From Accountants to Detectives: How Nuclear Safeguards Inspectors Make Knowledge at the International Atomic Energy Agency

The International Atomic Energy Agency (IAEA) verifies state compliance with the Nuclear Nonproliferation Treaty through nuclear safeguards. The agency’s legitimacy derives from the convincing display of technical authority. The politics of nuclear things, however, constantly threaten to undermine this authority. Nuclear safeguards are made legibly authoritative and credibly technical through bureaucratic objectivity. This epistemic logic and practice is widely shared by projects of technocratic governance in the liberal international order. After the discovery of Iraq’s secret nuclear weapons program, the IAEA transformed its accounting-based knowledge practices. However, these transformations into more detective-like ways of knowing call into question the presumed technical purity of safeguards reports. This article unearths the historical origins of safeguards as bureaucratically objective knowledge and demonstrates its enduring legacy at the IAEA, as its bureaucrats and diplomats attempt to manage the tension between effectiveness and credibility.

In the aftermath of the 1991 Gulf War, the world discovered that Iraq had been pursuing a clandestine nuclear weapons program. This was a surprise because Iraq was a signatory to the Nuclear Non-Proliferation Treaty as a nonnuclear weapon state and International Atomic Energy Agency (IAEA) inspectors had been visiting the modest nuclear facilities—two research reactors, a small fuel fabrication laboratory, and storage facility—twice a year to check that no prohibited activities, such as nuclear weapons production, were taking place. Despite these inspections, the country’s secret nuclear weapons program had gone undiscovered until then. “The IAEA was a beat cop with a blindfold,” wrote the former head of the IAEA, Egyptian lawyer Mohamed ElBaradei, in his memoir (ElBaradei 2011, 10). If states wanted to secretly develop nuclear weapons, it appeared they could do so undetected. In the mid-1990s, the IAEA’s inspection regime was therefore under scrutiny for being ineffective, which threatened the legitimacy of the entire nuclear nonproliferation regime.

When IAEA staff tell this story two decades on, they like to show two aerial photographs of Tuwaitha, Iraq’s principal nuclear site. The first indicates the buildings where inspectors had been going, and the second adds the sites where, right under inspectors’ noses, Iraqis were illegally enriching uranium and separating plutonium. The failure of the IAEA, they conclude in their presentations, was because IAEA safeguards had only been inspecting what states declared to them. Therefore, they continue, the reforms of the IAEA’s safeguards system throughout the 1990s and into the 2000s were vital to maintaining
the legitimacy of the nuclear nonproliferation regime, of which the agency was the key technical body.

Founded in 1957 and mandated to verify compliance with the 1970 Nuclear Non-Proliferation Treaty (NPT), the IAEA has built a reputation of being a technical organization, and a technical organization only. The aim of safeguards in the agency’s self-description is to “provide credible assurances” about the peaceful nature of countries’ nuclear programs. Safeguards reports construe nuclear nonproliferation as the unexciting technocratic project of accounting for nuclear material. From 1972 to the 1990s, IAEA nuclear safeguards inspectors visited nuclear facilities to measure and count nuclear material to make sure that none of it was being diverted to build bombs.

Iraq’s secret program showed that relying only on the state’s declaration was not enough. In order to improve the “effectiveness” of safeguards, the IAEA argued, inspectors needed to be able to know more about what was going on in the state. Aside from a voluntary legal measure that states could sign to permit more intrusive inspections, the key innovation of these reforms was in the way safeguards were conceptualized. Inspectors would no longer be mere accountants of nuclear material, dutifully inspecting declared sites. No, they would now evaluate the state “as a whole” in order to ferret out potentially illegal nuclear behavior, a methodology that would come to be known as the “state-level concept.” The reforms expanded the scope of the inspectors’ purview and launched the organization into new areas of knowledge it had previously not dared to enter for fear of appearing political.

In 2012, I began twelve months of fieldwork at the IAEA as an intern in the safeguards training section. I observed the introductory course for new inspectors and attended courses in more specialized topics; participated in a weeklong mock inspection at a regional nuclear power plant; interviewed inspectors, analysts, technicians, and other specialists across the department; attended meetings; and wrote a technical report for conceptualizing inspector competencies. At that time, the relationship between the kind of knowledge necessary to preserve nuclear peace, the means of acquiring it, and the competence of the IAEA to apply its science of knowing to the global dilemmas posed by nuclear things, was as fraught as it had been in 1991. From the mid-2000s, precisely those reforms that should strengthen safeguards knowledge and practice had begun to generate a roiling controversy at the IAEA among both the 170 member states and the diverse group of international civil servants I worked alongside. This cast doubt on the agency’s ability to keep the political out of its work.

The tension that gripped the IAEA Department of Safeguards concerned the legitimacy and appropriateness of its own revamped methods of collecting information about states’ compliance with international law. Having embraced what I call bureaucratic objectivity—the faith in quantitative, routinized, and technical knowledge practices to produce an authoritative, disinterested “truth”—safeguards inspections were now exhorted to reflect situated expertise, flexibly applied to the contingent characteristics of particular state contexts. In other words, the inspectors who had been used to acting as accountants of nuclear material were now implored to take on the role of detectives, sniffing out potentially suspicious activity across an entire state. Many, if not most, accepted this new challenge—by degrees, from grudgingly to enthusiastically—but others felt far more trepidation about the transformation of their task, which began to smell increasingly like the political decision-making that nuclear safeguards had been designed to avoid.

The change created a drama that revolved around whether this altered scope of the safeguards task was compatible with the institutionalized ideology of the IAEA’s technical neutrality. As one inspector told me, the new approach to safeguards had produced “many fractured opinions in the house.” The agency staff’s animated debates revealed a warp in
the IAEA’s mission that was painfully exposed in 1991 and only aggravated by the remedy that was applied. By dint of the reforms to its safeguards task, the meanings and methods by which the IAEA secures its slender credibility and political legitimacy had become unsettled. In this article, I examine the consequences of the safeguards reforms to show how bureaucrats attempt to meet the exigencies of more “effective” nuclear safeguards while also maintaining the organization’s credibility. I argue that they address this tension by creatively making new ways of knowing legible in terms of old ways of representing knowledge.

Bureaucratic Objectivity as Semiotic Ideology
Lacking the power to enforce the nonproliferation regime’s rules about who may do what with nuclear things, the IAEA’s legitimacy rests on its ability to persuade the global community of the accuracy of its findings. In order for the only multilateral nuclear verification authority, as interviewees called it, to be efficacious in its role in preventing the spread of nuclear weapons, the IAEA’s evaluations of whether states are following the rules must be widely believable. This power of persuasion makes the IAEA’s task a communicative one. The IAEA carries out its “enactments of expertise” (Carr 2010) both through explicitly linguistic performances—public reports and speeches—and its everyday practices of producing credibly technical safeguards knowledge.

At the same time, the slipperiness of the distinction between technical and political at the international organization tasked with promoting and regulating nuclear technologies seems almost too obvious to mention. Nuclear things, Gabrielle Hecht reminds us, are always subject to “technopolitics,” the “strategic practice of designing or using technology to constitute, embody, or enact political goals” (1998, 46). The IAEA’s diplomats and bureaucrats, as well as its observers, readily acknowledge that nuclear governance is always both technical and political. Yet, they simultaneously insist that distinguishing between the domains is vital for maintaining the organization’s legitimacy. In a way, the objective of the IAEA’s technopolitics are in effect to produce an “anti-politics” (Ferguson 1994), “the suspension of politics from even the most sensitive political operations” (Ferguson 2006, 273). Nuclear safeguards, therefore, are constituted as purely technical tasks; inspectors are expected to carry out their duties as international civil servants without allegiance or favor to a state. Even if the IAEA failed to discover Iraq’s clandestine nuclear program, they did not fail in their technical neutrality. One might suspect then, that the goal of IAEA safeguards is not actually to effectively verify the NPT but rather to perform exquisitely technical inspections.

The technical antipolitics of IAEA safeguards are achieved through the principled application of bureaucratic objectivity. With this term I am drawing on the substantial body of work in history and the social sciences that characterizes the authority of bureaucratic forms of knowledge that are variously administrative (Lynch et al. 2010), procedural (Muellerleile and Robertson 2018; Rottenburg 2009), disinterested (Daston and Galison 2007), legal (Latour 2010), and often quantitative (Merry 2016; Poovey 1998; Porter 1995). This account builds on these literatures to show how diplomats and bureaucrats seek to achieve objectivity through the institution of Weber’s key features of bureaucracy: impartial experts, formalized rules, and calculability. These actors would agree that the “‘objective’ discharge of business primarily means a discharge of business according to calculable rules and ‘without regard for persons’” (Weber 1958, 215).

At the same time, I build on the work of scholars interested in the epistemic affordances of bureaucracy’s representational practices—such as Becker and Clark (2001) on “bureaucratic practices,” Riles (2006) on “documents,” Hull’s (2012) “graphic ideologies,” and
Kowalski’s (2018) “text ideologies”—to argue that bureaucratic objectivity can be productively understood as a semiotic ideology (Keane 2003, 2018). As “people’s underlying assumptions about what signs are, what functions signs do or do not serve, and what consequences they might or might not produce” (Keane 2018, 64), semiotic ideologies are rationalizations about signs and their use with political and ethical consequences. Semiotic ideologies articulate normative expectations about which kinds of signs can refer to which kinds of objects. As a semiotic ideology, bureaucratic objectivity joins procedurally produced representations with quantitatively derived knowledge in tightly regimented, formal practices to provide the basis for the IAEA’s authority. New forms of knowledge strain established practices for authoritatively representing the agency’s expertise.

Similar to the transformation in “calculation grammar” for the price of water that Ballestero (2015) describes, this article traces a conceptual transformation of knowledge practices with ideological implications. While Ballestero’s actors feared that the “economic approach” (2015: 271) would threaten the public nature of water, IAEA actors worry that the new state-level approach would threaten the apolitical standard of their judgments. While the preferred outcome of the machinery of bureaucratic objectivity is technical knowledge free from politics, its knowledge operations are always—but in this case, particularly saliently—threatened by potentially contaminating input, and the ideal state of objectivity is thus always deferred (Hoag 2011). Subjectivity lurks everywhere and must be vigilantly guarded against. IAEA nuclear safeguards imagined as the accounting of declared nuclear material was a nearly perfect expression of bureaucratic objectivity, its apparatus reliably technical in output. The state-level concept, however, introduces dubious inputs, which must be rigorously disciplined into established modes of knowing to avoid politicization and maintain the agency’s authority.

In what follows, I demonstrate the establishment of a system of quantitative, rule-based safeguards in the 1960s, which reveals its inadequacies when Iraq’s clandestine nuclear program is discovered in the 1990s. I describe the safeguards reforms initiated in response and the internal crisis of legitimacy these precipitated. Then I turn to the IAEA’s internal effort to rediscipline unruly forms of knowledge and examine how their solution mobilizes the semiotic ideology of bureaucratic objectivity.

Safeguards: A Matter of Calculation
To tell the story of IAEA’s establishment requires chronicling a series of miscarried initiatives, begun after the United States used nuclear weapons against Japan in 1945. The initiatives were to regulate nuclear power, but each fell afoul of various aspects in the delicate politics of mass death. The series of international postwar proposals to establish an organization to monitor and control nuclear technologies foundered on the risks of espionage attending intensive oversight, the burden of intrusive inspections, and the tenuous balance of powers between the United States and the Soviet Union (Bernstein 1974; Craig 2008; Hewlett and Anderson 1962).

The determination to govern nuclear power by keeping watch over its activity advanced, however, alongside other burgeoning institutions of international organization. Writ large, the geopolitical transformations following World War II—decolonization, shifting neocolonial alliances, the sprawling fronts of the Cold War, and the beginning of the arms race—met with a shared set of convictions among the diplomatic actors tasked with administering their ramifications. Confronted with both explosive tensions between states and the vast apparatus necessary to encompass them, bureaucratic systems of specialized agencies flourished under the United Nations (Mazower 2013), each structured to create a formal division in the labor of governance between political and technical domains
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(Barnett and Finnemore 2004), whereby technical secretariats duly carried out policy decided on by the member states (Pedersen 2015). This cultural schema at last offered a thoroughly modern solution to the ancient Juvenalian quandary: the watchmen would be watched by the systematic practice of watching itself. Through the elaboration of administrative forms of governance and bureaucratic structures, the IAEA’s secretariat and its staff of inspectors came to stand as icons for the “technical”: they constructed safeguards verification as an irrefutably technical task, indexed by formalized regimes of inspection protocols and documentation.

During the negotiations for the IAEA statute (Holloway 2016; Roehrlich 2016) and its safeguards systems in the 1950s and 1960s, participants mobilized shared imaginaries about ideal bureaucratic functioning. The archival record demonstrates that safeguards inspections were designed to harness the calculability of nuclear reactions as a function of material type and a factor of burnup, or fuel utilization. The frequency and kinds of inspections could be known in advance, as was thought to be important to states reluctant to sign up to an intrusive inspection regime; safeguards were made calculable. Diplomats argued about the best way to translate the political values of nondiscrimination and democracy into a system of bureaucratic surveillance and technological control.

In April 1960, the IAEA’s board of governors were deciding how to determine the frequency of inspections in a state. A working group had suggested taking into account a country’s “state of industrialization” in addition to the type of nuclear facility and the amount of nuclear material to be inspected. The Americans proposed retaining only the technical and quantitatively derivable factors. The Mexican ambassador, Mr. Graef Fernandez, enthusiastically approved because a state’s level of “industrialization …was difficult to assess objectively.” He favored the American amendment, which was “based exclusively on scientific data and that would exclude any possibility of discrimination.”

A debate ensued about how to properly ensure that no state would be discriminated against in this system of nuclear technology assistance. The Czechoslovakian diplomat, Mr. Simane, argued that “a principle under which the same frequency of routine inspections was applied to under-developed countries as to others was by no means democratic,” as it would place an undue burden on these less able states. Mr. Michaels, the representative of the United Kingdom, responded that the American proposal was “democratic in the proper sense of the word” because it would allow countries “to know in advance the number of inspections to which its facilities would be subject.” Within such a system, he commented reassuringly, a country “would never have reason to fear unfair treatment, even if it were not on good terms with one or more Governments represented on the Board.” The Japanese diplomat, Mr. Matsui, urged that the principle of inspection frequency “must be chosen with care, for the future of safeguards would largely depend on whether the inspections were applied without discrimination.” Undoubtedly, he added, “if the Board had to take a separate decision on each particular case its decision might become arbitrary in nature.”

In their discussions at the IAEA board room in Vienna’s Grand Hotel, the diplomats progressively yoked quantitative procedures to the principle of nondiscrimination and thereby institutionalized bureaucratic objectivity at the IAEA. Notwithstanding the bloc politics at this stage in the Cold War, the vast majority of the representatives were persuaded by the technically objective neutrality offered by the American proposal. Ultimately, the majority of the board agreed, sixteen to three, that the American proposal, with its mechanistically technical and quantitative factors, avoided the “subjective” pitfalls of determining a state’s level of industrialization and thus the inspection burden on a case-by-case basis. Above all, it offered the state the possibility of knowing in advance what it was signing up for.
These debates in 1960 laid the conceptual groundwork for a safeguards system based on quantitative and technical factors, carried out by the specially trained international civil servants through a systematic set of rules and documentation. This rule-based and predictable system promised impartial evaluations.

Bureaucratic objectivity was elaborated through the safeguards practices, rules, and procedures developed in the 1960s and 1970s. Much like the diplomats, the bureaucrats too would place their “trust in numbers” (Porter 1995). This allowed these actors in positions of low authority to hold at bay the political with dull numerical procedures. Safeguards knowledge practices would further create durable ideological connections between shared understandings of the technical and the formal proceduralism of bureaucratic objectivity. Above all, these rules would provide the basis for understanding and performing inspector expertise. Bureaucratic objectivity became the professional ethos for the corps of nuclear inspectors, which grew from less than a dozen in the 1960s to over a hundred in the 1980s to inspect the growing number of states that joined the NPT and placed their nuclear installations under agency safeguards.

From Accountants to Detectives
Throughout the 1970s and ‘80s, the nonproliferation regime suffered political setbacks with India’s nuclear detonation in 1974 and Israel’s bombing of Iraq’s nuclear reactor in 1981. Nevertheless, and despite known limitations with the safeguards system (Weiss 1978), the technical credibility of the IAEA was firm. The expertise enacted by nuclear safeguards inspectors was authorized through epistemic practices of bureaucratic objectivity that durably associated these practices with the domain of technical impartiality and disinterestedness. Iraq’s clandestine nuclear program impugned the IAEA’s credible authority for the first time not on the grounds of failing to be impartial but of securing only partial, incomplete knowledge. Under the old system, a state reported its nuclear material and facilities to the IAEA. Throughout a given year, the inspectors assigned to that state took turns to visit the facilities. At the facility, the inspector measured nuclear material, counted inventory, applied seals, and serviced surveillance cameras according to a predefined set of rules that determined the frequency and types of inspections based on the technical qualities of the facility (notably, how much weapons-usable nuclear material the facility could produce). Once back at headquarters, the inspector wrote up these findings in a report that, along with colleagues’ inspection reports, would become the basis of an annual report, penned by a more senior inspector, on the state’s nuclear activities.

The agency’s exclusive focus on verifying a state’s own declarations of nuclear activity, its reliance on a system of accounting and taking inventory to detect diversion of nuclear material, its inspection of only the nuclear material and activities declared by the state, and the undifferentiated systematicity in the application of its rules and criteria for inspection—that is to say, its rule-based epistemic process—were perceived to be the root causes for its failure to detect Iraq’s noncompliance (Ogilvie-White 2014). This system, the international community agreed, needed to be strengthened and the Iraq spectacle provided the impetus for change. Throughout the 1990s, the IAEA introduced technical, legal, and methodological tools to remedy the perceived shortcoming of safeguards and restore its credibility.

The organization first expanded its technical capabilities by introducing the use of swipe samples to detect possibly undeclared nuclear activities from signature fissile isotopes in the environment. It also negotiated a new voluntary legal measure, the 1997 Model Additional Protocol, which a state could sign to allow the IAEA to carry out more intrusive and expansive inspections and analysis activities within that state. Most fundamentally,
though, the agency transformed the way it conceptualized the safeguards project. New “state-level” safeguards demanded that IAEA inspectors look past the declaration of a state’s facilities on paper to consider more fully the “state as a whole,” in order to evaluate whether a state had declared all its nuclear-related activity to the IAEA in the first place.9

The new safeguards system requires some two hundred inspectors at the Department of Safeguards to collaborate in teams with information analysts to draw up the inspection plan for a state based on which activities in a state are the riskiest in terms of proliferation. The teams gather information not only from a state’s declarations but also from interdisciplinary, publicly available knowledge of the total scientific, industrial, and resource capacities in a state. This broader field of information permits inspectors to weigh various aspects of a state’s activities including those not necessarily tied to nuclear material. Based on this information, inspectors plan inspections to find out more about activities that are perhaps suggestive of risks of proliferation even while not explicitly proscribed. The undetermined “perhaps” is a telling sign of a dramatically new regime of knowledge. Inspectors are now called upon to define what are called plausible proliferation paths in a state. Experiments with lasers at a university, for example, might indicate a state’s efforts to develop the capacity to laser-enrich uranium, and therefore comprise a factor the savvy, skeptical inspector should take into consideration without, however, necessarily impelling the IAEA to take action. Based on the interdisciplinary collection of information, state evaluation groups are then expected to create the inspection plan for the state.

In an effort to bolster state cooperation with the IAEA, the head of safeguards at the time, Herman Nackaerts, gave the plenary presentation at the 2011 meeting of the Institute for Nuclear Materials Management, which is a US-based and -dominated professional organization that serves as a quasi-industry organization for nuclear safeguards inspectors. He cited the IAEA’s failure to detect Iraq’s nuclear weapons program in the first Gulf War, declaring, “We did not ask critical questions” (Nackaerts 2011b). The new state-level methodology would rectify this situation:

This means moving away from such a heavy reliance on routine quantitative measurements and the mechanistic application of generic criteria. Instead, it requires taking into account a wide range of factors—qualitative and quantitative, reaching an informed judgement based upon a detailed analysis and evaluation of all the information available to the Agency, and then deciding to act accordingly. (Nackaerts 2011a)

These new practices pointedly abandoned the uniform quantitative and technically impartial set of criteria upon which the old inspection system was based. Suddenly, each state would be evaluated on its own merits, case-by-case, as it were, which would produce a “less predictable and less prescriptive verification regime” (Nackaerts 2011a). In 1960, the Soviet representative had championed just such an approach in the mid-century lexicon of taking into account the “state of industrialization” in each country in order to prevent discrimination. By 2014, the Russian representative and nonaligned states such as Brazil and Egypt denounced this method for weakening the principle of nondiscrimination. A number of my inspector interlocutors themselves were deeply uncomfortable with the new approach; it was alleged to reintroduce the “subjectivity” that the older procedural modes had so gingerly pared away, to yield unreliable or inaccurate knowledge, and to corrode the paramount reputation of the IAEA’s neutrality without the defense of bureaucratically uncontroversial, incontrovertible, and objective facts. Representing a change in evaluation regimes (Chumley 2013), the new knowledge practices appeared to introduce into
safeguards evaluations the kinds of messy subjective judgments and nonquantifiable information that the safeguards system had been designed to exclude in order to lay claim to impartial technicalness.

The radical overhaul of the safeguards system, then, forced a sharp dilemma at the IAEA: How was the institution and its inspectors to secure its (a)political legitimacy with knowledge-making practices, when the knowledge-making practices themselves were the muddy sources smudging the boundaries between the technical and political? How should they proceed when the very apparatus with which to purge the political and transform its political effects into unobjectionable facts now threaten to politicize? How are IAEA bureaucrats to credibly recast knowledge they fear is politically contaminated into the kind of data that they—humble figures of unassuming objectivity—ought to produce? How, in short, can the bureaucrats “technicize” incongruous, politicizing knowledge, and stuff it, as it were, back into the “black box” of the older safeguards system (Latour 1999)?

**Bureaucratizing State Evaluation**

The state-level safeguards methodology presents opportunities for subjectivity to insinuate itself into inspection work in newly explicit ways. Both inspectors and diplomats must demonstrate concern that safeguards knowledge can be contaminated by improperly disciplined subjectivities, and must demand modes of repairing these potential breaches in bureaucratic objectivity.

**Improperly Political Subjectivities**

In my sixth month of fieldwork, I commented on the IAEA’s safeguards controversy to Jill,10 an inspector who had become a close interlocutor, and she told me I had it all wrong. We had been discussing a series of technical meetings before the board of governors, where secretariat bureaucrats were called to defend the objectivity and technical robustness of state-level methodology to skeptical representatives of member states. In the early 2010s, Russia and member states in the nonaligned movement began to complain that the secretariat had too quickly implemented expanded safeguards in cahoots with Western states. They accused the secretariat, in other words, of an improper politicization when it adopted new safeguards methods, which had in turn enabled the politicization—even the weaponization—of its reports as the hawkish public debate about the Iranian program at the time indicated. The Russian representative in particular was unimpressed with the bureaucrats’ performance in the most recent technical meeting. Despite their painstaking efforts to demonstrate the impartiality and systematicity of state-level safeguards with ever longer slide decks, process visualizations, and bureaucratic documentation, the Russian diplomat chided the bureaucrats in the meeting that they should “leave political analysis to us [the board]” and draw conclusions based only on “objective and technical” factors.

I interpreted this critique as either naive or disingenuous, but as a political salvo nonetheless. Did the Russian representative really believe that safeguards inspections could ever not be political? Or was he merely obstructing attempts by the secretariat—largely supported by the United States, the United Kingdom, and other Western states—to strengthen the safeguards function in order to prevent potential “cheaters” like Iran from getting the bomb? From what I had learned from inspector training courses, all nuclear safeguards activities contained some measure of judgment that was not purely “technical,” even if it was not explicitly “political.” Trainers told the new inspectors that while they should make sure to follow procedures they also had to think for themselves (“use [their] brain” was one phrase I often heard). I was alert, as I suggested the Russian
representative might have been, to the essential imbrications of technoscience and politics, and to the strategic political goals and power relations enacted and produced in their elision.

Eager to discuss my insight, I said to Jill, “There’s no way that inspections can ever be 100 percent objective.” She surprised me with her vehement response. “No!” she replied. “Safeguards must be objective! They should not be politicized,” and related the upsetting case of another inspector—Jack—who had a “particular leaning”—an inclination allegedly arising from his national identity and his concomitant failure to suppress his national affiliation to a Western state possessing nuclear weapons—which made him a priori suspicious of certain states. As a result, Jack “interpreted some reactor satellite imagery incorrectly.” Jill explained, “Whenever you’re building a reactor, you need tunnels to lay pipes, and this inspector was so stupid and argued that the tunnels could be used to secretly move material. So, they went there [on an ad-hoc inspection] and, of course, there was nothing.” The inspectors found no evidence that the tunnels which were required for reactor construction were being used for clandestine purposes.

Jill understood Jack’s actions to be motivated by the politics implied by his nationality, which biased his reading of technical facts. This was unacceptable to her, and she blamed the “state-level safeguards” system that had made it possible, insofar as it had loosened the disciplining effects on knowledge and on knowledge-makers themselves, and given inspectors increased leeway in how to conduct inspections and interpret information. Jill, a national from an African country, shared nonaligned states’ mistrust of the new system: it was too subjective and threatened the fair and equal treatment of member states. The previous system of knowledge making, the rule-based and materially anchored inspection regime that had operated before the safeguards reforms in the 1990s, was more “purely technical” and did not discriminate between states.

As Jill’s accusation that Jack had been misled by his “particular leaning” makes clear, there are broad geopolitical divisions among bureaucratic staff that sometimes align with their favor or disfavor of the new system and its capacity to secure what is called the “technical independence” of the agency. Drawing a simplified map of geopolitical motivation among IAEA staff, however, says little about the ideological dilemmas they faced. Part of Jill’s evident disquiet concerned the failure of the bureaucratic disciplining of the inspector into the role of the international civil servant, which she understood as an assault on the objectivity of safeguards.

Improperly Bureaucratic Subjectivities

A similar disquiet arises from the subjectivities implied by the different types of employment contracts at the IAEA. While most staff members are employed by the IAEA directly as international civil servants, budgetary constraints have led to positions paid for directly by the member states as part of their extra-budgetary “support programmes” to the agency. These employees are usually “on loan” from the member states’ own nuclear bureaucracy, and they take on a variety of (usually, technical) short-term posts at the IAEA. Those contributing the largest shares of voluntary funds and personnel resources to the IAEA are, unsurprisingly, the Western member states with extensive nuclear infrastructures.

One area where these short-term employees are sometimes used is in sections that analyze information from open sources (scientific research, trade data, satellite imagery, etc.). During the secretariat’s technical meetings before the board of governors that I had discussed with Jill, some member states voiced their preference that information analysis be carried out only by full-time staff members and not by short-term employees with
questionable impartiality. At one technical meeting an Asian diplomat criticized that the work of assessing publicly available information at headquarters was largely done by outsiders brought on as cost free experts (CFEs) and as junior professional officers (JPOs). CFEs and JPOs normally worked for their national governments and were provided to the IAEA by wealthy member states for limited periods. They often returned to their home countries when their contracts ended. It was no wonder, then, that their loyalty to the IAEA was not self-evident. They were seen as not fully committed to the international civil service. One state articulated this in terms of neutrality:

If more work is being done at headquarters in particular in Open Sources [open sources information analysis, OSI], and CFEs and JPOs are used for that. If OSI is becoming more important, shouldn’t that role be done by Agency staff who are more neutral, with all due respect to CFEs and JPOs?

Subjectivity as derived from nationality worried member states, especially because information analysis had become an integral part of new safeguards, as Jill’s story made clear. Regular staff members were presumed to be impartial by virtue of their positions as full-time international civil servants—it is the position of civil servant that ratifies its occupant. Member states therefore preferred seeing regular staff members in roles that require the judgment and evaluation ostensibly outside the bureaucrat’s calling. Temporary staff members were not the right kinds of people because they did not have the properly disciplined subjectivity to ensure impartial knowledge production. The head of the safeguards department at the time attempted to reassure the worried states at the meeting by telling them, “We make sure that staff members are the ones doing the evaluating.”

Analysis By Procedure

Beyond assuring member states that impartial international civil servants do safeguards evaluations, the head of safeguards emphasized to the states at a technical meeting that the secretariat “follows defined processes and procedures to draw independent and objective conclusions based upon its own findings.” But the process of drawing up “evaluations” of a state was not only fraught for member states; some inspectors, too, were skeptical of the new safeguards methods that required them to go beyond the nuclear material accounting they were used to. Particularly troublesome was the process by which a state’s individualized safeguards plan was determined. It was based on a methodology called acquisition path analysis (APA) It was used (and likely originated) in US national laboratory offices that dealt with nuclear nonproliferation.

This methodology had been used informally within the agency since the mid-1990s, but its use had not been standardized across departmental divisions. In the early 2010s, staff in the department’s Concepts and Planning division began devising a document to formalize the procedure, which was published as a guide in one of the IAEA’s internal bureaucratic document genres. The Acquisition Path Analysis Guide assisted state evaluation groups in structuring and systematizing their analysis processes and provided tools for visualizing the vast amount of information required to carry out acquisition path analysis for a state. In semiotic terms, the APA Guide “enregisters” (Agha 2003, 2005) the epistemic analysis process as a bureaucratic way of speaking and knowing. Enregisterment is the process by which ways of speaking become recognizable as a type, or a register. The enregisterment of acquisition path analysis in the guide made analysis legible not as an inchoate, incoherent activity but as one anchored to the rigid proceduralisms dictated by the text genre. Once
thus enregistered, APA became knowable as a bureaucratic method, ready to be circulated as an apparently stable knowledge-making activity with apparently durable meaning firmly in the technical domain.

APA is “an analysis of all technically possible paths by which [a] State could pursue the acquisition of nuclear material for the development of a nuclear weapon or other nuclear explosive device” (Renis, Radecki, and Morizot 2016, 2). Inspectors and analysts grouped in state evaluation groups would then rank these “technically possible” paths according to how quickly the path would permit the state to produce a weapons-usable quantity of nuclear material. “This process … is a structured method that does not involve judgments about a State’s intention to pursue any such path” (2). In conversations with developers of the guide, I learned that the hairy problem of judging intent had to be carefully excised from the analytic process because it was perceived as introducing “subjective” and “political” considerations into an exercise that ought to be technical. Over and over again in training exercises, trainers and supervisors instructed both new and seasoned inspectors not to consider a state’s intent to build a nuclear weapon in their assessment of its likelihood. Over and over again, inspectors worried that they were expected to judge a state’s intent. The state-level safeguards approach had brought into view what bureaucratic objectivity had so long concealed: that the system of inspection rests on the assumption that the state might want to cheat. The messy business of intent, with its political penumbra, needed to be stuffed back into the black box of bureaucratic objectivity, and the APA Guide was designed to do just that.

Following the guide required state evaluation groups to externalize their analytic process by providing visual and written documentation of their assessments. This guide—with a section titled “Purpose and Scope”; its definitions; its numbered, sequential process to guide states through the methodology; its annexes and forms—bureaucratizes analysis by providing a formal structure of steps that produce an externalized, technically bounded outcome to the analytic methodology. In this way, analysis—with its threatening potential for introducing “subjectivity” to the supposedly technical process of evaluating state compliance—is brought into the bounds of procedure through the development of the guide. These assessments could then circulate as files across the organization, becoming decontextualized knowledge objects theoretically equally accessible to other bureaucrats in the organization. The decontextualized circulation of files is a key quality of bureaucratic objectivity, according to Robertson (2009).

The APA Guide enregisters the analysis process as a bureaucratically rule-bound epistemic activity. This bureaucratic discipline seeks to ensure the distinction between technical evaluations and subjective (or political) interpretations. When safeguards bureaucrats promised member states in technical meetings that they followed, in their terms, “defined processes and procedures” to draw the “independent and objective conclusions” that the member states demanded, they articulated a shared understanding that knowledge production carried out according to the genres and registers of bureaucratic objectivity promised impartial treatment of states that could only lead to objective, calculable outcomes.

**Bureaucratic Promises**

The IAEA has been instrumental in calming the proliferating nuclear fears that emanate from nation-states and variously imagined security threats (Masco 2014). It has done so for most of its existence by establishing its technical credibility via safeguards practices that semiotically model bureaucratic objectivity through ideologically appropriate representations of that knowledge: the proceduralized and quantitative genres and textual forms that permit this knowledge to be read as technical.
The state-level safeguards’ qualitative evaluation process introduced in the early 2000s threatened the distinction that had been institutionalized through bureaucratic objectivity. Analysis—this fuzzy, nonmechanistic way of interpreting facts in the world—was too untechnical to pass as the impartial, objective knowledge production that ensured that the IAEA would be globally recognized as an independent authority. Against these concerns, the head of safeguards reiterated to the member states at a technical meeting in 2013: “We do technical work, we do technical assessments, we draw technical conclusions and the Director General presents these to the Board of Governors” presumably to be interpreted, politically.

The culturally salient distinction between technical and political domains provides for the possibility of technocratic governance in the international liberal order. At the IAEA, it is performed through adherence to an epistemic form and practice of bureaucratic objectivity that legibly produces impartial knowledge which, in turn ensures the legitimacy of technocratic organizations. The knowledge practices of IAEA nuclear safeguards inspectors elucidate the values and ethics of “bureaucratic objectivity” as they operate under a condition of epistemic change.

Individual safeguards bureaucrats are disciplined as impartial experts; their national allegiance is ostensibly curtailed by a professional commitment to the role of international civil servant. When this commitment breaks down because of an individual’s failure to police their political subjectivity, as in the case of Jack, it threatens the disinterestedness of safeguards judgments, as feared by Jill. But the “technical” objectivity of safeguards knowledge can also be imperiled by the wrong kinds of people. As noted above, member states prefer that full-time IAEA staff members who check their national allegiance at the door, rather than contract workers from member states, carry out the work related to gathering information about a state. These instances illustrate how types of people become durably associated with either “technical” or “political” ways of being and knowing.

Similarly, sets of knowledge practices also become contextually recognizable as either technical or political. The analytic practice of acquisition path analysis—holistically assessing all possible ways a state might develop a nuclear weapon—strays dangerously far from the established-as-technical-practice of nuclear material accounting. This elusive activity is creatively enregistered as bureaucratically technical through the development of a guide document for its methodology. Analysis is disciplined into a step-by-step program that provides a model framework for state evaluation groups to follow. APA is bureaucratized to mimic the formal proceduralism of knowledge practices such as accounting for nuclear fuel.

The IAEA’s core contribution to stabilizing the spectacular political entailments of nuclear weapons is by capturing nuclear things in their most banal, technical form. Against the fears of nuclear catastrophe and chaos, and of mutual mistrust and suspicion, the IAEA stands as a stalwart rule-bound bureaucracy: a form of governance that strives to be an “anti-politics machine” (Ferguson 1994), promising neutrality where there is contention, equality where there is unevenness, and routine where there is turbulence. Most importantly, it promises that its promises are true, producing sheaves of paper, regular measurements, and formalism as evidence; it promises that there is nothing to see here—nothing spectacular, and no reason to speculate—and it promises its adherents and its dependents that they can trust this to be so.

Notes
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1. For a thorough account of the IAEA’s inspections in Iraq, see Harrer 2013.
2. This treaty created three classes of states: the five “nuclear weapon states” (China, France, Russia, the United Kingdom, and the United States); all other states that signed the treaty as nonnuclear-weapon states, forsaking military use of nuclear technologies; and the states that remain outside of the treaty (India, Israel, Pakistan, South Sudan, and North Korea).
3. IAEA website, “Basics of IAEA Safeguards” page, https://www.iaea.org/topics/basics-of-iaea-safeguards.
4. These inspectors range in age from twenty-five to sixty-five, but the majority are over forty, at least 65 percent are men, and at least 70 percent are from Western states. Inspectors are usually engineers of various kinds, some are physicists or chemists, and only a handful have no formal technical or scientific background.
5. In order to ensure that my informants could not be identified based on specific things said, I have attempted to disambiguate quotations by creating conglomerations of things said by multiple individuals. These should be understood as figurative speech and examples of a typical position expressed by multiple people.
6. “Official Record of the Two Hundred and First Meeting, GOV/OR.201,” summary record, Vienna, Austria, June 14, 1960, page 9, GOV/OR.200-209, Official Records of Meetings, IAEA Board of Governors, General Records Relating to Atomic Energy Matters, 1948–1962; Office of the Special Assistant to the Secretary of State for Atomic Energy and Outer Space, Office of the Secretary; General Records of the Department of State, Record Group 59; National Archives at College Park, MD.
7. “Official Record of the Two Hundred and First Meeting, GOV/OR.201,” summary record, Vienna, Austria, June 14, 1960, pages 10-13, GOV/OR.200-209, Official Records of Meetings, IAEA Board of Governors, General Records Relating to Atomic Energy Matters, 1948–1962; Office of the Special Assistant to the Secretary of State for Atomic Energy and Outer Space, Office of the Secretary; General Records of the Department of State, Record Group 59; National Archives at College Park, MD.
8. This agreement has been criticized for becoming a new gold standard; tainting with suspicion all those states who refuse to sign it.
9. This approach, however, coincides with the inclusion of member-state-supplied intelligence information in the IAEA’s reports. This has been highly controversial because of the obviously political situatedness of such knowledge. Critics argue that the IAEA does not have the expertise to independently verify intelligence information and should thus reject it.
10. All names are pseudonyms.
11. See Note 5.
12. Even in the case of inspectors who are full-fledged staff, member states retain the right to refuse individual inspectors in their facilities, for reasons of political preference or simple racism as Hecht (2006) has shown.

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