
Wide Area Motion Imagery and the Colonial Antecedents of Surveillance

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Wide Area Motion Imagery and the Colonial Antecedents of Surveillance

Abstract

Wide area motion imagery (WAMI) technologies are procured by federal and state security institutions across the United States, due to their capacity to surveil at an extraordinary scale. Innovation in WAMI development seeks to make them more compact or convenient to use and employ in a variety of situations. The increased use of WAMI, particularly through uncrewed aerial combat vehicle (UCAV) systems and operations, is able to render visible people, communities, and behaviors at an unprecedented level. This has implications for individuals' and communities' perception of surveillance and the ontology of security. The experience of being secured or kept safe is brought about through the surveillance apparatus, which imposes an unending gaze upon the secured population. This article argues that WAMI technology replicates the totalizing gaze of colonial surveillance architecture, and its deployment in areas such as Baltimore and Dayton, reifies disciplinary boundaries around legitimate behavior in law enforcement and warfare.

Introduction

Since the September 11, 2001 terrorist attacks on the World Trade Center and the ensuing invasion of Iraq and Afghanistan under the Bush administration's global war on terror, surveillance across territories, communities, and cyberspaces has enhanced.¹ In the context of visual mapping of cities and towns, new technologies have been deployed to embed post-2001 security techniques.² The Uniting and Strengthening America by Providing Appropriate Tools Required to Intercept and Obstruct Terrorism Act (PATRIOT Act), passed in response to the attacks, established unprecedented levels of surveillance as part of law enforcement strategies, much of which would be shielded from the public and free of judicial oversight.³ Similar rationales behind the PATRIOT Act of protecting American lives and liberties through legitimated mass surveillance persist today.⁴ In 2023, New York City's Police Department partnered with Amazon Ring as part of their Domain Awareness System to establish access channels to Ring devices, which include the collection of biometric information including face shape, skin color, and odor recognition to determine whether patterns of behavior constitute "suspicious activity."⁵ These innovations categorize different individuals and communities into those deemed risky, punishable, or suspect, marking them as deserving of surveillance and targeting.

Wide area motion imagery (WAMI) surveillance technologies have emerged as a new, efficient form of data collection and processing. These employ persistent surveillance that utilizes up to hundreds of compact cameras, which capture image and video recordings across exceptional range.⁶ The scale of WAMI projects shifts surveillance techniques into overdrive, enabling continual monitoring and recording of civilian settings under the guise of law enforcement. Perpetual surveillance relegates specific communities deemed suspect or risky to the margins of social life, replicating the architecture of colonial surveillance systems. Such surveillance repeats the methods of dehumanization and disposability inherent to imperial and colonial endeavors.

WAMI technology: Origins, Examples, and Implications

Defense industry leaders developed sophisticated technologies, including WAMI, as part of intelligence, surveillance, and reconnaissance (ISR) operations in the 2000s in Iraq and Afghanistan.

Nascent forms, such as the E-8C Joint Surveillance Target Attack Radar System, flew army personnel as part of Operation Desert Storm in 1991 and Operation Iraqi Freedom in 2003.⁷ In the latter, ISR was enhanced to merge capabilities around transporting personnel with wide-area surveillance coverage, spanning 19,000 square miles.⁸ Once ground troops and commanders recognized the benefits of persistent and wide-ranging surveillance, wide-area coverage technologies for ISR missions were in demand and innovating. WAMI developed as a branch of technology, providing remote, continuous video coverage of several square miles at several frames per second and providing live image capture using an onboard array of cameras.⁹

Project Angel Fire was developed in the late 2000s to bring WAMI surveillance to Iraq, empowering troops with forensic and post-event analysis for roadside bombings.¹⁰ BAE Systems, with the sponsorship of the Defense Advanced Research Projects Agency and the U.S. Air Force, developed the Autonomous Real-Time Ground Ubiquitous Surveillance-Imaging System (ARGUS-IS) pod system, with its first test flight on a Black Hawk piloted helicopter in 2010.¹¹ The ARGUS-IS, equipped with a 1.8 gigapixel sensor, could cover an 8-by-8 kilometer field of view with 20-centimeter resolution, but weighed 1,000 pounds. With innovation in the field increasing, alongside resources and government and private sector support, the urgency to develop efficient, advanced, and compact WAMI systems became apparent.

Dr. Michael Eismann, chief scientist for electro-optical and infrared sensors at the Air Force Research Laboratory, explained that reducing space, weight, and power consumption was imperative to the longevity of WAMI development. Proponents of similar views express fears about the insidiousness of terrorism and extremist threats. They cite that WAMI capacities enable significantly enhanced “pattern-of-life” analysis, ascertaining the risk of terrorist activity and their precise location in complex, urban settings.¹² Many WAMI capabilities have been incorporated into uncrewed aerial vehicles (UAVs). In 2016, the global aerospace company Exelis launched a compact WAMI system titled CorvusEye 1500, with the capacity to monitor city-size areas atop UAVs, focus on specific target sections for suspicious activity, and record perpetually in real-time, without the need for a human operator and weighing less than 95 pounds.¹³

While innovation fulfilled the desires of efficiency, compactness, and scale, the perception of terrorism and extremism developed—fears of

individuals being radicalized across cities into enemies of America flourished.¹⁴ Consequently, WAMI technologies, specifically Project Angel Fire, were positioned to solve domestic homeland security problems. These innovations operated as part of a broader trend of law enforcement militarization, including increased SWAT deployment and provision of surplus military equipment to local police forces.¹⁵ Using Ross McNutt, Project Angel Fire founder, reconfigured Project Angel Fire into Persistent Surveillance Systems, developers of the Gorgon Stare Project and other perpetual WAMI operations in towns such as Dayton, Ohio, and Baltimore, Maryland.¹⁶

Such projects have significant legal implications that, while operating under the logic of preventing terrorism and undertaking anticipatory surveillance to enhance public safety, undermine its integrity. Although it is legal for surveillance to take place in U.S. airspace, which falls into the same category as sidewalks, roads, and parks, and it is legal to take photographs of private property and private citizens from public space, there are implications for how privacy is undermined by ever-present technologies that can achieve precision imagery without detection.¹⁷ Indeed, WAMI's capacity to capture high-resolution images today that may lend themselves to facial recognition¹⁸ alongside pattern-of-life analysis may place doubt over the effectiveness of the right to record in public spaces to account for such developments to protect private citizens and property.¹⁹

In conflict settings, however, WAMI technologies, such as the BlackKite and RedKite from Logos Technologies, are designed to be light enough to be equipped onto a range of tactical aircraft and support ground troops in real time.²⁰ The Center for Strategic and Budgetary Assessments' 2020 report on deterrence by detection presented sophisticated ISR operations utilizing WAMI to ensure that U.S. forces are prepared for any eventuality.²¹ Tension persists between the protection of privacy under both domestic and international law, particularly in light of counterterrorism efforts and anticipatory action on behalf of states undertaking ISR operations beyond their borders.²² With regard to the United Kingdom, the Investigatory Powers Tribunal handed down a controversial decision in *Human Rights Watch v Secretary of State*, which determined that individuals living abroad were not subject to the provisions of the European Convention on Human Rights in the context of ISR.²³ Under the law of armed conflict, whether privacy rights guaranteed under international conventions and treaties, to which the United States is a party, can be violated by the

United States in its counterterror ISR operations remains a thorny area of concern in international law.

Commentary on the legal and ethical dimensions of WAMI has undertaken little investigation into the capacity of such technologies to ascribe identities of suspicion and risk to specific individuals and communities. Proponents' own words refer to WAMI technologies as having the capacity to "identify threat activities" or flagging individuals as suspicious.²⁴ In this context, it is critical to investigate how the inscription of such identities presents effects that replicate the dehumanization efforts of colonial surveillance efforts.

Colonial Surveillance on Mauritian Plantations and Beyond

In the early 19th century, 452,000 indentured people arrived in Mauritius from India, China, and other Asian and African nations to work on sugar plantations.²⁵ Indentured labor in Mauritius was designed as a colonial project to repair the rupture in capital production caused by the liberation of enslaved people and continue to meet the demand for raw materials in Britain, France, and The Netherlands.²⁶ Plantation estates reassumed their designation as sites for the ordering and reconstituting of individuals into disciplined objects of service toward the machinery of colonial production, with many owners expressing resistance to the establishment of jails or prisons, as they considered them to be refugees from the levels punishment and surveillance they would deploy on plantations.²⁷

Plantation architecture confined indentured laborers into poor accommodations, just as the enslaved people that were imprisoned before them.²⁸ Many occupied a nucleated village landscape—the Trianon plantation followed a "big house and slave quarters" pattern, informed by racial stratification and surveillance.²⁹ The structure of plantations was expressly designed to address what colonialists perceived to be a problem of space and surveillance, whereby surveillance must be as simple as possible to regulate enslaved and indentured behavior efficiently.³⁰ Architecture on plantations invoked a panoptic gaze, in which the indentured person's vision of the central house and witnessing of the plantation overseer is inhibited. Yet, the owner retains the disciplinary power of the gaze, instilling fear and coercion through the potential that the overseer may always be watching.³¹

Archaeologists have analyzed the implications of space and surveillance as emblematic of the panopticon, wherein sight and lines of sight, and the capacity to be perceived, serve as tools of discipline across the landscape of the plantation.³² Through the obscuring of sight lines and the concurrent perpetual sight of the plantation overseer, and disciplinarians, the status of indentured or enslaved is inscribed upon the existence of the surveilled community. In 1899, the U.S. Consulate issued a report of plague in Port Louis, Mauritius, which exemplifies the desire for constant surveillance and control—200 indentured people afflicted with plague had “stampeded” to escape police surveillance.³³ These individuals would be hunted as they scattered across towns with friends who would conceal and protect them.

Critically, the Consulate employed the language of the indentured escaping surveillance and finding concealment as safety. The notion that concealing oneself manifests as some semblance of shelter demonstrates how the architectures of existence in the plantation acted as a disciplinary mechanic to pacify and pathologize the surveilled community. In the context of the panoptic gaze, the plantation environment created new territories of being, stratifying life according to whether one’s existence warranted disciplinary treatment and control. Such systems constructed those who experience surveillance as deviant if they were to try to escape the territory of the plantation or the reach of colonial officials. If they were to obey the ordering of life on the plantation, the system would consider them disciplined or captured, with little between these poles of being.

Surveillance in colonial Mauritius also extended beyond indentured life on the plantation. The passage of Ordinance 31 in 1867 enforced a “pass system,” through which older indentured migrants would have conditions imposed upon their continued residence on the island following completion of their contractual stay.³⁴ If anyone possessing a pass failed to display it when requested by an inspector or law enforcement, they were highly likely to be arrested under vagrancy laws.³⁵ Surveillance and its disciplinary capacity for managing life across the colony were indispensable to the enforcers of imperial repression.³⁶ Norms and discursive practices were produced through multiple intersecting matrixes of surveillance, movement recording, and encoding of suspect or deviant behavior. This combination of practices and regulatory schemes would set boundaries around legitimate, non-suspect citizens or residents, as opposed to suspect, risky groups of individuals and communities.

These enveloping practices of norm production, discourse, and surveillance stratified relations across the colonial landscape into the legitimate and the suspect. At the same time, the construction of the suspect category dehumanized and dispossessed the surveilled community of the same degrees of agency. In a literal sense, the dichotomy between the capacity of the surveilled to witness or gaze upon the overseer and the overseer's capacity to surveil embodies this dispossession. They became disposable to the overseer—they acted in service of the production of resources to serve the colonial metropole. Still, they cannot act outside their disciplined category, fearing further punishment, ostracization, and dehumanization.

WAMI and the Postmodern Plantation

As Katherine McKittrick has described, “The plantation provides the future through which contemporary racial geographies and violences make themselves known.”³⁷ In this sense, the postmodern surveillance scape of post-9/11 paranoia makes it possible for imperial statecraft and national security discourse to return to the same dehumanization techniques of the plantation. WAMI technologies re-enact the colonial surveillance matrix to produce re-disciplined individuals and communities.

Perpetual WAMI surveillance was first employed in the homeland security landscape in Dayton, Ohio. Deputy Police Chief Richard Biehl supported PSS's efforts to install WAMI systems by stating that he wanted the public “to be worried” that they were being watched and would never know when.³⁸ This statement exemplifies the totality of the plantation structure of surveillance and panoptic gaze—the insidious desire to maintain perpetual surveillance, with the capacity to act on information gathered in secret, replicates the extreme disparity between the overseer and the surveilled. This is reinforced by the Ohio American Civil Liberties Union's concern that the project lacked a warrant requirement, clear retention and sharing policies, or provisions for independent oversight.³⁹ This approach developed new geographies that extended the plantation landscape into the ephemeral, through which the capacity to witness or perceive the overseer from the position of the surveilled becomes impossible.

In Baltimore, WAMI technologies were first identified to be in operation across the city in 2015, following the Baltimore Police

Department's (BPD) agreed 90-day trial period for PSS, initially conducted without public scrutiny or awareness.⁴⁰ The project deployed two planes equipped with a WAMI system of twelve 192-megapixel cameras, from which digital images would be stitched together to form a complete topological analysis of crime and deviance across the city.⁴¹ In the recorded dialogue of a Community Support Program focus group, a participant describes the capacity of the PSS technology to act as an independent, neutral observer: "That's the eye in the sky just watching the two parties."⁴² The eye-in-the-sky trope implies an almost superhuman level of observance, akin to divine imagery, through which everyone may be judged on equal footing. However, in the context of colonial surveillance architecture, it invokes the gaze of the overseer.

The overseer's gaze over the plantation, as established, does not observe a logic of justice and fairness—the priority of its capacity to observe is to maintain discipline and control over the population for capitalist production. With the PSS or BPD project in Baltimore, this is evidenced by the New York University's Policing Project's finding that the program strayed outside of its civil liberties assurances, tracking residents over multiple days and failing to delete images after 45 days.⁴³ The priority of the WAMI technology was to maintain persistent surveillance and relay information around the movements of people linked to crime scenes, not necessarily to protect private citizens from direct harm. At the time, the Baltimore City Council President, Brandon M. Scott, stated that the BPD had testified that the PSS surveillance planes "yielded zero pieces of evidence that could be used to fight crime."⁴⁴

Like the overseer's gaze and the plantation's concurrent structure, the WAMI across Baltimore produced narratives around suspect individuals and communities. Communities with Solutions, a recipient of PSS donations in Baltimore, defended the level of investment into a second PSS WAMI project in 2020, with representative Archie Williams stating that "it helps the person that's innocent and it helps the person that's guilty."⁴⁵ However, in the broader context of reporting on BPD's history of targeted policing of Black communities and racial bias across their enforcement actions, it would be predictable that the BPD's arsenal of surveillance technologies would be deployed primarily in Black neighborhoods.⁴⁶ The WAMI's gaze encompasses and aggregates particular communities into categories of crime, deviancy, and unlawful behavior, searching for data that warrants investigation

and interrogation of those becoming more suspect or risky over time. In this sense, just as the overseer intends to maintain the divergent status of the surveilled, the WAMI wants to preserve the status of the surveilled as potentially, or inevitably, criminal.

Conclusion

The post-2001 security landscape and its constitutive techniques are replicating the disciplinary techniques of colonial surveillance. Not only is this done through the employment of literal surveillance technologies, but their prominence in everyday life and the scale at which they can operate signifies a return to the panoptic gaze of plantations. WAMI technology is the most acute indicator of said return, in the capacity to operate perpetual and all-seeing surveillance and condensed recorded information for easy processing by operators of the WAMI systems. Utilizing such technology has accelerated the casting of different individuals and communities as suspect, deviant, or dangerous within the security landscape.

WAMI technology reopens colonial wounds and expands the panoptic scope. The plantation security scape enables unprecedented levels of intimate surveillance from exceptional distances through the level of ISR data collection offered by WAMI. It allows the operators to escape the returned gaze of the public. In legal reform, WAMI technology raises concerns around privacy law, the right to record, and law enforcement powers of surveillance, particularly as such technologies become more advanced and enhance the capacity to shield those conducting the surveillance.

To avoid and resist the continued integration of plantation geographies, legal scholarship and discussion must focus on destabilizing military practices in law enforcement and surveillance. The law of armed conflict's regulation of military technology continues to struggle with accounting for rapid innovation, and federal regulation of law enforcement will only replicate said struggles if militarization and enhancement of such techniques continue at the same rate. The discourse around WAMI technologies in the light of persisting colonial surveillance should contribute a flashpoint in such efforts to improve transparency and awareness around these practices. One can illuminate pathways toward avoiding the panoptic gaze through improved awareness and interrogation of these technologies.

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