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Article

# Satellites and the Changing Politics of Transparency in World Politics

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## Abstract

This article explores the degree to which commercial satellite imagery has empowered non-state actors in the politics of transparency in world politics. This question has received renewed attention in the wake of the disclosure of China's new missile silos in 2021 as well as Russia's war against Ukraine since 2022. The article contributes to research on this question by teasing out the competition over authority undergirding the politics of transparency. It does so in two steps: it conceptualizes the politics of transparency as involving a combination of state and non-state actors engaging in transparency efforts against another state or other states and it distinguishes four aspects of the empowerment of non-state actors in such constellations of actors: (a) the emergence of new or better disclosure devices that (b) bolster the expertise of some non-state actors, (c) giving them more influence over public debates, and (d) prompting changes in the policies of relevant actors. The article uses this framework to explore the factors that affected the degree of empowerment of non-state actors in the two cases of China's new missile silos as well as Russia's war against Ukraine. It highlights three factors: the interplay between state and non-state transparency makers, the polarization of public spheres, and the ability of states targeted by the transparency efforts to fragment public spheres.

## Keywords

authority; China; commercial satellites; Russia; transparency

## Issue

This article is part of the issue "Publics in Global Politics" edited by Janne Mende (Max Planck Institute for Comparative Public Law and International Law) and Thomas Müller (Bielefeld University).

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## 1. Introduction

In the last decades, technological change has given non-state actors greater ability to make visible and known what state actors, or other non-state actors, do. Satellites have been central to this story. Notably, based on the analysis of commercial satellite imagery, US researchers made public the Chinese construction of new silo fields for nuclear missiles in 2021. The disclosure of the silo fields prompted *The Economist* ("Open-source intelligence," 2021) to proclaim that "open-source intelligence" (in the sense of analysis drawing on commercial satellite imagery and social media data) was challenging "state monopolies on information," thereby changing the dynamics of world politics.

This article explores the degree to which commercial satellite imagery has empowered non-state actors in the politics of transparency in world politics. Commercial satellite imagery denotes pictures of select

parts of Earth taken by for-profit companies using remote-sensing objects orbiting Earth in (outer) space. During the Cold War, remote-sensing satellites were the preserve of states. Since the 1990s, however, satellite imagery has become more widely available thanks to the rise of satellite companies, most of them from the US, such as Space Imaging, DigitalGlobe, Maxar, and Planet Labs. As research in International Relations and beyond has shown, diverse non-state actors, such as non-governmental organizations, researchers, journalists, or the satellite companies themselves, have used satellite imagery to raise awareness for political issues and promote policies for their governance in various fields, among them human rights and environmentalism (see Eilstrup-Sangiovanni & Sharman, 2022; Litfin, 2002; Rothe & Shim, 2018) but also climate politics (Gupta, 2023) and security politics (see Lawrence, 2020; Lin-Greenberg & Milonopoulos, 2021; Witjes & Olbrich, 2017; Zegart, 2022, pp. 238–250). This research has

provided important insights into the empowering effects of the rise of commercial satellite imagery for non-state actors, with some scholars proclaiming the advent of a new “age of transparency” (Larkin, 2016). At the same time, it has also highlighted the limits of this process. Some states, particularly the US, still have considerable control over which satellite imagery is available and which is not (see Witjes & Olbrich, 2017). Moreover, many non-state actors come from Western countries and reproduce Western interpretations of political issues (see Rothe & Shim, 2018). The debate has gained new momentum with the prominent use of commercial satellite imagery by non-state actors in the context of the war in Ukraine, which has led some observers to once again speak of a new era of transparency in which non-state actors are able, thanks to commercial satellite imagery and social media feeds, to track the activities of states much more closely than before (e.g., “OSINT: A new era,” 2022). This has re-opened the question of how much the rise of commercial satellite imagery has changed the politics of transparency.

The politics of transparency are key to the theme of this thematic issue: the publics that partake in global politics. The politics of transparency shape the knowledge that publics have about the political issues that they debate—and whether they are aware of these issues in the first place. The article seeks to contribute to research on how satellites change the politics of transparency by highlighting the competition over authority underpinning it. Transparency is not simply about the availability of information regarding political issues. Rather, it is a process of “managing visibilities” (Flyverbom, 2019, p. 3) in which actors attempt to guide political attention towards certain issues, and certain aspects of these issues, in order to shape how they are governed.

The article starts by unpacking the politics of transparency in two steps. It highlights that the politics of transparency often involve some combination of state and non-state actors striving to influence what certain other states do. These politics take place before several publics in the sense of public spheres as defined in the introduction to this thematic issue: communicative spaces in which actors engage in debates over events or issues (see Mende & Müller, 2023; Section 2). To probe into the dynamics of such constellations of actors, the article then identifies four key aspects in which technological developments such as the increasing availability of commercial satellite imagery can potentially empower non-state actors: (a) by giving them new disclosure abilities, (b) by helping them to become recognized experts on an issue, which in turn gives them the ability (c) to (re)shape public debates on the issue, and (d) to compel (state) actors to change their policies regarding the issue (Section 3). To illustrate the framework and further theory development, the article explores and compares the two high-profile cases that gave new momentum to the debate about the effects of technological develop-

ments on the politics of transparency: the disclosures of new Chinese nuclear missile silos in 2011 and Russia’s military build-up and subsequent war against Ukraine in 2021–2022 (Section 4).

The article contributes to research on satellites and the changing politics of transparency in two ways. Firstly, it highlights that these politics involve an interplay between state and non-state transparency makers. In both cases, the US government prompted (through policy arguments or initial disclosures) transparency efforts by non-state actors, thus initiating the transparency efforts and then outsourcing key parts of them. The interplay between state and non-state transparency makers thus gave the non-state actors a prominent role. Secondly, the proposed framework provides insights into the factors that limit the empowerment of non-state actors. While previous research has emphasized idiosyncrasies of commercial satellite imagery (in particular, the control of the US government over the mostly US-based companies providing the imagery as well as the fees that these companies charge) as factors limiting the empowerment of non-state actors, the article points to additional factors that stem not from the idiosyncrasies of commercial satellite imagery but rather are related to the nature of the politics of transparency as a competition over authority. The case studies highlight two such factors: the polarization of public spheres, both national and transnational, as well as the ability of states targeted by the transparency efforts to fragment public spheres, that is, to decouple their national debates from transnational ones.

## 2. A Competition Over Authority Before Several Publics

World politics revolves around the governance of issues such as international security, the climate, global pandemics, or global development. One fundamental idea of democratically organized political systems is that the public should know enough about these issues to be able to judge the performances of those that govern them and, based on this knowledge, hold them accountable for their performance. Transparency, the classical liberal argument goes, fosters more informed public debates and allows the public to check the arguments that governments use to legitimize their (foreign) policies (Larkin, 2016; for conceptualizations of transparency in international relations, see also Lord, 2006; McCarthy & Fluck, 2017). Foreign policy—and by extension, world politics—has traditionally been a realm in which governments have a considerable knowledge advantage over the public that holds them accountable. By making the issues more transparent, non-state actors diminish this advantage, thus constraining the “elasticity of reality” (Baum & Potter, 2019, pp. 751–752) that governments enjoy, that is the range of plausible arguments that they can make about world politics.

However, what the issues are, what is problematic about them, and how they are to be governed is often

subject to political contention. As Sending (2015, p. 11) argues, world politics is characterized by competition over authority. Various actors, both state and non-state, “compete with each other to be recognized as authorities on what is to be governed, how, and why.” Actors can be authorities in two senses: they can be “in authority” and/or “an authority” (Kratochwil, 2006, p. 306). The first sense denotes political authority, that is, the recognized competence to make binding decisions for a constituency of actors. The second sense denotes epistemic authority, that is, the ascribed expertise to provide special and politically pertinent knowledge about the issues (see Zürn, 2018, pp. 50–53). When non-state actors engage in transparency efforts, they strive for epistemic authority that enables them to influence debates on how the issues are to be governed. What Krause Hansen and Flyverbom (2015) term “disclosure devices,” that is, particular ways of making things more transparent such as the production of rankings (see Ringel, 2023) or the analysis of satellite images, are tools that actors use to gain attention and influence in the competition over attention and influence. The promotion of transparency is, in this perspective, not a neutral endeavor but a strategy that actors pursue to assert certain interpretations of the issues and to establish themselves as experts on how these issues are to be governed.

There is a tendency in the research on the geopolitics of satellite imagery to approach the empowerment of non-state actors through a state vs. non-state actors lens. When scholars explore whether the gaze of non-state actors differs from that of states (e.g., Rothe & Shim, 2018), or highlight that some state actors retain considerable control over what the commercial satellite companies can do (e.g., Witjes & Olbrich, 2017), or study the implications of the reduced control that states have over disclosure decisions (e.g., Lin-Greenberg & Milonopoulos, 2021), they implicitly or explicitly adopt a state vs. non-state actors perspective. Often, though, the politics of transparency feature constellations of actors in which both state and non-state actors seek to make the activities of another state or another set of states more transparent. The cases of China’s missile silos and Russia’s war against Ukraine exemplify such constellations. They involve a state actor, the US, and various non-state actors (in particular researchers, journalists, and satellite companies from the US and other Western states) engaging in transparency efforts against China and Russia, respectively.

The dynamics of these constellations go beyond those implied in a simple “state vs. non-state actors” dichotomy. On the one hand, some state and non-state actors work in tandem to raise public awareness for certain issues and generate pressure on another state or other states. The non-state actors, in other words, side with some states against others. On the other hand, even while siding against some other state(s), the state and non-state actors nonetheless still compete for political attention and influence. There is, in other words, a

competition among different transparency makers—that is, actors seeking to make an issue more transparent—which may differ not only in their abilities but also in their ideas of how the issue is to be governed.

Furthermore, such constellations involve several publics and, with them, several possible channels of influence. To use a simple example, state A and non-state actor B seek to make the activities of state C more transparent. Then pressure on state C can be generated in one of three (combinable) ways: by convincing the national public of state A that a reaction is necessary, by mobilizing a transnational public (and with it, additional states, international organizations, and non-state actors) to put pressure on state C, or by prompting the national public in state C to demand that the state reconsider its activities. The expertise ascribed to the transparency makers may differ across these publics, as does their influence. The dynamic of the ensuing politics of transparency depends to a considerable degree on how state C reacts to the transparency initiative. State C can change its activities, thus giving in to the pressure. But it can also attempt to weather the pressure by engaging in a political battle over what the public thinks about the activities or by attempting to suppress such a debate.

### 3. Four Aspects of the Empowerment of Non-State Actors

The framework thus starts from the assumption that the politics of transparency often resemble situations in which combinations of state and non-state actors seek to make activities of another state, or other states, more transparent. Such constellations are not specific to commercial satellite imagery as a disclosure device but can also arise when non-state actors rely on, for example, social media feeds to track what some states do or compile and publish rankings to name and shame. There are differences between these disclosure devices. Commercial satellite imagery is, for instance, sometimes described as open-source intelligence in the same vein as social media feeds (e.g., “Open-source intelligence,” 2021; “OSINT: A new era,” 2022). However, the access to and use of commercial satellite imagery is considerably more costly than the analysis of social media feeds, which limits the number of non-state actors that can draw on it for their transparency efforts. What these disclosure devices nonetheless have in common is that they are tools that state or non-state actors use to generate insights into the activities of some state(s) and to leverage these insights to gain political attention and influence.

To assess how much the politics of transparency change when non-state actors use new or newly available disclosure devices such as commercial satellite imagery, it seems, therefore, useful to unpack the process through which the non-state actors gain attention and influence. The following four aspects matter for how powerful the non-state actors become.

The first aspect is the opportunity to improve or create new disclosure devices. This aspect thus relates to the disclosure ability of actors, that is, their capacity to make an issue more transparent. The disclosure ability is affected by technological change, e.g., the rise of commercial satellite companies, but is also affected by political and legal circumstances, such as laws constraining or allowing the use of certain satellites or satellite images (see Litfin, 2002, pp. 74–75; Witjes & Olbrich, 2017, p. 530). New technologies can increase the disclosure ability of non-state actors relative to governments by making it harder for governments to hide certain activities or by making non-state actors less dependent on friendly governments as providers of information on these activities.

The second aspect is the translation of this disclosure ability into recognized expertise on the issue. Expertise is a claim to special knowledge about an issue, be it because of experience or—more relevant with regard to disclosure devices—because of certain skills (see Eyal, 2019, pp. 21–42). The acceptance of this claim by actors relevant to the governance of the issue is crucial to the ability of actors using disclosure devices to establish themselves as (epistemic) authorities on the issue (see Sending, 2015, p. 21; Zürn, 2018, pp. 52–53). New technologies can make the competition over authority more dynamic when they give rise to new forms of expertise, thus potentially facilitating the rise of new experts. Established experts, though, can also leverage the new forms of expertise to sustain and bolster their status.

The third aspect is the influence on public debates. Multiple actors often claim to be experts or are regarded as experts on an issue. As Loehrke et al. (2021, p. 3) note, the spread of open-source practices has entailed a “convergence of practices shared by journalists, intelligence professionals, nongovernmental experts, and other interested citizens.” However, it has also “added competition among actors seeking to inform the public policy conversation” (Loehrke et al., 2021, p. 3). That some actors are recognized as experts does not imply that they are able to (re)shape public debates on the issue. For that to happen, the knowledge that they produce and circulate needs to be recognized by other actors in the public sphere(s) as pertinent enough that, because of the disclosures, these actors adopt certain interpretations of the issue and accordingly argue for certain ways of governing it. The polarization of political debates, though, may result in situations in which actors are recognized as experts within only one camp but not others, thus limiting their influence on these debates (for the effects of polarization on public debates, see Baum & Potter, 2019).

The fourth aspect is the influence on the policies of the relevant actors. This influence can be both direct and indirect. It is direct when the actors whose activities are made (more) transparent react to the disclosures and change their activities. It is indirect when the transparency efforts prompt other actors to change their

policies vis-à-vis the actor whose activities are made (more) transparent. As discussed above, the influence on the policies of the relevant actors happens through the influence of public debates and the ways these public debates prompt the relevant actors to adopt certain policies. That said, some actors may welcome the dynamics that the disclosures made by non-state actors inject into public debates because these dynamics are conducive to their policy aims. These actors are then not prompted by the disclosures to adapt their policies but rather capitalize on them to legitimize the policies they adopt. In such cases, the actors—so to speak—outsource parts of the legitimation of their policies to the non-state actors. Other actors, in contrast, may dislike the dynamics generated by the disclosures and seek to suppress the ensuing public debates, for instance by refusing to discuss the issue or by seeking to keep the debates away from the publics that are crucial to the legitimation of the policies.

The distinction between these four aspects provides a qualitative measure of how much technological developments, such as the rise of commercial satellite companies, change the politics of transparency and empower non-state actors. The power dynamics undergirding the politics of transparency are most strongly reshaped when all four aspects are fulfilled, that is when non-state actors are able to successfully leverage disclosure devices to establish themselves as key experts, reshape public debates, and prompt changes in the policies of relevant actors. Furthermore, the distinction helps to structure and focus the exploration of the factors that enable and limit the empowerment of non-state actors.

#### 4. A New Age of Transparency?

This section presents two brief case studies to illustrate the framework developed above and to contribute to further theory development on the changing politics of transparency. The two cases are the transparency efforts relating to new Chinese nuclear missile fields in 2021 and Russia’s military build-up and war against Ukraine since 2022.

The two cases are treated as paradigmatic cases in the current debate about the advent of a new age of transparency (e.g., “Open-source intelligence,” 2021; “OSINT: A new era,” 2022). These cases are paradigmatic in the sense that they involve political debates characterized by a prominent role of non-state actors who, by using commercial satellite imagery, are able to generate a new level of transparency about the activities of certain states. At the same time, given the geopolitical tensions that they involve, the two cases are, in some sense, extreme. But because key processes (in the case studies, those enabling and limiting the empowerment of non-state actors) are particularly pronounced in such cases, they are helpful for teasing out these processes and generating hypotheses for further research (Gerring,

2007, pp. 101–105). The two cases are characterized by in-case variation as the non-state actors impacted US and transnational debates, but their impact on China and Russia was more limited, as both states have continued with the activities that the non-state actors disclosed. This makes the two cases useful for exploring the factors that limit the empowerment of non-state actors, which will help to further refine the framework developed above. The framework, and especially the four aspects that it highlights, provides the structure and focus for the analysis and comparison of the cases (see George & Bennett, 2005, on structured and focused case comparisons). To probe these factors, the case studies draw on a mix of primary sources (such as publications by non-state actors, government statements, and newspaper articles), complemented by secondary literature.

Table 1 summarises the findings. The case studies reveal a dynamic between state and non-state transparency makers in which the state transparency maker (the US) prompts and partly outsources the transparency-making to non-state actors. They point to two factors that limit the empowerment of the non-state actors: the polarization of political debates and the purposive fragmentation of public spheres.

#### 4.1. China’s Silo Fields

China’s nuclear arsenal is considerably smaller than the arsenals of the two biggest nuclear powers, the US and Russia. No international organization publishes statistics on the arsenals of the nine states possessing nuclear weapons in the world. Nor does any state. The most prominent transparency maker publishing such statistics is a non-governmental organization, the Washington-based Federation of American Scientists (FAS), which estimates Russia’s total arsenal (including deployed and retired weapons) to include 5,889 warheads; the US’ arsenal, 5,244; and China’s arsenal, 410. Russia and the US, though, only deploy parts of their arsenal: 1,674 warheads in Russia’s case and 1,670 warheads in the US case (see Kristensen, Korda, Johns, & Kohn, 2023).

A longstanding debate, especially in US security politics, is whether or not China strives to enlarge its arsenal to diminish the difference. The Trump administration revived the debate by claiming that China was “expanding” its arsenal “rapidly” and was “likely to at least double its size in the years ahead” (Ford, 2020, p. 2). In 2021, three disclosures then injected new momentum into the debate. On 30 June, the *Washington Post* reported that

**Table 1.** The politics of transparency in the two cases.

|                             | Case 1: Chinese silos  | Case 2: Russia’s war against Ukraine  |
|-----------------------------|--|---|
| Disclosure devices          | Increased abilities of non-state actors.<br><br>Use of abilities to search for Chinese silos prompted and encouraged by a state actor (US).  | Increased abilities of non-state actors.<br><br>A state actor (US) initially played an important role in the disclosure of Russian activities.  |
| Expertise                   | Satellite imagery is accepted as a pertinent disclosure device within the US (and transnational) debate.<br><br>Use of satellite imagery bolstered the status of established experts in this debate.   | Satellite imagery is accepted as a pertinent disclosure device within the US and transnational debate.<br><br>Used by journalists and researchers.<br><br>Use showcased the expertise of satellite companies.                       |
| Influence on public debates | Disclosures gave new momentum to the US debate about possible Chinese nuclear build-up.<br><br>But due to the polarization of the debate, the non-state actors could not control the momentum.<br><br>China refused to engage in a debate.<br><br>Reactions by Chinese media are shaped by the polarization of the transnational debate. | Initial disclosures started a transnational debate about Russia’s intentions.<br><br>Russia initially participated in this debate, then—after the war started—sought to decouple its national public from the transnational debate. |
| Influence on policies       | Disclosures helped the US to legitimize its nuclear modernization program.<br><br>China continued its nuclear program.   | Disclosures helped the US to rally (Western) support for Ukraine.<br><br>Russia neither abandoned its plan to attack Ukraine nor has so far stopped the attack.   |

researchers from the Center for Nonproliferation Studies (CNS) in Monterey, California, had discovered the construction of a new field with more than 100 nuclear missile silos in China (see Warrick, 2021). On 26 July, the *New York Times* announced that researchers from the FAS had found a second silo field that was under construction (see Broad & Sanger, 2021). On 12 August, the *Washington Times* reported that an analyst from the US Air Force's Air University had detected early construction work for a third silo field (see Gertz, 2021). All three revelations were based on the analysis of satellite imagery.

*Disclosure ability:* All nuclear powers practice some degree of secrecy about their arsenals. Democracies such as the US, Great Britain, and France, though, reveal considerably more about their nuclear forces than autocracies such as China and Russia. Given this secrecy, non-state actors had long depended on what the nuclear powers chose to reveal and what transparency-fostering governments, notably the US administration, published about the arsenals of other, less transparent nuclear powers (see Norris & Kristensen, 2015). This situation has changed considerably with the rise of commercial satellite companies. The growing availability of satellite imagery has offered non-state actors powerful new means for finding and tracking nuclear facilities and forces (see Zegart, 2022, pp. 232–234). An early indication was the disclosure of Iran's nuclear facility in Natanz by a US-based NGO, the Institute for Science and International Security, in 2002 (see Lawrence, 2020). Commercial satellite imagery has thus boosted the disclosure abilities of non-state actors, enabling them to partially circumvent the secrecy practices of states such as China while at the same time making them less dependent on the US government as a source for information about the nuclear programs of other states. The revelations about China's silo fields showcased this enhanced disclosure ability.

*Expertise:* A range of actors draws on commercial satellite imagery to produce knowledge about nuclear arsenals. The first two disclosures, though, were not made by newcomers to the debate on nuclear politics but by actors that were already established experts. The CNS and FAS have both used commercial satellite imagery for years for tracing developments in nuclear arsenals and, by doing so, have established themselves as epistemic authorities on the matter (see also Lawrence, 2020, p. 534). The CNS found the first silo field when Jeffrey Lewis, one of its senior analysts who had worked on Chinese nuclear forces for some time (e.g., Lewis, 2014), tasked Decker Eveleth, a fellow, to check the "rumor that has been going around Washington" that China was "dramatically expanding" the number of its nuclear-armed intercontinental ballistic missiles (Lewis, 2021). The FAS, as mentioned, is arguably the key authority publishing knowledge on the arsenals of the various nuclear powers. Since the late 1980s, it has published statistics and descriptions of the arsenals in the *Bulletin of Atomic Scientists* and the *Yearbooks* of

the Stockholm International Peace Research Institute. In February 2021, the FAS had already discovered the construction of 14 new silos at a Chinese training ground. After the CNS disclosed the first silo field, the FAS checked for other sites, finding the second silo field (see Broad & Sanger, 2021). While the CNS and the FAS have been widely accepted as experts within the US and (Western) transnational debate on global nuclear politics (for an overview, see Bugos & Masterson, 2021), Chinese media challenged their expertise following the disclosures. Notably, Xijin Hu, the editor-in-chief of the *Global Times*, an English-speaking newspaper published by the Communist Party, decried Lewis as an "amateur" who did not understand nuclear technology (Hu, 2021).

*Influence on public debates:* The disclosures injected new momentum in the US debate while China refused to engage in a debate. The politics of transparency were characterized by competition among transparency makers, with the claims made by the US government about China's activities spurring non-state actors to dig deeper, with both the CNS and FAS relying on images provided by Planet Labs and later also Maxar, which in turn spurred efforts by others, including the Air University which used satellite images from the European Space Agency. The cumulative effect of this competition was a sequence of disclosures that substantiated the government's claims without the government having to disclose images from its own satellites. With "approximately 300 apparent silos under construction," the FAS concluded, China was pursuing an "unprecedented nuclear build-up," which made it more likely that "China's total ICBM [intercontinental ballistic missiles] force could potentially exceed that of either Russia and the US in the foreseeable future" (Korda & Kristensen, 2021). For the commander of the US nuclear forces, the disclosures revealed a "strategic breakout by China," and he suggested that open-source analysts should "keep looking" for more construction activities (as cited in Gertz, 2021).

The CNS and the FAS sought to curb the dynamic generated by their disclosures within the US debate. The US debate pitted proponents of a modernization and expansion of the US nuclear arsenal against proponents of nuclear restraint and arms control (for an overview, see Bugos & Masterson, 2021). The former welcomed the disclosures as further proof that the US had to improve its nuclear forces to prevail in the impending arms race. In a congressional hearing in March 2022, for instance, the already mentioned commander of US nuclear forces noted that since his last testimony, "commercial satellite imagery [had] revealed three new nuclear missile fields in western China," which he argued vindicated his earlier warnings that China was moving beyond its previous strategy of minimal deterrence and rapidly expanding its nuclear capabilities (Richard, 2022, p. 5). The CNS and the FAS traditionally side with the proponents of nuclear restraint and arms control. They accordingly warned of the risks inherent in arms races, suggested that the

silos could also be a sign of Chinese worries about the survivability of its nuclear forces in the face of modernized US nuclear forces, and made a case for arms control solutions (see Korda & Kristensen, 2021; Lewis, 2021). Put differently: the disclosures intervened in a polarized debate in which each side sought to mobilize the revelations for their own purposes and in which the non-state actors positioned themselves on one of the two sides, which limited the influence they had over the debate.

The Chinese government has sought to avoid a public debate on the disclosures. The *Global Times* suspected the disclosures were a plot by the US government to “squeeze the room for China’s nuclear development through public opinion pressure,” urging the Chinese government to side-step this plot by neither confirming nor denying the disclosures (Hu, 2021). So far, the Chinese government has followed this advice. For instance, in a media briefing in January 2022, the director general of the Arms Control Department of the Chinese Foreign Ministry declined to confirm the existence of the silos. He added, though, that satellite imagery was not a good basis for estimating the size of China’s nuclear arsenal (see Moritsugu, 2022). In an editorial, the *Global Times* went a step further, accusing “politicians and media in Washington” of “hyp[ing] disinformation such as ‘China is building missile silos in its northwest’ in order to legitimize the modernization of its nuclear program (‘US eyes,’ 2022). The comments by the *Global Times* illustrate how the geopolitical struggle between the US and China has polarized the transnational debate. For the *Global Times*, the non-state actors were no more than pawns in the US plot to perpetuate its nuclear superiority.

*Influence on the policies of relevant actors:* The disclosures did not lead to substantial changes in China’s nuclear program, but they helped the US government to justify the modernization of its own nuclear forces. China has continued modernizing and expanding its nuclear arsenal while insisting that its strategy is still minimal deterrence and that it is not interested in a nuclear arms race (see Kristensen, Korda, & Johns, 2023). The US government, in turn, has incorporated the diagnosis of a rapidly expanding Chinese nuclear arsenal into its nuclear strategy. Its Nuclear Posture Review, published in October 2022, noted that China “has embarked on an ambitious expansion, modernization, and diversification of its nuclear forces” and “likely intends to possess at least 1,000 deliverable warheads by the end of the decade” (U.S. Department of Defense, 2022, p. 4).

#### 4.2. Russia’s War Against Ukraine

Satellites enable state and non-state actors not only to detect nuclear missile silos but also the deployment of conventional military forces. Such satellite images have played a prominent part in Russia’s war against Ukraine. The politics of transparency can be divided into two phases: The first phase began in October 2021

with media reports about US concerns over the Russian deployment of substantial military forces near Ukraine (e.g., Sonne et al., 2021). This phase was characterized by Russia’s denial of any intent to attack Ukraine and Western public debate about whether the increasing Russian deployments around Ukraine were preparation for war or merely a political pressure game (see Harris et al., 2022). The politics of transparency then entered a new, second phase when Russia invaded Ukraine in February 2022. This phase, which is still ongoing at the time of the writing of this article (April 2023), has been characterized by debate about the course of the war and the suffering and destruction it has caused.

*Disclosure ability:* Commercial satellite imagery has increased the abilities of non-state actors to track substantial deployments of conventional military forces. Compared to the case of China’s silos, the politics of transparency have nonetheless involved a stronger role of a state actor. The US government set key impulses for the transnational public debate. The October 2021 disclosure was followed by a second and more substantial one in early December 2021. The *Washington Post* published an article based on US intelligence that described how Russia was amassing up to 175,000 soldiers on the Ukrainian borders (see Harris & Sonne, 2021). The article included several satellite images provided by DigitalGlobe (a subsidiary of Maxar) showing Russian military camps near Ukraine. The availability of commercial satellite imagery thus allowed the US to disclose the Russian build-up without having to publish imagery from its own spy satellites. At the same time, it also enabled non-state actors to provide the transnational public first with frequent updates on the Russian deployments and then, after the war had begun, with insights into how the war was unfolding. Media outlets, for instance, used satellite images of a kilometers-long immobile Russian convoy to highlight Russia’s logistical failures (see Thebault, 2022). The focus on Russian activities has been a deliberate bias. Commercial satellite companies come from the West, often have contracts with Western governments (see Teicher, 2022), and have used their disclosure ability selectively to make Russian activities more transparent, but not usually the Ukrainian ones.

*Expertise:* States have abstained from publishing imagery from their spy satellites on the war in Ukraine. This has created an opening for non-state actors to leverage commercial satellite imagery to position themselves as actors with special knowledge about the war. Two groups of actors can be distinguished in this regard. The first group consists of journalists. Satellite images have been a prominent element of the media coverage of the war. Most of these images come from Maxar, which has granted special access to its image archives to a number of media partners, among the *BBC*, *The Economist*, *The New York Times*, and *The Washington Post* (see Teicher, 2022). This arrangement has been mutually beneficial: The media outlets



had “unprecedented access to commercial satellite imagery” (Beale, 2022), which enabled them to visually substantiate their coverage in new ways and to provide insights that other media outlets could not provide. Maxar, in turn, could brand itself as a company that supports global public interests. The arrangement, however, also illustrates that commercial satellite companies can—and do—influence the competition over authority by selecting some non-state actors, but not others, as partners, thus giving them an edge in the competition.

The second group comprises non-state actors that have monitored Russia’s military build-up and the subsequent war. One prominent example is the Institute for the Study of War which has published regular reports, including maps, about relevant battles in the war on its website (see Institute for the Study of War, 2022). The institute draws on a number of sources to produce these reports, including satellite imagery. The reports, in turn, have been used by media outlets as an authoritative information source for how the war unfolds (e.g., “Russia-Ukraine war at a glance,” 2023).

*Influence on public debates:* The disclosures in late 2021 and early 2022 sparked a transnational debate about the intentions behind Russia’s military build-up. Russia initially denied any intent to invade Ukraine, arguing that the satellite images showed nothing but military exercises. “We have no intention of attacking, staging an offensive on or invading Ukraine,” Russia’s Deputy Foreign Minister Sergei Ryabkov insisted in January 2022 (cited in Khurshudyan et al., 2022). In contrast to China’s (non-)reaction to the silo disclosures, Russia thus initially engaged in a transnational public debate about the disclosures, challenging the Western interpretation of what the satellite images showed. Once the war started, though, Russia sought to keep the debate away from its own population by passing legislation restricting what could publicly be said about the war and what the media could report (see Troianovski & Safronova, 2022). Its reaction, in other words, was to fragment the public debate, separating the transnational public debate from the public debate within Russia.

*Influence on the policies of relevant actors:* The disclosures helped the US to garner support among Western governments for a strong stance against Russia’s aggression (see Harris et al., 2022). Moreover, several commercial satellite companies provide imagery to Ukraine, thus helping it keep track of Russian troop movements (see Ignatius, 2022). As in the case of China’s silos, however, the public disclosures have so far not compelled the state targeted by the transparency efforts to abandon its activities. The disclosures neither stopped Russia from attacking Ukraine nor has Russia so far ended its attacks. That said, the transparency efforts nonetheless impacted Russia’s policies. The laws it passed to regulate what the Russian media and public can and cannot say about the war are an effort to keep the transnational debate—including the satellite images published by Western media—away from the Russian population.

Russia, in other words, has reacted to the Western efforts to make the war more visible with a regime geared towards making it less visible—or, more precisely, towards making those aspects that do not conform to the story that the Russian government wants to tell less visible.

## 5. Conclusion

How much has commercial satellite imagery empowered non-state actors in the politics of transparency? China’s missile silos and the war in Ukraine have brought new attention to this question, with some observers arguing that they herald the advent of a new age of transparency with a more empowered role for non-state actors. To examine this argument, the article first highlighted that the politics of transparency are part of a competition over authority in which state and non-state actors seek to position themselves as the key (epistemic) authorities whose interpretations of political issues matter for how they are governed. The article then developed a framework that analytically unpacks the empowerment of non-state actors in this competition over authority into four aspects: the development of new disclosure devices, the expertise that these disclosure devices help to build up, the influence that they give the non-state actors over public debates, and the impact they thus have on the policies of the relevant actors. The case studies show that commercial satellite imagery helped non-state actors to create a new level of transparency and to position themselves as experts in US and transnational debates. But they also highlight limits in the power that the non-state actors thus gained: they could only partially shape the debates, and their disclosures did not lead to a substantial change in the Chinese and Russian activities that they sought to make more transparent.

The framework and the explorative case studies suggest several factors that help to explain the impact on US and Western debates and the limited impact on China and Russia. The first is the interplay between different transparency makers. In both cases, a state actor, the US, prompted (China’s silos) or kick-started (Russia’s preparation for war) the transparency efforts, and non-state actors then continued them, encouraged by the state actor, which could in this sense partially out-source the transparency efforts. The second factor is the polarization of public spheres. In the US debate on China’s missile silos, the non-state actors were widely accepted as experts, but proponents of a more robust nuclear force posture and proponents of nuclear restraint and arms control interpreted the disclosures differently. While the non-state actors gave the debate new momentum, they were unable to control it. The geopolitical tensions between the great powers have contributed to a polarization of the transnational public sphere. Chinese media accordingly dismissed the silo disclosures as a US plot to legitimize its own nuclear program. The third factor is the fragmentation of public spheres. After initially engaging

in a debate about the satellite images depicting growing Russian deployments around Ukraine, Russia passed laws that considerably restricted what Russian media could report about the war, thus decoupling the Russian public sphere from the transnational one. As the second and third factor underscore, the dynamics of the politics of transparency can only be fully grasped when taking into account the nature of the relevant publics and their impact on how the politics of transparency play out.

How generalizable are these findings? The article only applies the framework to the use of commercial satellite imagery in security politics. However, the situation that the framework depicts and unpacks—that is, constellations in which combinations of state and non-state actors engage in transparency efforts with regard to the activities of another state actor or other state actors—is neither specific to this particular disclosure device nor this particular policy field. The framework can, in this sense, be used in future research to explore whether the identified factors also play a role in other policy fields and which (combinations of) disclosure devices help non-state actors most to gain political attention and influence.

Given that the interplay of state and non-state transparency makers has, in both cases, helped the US to legitimize its policies directed against China and Russia, another avenue of research would be the question of the effects of the empowerment of non-state actors on the power dynamics between states. The empowerment of non-state actors increases the power of some states—particularly those with the same policy preferences—while challenging the power of others. There is thus a strategic dimension to the empowerment of non-state actors, with the former states having an interest in fostering the empowerment and the latter an interest in hampering it.

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The author declares no conflict of interests.

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