

A satellite with two long solar panel arrays is shown in orbit above the Earth. The satellite is white and black with various instruments and antennas. The Earth's blue and white surface is visible in the background against the blackness of space.

**OUTER**

INFORMATION WARFARE, AND THE TRUTH

**SPACE**

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**D**ESPITE UTOPIAN VISIONS of space exploration and the libertarian promises of freedom for an interplanetary humanity, outer space is cold, dark, and fraught with ethical tradeoffs. Certainly, the use of outer space has undeniably yielded an array of advantages (i.e., internet access, geospatial data and telemetry, monitoring and surveillance, navigation assistance, and communication services),<sup>1</sup> but the information gathered through military and commercial satellites is not value-neutral and carries the potential paradox of both helping and harming humanity. As a result, space-based assets and the data they gather have severe implications for those concerned with accessing truth while mitigating the spread of misinformation.

### SPACE FOR TRUTH AND VERIFICATION

Firstly, satellite imagery and other telemetry can be used to monitor and verify claims and allegations by state and non-state actors alike—a highly useful tool for combating conspiracies and dubious claims amidst heightened tensions and humanitarian disasters. For example, satellite imagery has played a crucial role in detecting Russian troop movements throughout their full-scale invasion of Ukraine. Initially, this imagery was used to counter Putin’s claims that nothing out

of the ordinary was happening, but the images provided clear evidence to the contrary. More recently, satellite imagery has been used to identify mass graves and destruction wrought by Russia in Ukraine.<sup>2</sup> These images can be used as evidence for future war crimes trials and to fact-check competing allegations and misleading narratives. Space-based assets have the potential to ensure that states comply with their commitments, or at the very least, determine whether a state is renegeing on its obligations. This is particularly relevant for arms treaties or other security agreements where the temptation of non-compliance is substantial.<sup>3</sup>



**February 15, 2022, satellite photo shows increased Russian Military Activity Near Ukraine at the Opuk training area in Crimea, which Russia seized from Ukraine in 2014. | CC public domain**



**A satellite image collected by U.S. Air Force Airmen with the Electronic Systems Center-managed Eagle Vision program show the Fukushima Dai-ri nuclear power plant in Japan after the devastating earthquake and tsunami that struck March 11, 2011. US Air Force from USA I CC public domain**

Secondly, satellite imagery can offer timely and accurate information during natural and humanitarian disasters.<sup>4</sup> During times of active crisis, heightened media attention and widespread confusion can create a social vulnerability that potential attackers may seek to exploit. Therefore, the rapid dissemination of credible and evidence-based information is extremely important. A satellite, for example, captured a picture of the explosion at the Fukushima nuclear power plant on March 11, 2011, just minutes after the first reactor blew up.<sup>5</sup> While walking up to a nuclear power plant explosion is not feasible, for obvious reasons, satellite imagery may be the next best option. When disaster strikes, timely and factual information is necessary to prevent chaos, loss of life, and long-term consequences. Space-based assets provide a means of gathering and transmitting this information, which is critical in ensuring accurate situational awareness and response coordination. In addition, these assets can play a crucial role in countering misleading conspiracies, miscommunication, and false claims.

## SPACE FOR DISINFORMATION AND MANIPULATION

The credibility and importance of satellite imagery makes it a potential source for influence operations, as these images can impart a sense of trustworthiness and authority. For several reasons, this trust is misplaced. Firstly, interpreting such imagery is not always easy and requires a level of training and skill. Imagery from remote sensing systems using synthetic aperture radar (SAR), which can see through clouds, for

example, is not always clear-cut. Humans are not accustomed to seeing aerial imagery to begin with, let alone in black and white and in unfamiliar textures. A would-be manipulator can intentionally misinterpret an image to deceive untrained eyes. For example, during the lead-up to the invasion of Iraq in 2003, Secretary of State Colin Powell used satellite imagery, which was at best inconclusive, as evidence of weapons of mass destruction in a UN Security Council meeting. As well, satellite imagery, like all imagery, can be easily recontextualized to fit a different narrative. This is clear in conventional imagery. For example, a photo of a protest purporting to be from one event may later be misidentified as being from a completely different time and location. There is also a creeping worry that artificial intelligence will be used to create deep fakes of satellite imagery or other terrestrial maps. Researchers are already attempting to uncover ways to detect and verify instances of these tactics.<sup>6</sup>

## Satellite imagery can offer timely information during natural and humanitarian disasters.

### WHAT GETS OBSERVED AND WHO DECIDES?

Finally, we should also be aware of the potential impact a near ubiquitous remote sensing regime could have on democracy, global equity, and human rights. Although reliance on satellite communications may help circumvent internet outages or lack of access, these communications



can also be intercepted, allowing others to eavesdrop or geolocate end users.<sup>7</sup> For example, Dzhokhar Dudayev, the first president of the self-proclaimed independent Chechen Republic of Ichkeria, was killed in 2006 by a Russian missile strike after a call from his satellite phone was intercepted by a Russian reconnaissance aircraft.<sup>8</sup> It has also been alleged that Syrian President Bashar al-Assad has used satellite phone signals to target journalists.<sup>9</sup> As the Committee to Protect Journalists warns, satellite phones can always be tracked.<sup>10</sup>

### The commercialization of outer space has made satellite use available to a wide range of states, academic institutions, media outlets, and civil society organizations.

The increasing commercialization of outer space has made satellite use available to a wide range of states, academic institutions, media outlets, and civil society organizations. However, the control of “unfettered observation” remains primarily in the hands of Western companies, prompting some critics to raise concerns over potential biases influencing the information that is obtained, revealed, and acted upon.<sup>11</sup> Apprehension over the privatization of space is similar to that raised about our centralized information ecosystem, whereby



Satellite view reveals how the forest and the atmosphere interact to create a uniform layer of “popcorn” clouds one afternoon. | NASA image courtesy Jeff Schmaltz, MODIS Rapid Response at NASA GSFC. CC public domain

only a few U.S.-based tech giants can control and exploit vast troves of data. Domestic politics may also influence what is collected and what is not. For example, amidst growing debate over the health of the Amazon rainforest and extraction, former Brazilian President Jair Bolsonaro slashed the budget of the National Institute for Space Research,<sup>12</sup> the federal agency traditionally charged with monitoring deforestation in the Amazon. Who determines what is observed and the management of the data will certainly play a role in the health of our environmental and information ecosystems beyond national security and geopolitics.

### SPACE WARS BEGIN ON EARTH

Despite the distance, outer space and Earth are linked. However, our increasing dependence on space-based assets makes parsing the multitude of challenges and tradeoffs more difficult. Amidst talks of great power competition, space weapons, and commercialization there are equally pressing issues concerning production of knowledge, truth, and accountability. Though these topics sometimes overlap with national security (as with arms treaties or interstate war), they also affect the broad concept of human security—the wellbeing and safety of individuals and communities. As states and international organizations consider what to do to ensure the sustainable development and use of outer space, concerns should go well beyond simply reducing the level of debris, whether asteroids should be mined, or what qualifies as a space weapon.<sup>13</sup> Policymakers must also carefully balance the potential benefits of remote sensing against the potential risks to privacy, human rights, and global equality.

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## ENDNOTES

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