligence agencies err in nuclear proliferation assessments?**

States conceal their nuclear activities from curious foreign eyes. In response, governments invest deeply in intelligence resources in discovering their respective nuclear intentions and capabilities. Predictions that other countries would acquire nuclear arms have influenced strategic choices from treaties to war-making. Intelligence agencies have not always been able to provide the desired warning of a state's nuclear weapons development at a policy-relevant moment.<sup>1</sup> At other times, they have exaggerated nuclear ambitions. The systematic causes of these over- and underestimates are not well understood in the IR and intelligence literatures.

*The Half-Lives of Others* examines why intelligence agencies err in assessing other countries' nuclear weapons programs. The study's outcome of interest is the accuracy of the assessment of another state's nuclear technical capability and its intentions of whether that capability will be used for civilian or military purposes. It finds systematic explanations both in the nature of the analytical process and in the political and technical characteristics of the assessed nuclear programs.

#### **Comparative three-stage research design**

**1. Global panel dataset.** Over 12,000 country-year observations for the performance of US, UK, East and West German intelligence analysts. Proliferation assessments were compared with current understanding of the program's status to indicate whether they had been correct, or were an erroneous over- or underestimate.

**2. Case studies.** Comparative congruence verifications for assessments of China, India, Argentina, and Pakistan that were performed by the UK, USA, Sweden, Switzerland, and both Germanys.

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<sup>1</sup> "In the months prior to India's May 18 nuclear test, the intelligence community failed to warn U.S. decision makers that such a test was being planned. This failure denied the U.S. Government the option of considering diplomatic or other initiatives to prevent this significant step in nuclear proliferation." (Intelligence Community Post-Mortem, 1974)

**3. Process tracing.** Tracing how East German, British, and American intelligence officers assessed the West German nuclear program. Includes documentation of the information available to the assessors and evidence of the analytic process.

#### **Summary of preliminary findings**

**Assessments were overwhelmingly accurate.** British and American intelligence estimates enjoyed a rate of success of well over 90%. Continental European intelligence assessors erred in about half of their proliferation estimates. Underestimates were more common than overestimates by a factor of ten, beginning in the 1960s.

**Program characteristics determine accuracy.** Size and technical complexity, imports of technology and materials, and the absence of international safeguards were reliably associated with *lower* assessment accuracy. The target state's diplomatic signaling also mattered. States announcing their intentions through international treaties and organizations were assessed with greater accuracy.

**Politicization rarely affected proliferation assessment.** The misleading idea that democratic intelligence organizations are chronically politicized and therefore produce inaccurate assessments is a consequence of their relative openness and accountability processes, which disproportionately expose assessment failures rather than a baseline of competence.

#### **Applying a comparative perspective**

**Alternative explanations** for accuracy of intelligence assessment abound: intelligence analysis is rarely correct because analysts under the sway of policymakers<sup>2</sup> who are protecting their bureaucratic turf<sup>3</sup> or lack personal integrity<sup>4</sup>.

**Contrary to pervasive skepticism**, the study finds that intelligence agencies are generally adept at proliferation assessment and more likely to underestimate proliferation risks than to inflate them. They are therefore neither realist chronic overestimators nor the efficient information-processors assumed in the signaling literature.

**The main contribution** is to compare different intelligence agencies performing the same task.<sup>5</sup> The extant literature provides explanations for individual intelligence failures, psychological reasons why estimators might be biased, and domestic political explanations for dysfunctional policy-intelligence relationships. These findings have not been consolidated into generalizable theories that compete in explaining variation in misestimation across time and place.

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<sup>2</sup> Joshua Rovner, *Fixing the Facts: National Security and the Politics of Intelligence*, Cornell Studies in Security Affairs (Ithaca, NY: Cornell University Press, 2011).

<sup>3</sup> Amy B Zegart, *Spying Blind: The CIA, the FBI, and the Origins of 9/11* (Princeton University Press, 2009).

<sup>4</sup> Uri Bar-Joseph, 'The Politicization of Intelligence: A Comparative Study', *International Journal of Intelligence and CounterIntelligence*, 26.2 (2013)

<sup>5</sup> The study examined archival evidence from over 1,000 archival/declassified files.

**Policy implications**

**Public insight** into what intelligence analysis has--and has not--been able to do. The results also show how it differs from policymakers' intuitions. Amplifying findings by Yarhi-Milo<sup>6</sup>, policymakers behave more like fearful overestimators when drawing their own conclusions about intentions.

**Governments** seeking to persuade foreign observers of their exclusively peaceful nuclear intentions can find guidance in the results, for example in the importance of submitting to the nonproliferation regime.

All **nuclear proliferation analysts**, not just intelligence professionals, can study these conclusions for evaluating country's proliferation risk. Most errors did not arise from missing secret or technical information, but from misunderstanding national intent.

**Limitations and feedback**

**Policy applications.** The inferences were drawn from the Cold War period on the basis of intelligence methods and nuclear technologies of the era. How can this research be more applicable to contemporary questions of proliferation assessment? During the fellowship, I will also be conducting interviews with practitioners to identify these applications.

**Empirical leads.** With the exception of East Germany, assessments were created by Western democracies with independent intelligence agencies. Efforts to add non-democratic and non-Western Polish, Iraqi, and South Korean assessments are currently underway. Additional suggestions would be extraordinarily helpful.

**Framing and publication plan.** The findings about the relationship between political and technical characteristics of target programs will be summarized as an article for a security studies journal. The theory-building findings about the nature of the assessment process represent the early stages of a separate study that engages the international relations literature with in-depth process tracing of comparative cases of proliferations assessments. Is this the most effective use of the research findings?

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<sup>6</sup> *Knowing the Adversary: Leaders, Intelligence, and Assessment of Intentions in International Relations* (Princeton University Press, 2014).

## 2. Daniel Salisbury, Belfer

### *Understanding WMD-related Illicit Trade: Lessons from Borrowed Concepts*

*On what issue are you working and why is it important?* The research project explores the behavior of entities –individuals, companies and networks– in their efforts to illicitly procure or supply technologies to sanctioned nuclear, missile and military programs. Notably, the research will seek to generate new conceptual insights drawing on bodies of literature which have seen limited use in efforts to explain proliferator behavior at this level.

Over recent decades, procurement agents working on behalf of Iran, North Korea and others have continued to use a wide range of methods to exploit the infrastructure of legitimate international commerce to acquire technology for their nuclear, missile and military programs. Witting and unwitting manufacturers, suppliers and middlemen will continue to make material contributions to current and future programs of concern.

Secrecy inhibits our understanding of illicit trade. Procurement agents and proliferating states seek to keep their procurement efforts secret- because they are illegal and they want to avoid the shutdown of procurement channels. Governments also seldom disclose their knowledge, seeking to protect sources and methods. We have far from a complete dataset –in fact, the cases we are aware of likely constitute “the tip of the iceberg”.

The project will draw on a variety of literatures on criminal networks to generate new conceptual insights to deal with knowledge gaps, and contextualize the limited dataset. Considering borrowed concepts can also help us to challenge generally accepted assumptions on which nonproliferation policy is based. Further understanding the motivations of these actors to become involved in supplying these programs, and what drives their choices of methods, will help to refine existing nonproliferation tools and produce new evidence-based nonproliferation policies.

*What is the big question that you are seeking to answer about that issue?* The project will explore one primary research question:

- What drives the behavior of entities in supplying nuclear, missile and military programs?

It will do so by exploring three sub-questions:

- “Why” - Why do actors get involved in supplying sanctioned nuclear, missile and military programs?
- “How?” - Why do actors’ efforts to supply these programs take the form that they do? I.e. what factors drive the shape of proliferation networks or supply chains?
- Policy responses - Do the factors identified in driving /shaping entity behavior challenge the generally accepted assumptions behind nonproliferation policy tools?

*How are you going to answer that question?* What methods will you use and what evidence or cases will you explore? The project will exploit new conceptual insights and utilize untapped data. Conceptual insights will be drawn from a diverse body of academic literature. This includes work on illicit trade and networks, criminology and business studies.

The secretive nature of illicit trade means that the existing dataset is limited, incomplete and skewed. However, there are still significant sources of data which have seen limited exploitation in existing scholarship. This is including, but not limited to, US court documents such as indictments, complaints and transcripts, leaked government documents and cables, UN Panel of Experts' reports, media reporting and other open source material such as company registry information. I will also explore conducting interviews with former government officials involved in export control enforcement and countering proliferation networks.

*What is your answer to the question you are asking? That is, what is your argument or conclusion even if it is still tentative at this point?* A number of early conclusions have been derived from research into related areas over the past year, and shape my plans for the upcoming year:<sup>7</sup>

- *We are too focused on the “biggest fish”* -A focus on the most significant cases such as the AQ Khan Network means that our general perceptions regarding proliferators are shaped by anomalies. For example, Khan's \$400mil personal fortune gives the impression that WMD-related illicit trade is a highly profitable activity.
- *Limits of cost-benefit frameworks* -Analysts need to look beyond a basic cost-benefit analysis (profit > risks = involvement) and the rational actor model when considering why entities become involved in proliferation-related transactions. While profit clearly motivates many entities to become involved in illicit trade – this is often only part of the picture. Other ideological, personal and social factors also play a role.
- *Proliferators and companies don't think that way* -There is little evidence to suggest that those involved in proliferation, and businesses in implementing Internal Compliance Programs (ICPs), weigh up costs and benefits of these activities in an informed and structured manner before making decisions.
- *Consider proliferation opportunities* -A model based on “opportunity theory” from criminology – focusing on a criminal opportunity and the specific costs and benefits of that situation – provides a more insightful model than costs and benefits alone.
- *Be careful focusing on enforcement actions* -Our understanding of illicit procurement and enforcement actions can be skewed by the prevalence and type of enforcement actions. For example, “sting operations” appear to be much more prevalent in US enforcement actions than stated.<sup>8</sup> Most stings tell us little about illicit trade – they are false opportunities manufactured by enforcement bodies. Open source research methods can help to differentiate between actual procurement attempts and “sting operations”.

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<sup>7</sup> These conclusions, and others are outlined in my recent work: Daniel Salisbury, 'Why do Entities Get Involved in Proliferation? Exploring the Criminology of Illicit WMD-related Trade', *Nonproliferation Review*, forthcoming (fall 2017); Daniel Salisbury, 'What Drives the Middlemen? Exploring Involvement in WMD-related Illicit Trade', *Defence in Depth Blog* (10 July 2017), <https://defenceindepth.co/2017/07/10/what-drives-the-middlemen-exploring-involvement-in-wmd-related-illicit-trade/>.

<sup>8</sup> For example, looking at enforcement cases involving the trafficking of Iranian aircraft parts – it is clear that almost half of the prosecutions were “stings”, with those “stung” by an undercover buyer having no real links to Iranian procurement efforts. Daniel Salisbury, 'Tomcat and Mouse: Iranian Illicit Procurement of US Legacy Military Technologies, 1979-2016', currently under review with *Strategic Trade Review*.

*How does your work fit into the existing work on the subject?* The existing scholarship which considers this illicit WMD-related trade has tended to be case study based, focused on high-profile cases such as the AQ Khan network, or focus on exploiting open sources to further explore violations. There has been limited conceptual research conducted which seeks to draw out broader trends.

*What alternative arguments or explanations exist and why is your answer superior?* Some scholarship has sought to take a more conceptual approach, considering proliferation networks, and the factors that shape them. Scholars at the Belfer Center are currently exploring “resilience” as a lens through which to consider the strengths and weaknesses of proliferator activities. This work suggests that involvement in proliferation may not be as profitable as many perceive, providing the example of the Cheng case which saw an individual imprisoned for nine years after gaining just several thousand dollars a year from a scheme to ship \$2mil worth of pressure transducers to Iran’s nuclear program.<sup>9</sup> This research has also highlighted that enforcement may create incentives as well as deterring some actors: “When enforcement does increase... the net result is likely a more lucrative market for proliferators”.<sup>10</sup>

Another project at MIT has addressed similar issues, drawing on interviews with defectors from North Korean state trading companies. This work suggests that the risks of sanctions, rather than deterring criminal behavior, have been monetized by Chinese middlemen resulting in larger and more lucrative operations.<sup>11</sup> Rather than providing an alternative argument, these pieces of work reiterate the value of challenging the basic assumptions regarding proliferator motivations, and behind nonproliferation policy tools.

*How does your work add to or change our understanding of the issue you are studying?* What do you see as your most important contribution? My work –alongside those cited above –seeks to challenge some of the basic assumptions about illicit trade. Building on my last year’s work I hope to expand lessons from borrowed concepts by considering other criminal areas: narcotics, arms trafficking and other illicit activities.

*What policy implications flow from your work? What concrete recommendations can you offer to policymakers?* The early conclusions described above have also led to some early policy-relevant implications:

- *Examine the data* -while a significant dataset exists of export control violations, there have been few attempts to fully consider this and develop conceptual frameworks. Policymakers likely do not have the time to consider this dataset.
- *The limits of deterrence* -Export control systems have a number of roles: risk assessment, technology denial, detection of illicit activity, intelligence gathering, etc. Because global export control systems are patchy, and enforcement efforts are even patchier, export controls and related sanctions likely have a limited deterrence value. Rather than “deterring” entities from involvement, export controls can “compel” companies to put in place Internal Compliance Programs (ICPs).

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<sup>9</sup> Aaron Arnold, “A Resilience Framework for Understanding Illicit Nuclear Procurement Networks”, *Strategic Trade Review*, vol.3, no.4 (Spring 2017), pp.3-24.

<sup>10</sup> Ibid, p.22.

<sup>11</sup> John Park and Jim Walsh, “Stopping North Korea, Inc.: Sanctions Effectiveness and Unintended Consequences”, MIT Security Studies Program Report, August 2016.

- *Should we punish severely?* -In the literature on criminological sanctions, three factors are considered important in deterring criminal behavior: certainty, severity and celerity. The US and other governments frequently emphasize the importance of severity in their statements. The criminology literature generally undermines the importance of severity of punishment in deterrence, in favor of certainty.
- *The value of “stings”?* -The prevalence of “sting operations”, and the types of cases that many of these represent, suggests there are limits to their utility. When vendors are stung by undercover agents posing as procurement agents, there is often no sign of any actual links to prospective buyers. While these cases boost prosecution statistics, value for nonproliferation efforts is debatable.

*What do you think is the weakest or most vulnerable aspect of your study and what sort of feedback would be most useful to you?* I hope to benefit more from discussions with former and current policymakers this year. This will help me to better understand the implications of my research, and better frame recommendations for policymakers.

### 3. Anna Weichselbraun, CISAC

#### *IAEA Nuclear Safeguards in Crisis: an Ethnographic Perspective*

##### 1. On what issue are you working and why is it important?

My research explores the IAEA's crisis in legitimacy following the discovery of Iraq's clandestine nuclear weapons program in Iraq in 1991. I examine the transformation of IAEA safeguards from accounting for nuclear material to looking at the "state as a whole." This approach is supposed to make IAEA safeguards more robust but has been criticized by Member States including Russia, Brazil, and South Africa. Understanding how the IAEA has once again become a widely trusted organization (for example, in the role of verifying the Joint Comprehensive Plan of Action) is important for strengthening the international nonproliferation regime and ensuring global peace and security in the face of present attempts to undermine the legitimacy of international organizations.

##### 2. What is the big question that you are seeking to answer about that issue?

How did the IAEA respond to the limitations of the existing safeguards agreement system (based on INFCIRC/153) derived from the Nuclear Nonproliferation Treaty? How did it change nuclear safeguards to be able to detect clandestine nuclear activity in a state? And what limits and critiques did the Agency encounter in attempting to carry out these changes?

##### 3. How are you going to answer your question? What methods will you use and what evidence or cases will you explore?

I answer this question by looking at the way that the IAEA teaches its inspectors how to carry out nuclear safeguards. Explicit talk about how to do safeguards correctly (and incorrectly) shows how the organization seeks to present itself as technically expert and politically efficacious. I conducted twelve months of ethnographic field research in the training section of the IAEA's Department of Safeguards. There, I observed safeguards training courses from the 6 month introduction to safeguards for new inspectors to courses on more specialized topics like the export-import regimes for dual-use technology and the state level evaluation process. I conducted dozens of interviews with new and seasoned inspectors and analysts, in which I explored how these actors conducted their work (from inspections themselves to headquarters analysis), and what qualities they saw as most important for a good nuclear safeguards inspector to possess. As a case study, I investigated the "Acquisition Path Analysis," an analytic method that serves as the cornerstone of the IAEA's "state level" safeguards system, but which was hotly debated among Secretariat staff and Member States. I also conducted archival research at the IAEA's archives on the early development of nuclear safeguards.

##### 4. What is your answer to the question you are asking? That is, what is your argument or conclusion even if it is still tentative at this point?

The IAEA's attempts to overcome the limitations of its mandate by taking into account the "state as a whole" go against widely shared expectations among the Member States (and among many staff members) about the *bureaucratically objective* ways that the IAEA conducts safeguards. Many practitioners, stakeholders, and observers agree that the greatest threat against the IAEA's legitimacy (and the success of non-proliferation efforts) is its politicization, real or perceived. According to this narrative, the IAEA is a "technical" organization that has only recently been threatened by the influence of certain member states attempting to exert pressure on the Secretariat's (safeguards) work. In this narrative, the IAEA's status as a technical organization is self-evident. I argue, however, that the IAEA must be made into a technical organization through its safeguards techniques and its safeguards



reports. Only when this work is recognized as technical and independent by the member states is the IAEA “obviously” technical.

One example of how state influence operates is a result of the IAEA’s zero-growth budget policy. This policy makes the IAEA Secretariat reliant on Member State Support Programs (from primarily states with extensive civilian and/or military nuclear programs) to fund necessary additional equipment and training for safeguards inspectors. But because this form of support is articulated as merely “technical,” its political aspects—in the form of how the states influence the way the IAEA thinks about safeguards in the very equipment and training provided—are concealed.

### 5. How does your work fit into existing work on your subject?

The existing literature on the IAEA tends to focus on the influence of diplomatic, political and state actors on the functioning of the organization. Some scholars have shown that debates about the Agency’s technical capacity is often strategically deployed to advance political interests (Findlay 2012; Brown 2015; Busch & Pilat 2017). Others see the boundary as threatened by the introduction of politics extraneous to the Agency’s work in the organization’s policy-making bodies (such as the perennial resolution introduced by Arab states at the General Conference calling on Israel to join the NPT) (McKnight 1971; Scheinman 1987; Rauf and Kelley 2014). My work illuminates how the mundane day to day work of nuclear safeguards inspectors must constantly produce the organization as technical to fend off political forces.

#### 5.a What alternative arguments or explanations exist and why is your answer superior?

The technical capacity of the organization is either assumed as self-evident or dismissed as an arbitrary measure that is the product of political maneuvering. Neither of these perspectives allow for an understanding of how the organization came to be constituted as technical, how it performs this expertise, and how, specifically, its legitimacy can be threatened.

In my case study on “Acquisition Path Analysis,” I argue that the laborious production of an entire procedural document for this analytic methodology was necessary in order to produce it as a bureaucratically objective technique. Individual, subjective opinions could be (appear to be) harnessed by bureaucratic procedure. This finding reveals how “technical independence”—the source of the IAEA’s political legitimacy—relies on the organization’s bureaucratically-based procedural expertise.

#### 5.b How does your work add to or change our understanding of the issue you are studying?

My work illuminates how political debates about global security are carried out in the everyday work of bureaucrats. It shows that the critiques about state level safeguards should not be dismissed as merely the “political” interventions of certain states. Rather, some of the state level safeguards concepts and methods radically threatened the bureaucratic foundation of legitimacy on which IAEA safeguards had been historically built and made politically acceptable to most of the world.

#### 5.c What do you see as your most important contribution?

My research shows how IAEA safeguards actually function in the day to day work of nuclear safeguards inspectors, analysts, and managers. It demonstrates that struggles to maintain the boundary between the technical and political aspects of the international control of nuclear technologies are carried out at all levels of the nuclear bureaucracy.

### 6. What policy implications flow from your work? What concrete recommendations can you offer to policymakers?

I suggest that policymakers can strengthen international organizations by refraining from overly attempting to influence their political directions. Even technical and logistical support can be seen as

wielding outsize influence. In the case of the IAEA, supporting a change to the organization's zero-growth budget policy could free it from its out-sized reliance on the support programs of wealthy states with well-developed nuclear technology sectors. If the IAEA's budget supported its technical tasks more adequately, it could pursue its verification task more independently.

7. What do you think is the weakest or most vulnerable aspect of your study and what sort of feedback would be most useful to you?

As an anthropologist, I am still relatively new to the domain of policy-relevant research, its concepts, and ways of speaking. I would be grateful for suggestions on which aspects of my research would be most interesting to policy audiences, and appreciate any comments on how to articulate my research in more legible terms.

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