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ARTICLE

# "How Will I Know?": Semiotic Indeterminacy, Transparency, and Expectations of Sincerity in the Global Nuclear Order

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**Abstract**

Semiotic indeterminacy describes the basic observation that signs are always unstable and open to interpretation. As such, semiotic indeterminacy can become a resource for the strategic pursuit and exploitation of political goals. In this article, I examine the role and multiple dimensions of semiotic indeterminacy in nuclear nonproliferation, the global governance project to prevent the spread of nuclear weapons. Taking as an illustrative example the controversy around the nuclear program of the Islamic Republic of Iran, I demonstrate that when the transparency practices implemented to close down on the semiotic indeterminacy of nuclear materials fail, nuclear verification turns from a techno-rational project into a moral-evaluative one with the aim of uncovering the hidden intentions of a state. This transduction of one semiotic register into another derives from transparency's dual tradition as both a rationalizing imperative as well as a moralized norm of sincerity. Attending to the semiotic dimensions of liberal forms of governance offers a new perspective on its contradictions.

**Keywords:** IAEA; Iran; nuclear safeguards; semiotic ideology; sincerity; transparency

## Introduction

Semiotic indeterminacy describes the basic observation that signs are always unstable and open to interpretation. "How will I know if he really loves me?" asked Whitney Houston in her 1985 hit, packaging in pop lyrics the understanding that signs must always be construed and this construal can be more or less determined in various contexts. Semiotic indeterminacy, in other words, is a term that names the condition under which people come to construct shared meaning and shared realities. As understood by the premises of this special issue, semiotic indeterminacy can become a resource for the strategic pursuit and exploitation of political goals. One high-profile example of how people make use of and respond to semiotic indeterminacy can be found in the

long-standing geopolitical controversy around the Islamic Republic of Iran's nuclear program. Is it exclusively peaceful, as Iranian representatives insist? Or, is Iran building a nuclear bomb, as many in the West and beyond suspect?

Determining the nature of the Iranian program is a way to understand the role of the International Atomic Energy Agency (IAEA) in verifying the Nuclear Nonproliferation Treaty (NPT), of which Iran is a signatory. IAEA nuclear safeguards are designed to establish a state's compliance with international agreements. Since mere signatures on paper are deemed insufficient for preventing the spread of nuclear weapons, the IAEA's verification effort is focused on establishing the meaning of the presumably more stable—because durable—materiality of nuclear facilities and infrastructures. However, as the Iran case makes most eminently clear, this verification effort operates under the difficult condition of the semiotic indeterminacy of nuclear technologies: the same technologies and material can be used to generate electricity or develop nuclear weapons. The semiotic indeterminacy of these nuclear materials has been mobilized by the actor we will call "Iran"[1] for purposes of gaining political leverage to the frustration of the IAEA and other global political actors.

When neither words nor things can be rendered semiotically stable enough to satisfy the transparency practices and legal obligations characteristic of the nuclear nonproliferation regime, we observe a discursive shift in the evaluation of Iran's program. This discursive shift *transduces* (Silverstein 2003) evaluations of the Iranian nuclear program in terms of rational-bureaucratic transparency practices into a distinctly moral(istic) register. In this moral(istic) register, construing the meaning of Iranian nuclear facilities becomes a matter of construing the state's ethical subjectivity (Keane 2015). Consider the following example:

Nine years ago, in December 2015, the IAEA issued a report titled "Final Assessment on Past and Present Outstanding Issues regarding Iran's Nuclear Programme" (Director General 2015). While the report assessed that Iran "carried out activities relevant to the development of a nuclear explosive device" (Director General 2015, 2), the IAEA had "no credible indications of activities in Iran relevant to the development of a nuclear explosive device after 2009" (Director General 2015, 15). Dubbed the "PMD report" with the acronym standing for "possible military dimensions," this text was widely interpreted to be an attempt to close IAEA investigations into Iranian nuclear activities with military applications—activities that were prohibited by the country's adherence to the NPT as a nonnuclear weapon state. With the Iran nuclear deal (the Joint Comprehensive Plan of Action [JCPOA]) having been agreed just six months earlier in July 2015, this report was understood as a necessary step to facilitate the implementation of this multilateral agreement and to offer some kind of closure to the "Iran nuclear issue."

In a panel discussion of the report hosted that same month by the Arms Control Association (ACA), a think tank with expertise in nuclear nonproliferation issues, experts discussed the report. One of the speakers, Greg Thielmann, a former U.S. foreign service officer and current senior fellow of the ACA, noted in closing, "Some of the agency's PMD suspicions have been relieved; others have not. All in all, the report

[1] As well as by other states including Japan, West Germany, and South Korea as Volpe (2023) argues.

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is neither an absolution of Iran nor a full-throated condemnation" (Arms Control Association 2015, 13).

Thielmann likely meant his words to be read figuratively; he probably did not literally mean that a technical agency could function as a religious authority and issue a report that carried the moral weight to either "absolve" or "condemn." But the choice of words reveals dimensions of the liberal imagination in which transparency practices are expected to satisfy structural suspicions of hidden, nonpublic dimensions of social and political life (Agrama 2024). As much research has demonstrated, transparency practices suffer from the problem of infinite regress: complete transparency can never be achieved because of an ever receding horizon of things we might possibly still want to know. Transparency practices actually generate more suspicion (August and Osrecki 2019b). The suspicion of Iran is nonfinite because suspicion is built into the liberal imagination and feeds on a semiotic presupposition that the truth can eventually be revealed. It is not just requests for transparency but also accusations of lying and the desire to prove deception that are at the heart of the controversy around the Iranian nuclear program, what Gabrielle Hecht calls Iran's "nuclearity-as-world-crisis" (Hecht 2007, 103). Iran's nuclearity is a problem for liberalism's moral consensus in the global nuclear order.

In what follows I will elaborate on the semiotic indeterminacies that plague transparency practices in the global project to prevent new nuclear weapons. Based on ethnographic material such as the use of tamper-indicating seals as well as ethnographic discourse analysis of reports and public statements, I demonstrate how semiotic indeterminacy operates in multiple ways in the verification effort of the IAEA, and the ways that different political actors attempt to overcome and exploit it. The empirical material illustrates the observation that when transparency practices fail, a shift to a moral register takes place. This observation supports my argument that the semiotic presuppositions of the liberal international order regiment the nuclear nonproliferation regime with the result that in the hegemonic nuclear order (Ritchie 2019) it is worse to be deceptive than to actually build nuclear weapons.

## The multiple dimensions of semiotic indeterminacy and how they operate at the IAEA

Semiotic indeterminacy is a constituent quality of sign use, that is, of semiotic process. Its effects have been observed and theorized in a few different ways. In the context of the expansion of educational marketing discursive fields in higher education, linguistic anthropologist Bonnie Urciuoli notices that semiotic indeterminacy permits for certain key words to function as "strategically deployable shifters" where the "salient interpretation of the term depends on the relation of its user to its audience and so shifts with context" (Urciuoli 2003, 396). The meanings of the term as used across different discursive fields can be more or less coherent or in conflict with each other. In an explicitly more political context, legal anthropologist Jessica Greenberg demonstrates how the discursive practices of a Serbian student movement contributed to the growth and success of the group, but the "open-endedness of their communicative practices was untranslatable" to other contexts (Greenberg 2012, 373). Urciuoli and Greenberg focus on the capacity for lexical items to circulate as semantically flexible

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signifiers, meaning different things to different users but nevertheless enrolling them all into more or less common projects of meaning-making. While such lexical semiotic indeterminacy exists in the world of nuclear nonproliferation, it is not the only kind.

Linguistic anthropologist Matthew Hull describes another way that semiotic indeterminacy operates in his study of a Pakistani bureaucracy. Hull demonstrates how files are manipulated and circulated through "techniques of equivocal writing that contribute to the indeterminacy of responsibility" and that "this indeterminacy is central to political contestation within the bureaucratic arena" (Hull 2013, 446). Hull emphasizes the materiality that contributes to this indeterminacy. At the IAEA, it is the materiality of nuclear things as a source of semiotic indeterminacy that needs to be rendered unequivocal through technical and bureaucratic practices of verification. Yet these bureaucratic practices are themselves inevitably also open to further indeterminacies, which then require semantic and pragmatic adjudication in yet another domain, the moral-political. Thus, the nuclear nonproliferation regime is characterized by struggles to manage multiple dimensions of semiotic indeterminacy across various scales, the solutions to which paradoxically create new semiotic indeterminacies, leading to a potentially infinite regress of uncertainty with respect to nuclear technologies and the question of how they are being used. Let me attempt to sketch the problem quickly from the beginning.

The invention of nuclear weapons introduced the problem of how to avoid their use. Initial proposals called for drastic, even transformative, measures such as world government and complete disarmament (Wittner 1994). When the Cold War started, the superpowers grew concerned with the spread of nuclear weapons beyond the super powers. At the same time grew a desire to profit from the commercialization of nuclear energy. In 1953, President Eisenhower's Atoms for Peace speech before the United Nations General Assembly was the beginning of a publicity campaign to sell peaceful uses of nuclear technology to the world to developing countries as a promise of ensuring peace and prosperity while it distracted from the rapidly growing nuclear weapons arsenals. The speech is widely understood as germinating the seed for the creation of the IAEA four years later. The agency's dual mission to at once promote nuclear technology and prevent its military use through a set of controls expresses the first dimension of semiotic indeterminacy: the same technology, the same nuclear material, can be used for peaceful as well as military purposes.

The IAEA's mid-century attempt to develop a control system ("nuclear safeguards") for nuclear technologies was characteristic for the technocratic internationalist form of governance that would shape the functioning of liberal international order for the rest of the century (McKnight 1971; Mazower 2013; Steffek 2021). The task was to ensure that states that were recipients of civilian nuclear technologies did not misuse these for military purposes. While the technical modalities and means for ascertaining the nonmilitariness of a nuclear technology were being worked out at the IAEA, the fact that these controls on semiotically indeterminate nuclear infrastructures were essentially voluntary measures made increasingly clear that additional measures were needed to prevent the spread of nuclear weapons: measures that would essentially obligate states with nuclear technologies to accept controls.

The NPT of 1968 divided the world in states permitted to have nuclear weapons and states that have agreed to renounce nuclear weapons in exchange for the "right" to

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civilian nuclear technologies. This treaty introduced states to the obligation to accept nuclear safeguards on their (civilian) nuclear infrastructure. But the legal dimension also introduced a normative dimension into what would become the global nuclear nonproliferation regime. By signing the NPT, states committed themselves to its imperatives which would increasingly be read and interpreted in moral terms, where states that signed on as nonnuclear weapon states essentially promised to remain pure of nuclear weapons intentions.[2]

The IAEA's control system by itself was not sufficient to prevent new nuclear weapons because nuclear material was semiotically indeterminate. But the legal instrument designed to commit states not to build nuclear weapons by itself was also not sufficient to prevent new nuclear weapons, because state promises could not be relied upon. The semiotic indeterminacy of the legal promise required a verification mechanism, a return to the semiotic indeterminacy of the nuclear material, but now buttressed by a new legal (and eventually moral) norm.

IAEA nuclear safeguards were not designed to be straightforward transparency practices. They were constrained at once by the semiotic indeterminacy of the nuclear material itself, by the status of the inspected state within the NPT or outside of it, as well as by concerns of industrial espionage and revelations of security-relevant capabilities to other states. The earliest attempts to reckon with the problem of controlling nuclear technology recognized that complete surveillance was neither technically possible nor politically acceptable nor commercially desirable (Hamblin 2016). Thus, even though it is one of the most intrusive inspections systems carried out by an international organization on the soil of member states, what kind of information can be requested and how and to whom this information can be disclosed is tightly regulated and continues to be subject to negotiation. Nevertheless, in recent decades, especially since the end of the Cold War, new concerns with nuclear proliferation have renewed desires to grant the agency increased powers of inspection and have sometimes been expressed as calls for increased transparency.

Transparency practices are a well-established component of liberal forms of governance at the subnational, national, as well as supranational level. Starting in the 1990s, accounting scholar Michael Power's early works on the "explosion" of audit (Power 1994, 1999) led to a widespread engagement in the social sciences with audit and related transparency practices. Sociocultural anthropologists began studying the encroachment of transparency practices in the form of audits in higher education starting in the 1990s (Strathern 1997, 2000) but also observed the spread of such practices in various fieldsites in the first decades of the millennium leading to a slew of works examining the often illiberal effects of transparency practices as expressions of governmentality (Anand 2015; Dotson 2014; Hetherington 2011; Kipnis 2008; Lindquist 2010; Shore 2008; Shore and Wright 2004).

In the introduction to their 2019 edited volume sociologists Vincent August and Fran Osrecki trace transparency's intellectual history and take stock of roughly 30 years of social scientific research on its practices. They argue that the transparency imperative

[2]Most states that would later develop nuclear weapons did not sign the NPT (India, Israel, Pakistan, and South Africa). Only South Africa renounced its nuclear weapons program and eventually joined the NPT; and only North Korea signed the treaty, violated, and left it.

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represents a modernist form of governance which translates suspicion into practices of verification, often with democratic aims of improving the accountability of institutions to publics (August and Osrecki 2019b, 3). The IAEA's safeguards system can be readily identified as translating the suspicion of the misuse of nuclear technologies into practices of verification that aim to provide "reasonable assurance" that states are complying with their agreements. Starting in the 1990s with the post-war discovery of Iraq's clandestine nuclear weapons program, the IAEA secretariat began to identify "transparency and openness" as requirements for successful safeguards verification. In the industry journal for nuclear safeguards, four IAEA safeguards officers discuss what these terms should mean in practice and note that "International confidence is created through the agency's verification of the accuracy of the state's declarations and *sufficient transparency* of the state to provide assurance that activities have not been hidden from the agency and not declared" (Larrimore et al. 2006, 2; emphasis added).

Yet, what is sufficient transparency? August and Osrecki note that most studies conclude that transparency practices do not lead to more transparency but, rather paradoxically, increase opacity (August and Osrecki 2019b). While this observation is beyond dispute, I argue that this paradox can be, in part, attributed to the semiotic ideologies that motivate liberal notions of transparency. As August and Osrecki describe, the history of transparency draws on "two competing—or—complementing traditions." These are transparency as rationalization and the "transparent heart," that is to say, "The 'honesty' and immediate accessibility of someone's 'true' beliefs and essence" (August and Osrecki 2019b, 23). This dual tradition inherent to liberal notions of transparency in its search for semiotic closure leads to moments in which the rational and ethical dimensions of transparency are conflated, and the search for a rational transparency transmutes into a desire to peer into the soul of a state. The rational practice of safeguards verification seeks to achieve the transparency of things, but this practice simultaneously compels indexical speculations and evaluations of what intentions lie behind these things supposedly laid bare.

The desire for practices that reveal the transparency of things derives from a semiotic anxiety about the real which can be soothed for example via governmental practices of audit and public accountability. The desire for transparency of "the heart" derives from a semiotic anxiety about the fundamental uncertainty of intersubjectivity, expresses itself in normative expectations of sincerity (Keane 2002), and is demanded via ritualized speech acts such as oaths and confessions of faith. Both can be observed at the IAEA. In liberal practices of transparency, total and complete transparency—the semiotic closure of things and words—can never be achieved. This impossibility, this semiotic indeterminacy, feeds an endless suspicion that seeks to reveal an ever-receding horizon of the secret truth it imagines to be concealed. "[The] modern liberal imagination … conflates secret truth with latent threat" (Agrama 2024, 407). At the IAEA, this secret truth is always the undisclosed intention, of which particular arrangements and constellations of nuclear material and technologies are thought to be an indexical sign.

The dominant narrative of the Iran controversy as well as my analysis of the semiotic indeterminacies of IAEA safeguards as transparency practices begin with the revelation of a secret truth via satellite imagery: the aerial images of a heretofore undisclosed facility in Natanz.

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## Satellite imagery as transparency practice: "the hidden must be exposed"

The long-standing diplomatic concerns of the West and its allies about the nature of Iran's nuclear program reached a new global dimension of publicity with the disclosure of satellite images of a nuclear facility in December 2002 by the Washington-based Institute for Science and International Security (ISIS). In making public these images of Natanz, a nuclear enrichment plant under construction, ISIS confirmed allegations made in August 2002 by an exiled Iranian dissident group which sought to call attention to the existence of heretofore "undeclared" (in the parlance of the IAEA) facilities. The discovery, via commercial satellite imagery, of a "secret truth" activated a sense of threat, a combination which Agrama has argued is a "structural" feature of the "modern liberal imagination" (Agrama 2024, 407). The US took the satellite imagery as evidence to accuse Iran of pursuing weapons of mass destruction. The IAEA opened its investigation into Iran and in February 2003 inspected both facilities (Natanz and Arak, a heavy water plant) (Reuters 2005).

Over the course of the next decade, Iran and the IAEA would participate in a dance of disclosure and delay, cooperation and recalcitrance, and agreements and renunciations. Satellite imagery would repeatedly be brought in as ostensibly indisputable evidence of Iran's nuclear activities. In particular, nongovernmental groups such as ISIS mobilized the commercial availability of satellite imagery to conduct a kind of citizen surveillance of Iran and North Korea, states whose nuclear programs continue to concern the West. Geographers Chris Perkins and Martin Dodge argue that the use of satellite imagery to reveal state secrets can be read as counter-hegemonic or even playful practices of engaging with the security state (Perkins and Dodge 2009, 546) while science and technology studies scholars Nina Witjes and Philipp Olbrich complicate the notion of satellite imagery as a "benign" form of transparency by pointing out how it works as a political practice to selectively visibilize certain security threats and not others (Witjes and Olbrich 2017, 527–532). "Satellite images do not constitute outright 'transparent' windows to the world, but are a product of diverse actor-constellations, political and technological choices, and analytical processes that often remain invisible to the public" (Witjes and Olbrich 2017, 532).

As so often with various media, satellite images appear to be straightforward representations of the earth but need to be interpreted and analyzed in order to become meaningful pieces of information. As a visual technology, satellite imagery literally forwards the notion of a "view from above, from nowhere" (Haraway 1988, 589) to represent a "naturalistic objectivity and transparency," its truth value further established through "the aesthetic of abstraction and remoteness" (Perkins and Dodge 2009, 547). Yet, "we still need somebody to tell us what the grey squares or green islands on a picture actually mean" (Witjes and Olbrich 2017, 525). The apparent self-evidence of satellite images as merely depicting the world makes them attractive as technologies of transparency. However, they, too, become prisoner to the infinite regress of calls for transparency where more images tend to raise more questions, leading to further calls for transparency.

In his 2019 article analyzing the use of satellite imagery in the discovery of Iran's Natanz facility, critical security studies scholar Christopher Lawrence observes that the pursuit of potentially clandestine facilities motivates the investigations into Iran's nuclear facilities. Uncovering things that have been hidden becomes a normative goal

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in itself for the civil society actors employing remote-sensing technologies such as satellite imagery in their work. Lawrence describes how a disparate assemblage of actors and technologies are motivated by and orient around a "clandestineness narrative" (Lawrence 2020, 509) that endlessly presumes the existence of additional secrets. At the same time, the secrets being uncovered are not so secret after all. Lawrence notes that the

> attention to secrecy and clandestineness in the December 2002 ISIS report … borders on the paradoxical. On one hand, the report notes that the IAEA had discussed Natanz with Iranian officials in September, and was scheduled to visit the site in the coming February. On the other hand, the site is introduced as a 'secret site.' (Lawrence 2020, 524)

The question of when a secret stops becoming one resonates with the demand in the previous section about "sufficient transparency." In an enterprise where sufficient transparency remains undefined, the project of uncovering secrets continues unabated: "the hidden must be exposed, and exposure itself becomes its own normative impetus" (Lawrence 2020, 515). Here, semiotic indeterminacy operates in the penumbra outside the sign, and in its interpretative openness which seems to suggest ever more additional signs that might be interpreted to eventually lead to some secret truth. Each uncovered facility, each disclosed sign must be interpreted, and in its interpretation suggests additional, as yet unknown, facts and interpretations.

## The semiotic indeterminacy of tamper-indicating seals

While civil society actors take advantage of commercially available satellite imagery to carry out their security sleuthing, the IAEA's safeguards inspectors, suspicious of what happens when they are away, have been using tamper-indicating seals for decades to aid the process of inspection and maintain "continuity of knowledge" about the facility in their absence. Seals are applied to spent fuel casks, the doors of storage areas, or, more temporarily, the inspector's briefcase while she goes out to lunch.

The seal is a passive artifact in the semiotic ideology of transparency, always at the ready to bear witness to whatever may be done to it. As I explain elsewhere (Weichselbraun 2019), the seal's capacity to signify unequivocally is the outcome of a bureaucratic process which regiments both seals and humans and transfers agency from the seals to the humans that handle them. The seals themselves are ontologically attributed to not possess agency which makes them credible witnesses. People—full of contingent agency—may lie, but seals always tell the truth. Seals are thought to be simple and straightforward binary signs: either intact or broken. They are designed to signal unequivocally and function as passive artifacts that act as apparently undeniable, literally material witnesses of whether a state's public expression matches its privately held intention. But as with satellite imagery, seals are merely naturalized as apparently transparent signs: they too must be interpreted.

In the years following the "revelation" of Iran's nuclear enrichment facility to the global demos, the IAEA and Iran engaged in progressive iterations of inspections and retractions. In August 2005, workers at a uranium-conversion facility in Isfahan, Iran, cut metal seals from equipment and began feeding uranium ore

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concentrate (commonly known as yellowcake) into the production line to create uranium hexafluoride (UF6), which could then be enriched to produce nuclear fuel. The seals—three-quarter-inch metal buttons—had been placed there by IAEA inspectors just a few months earlier as part of a process of negotiations with the United Kingdom, France, and Germany to limit Iran's nuclear program.

Mere days after Iran had notified the agency and removed the seals, the diplomats of the IAEA's Board of Governors held an emergency meeting. They adopted a resolution that "expressed serious concern" about Iran's decision to resume "uranium conversion activities" (IAEA and Board of Governors 2005a). At the next regular meeting in September, the board determined Iran to be in noncompliance with its safeguards agreements deriving from the Treaty on the Non-proliferation of Nuclear Weapons (IAEA and Board of Governors 2005b). In January 2006, Iran again removed seals, this time from another nuclear installation—a uranium-enrichment facility in Natanz—and, in early February, the Board of Governors, as provided for in the IAEA's statute (IAEA 1956, Art. 3, B.4), referred the Iran case to the United Nations Security Council (IAEA and Board of Governors 2006) as a matter of "international peace and security."

When Iranian workers removed seals in August 2005, the controversy surrounding the country's nuclear program reached a new level of geopolitical intensity. The Guardian's headline shouted, "Iran Risks Showdown as Atomic Work Resumes" (Traynor and MacAskill 2005). USA Today claimed that by removing the seals, "Iran escalated a confrontation with the West." Global actors interpreted the fact that Iran broke IAEA seals as an act of "brinkmanship" (Beeston 2005), signaling that the country no longer wanted to cooperate with the ostensibly generous international efforts to limit its nuclear program ("Offer by Europe Would Give Iran Nuclear Future"; Weisman 2005).

Iran, however, argued in its August 2005 seal-breaking-announcement letter to the IAEA that it was reacting to the "broken promises" (IAEA 2005, 2) of its negotiating partners whose proposal had fallen short of Iranian expectations. Iran's letter sought to present an alternative explanation for the seal-breaking, one that hinged on what the state understood as its right to peaceful nuclear technologies. Nevertheless, in the following months, these broken seals became an increasingly unequivocal sign of Iran's bad intentions for the international community.

Because the seal can easily be cut, broken, or removed, it retains for the state the option of noncompliance. And indeed, the seal's material fragility enables its script: through the seal the state can communicate its compliance, or, as in the case of Iran, its refusal. As such the seal seems to operate as a passive receptacle for signifying an actor's intention, a form of verbatim technology as described by Inoue (2018). The effect of immediacy, she argues, emerges from the social construal of the semiotic medium as neutral and transparent conduit.

Contrary to this common-sense view, the seal's signaling capacity should be seen as the outcome—not the starting point—of the seal's semiotic properties. Its common-sense emblemeticity is the puzzle to be interrogated (Kockelman 2013, 78–79). The labor of the seal's administration as a piece of evidence is distributed along a "chain of custody" similar to the forensic DNA testing in criminal trials described by Michael Lynch et al. (2010). To become stable signs of geopolitical sincerity, seals undergo

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semiotic transformations, beginning as meaningless pieces of metal and returning to headquarters as witnesses of radiation or bad weather, or as victims of accidents; their component parts index professional vice and virtue, and their residues accrue into the evidence of inspection work for the inspectors and technicians at the IAEA (Weichselbraun 2019).

The interpretation of broken seals once again becomes a problem of semiotic indeterminacy. Iran removed seals and the board of governors attempted to understand the meaning of this action. Their response would assign responsibility and lay out steps for future action to restore the destabilized order. Within the context of diplomacy and its repertoire of available actions and strategies, breaking seals might indicate a variety of intentions. Does the actor mean to signal their impatience? Is this to be taken as a threat or a bluff? The diplomatic effort was directed toward locating the state's intentions on a spectrum of motivation from indecision to determination, while simultaneously crafting strategies for responding to their presumed motivation. While the NPT does not deal (explicitly) with the intentions of states to remain inside the treaty or not, relations of trust and promise between states are mediated via seals and other devices that make up the semiotic infrastructure of international treaty verification. While technicians work to minimize semiotic indeterminacy by honing the clarity of the seal's binary signal, what it ultimately means must be negotiated in the board room.

## "Possible military dimensions": closure through disclosure

Seals are only one component of the IAEA's verification work. The work entails other tasks such as accounting for nuclear material, taking measurements, checking surveillance cameras, and retrieving their data. In the case of Iran, IAEA inspectors were tasked with going beyond the routine safeguards measures in order to investigate the "possible military dimensions" of the country's nuclear program. These measures were negotiated as part of a multilateral diplomatic process taking place outside of the aegis of the IAEA that began in 2006 when the board of governors reported Iran's noncompliance with its commitments to the IAEA to the United Nations Security Council.

All the while, Iran continued to insist on its right to peaceful nuclear activities including uranium enrichment for fuel production, as well as on its peaceful intentions. Against the state's behavior, its public pronouncements were met by practitioners and observers with disbelief, even suspicion. A 2009 congressional report to the Senate Committee on the Iranian nuclear issue stated, "the United States and other countries have argued, however, that Iran can no longer be trusted with [the] right [to enrich uranium] because of its past deception" (Senate Committee on Foreign Relations 2009, 12).

Despite this expression of distrust, during the Obama administration secret backchannel diplomatic negotiations with Iran eventually led to the agreement of the JCPOA colloquially called the "Iran deal" in July 2015. During his announcement of this historic agreement, President Obama stressed that it was "not built on trust, but on verification" (Obama 2015) in an apparent effort address critics who might accuse him of being bamboozled and allowing the Iranians to deceive the world yet again. This phrase remixes the famous aphorism "trust, but verify" used by President Reagan

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during arms control negotiations in the 1980 for a more skeptical moment. Verification, the IAEA's task, is thought to be the technically transparent mechanism to hold Iran to account for its commitments in this new agreement.

There were, however, lingering discrepancies in the Iran file that remained unresolved until December 2015 when the IAEA released the report with which this article opened. The reception of the report demonstrates how the impossibility of overcoming semiotic indeterminacy via rational transparency practices produces a discursive slippage into a moralized, even religious register. The "PMD report," as it was widely referred to, was supposed to be the IAEA's authoritative and comprehensive evaluation of the military dimensions of the Iranian nuclear program based on multiple years of intrusive and detailed inspections all over the country. The IAEA's press office accompanied the development and release of the report with quotes from the director general's public talks in which he did not cease to insist that as a technical organization "the IAEA was able to make a vital contribution by sticking to its technical mandate and not straying into politics" (Quevenco 2015).

In public reactions to the release of the report, the IAEA's technical authority was sometimes characterized in religious terms. Exemplary for this discourse is the panel discussion hosted in late December 2015 by the ACA, a nonpartisan think tank which publishes commentary and policy analysis on nuclear nonproliferation as well as arms control issues more broadly (Arms Control Association 2015). The discussion illustrates how semiotic indeterminacy operates and motivates the evaluations and interpretations of the participating experts, which includes evaluations of transparency and expectations of deception. In this discussion, the dual tradition of transparency is expressed.

The guests at the panel discussion included two former government employees turned policy wonks and one international relations scholar. Mark Fitzpatrick, then Director of the Non-Proliferation and Disarmament Programme at the renowned London think tank the International Institute for Strategic Studies (IISS), had joined the IISS in 2005 after 26 years in the State Department focusing on nonproliferation. He opened the roundtable and largely dominated it in terms of the number of turns and length of contributions. His opening comments start by noting that the IAEA's report doesn't address the why but the how, not the state's intentions but merely the materiality and the physical infrastructure of the nuclear program. Contrary to more hawkish positions, Fitzpatrick takes a pragmatic position on transparency:

> The report gives the Board of Governors with the IAEA a basis for closing the PMD or MD file. This was a concession by the West, which could have insisted that the IAEA keep pressing for more answers. You know, they could have demanded convincing answers to why the building at Parchin had a room with an unusual cross-section and incomplete ventilation system, but it would have meant keeping alive a distraction. Parchin's a distraction from the real issues of what Iran is currently doing and what they may do in the future. (Arms Control Association 2015, 6)

Rather than pressing the IAEA to pursue full transparency by seeking more answers about Iran's past material arrangements, the generous West concedes to let certain

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issues—deemed "distractions"—slide in order to focus on "the real issues" of Iran's current and future activities. Against some who claim that full disclosure is vital for future verification work, Fitzpatrick argues that "It's not necessary for future verification of the JCPOA to know exactly what Iran did at every point in the past … the IAEA knows basically what Iran did. And they can make worst-case assumptions where there are some uncertainties" (Arms Control Association 2015, 7).

Fitzpatrick offers a characterization of the report in moralizing language while maintaining a position of political pragmatism:

> This is not to exonerate Iran in any way, but not every element of the accusations is condemnatory. (Arms Control Association 2015, 6)
> So it's not an exoneration in any way. (Arms Control Association 2015, 6)
> You could read it to say, we know you were lying, you know we know, but these were venial lies and let's leave it at that, let's move on. (Arms Control Association 2015, 6)

Fitzpatrick combines his evaluation of the report as neither condemnatory nor an exoneration with speculation about whether Ayatollah Khamenei's "red line" that Iran would not accept any further sanctions was "a bluff or not. Probably it was" (Arms Control Association 2015, 6). Over the course of a few short lines, Fitzpatrick mentions calling Khamenei's bluff three times, clearly expressing his expectation of deception.

The next speaker, Ariane Tabatabai, continues the expectation of deception in the supreme leader's statements by opening with, "Now, those who watch Iran know that you have to take everything the supreme leader says with a whole shaker, not just a grain of salt" (Arms Control Association 2015, 9). This statement is met with laughter by the audience. Tabatabai, an Iranian-American political scientist and expert on the Iranian nuclear program who regularly advises the U.S. government and is critical of the regime, interprets the Iranian perspective at this roundtable. Her exaggeration of the idiom "to take with a grain of salt" elicits laughter in the American audience which indicates agreement with Tabatabai's proffered take that the supreme leader's words are especially untrustworthy.

Tabatabai continues to discuss Khamenei's statements on the JCPOA and the PMD issue: "His red lines are—some of them are more red. Some of them are not even lines. So, you know, it's very complicated, and you have to look very—you have to look at it with a lot of—you have to be very careful, essentially, when you examine his red lines" (Arms Control Association 2015, 9). She goes on to offer an interpretation of such official statements in the context of Iran's economic and political situation and with reference to the "underlying trust issue that Iran and the P5-plus-one and the IAEA, I would say, have" (Arms Control Association 2015, 9). According to Tabatabai, the Iranian position is that "Iran can't trust the West, but it cannot trust the International Atomic Energy Agency as an agent of the West" (Arms Control Association 2015, 10).

What emerges from these materials is that the trustworthiness or sincerity of the other participants is made morally salient when rational technical transparency cannot

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be satisfyingly achieved. In these instances, participants attempt to close down on the situation's semiotic indeterminacy by shifting into the moral-evaluative transparency of the heart. In searching for the hidden intentions, the true beliefs of the worrisome agent (and here I want to note the strangeness of attributing subjective interiority to a state), participants attempt to manage the semiotic indeterminacy by enrolling the other into a common relationship.

At this particular moment, December 2015, with a newly negotiated agreement only a few months old, speakers are aware of the potential for Iranian deception in the future but do not make it into a moral condition for cooperation. Fitzpatrick comments, "So I'm not so pessimistic about the future, but I think there are reasons to be certainly on alert to cheating on the margins and not to let it escape undetected and unresponded to" (Arms Control Association 2015, 29). He is optimistic that 15 future years of intrusive verification measures as part of the implementation of the deal will provide a "better basis of trust" (Arms Control Association 2015, 29).

So, while the report is characterized in moral terms as offering exoneration or condemnation or not, this moral evaluation is not made a condition of accepting the report. Rather, evaluating the report morally demonstrates the twinned tradition of rationalization and sincerity that characterize transparency practices such as the IAEA's verification regime. The participants seem to share a pragmatic understanding of the problem of transparency which August and Osrecki have pointed out: that calls for more transparency have no end because ever more information can be produced but also called into question. There is thus no way to satisfy such calls for transparency without actually stopping, accepting a limit to the information, and finally *trusting* the other party (August and Osrecki 2019a, 13–14).

One group which continues to insist on transparency and does so in an explicitly moral way is the U.S.-based National Council of Resistance of Iran (NCRI), the dissident group in exile which had initially uncovered some of Iran's clandestine nuclear activity a decade earlier. In a Washington Post article on the IAEA's PMD report, the NCRI is quoted as saying that the document makes "palpably clear that the Iranian regime has no intention of coming clean regarding the nature of its program, thus proving Tehran's intent to continue its pursuit of nuclear weapons" (DeYoung 2015). The phrase "to come clean" returns us to the moral dimension of the transparency of the heart. The phrase presumably derives from the longer expression "to make a clean breast of it," which is about opening one's heart, disclosing one's emotions and secrets, and demonstrating a clean heart free of impurity, a "transparent heart" if you will. To accuse someone of having no intention of coming clean is at the same time to demand such a full disclosure of their interiority in order to restore them to an upright moral subjectivity.

## Conclusion

The moral indignation reserved for Iran in the world of nuclear politics seems exceptional when compared to other states, such as Pakistan, India, North Korea, and Israel, that have illegally or illicitly developed nuclear weapons. This investigation into how semiotic indeterminacy perennially foils attempts to achieve transparency of nuclear

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programs seems to suggest: it is worse to lie about your nuclear program than to actually have nuclear weapons. Certainly, the fact that nuclear-proliferating states are treated differently is due to these states' positions within the global nuclear order and strategic relationships with other, hegemonic states. Nevertheless, investigating the moral contours of these alliances through an analysis of the role that semiotic processes play offers a new perspective on the ways that global governance regimes are applied unevenly.

That the liberal international order is not as technocratic and rational as modernist imaginaries insist is well-established in critiques of modernity but insufficiently explained. Attending to the role that semiotic indeterminacy plays in motivating different dimensions of transparency practices provides insights into processes of "hybridization" and "purification" (Latour 1993) that suggest that the contradictions of liberal modernity are mediated by contradictory modernist semiotic ideologies (Bauman and Briggs 2003) as well as naturalized norms of Protestant Christianity (Keane 2007). This approach also offers an explanation for why transparency practices continue to be pursued if they so reliably fail. By tracing the multiple dimensions of semiotic indeterminacy as they operate within the project of nuclear verification, we can see that the infinite regress of transparency practices traces an endless cycle between things and words: (1) the semiotic indeterminacy of nuclear material requires the relatively more semiotically stable agreement on an international treaty to govern nuclear technology; (2) yet the instability of promises requires their verification via transparency practices; (3) the impossibility of complete material transparency introduces the search for the certainty of interiority; and (4) the inability to determine a state's true intention redirects the sincerity-as-transparency norm back to the material realm.

Finally, the untrustworthiness attributed to the Islamic Republic of Iran derives in part from their structural position in the geopolitical order (Gusterson 1999), the functioning of which can be better understood if we attend to the semiotic dimensions of liberalism. Liberalism requires transparency practices as mechanisms of governance that have made suspicion a central problem of political life. This suspicion is fueled by the fact of semiotic indeterminacy whether expressed as the dual-use character of nuclear technologies, the constant search to uncover the hidden or the unexpected equivocalness of broken seals. Transparency, as a driving mechanism of liberal governance, harbors a duality: it is at once a requirement for rational-bureaucratic practices while it also carries an affective norm of intersubjective sincerity. This duality is always present in liberal transparency practices, but the normative dimension tends to remain hidden (!) as long as "sufficient" transparency is achieved. When transparency practices in the rational-bureaucratic mode fail moral anxiety emerges about the irresolvable problem of intersubjective uncertainty about another agent's motive. Rational transparency practices carry with them but constantly defer the question of "transparency of the heart." It is other modalities of maintaining relationships between states that produce the possibility of trust and cooperation. But not all states can be a part of these relationships. This means that structurally, from the perspective of the hegemon, certain states at the margins of the geopolitical order are always suspicious, are always thought to be hiding something.

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