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# Technology and Territorial Change in Conflict Settings: Migration Control in the Aegean Sea

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How does territorial change occur in conflict settings without a radical transformation of state interests and international norms? Territorial change is understood here as the unfolding of nonconflictual territorial visions, actions, and interactions in the absence of sovereignty transfer and/or transformation of the existing status of a disputed territory. This article addresses the question of territorial change in conflict settings by examining Turkey's coastal radar technology as an evolving border security infrastructure in the Aegean Sea. Entailing remotely controlled unmanned stations, mobile vehicles, and drones, Turkey's radar technology generates territorial change. Rather than merely enabling or constraining territorial engagement, technology actively produces territory by transforming it into a nonconflictual state. The altering of territory is achieved by the realignment of security conditioned by and functionally dependent on technology. Radar technology mediates Aegean security in ways that are different from its conventional external-oriented framework targeting another sovereign state. Yet, far from moving away from militarization, radar technology produces irregular migration as a new referent of militarized border security, while simultaneously bringing civilian actors to the fore. Territorial change materializes as technology alters the directionality of territorial vision, transforms "seeing" into "visualization," and makes possible new types of sovereign violence.

¿Cómo se produce el cambio territorial en situaciones de conflicto sin una transformación radical de los intereses de los Estados y de las normas internacionales? El cambio territorial se entiende aquí como el desarrollo de visiones, acciones e interacciones territoriales no conflictivas en ausencia de la transferencia de soberanía o de la modificación del estado existente de un territorio en disputa. Este artículo aborda la cuestión del cambio territorial en situaciones de conflicto examinando la tecnología de radares costeros de Turquía como infraestructura de seguridad fronteriza en desarrollo en el mar Egeo. Al incorporar estaciones no tripuladas, vehículos móviles y drones controlados a distancia, la tecnología de radares de Turquía genera cambios territoriales. En lugar de tan solo permitir o restringir la participación territorial, la tecnología produce activamente cambios en el territorio al transformarlo en un estado no conflictivo. La alteración del territorio se consigue mediante un reajuste de la seguridad condicionado por la tecnología y funcionalmente dependiente de ella. La tecnología de radares interviene en la seguridad del mar Egeo de forma diferente a su marco convencional orientado al exterior y dirigido a otro Estado soberano. Sin embargo, lejos de alejarse de la militarización, la tecnología de radares produce una migración irregular como un nuevo referente de la seguridad fronteriza militarizada, y al mismo tiempo pone en primer plano a los civiles como actores principales. El cambio territorial se materializa a medida que la tecnología altera la direccionalidad de la visión territorial, transforma el "ver" en "visualizar" y posibilita nuevos tipos de violencia soberana.

Comment le changement territorial intervient-il dans les environnements conflictuels sans transformation radicale des intérêts étatiques et des normes internationales? Le changement territorial est compris ici comme étant le déploiement de visions, d'actions et d'interactions territoriales non conflictuelles en l'absence de transfert de souveraineté et/ou de transformation du statut existant d'un territoire disputé. Cet article aborde la question du changement territorial dans les environnements conflictuels en examinant la technologie des radars côtiers de Turquie en tant qu'infrastructure de sécurité frontalière en évolution dans la mer Égée. Englobant les stations sans personnel contrôlées à distance, les véhicules mobiles sans pilote et les drones, la technologie des radars de Turquie génère un changement territorial. Plutôt que de simplement permettre ou limiter l'engagement territorial, cette technologie produit activement du territoire en le transformant en un état non conflictuel. La modification du territoire s'effectue par le réalignement de la sécurité conditionné par la technologie et fonctionnellement dépendant de celle-ci. La technologie des radars régit la sécurité égéenne de manières qui diffèrent de son cadre conventionnel qui est orienté vers l'extérieur en ciblant un autre État souverain. Pourtant, loin de s'éloigner de la militarisation, la technologie des radars produit une migration irrégulière comme nouveau référent de la sécurité frontalière militarisée tout en mettant dans le même temps les acteurs civils au premier plan. Le changement territorial se matérialise tandis que cette technologie change la directionnalité de la vision territoriale, transforme « l'observation » en « visualisation » et rend possibles de nouveaux types de violence souveraine.

## Introduction

The Aegean Sea has traditionally been characterized by interstate conflict over territory. The two parties of this territorial conflict—Greece and Turkey—have had long-standing bilateral disputes over issues of the continental shelf, airspace control, and sovereignty over small islets. The Aegean conflict is therefore a border conflict, where the demarcation of territorial borders has been at the center of interstate tensions and antagonistic attitudes. Under these circumstances, the conception of security over the Aegean has been external oriented targeting the other sovereign state

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and army. Security has been framed and addressed as state survival to be maintained against existential threats originating from the outside. This conception of security has constituted Greek–Turkish justifications of (the threat of) war and other violent means as a means to address their conflictual relations (Rumelili 2003, 2019; Heraclides 2019).

Through an empirical focus on Turkey, this article argues that a territorial change is occurring in the Aegean Sea, which concerns the unfolding of nonconflictual visions, actions, and interactions relating to territory and the territorial border. If conflict is “the articulation of the incompatibility of subject positions” about a territorial border (Diez, Stetter, and Albert 2006, 565), the nonconflictual here refers to the realignment of Turkey’s security understandings and practices in ways that are different from an outward-looking, interstate security framework conventionally pertaining to the Aegean Sea. The emergence of a nonconflictual engagement is underpinned by new understandings and practices as regards to what is to be secured, against whom, and how. Relatedly, referents of security become the irregular migrants, and their crossing and transgressing of borders constitute new threats to be addressed, including through coordination and cooperation between Greece and Turkey.

How has a nonconflictual territorial engagement unfolded in the Turkish Aegean? The question of territorial change in conflict settings has long occupied the field of international relations (IR) (e.g., Goertz and Diehl 1992; Diehl and Goertz 1998; Branch 2017). Kacowicz (1994), for example, investigated the conditions under which a disputed territory undergoes political and legal transformations without the utilization of violent means. The findings of Kacowicz’s comparative study indicate the significance of material interests and state preferences as well as international norms and rules in determining the success or failure of territorial change.

In the case of the Aegean Sea, however, there is no empirical support indicating a substantial change in conflict parties’ material interests or the development of shared normative understandings as regards to the disputed territory. On the contrary, and especially in the context of the strengthening of the far-right in Greece along with Turkey’s move toward authoritarian rule, “Greek–Turkish relations of today suggest a more worrying trend with regular standoffs over Aegean disputes and rise of aggressive rhetoric” (Rumelili 2019, 35). This led Heraclides (2019, 12) to the argument that “in the near future we may even witness a resumption of the Greek–Turkish rivalry if nothing drastic is done by both sides to avert this downward trend in relations.” The persistence of Aegean disputes makes the Greek–Turkish case an “anomaly” in the IR literature because of the limited power of international institutions on conflict resolution (Rumelili 2003, 2019). The two countries’ decades of membership of the North Atlantic Treaty Organization (NATO) and Turkey’s still ongoing European Union (EU) accession process have not led to a radical transformation of Greek–Turkish conflictual relations.

We are therefore left with a puzzle as to how a territorial change in the Turkish Aegean has happened in a context where those background conditions that rationalist and institutionalist approaches would expect are not present. To address this puzzle, this article invites for a shift of research focus to technologies with a particular focus on Turkey’s coastal radar technology as an evolving border security infrastructure in the Aegean Sea. In 2013, Turkish state authorities and HAVELSAN—a Turkish software and technology company in areas of defense, security, and

information—signed the Coastal Surveillance Radar System (CSRS) project. With a multi-million budget, the CSRS is built upon a three-layered security architecture aiming to deliver 24/7, uninterrupted surveillance of the Aegean Sea and the adjacent Turkish coasts. This three-component network involves (1) radar stations with electro-optic sensors installed along Turkey’s western coastline, (2) four identification and tracking centers in western cities, and (3) CSRS headquarters in Ankara (HAVELSAN 2015, 2017). Together with mobile radars and drone technology deployed by other state actors, the coastal radar system promises to provide software-based real-time tracking, streaming, and processing of information and intelligence between the sea and the land. The first phase of the project has been completed and its full operation is expected to materialize throughout 2021.

A growing scholarship at the intersection between IR and science and technology studies (STS) points to the centrality of “non-human things” (Nexon and Pouliot 2013, 343), which have their own *agency* (Latour 2005) in shaping IR (e.g., Bueger and Gadinger 2015; de Goede 2018; Adler-Nissen and Drieschova 2019; Monsees 2019; Anwar 2020). I build on this literature and move beyond that by making a theoretical argument on territorial change in conflict settings by means of technology that brings into existence nonconflictual security visions, practices, and interactions. I examine how the radar technology alters the directionality of the state’s security vision over territory, transforms “seeing” into “visualization” based on risk, and enables and expands sovereign violence beyond a state-centric and outside-oriented focus.

I develop my argument in two steps. First, I offer a brief review of existing IR studies on conflict, territory, and technology and point out the prevailing tendency to adopt a human-centered approach to technologies, which are merely understood as tools for augmenting, facilitating, and constraining actions. I then bring in STS concepts to argue for the agency of technologies in the production of territory by constituting new understandings and practices of security at and beyond the local level (e.g., Aradau 2010; Bellanova and Duez 2012; Grove 2015; Bueger and Edmunds 2017), including in the area of migration control (e.g., Follis 2017; van Reekum 2019). This section concludes with the observation that IR research on territorial conflicts has yet to benefit from STS insights.

Second, drawing on Martin Dodge and Rob Kitchin’s concept of “code/space” in airport travel, where code and space are in a “mutual relationship” (Kitchin and Dodge 2011, 16), I develop a conceptualization of territorial change as generated by and dependent on technology. The migration/security nexus is primarily mediated by territorial visions and (civilian) interventions and interactions enabled by technology to the extent that when this technology no longer applies to territory, the Aegean Sea returns to its conflictual state.

This also means that classical geopolitics surrounding the Greek–Turkish sea border does not cease to exist, but it is rather accompanied by a novel form of technologically produced territory. Similarly, the development of a nonconflictual territory in the Aegean Sea does not mean the disappearance of militarized border security in this particular geography. Just the opposite, the investment in Turkish coastal radar technology exemplifies the consolidation of the militarization of border enforcement. As Reece Jones and Corey Johnson (2016) convincingly show, far from being immune from militarization, border policing has acquired, over the last thirty years, a highly militarized

nature. Militarization concerns “the implementation of new militarised technologies, hardware, culture, strategies and organization” (Jones and Johnson 2016, 190) in the management of new societal anxieties of transnational nature, particularly the unauthorized border crossers (Casas-Cortes, Cobarrubias, and Pickles 2016; Garelli and Tazzioli 2017). Technologies and tactics of security that are developed and traditionally utilized in the military realm are nowadays part and parcel of monitoring and intercepting civilian populations on the move. This works hand in hand with the reframing and extension of state sovereignty and violence beyond a narrow focus on threats coming from the enemy state’s military (Jones and Johnson 2016; Frowd and Sandor 2018).

### Technology and Territorial Change in Conflict Settings

Most IR research on international conflicts has approached questions of territory and technology as variables. Territory has been conceptualized as a “source of conflict” (Goertz and Diehl 1992, 12) due to its material, strategic, and symbolic value to the parties concerned (Starr and Thomas 2005). Under these conditions, change takes the form of territorial transfer as a result of military conflict and/or independence and state formation processes (Goertz and Diehl 1992). Scholars have also observed that nonviolent forms of territorial change occur through the transformative effect of international norms and through changes in strategic calculations, which together determine the likelihood of peaceful territorial change (Kacowicz 1994).

In addition to the rich scholarship on the facilitating and constraining role of high technology in international conflicts (e.g., Cowen and Gilbert 2007; Kindervater 2017; Mir and Moore 2019), studies have looked at the growing importance of technology in international negotiations over disputed territories (Atzili and Kadercan 2017). For example, Wood has studied the application of the geographical information system to territorial changes and shown the potentiality of this particular technology “to make decision-making more transparent, analysis of options more thorough and the presentation of results more convincing” (Wood 2000, 72). Yet, nevertheless, the tendency of IR scholarship is to accord technology a secondary, intermediary role in conflict settings.

One important recent study is by Jordan Branch (2017), who foregrounds technology as an object in its own right in the study of territorial conflicts. Drawing on the STS view of agency as the ability to “make a difference in the course of some other agent’s action” (Latour 2005, 71), Branch investigates how the replacement of paper maps by digital mapping technologies has transformed international negotiations over territorial change. Such transformation lies in that digital mapping tools “present new capabilities, features, and representations” that fundamentally transform negotiation processes and outcomes regarding territorial conflicts (Branch 2017, 557).

As explained in the introduction, there is currently no institutionalized negotiation process over Aegean disputes between the conflict parties. The institutional conditions and circumstances that Branch (2017) considers for technology to exert agency on territorial change are therefore not existent in the Greek–Turkish case. Yet, the Aegean Sea is still transforming, which, as I argue, is generated by Turkey’s most recent radar technology. Technological capabilities, features, and representations do more than influencing diplomatic practices. Technology, by means of its practical operation, actively brings territory into existence around the migration/security nexus.

In this respect, the specifics of digital technologies make a difference in the production of territory (Bellanova and Duez 2012). Turkey’s coastal radar technology promises innovative options by means of, for example, circular polarization, automatic tracking of hundreds of targets, and low probability of intercept. Taking EU migration control as research focus, STS scholar Karolina Follis argues that digital technologies of border control, including radars, transform the sovereign vision and “fundamentally alter the nature of national borders” (Follis 2017, 1005). Developments in technology make the remote control of unwanted border crossings possible by means of extraterritorial mobility tracking and the production and exchange of images. In that way, technologies generate a “technologically mediated ... vision” beyond existing spatial possibilities and conditions (Follis 2017, 1011).

Territorial vision mediated through technology is operational. Digital technologies produce fast and vast amounts of such data as visual images, which do not simply represent a reality “out there,” but actively participate in the creation of this very reality (Farocki 2004). An understanding of vision as operative “foregrounds the active doing of images” (Hoel 2018, 11) along with metric and biometric data (Follis 2017). Shifting vision from “seeing” by the human eye to “visualization,” digital technologies help transcend the human ability and the human scale to intervene (Farocki 2004). Visualization is operational; it enacts borders and migration by connecting “disparate activities and visual materials” to one another (van Reekum 2019, 628). STS research on border control has shown that digital technologies, including radars, have effects that cannot be entirely known or predicted beforehand. The unanticipated effects of the technology have been observed in the construction of migrant identities and bureaucratic orders in EU asylum practices (Pelizza 2020) and the generation of particular encounters between state actors and border crossers at sea (Dijstelbloem, van Reekum, and Schinkel 2017).

Mundane digital practices of identification, surveillance, and communication of border control enable new connections between actors, including previously disconnected ones (Bueger and Edmunds 2017). Identification at a local border site relies on and feeds into databases, which are continuously updated through the integration of information, intelligence, and risk-analysis inputs from various local sites (Frowd 2014; Follis 2017). These connections in turn alter conduct on the ground by activating border interventions at unusual sites, such as internal controls (Frowd 2014), and push the territorial limits of security practices at sea (Bueger and Edmunds 2017).

This article’s theoretical argument on the production of nonconflictual territory draws on Dodge and Kitchin’s concept of code/space in their work on airport travel (Dodge and Kitchin 2004; Kitchin and Dodge 2011). These scholars differentiate code/space from coded/space. In the latter case, code—defined as software—contributes to the constitution and functioning of space by reinforcing, monitoring, and accelerating. The code is secondary to space in that even “if the code fails the space continues to function as intended, but not necessarily as efficiently, safely, or with as little cost” (Dodge and Kitchin 2004, 198).

In code/space, on the other hand, the relationship between technology and space is one of “mutual constitution” (Kitchin and Dodge 2011, 16). Space does not have “a secure ontology,” but is “constantly in a state of becoming” through the code (Kitchin and Dodge 2011, 16). The code “transduces” space in such a way that “how the space is used and produced is predominantly mediated by code, and the



code and its data exist in order to produce the space and its attendant spatiality” (Dodge and Kitchin 2004, 198). In this “dyadic” relationship, space is dependent on technology in functional terms rather than technology merely influencing spatial production. Put differently, if the software fails due to a system crash, code/space also stops functioning. For example, the check-in area of an airport ceases to operate as such and turns into a random waiting room crowded by people with luggage (Kitchin and Dodge 2011). Yet, code/space is not determinative or universal. It is through practices and social interactions that code/space is produced and mediated in “contingent, relational, and context dependent” ways (Kitchin and Dodge 2011, 18).

What insights can be drawn from the concept of code/space to study the relationship between radar technology and territorial change in the Aegean Sea? I argue that radar technology transduces territory into a nonconflictual state by transforming understandings and practices of security. In the state-centered and external-oriented security framework, the role of technology in the Aegean Sea is one of facilitation, domination, and confrontation with the other conflict party. Turkey’s (as well as Greece’s) continuously updated material capabilities and aerial reconnaissance equipment serve the army’s strategic purpose of collecting imagery intelligence and the observation of maneuvers by the other side for pertinent action and analysis. In the event of a failure in technology, state surveillance and operations might be disrupted or restricted. Yet, the functioning of the Aegean as a disputed territory is maintained. State interests remain untouched along with the aggressive rhetoric and feelings of mistrust toward one another. In the recently installed radar technology in the Aegean Sea, however, the nonconflictual territorial engagement centering migration control is functionally conditioned by the electronic and computer-based identification, surveillance, and communication equipment. If this technology is removed, the Aegean Sea is back to its conflictual position.

### Methods

I used case study method as commonly employed in qualitative research on migration and borders (e.g., Tsourapas 2018). John Law states that “In one way or another STS almost always works through case studies” (Law 2015, 32). This is primarily because STS scholarship shows a high level of attentiveness to empirical detail and provides “thick descriptions,” which are best achieved through case studies (Sørensen 2010, 56; Anwar 2020). The case study method relies on “a strategy of looking down” (Bueger 2014, 392) by paying close attention to practices (Bueger 2014; Bueger and Gadinger 2015; Adler-Nissen and Drieschova 2019).

The primacy of the local in STS research makes the selection of “sites” for observation and investigation a key research strategy. As Bueger defines, “a site is in essence a certain locale, a place composed of practices and material arrangements. It can be an organization, a unit or a distinct geographical place hosting a dense ensemble of practices” (Bueger 2014, 392), such as the court room (Anwar 2020). Given this study’s focus, the choice of sites is informed by geography (Turkey’s western sea and the coasts), objects (border technologies), actors (security professionals developing and using material objects), and practices (irregular migration management). I employed the “multi-sited comparison” method as developed by the STS scholar Estrid Sørensen (2010, 55–57). In case studies, the multi-sited comparison method has added value since it incorporates different field sites for observation and

investigation to highlight connections, relationships, and interactions (Sørensen 2010, 55–56). The primary source of data for this study comes from multiple fieldwork trips that I made to Turkey between 2015 and 2019. The fieldwork visits took place in three cities: Çanakkale, İzmir, and Muğla. Due to their geographical location, these cities have proven to be the primary sites for the concentrated and increased deployment of border technologies.

This paper builds on the empirical material collected through expert interviews, participant observation, and document analysis when following the radar technology. Following material objects and technologies means studying their everyday usage in concrete technical–institutional situations (Adler-Nissen and Drieschova 2019; Anwar 2020) across multiple sites (Latour 1999; Bueger 2014). Practically, the process first entailed semistructured expert interviews ( $n = 40$ ) with Turkish security officials between 2015 and 2019 accompanied by participation observation. The latter rested on the tracing and observation of the radar technology for the purpose of registering, mapping, and deciphering their physical location, movements, operation, and connections with other objects “and their physical surroundings” (Mutlu 2013, 174). Furthermore, I carried out a formal visit at a Turkish Coast Guard Command (TCCG) station in Çanakkale across the Greek island of Lesbos and was able to ground technologies in their local sites through “the recording of bodily movements, speech, and the handling of artefacts in real time” (Bueger and Gadinger 2015, 457). I gained access to the coastal station building and search-and-rescue ships and observed how border actors practiced surveillance by handling graphic displays, images, thermal cameras, and night vision apparatus. The main type of data that I sought through interviews was to understand how the interviewees understood and utilized technology in their everyday practices. This allowed me to gather unique insights into the explicit and implicit structures of meanings that security officials attribute to security, territory, and their related practices. When the respondents were asked to describe their perceptions, tasks, and responsibilities, it became clear that the outward-looking and state-centric type of security is very much prevalent in making sense of territorial engagement in the Aegean Sea. While the law enforcement component of security was emphasized when detailing about legal and administrative duties, the central security frame of this territory is clearly shaped by Greek–Turkish conflictual relations.

However, this “explicit knowledge” and “articulated meaning” proved to be “of secondary relevance” (Bueger 2014, 386) when the focus of interview exchanges was shifted to technology. This enabled to uncover implicit knowledge (Bueger 2014) underpinning everyday practices. The agency of technology became obvious when state officials were invited to elaborate on the utilization of technologies and the actions and interactions emerging thereof. The interview data revealed the mediating role of technology in rearticulating security in ways that cannot be captured by looking at public discourse and/or explicit knowledge. Several Turkish coast guard officials referred to their education in the military academy in their framing of security and the Aegean Sea and used such terms as “motherland,” “national security,” and “external threat.” Yet, when follow-up questions addressed the relationship between technology and practices, the type of security and its referents were articulated in novel ways. One interview moment that is worth recounting is when a coast guard official was offering details about the use of mobile vehicle technology and paused as if now realizing that mundane practices were not entirely

underpinned by the security understanding acquired during academic training. He jokingly stated: “We are trained to protect the motherland security, right? Against the enemy that comes from the other side of the sea. By also assisting the Turkish Naval Forces in wartimes ... But this is not what I mostly do on an everyday basis” (personal interview with a TCGC sergeant, July 25, 2017, Çanakkale). This, combined with field observations, showed that rather than merely contributing to practices, technology has an active role in territorial engagement.

Fieldwork stretched over several years enabled me as a researcher to follow practices forward in time, thereby illustrating the agency of technology in security settings. From my first fieldwork trip in Summer 2015 until Summer 2019, I have been able to trace how the introduction of a new technology has gradually entered and shaped daily practices. The entry of the radar technology in various border sites has been central to creating new understandings and possibilities for human action and generated new forms of interaction between state actors.

Documents as the third source of data collection contain important clues on implicit knowledge underpinning practices (Bueger 2014). I analyzed official written material by the TCGC and others, such as websites, press releases, reports, booklets, and daily news along with monthly and yearly statistics. While documents do not enable direct proximity to the field, they are still “primary source data” on security technologies, especially when the latter’s “research, development, and production are (...) kept under a veil of secrecy” (Grondin 2013, 192). Similar to its execution in the examination of the drone technology in warfare (Grondin 2013), this research’s document analysis incorporates a range of sources on technical specificities of the radar technology. These include Turkish defense journals and magazines, project tender calls and factsheets, product promotion material on border technologies, and the webpages and periodicals of the technology company of HAVELSAN, which is the main designer and producer of radars and electro-optic sensors situated at Turkey’s western borders.

Documents also come in the form of visual materials, which provide “important second-hand observations” about objects and their usage (Bueger 2014, 402). Videos by state institutions and technology companies on social media (e.g., YouTube) not just promote new border projects and technologies, but also help us to understand and examine what sort of border security is inscribed in their design and usage. The empirical data used in this research also rely on such visual materials.

## Technology and Territorial Change in the Aegean Sea

### *Directionality of Sovereign Vision*

As the Aegean has long signified the terrain of classical geopolitics, technologies deployed by Turkey (similar to Greece) have served as the means to achieve existing goals in line with the interstate security framework predicated upon a strict inside/outside territorial differentiation. The role of technology was one of augmenting and reinforcing the sovereign vision embedded in classical geopolitics of war and armed confrontation. As a result, technology’s directionality of concern was external focused. Satellite intelligence, (unmanned) aerial vehicles, defense, surveillance, and mobile electronic warfare radars, and air-to-air anti-radiation missiles have supported the sovereign vision to look *forward* and *outward* in order to defend the national

territory and population against the perceived external enemy, be it the army of another nation state or a non-state armed group. It is therefore not surprising that Turkish Naval Forces and Turkish Air Forces have been the chief actors of security in the Aegean Sea in navigating, monitoring, and acting upon territory with the help of continuously updated warfare technology.

Turkey’s new coastal radar technology alters the directionality of the sovereign vision toward new security understandings and practices. The features of technology along with its everyday operation turn the directionality of concern to the policing of migrants and their movements. Technology partakes in the growth of activity and interactions between law enforcement actors, whose presence in the Aegean Sea has traditionally been restricted.

First, the radar technology realigns the sovereign vision by enabling to look *back* and *inward*. The new type of vision is functionally possible through the technical features of the radar technology. Praised as national and domestic products still to become fully operational for the coastal surveillance system, the so-called SERDAR 4M and 7M radars have rotating antennas, which enable 360-degree surveillance of targets and their movements coming from any direction, while in practice their coverage is concentrated primarily on the coastline and the immediate sea.<sup>1</sup> Furthermore, the low probability of intercept feature of the radar technology allows for the fast automatic identification and tracking of numerous targets in critical coastal towns while escaping any radar detection equipment. Together with the low side lobe and close range performance characteristics, the radar technology optimizes surveillance coverage by addressing blind zones that occur due to geographical obstacles, such as mountains along the coast line.

Second, and relatedly, the radar technology makes a difference in its ability to deliver “phantom images” (Farocki 2004). Originally from the film industry, the concept of phantom images refers to those images that “are taken from a position that a human cannot occupy,” such as a camera attached under a train (Farocki 2004, 13). Put differently, a phantom perspective is about “the capacity of machine-made images to leap beyond the human scale” by capturing what would otherwise remain “outside the scope of human sensibility” (Hoel 2018, 13) as studied in the area of automated facial recognition in security practices (Lee-Morrison 2019). The technical features of the radar technology in Turkey’s border architecture, such as rotational antennas and the low side lobe, produce a zone of vision to capture those areas of the national territory that previously remained outside the sovereign gaze. The backs of the hills or different sides of isolated bays have become part of the sovereign vision thanks to the technological innovations of the radar technology.

As such, the technical possibilities offered by the radar technology constitute a new relationship between security and territory in the Aegean Sea. They do so by turning the gaze toward the inland territory and outbound movements by civilian population groups as emerging targets of security to be addressed. It is through the radar technology that territory is constituted and acted upon in line with the security/migration nexus. Daily activities are predominantly technology mediated. Turkish practices of interception are prompted and not merely assisted by radars and accompanying drones, which redirect the sovereign gaze to what is

<sup>1</sup>“Serdar: Coastal Radar Surveillance Family.” *Aselsan*. Accessed December 25, 2019. [https://www.aselsan.com.tr/SERDAR\\_Coastal\\_Surveillance\\_Radar\\_Family\\_3336.pdf](https://www.aselsan.com.tr/SERDAR_Coastal_Surveillance_Radar_Family_3336.pdf).

coming from *behind* and *from within* the national territory. For example, Turkish drones flying over the Aegean Sea in the adjacent coastline look back to track and trace movements on land and call forth law enforcement operations to prevent embarkation in remote places with restricted visibility. If this technology disappears, the sovereign vision reverts to its traditional concern with territorial disputes. Without radars and the accompanying drone technology, law enforcement activities can still take place but rather in sporadic ways and mostly through patrolling with inadequate efficiency and capacity.

A striking example of the transduction of the Aegean space into a nonconflictual form of territorial engagement is the installing of a coastal radar station on the Çavuş Island as part of Turkey's CSRS project. Possessing the technical features of the radar technology as outlined above, the Çavuş Island surveillance tower transmits data from the island and its surroundings to a coast guard station on the Turkish mainland. The latter controls the radar system on the island from a distance. What makes the stationing of a radar technology on the Çavuş Island especially relevant for this article's argument on territorial change can be found in the history of Aegean disputes. This Turkish island is only 1 nautical mile away from the Imia/Kardak Islet, which almost started a war between the two NATO allies in December 1995. The background is a "flag race" between Greece and Turkey as both parties claimed sovereignty over the rocky islet following a Turkish cargo boat captain's refusal to receive Greek assistance after running aground. The events illustrated the extent to which "that 'piece of rock' was endowed with so much nationalist significance in the two states through representations of the other party as different" (Rumelili 2003, 232). The Imia/Kardak Islet remains a source of tension between Greece and Turkey as became clear in January 2021, when a collision of the two countries' patrol boats in the immediate vicinity of the islet was responded by a rhetoric of harassment and violation of state sovereignty (Euronews 2021). The persistence of the conflicting claims over the Imia/Kardak Islet notwithstanding, a new vision is in operation within this territory—one that is centering migrants and their outgoing mobility to the EU. Since becoming active in 2018, the surveillance tower on the Çavuş Island has made possible the interception of hundreds of migrants both at sea and on the Turkish mainland.

Technology's agency regarding territorial change also relates to the amplification of civilian interactions. The emergent sovereign gaze works to connect the previously disconnected activities of Turkish law enforcement authorities, each of which has a specific precinct as prescribed by national law. Without the mediating role of the radar and drone technology, law enforcement activities in migration control are disparate and disconnected. The Turkish police and gendarmerie mainly rely on checkpoints and identity documents (İşleyen 2018a), whereas the coast guards carry out patrolling and use low-technology tools, such as binoculars, to watch the sea. If interactions take place, these are either very infrequent or sequential with a new actor taking over administrative responsibility upon interception and disembarkation (İşleyen 2018b). Here, the focus is on general law enforcement to preserve social order with migration control being one among numerous daily cases. Radar and drone technology radically transforms existing practices by assembling civilian actors around the policing of irregular migrants as the focal point of security. Drones at the disposal of the gendarmerie monitor the roads leading to isolated bays, and this inward-looking vision prompts the

stopping of the suspect vehicle on land or sends an alert to the coast guards to prevent boat departures or newly commenced irregular border crossing journeys. In a similar vein, the security vision generated by radars travels to the mainland to initiate action at a distant place by the police or the gendarmerie. These coordination and cooperation practices are actively produced by technologies rather than merely assisted. A possible collapsing of technology will lead to the decoupling of these civilian actors and the retreating of territory to its conventional conflictual status.

#### *Visualization through Data and Risk*

The radar technology generates territorial change by extending practices of "visualization" to migration control as a new source of insecurity, thereby moving referents of security beyond a focus on the enemy state. Having its origin in the field of modern war, visualization emerged as a new "skill" to manage "battlefields that were too large to see with the naked eye" (Mirzoeff 2015, 27). Visualizing is a highly specialized set of skills, techniques, and technologies to watch over a terrain, gather information and images, and observe activities to devise strategies of action. Over the course of its evolution, visualization has been enabled by maps, balloons, cameras, and more recently drones and other digital technologies (Mirzoeff 2015). The Aegean Sea is no exception to the centrality of visualization in territorial control as "huge amounts are spent on arms procurement aimed at the other side and for costly dogfights between military aircraft on a regular basis" (Heracleides 2019, 90).

What matters for this study is that visualization is getting a foothold within Turkish law enforcement practices. Yet, rather than occupying a secondary position in the service of existing threat perceptions and state interests over territory, Turkey's recent radar technology actively produces territory through the operational function of visualization. Without the radar technology, Turkish law enforcement practices in the Aegean Sea rely almost exclusively on an ordinary form of "seeing," which, as Mirzoeff defines, is visual perception achieved through "human ground-based assessment" (Mirzoeff 2015, 109). Irregular migration has, for the most part, stayed outside the scope of visualizing the Aegean Sea, while Turkish coast guards overwhelmingly relied on the naked eye in the depiction of the sea and the coastline through patrolling and the use of devices with limited technical features and range of vision. As one Turkish coast guard sergeant based in Çanakkale across Lesvos stated in July 2017, up until six months before, the station did not even possess thermal cameras (personal interview, July 24, 2017, Çanakkale). In line with this, operational practices principally took the form of a reactive approach, namely responding to an existing situation or event with a view to restoring order and safety. A bay or a shore is a random location of intervention to rescue a drowning tourist or arrest a ship smuggling cigarettes and alcohol. In a similar vein, irregular migration used to be "seen" as part of wider law enforcement operations in the Aegean Sea. Radar and drone technology makes a fundamental change by transforming seeing into visualization. It does so by constituting migrants and their outgoing mobility as new "areas of government concern" in the field of border security (Mirzoeff 2015, 121; Dijkstra, van Reekum, and Schinkel 2017) in line with which nonconflictual understandings and practices of territorial engagement develop.

To start with, technologies introduce the Aegean Sea to risk-based and data-driven visualization. The interstate



security gaze works to visualize the physical terrain “as a whole” (Mirzoeff 2015, 102) in concordance with the prevailing Turkish conception of national security that “every inch of the motherland is sacred.” This, on a moral level, obliges the Turkish army professional “to give each square meter of the national territory the same care and devotion” (personal interview, June 14, 2017, TCGC Headquarters, Ankara). The criticality of military in state security is deeply entrenched in Turkish geopolitical knowledge production (Bilgin 2007). Thus, in the conventional form of visualizing the Aegean Sea, the military seeks to master the landscape in its entirety, whether by means of calculating distances or measuring miles, aerial reconnaissance, and collecting and registering information, intelligence, and images. The continuously advancing military technologies at the disposal of the Turkish army come to the rescue of the latter, so it can visualize despite not being able to see, for example, infringements of air and maritime space by Greece. With visualization gaining ground in migration control that had long been addressed through seeing, not only national territory becomes subject to a systematic and calculative form of measurement, but visualization also enacts nonconflictual security by addressing the sea, bays, shores, islands, islets, and the coastline through risk- and data-based understandings and practices.

Such territorial change relates to the operational effect of visualization in bringing into existence “events” at sea, thereby rendering the Aegean Sea as a site of irregular migration management. In the state-centered context of security, the events observed, identified, selected, registered, and interpreted are, for instance, the coordinates of a Greek military flight activity, “dogfight” incidents, army exercises by Greece on islands close to the Turkish mainland, and geographical and time-related information about Greek ships and aircraft navigating across the disputed conflict. The Aegean Sea has long been a key site for irregular border crossings from Turkey to Greece as documented by academic studies and shown by media reports affirming their persistence over decades (İçduygu 2005). That said, it is through visualization that such “happenings” in the Aegean geography come to matter for security through identification, registration, representation, tracking, decision, and intervention.

The radar technology propels “itinerary” thinking as a novel way of understanding and practicing security in the Aegean Sea. Underpinned by a specific conception in visualizing territory, itinerary thinking is about monitoring, identifying, assessing, and predicting migrant movements in a particular territory rather than aiming at preserving borders understood as hard and impermeable demarcation lines between nation states (Cobarrubias 2019). Turkey’s radar technology sets in motion itinerary-based security by drawing out events not just in higher quantities, but also through the collation of bits of data and images to arrive at security facts leading to concrete physical interventions at sea.

In this respect, a key moment is the stitching of data to observe, detect, define, and intervene into events. The technological attributes of the radar technology grant a real-time tracking and stream of information from the sea and the coasts along with its communication across databases and actors. The system operates in the following way: A radar station detects a boat in the sea and sends this radar contact for identification to one of the four CSRS identification and tracking centers. The process is supported via the system’s headquarters through data gathered from other Turkish public authorities, such as the Ministry of Customs and Trade. If the radar contact is identified as suspicious on the

basis of existing information, the responsible identification and tracking center is notified. The center then deploys via radiotelephone the coast guard team that is closest to the suspect boat for further action. What also come out of this process are the so-called maritime tactical pictures through radar coverage, identification, and the funneling of data and images from one security site to the other. Itineraries are created through the tracking of vehicles with the same track number throughout their entire passage. The process is called the correlation method, where the individually assigned track number is taken over by each radar once the vehicle enters its area of coverage. The collected radar data are transmitted to relevant centers, and the tracking information from different radars is linked together to produce a real-time maritime picture to shape operational exercises and/or shared with relevant authorities, partially or completely (HAVELSAN 2015). Being another step in the movement from seeing to visualizing the Aegean, maritime tactical pictures partake in piecing together bits of the sea and the coast to construe events on the basis of risk- and data-based border security.

Itinerary thinking does not play an intermediary role by serving preexisting territorial perceptions and interests; it rather produces territory. In the absence of the radar technology, the Aegean Sea continues to perform its conventional role as a disputed territory, whereas irregular migrants, though continuously crossing the border, remain outside the scope of visualization. The migration/security nexus is enabled by the radar technology, whose possible termination would mean that the Aegean goes back to its conflict-oriented and state-centric type of visualizing events, movements, and threats. If a radar contact of the tracking of a ship fails, no maritime picture or migrant itinerary can be composed meaning that irregular border crossings will no longer be addressed in a calculative and systematic fashion. Civilian state actors will themselves be dissociated not just from one another but also from the Aegean Sea. It is data captured through the radar technology that activate communication and coordination between law enforcement authorities at diverse sites of information gathering and exchange. Otherwise, any vehicle information stored in the computer of a ministerial staff member will not be connected with the sea because there will be no numeric and non-numeric data requesting it as part of Turkish coast guard operations.

#### *Sovereign Violence*

The unresolved Aegean disputes have had the outcome of a long-standing Greek–Turkish arms race as a politics of deterrence. Competitive purchases of military technologies have been tied to a classical geopolitics of security, and the sovereign territorial vision over the Aegean has worked to augment or restrain coercive and aggressive use or threat of interstate violence. Sovereign violence, however, is not limited to interstate security. It is rather conditioned and transformed in line with changing, and not necessarily competing, conceptions of security. States deploy “martial” as well as “nonmartial” forms of violence, with the latter through “extending the bureaucratic and infrastructural powers” in order to address risk and uncertainties revolving around “‘non-traditional’ security threats like organized crime, irregular migration, and terrorism” (Frowd and Sandor 2018, 74).

As noted above, there has not been a transformation of Greek–Turkish threat perceptions and antagonistic attitudes regarding the Aegean disputes. Violence in this



particular geography is still very much determined by an inside/outside logic focusing on state survival and the protection of the inside population. The persistence of practices of deterrence, coercion, and even death showed itself once again by the crashing of a Greek fighter jet into the Aegean Sea in April 2018 shortly after a dogfight with Turkish F-16 pilots (*New York Times* 2018). That said, a new form of sovereign violence is unfolding in the Aegean Sea through the agency of the radar technology by realigning security toward a concern with movements by population groups rather than the enemy state. First, the radar technology brings civilian actors to the fore in the execution of sovereign violence. This is particularly the case for the Turkish coast guard institution, which has had a “low profile” in the Aegean Sea. Turkish coast guards have been and are still appointed to a coast guard station for a two-year term, and most interviewees expressed the previously widely accepted view of an appointment to Turkey’s western coast as a “nice break” in a quite summer town. Turkish coast guard presence in the disputed Aegean geography has grown in a larger spatial outreach of sovereign vision, action, and interaction. Mobile radars and drones by Turkish coast guards cover distances that used to come under the gaze of interstate security framework. Tracking and tracing propel concrete interventions at sea by means of interception and disembarkation labeled as “pullbacks,” thereby redirecting violence to new referents of security. Sovereign violence takes a new shape resulting in territorial exclusion, injuries, and deaths of migrant groups across the Aegean geography (Topak 2014). Without the territorial conditions of possibility offered by the radar technology, Turkish coast guards would still stop migrant boats in the context of broader daily law enforcement activities of restoring social order, yet in rather incidental ways. Technologies turn nonmartial surveillance and intervention into systematic violence through their advanced detection, separation, and accuracy capabilities for above-water targets.

Second, the expansion of sovereign violence to civilians gives way to actions and interactions beyond the nation state in ways that are essentially different from a conflictual type of territorial engagement. In line with the extension of the spatial limits of surveillance, daily operations of Turkish law enforcement authorities increasingly take place beyond national borders. The stopping of a migrant boat in international waters is no longer an exception in Turkish search-and-rescue operations. These operations in international waters transform the governance of the sea. It is because Turkish coast guards are nowadays navigating the landscape and targeting populations in those terrains where movements and activities would traditionally set off alarm bells by either side of the Aegean (personal interview with a TCGC sergeant, July 25, 2017, Çanakkale). The gaining of prominence of migration in Aegean security even involves Greek–Turkish coordination and cooperation. In their daily search-and-rescue operations, Turkish coast guards transgress the borderline and intercept migrants within Greek territorial waters and bring them back to the Turkish mainland. Far from feeling harassed or threatened as one would expect in an interstate security framework, the Greek side turns a blind eye to such activities (Karadağ 2020). This everyday reality is made possible by technology. Bilateral coordination and cooperation to execute violence are generated by radars collecting images, specifying coordinates, and calculating distances and time. It is by evaluating and sharing numerical and non-numerical radar data that the conflict parties agree on an unusual territorial rule over the Aegean Sea.

Third, and rather paradoxically regarding the second point, the radar technology brings into existence sovereign violence by registering, recording, and archiving incidents between the Greek coast guards and migrants. Turkey and Greece have long observed, collected, and publicized data to demonstrate violations of sovereignty by the other conflict party and used these data in support of their conflicting territorial claims, such as airspace control. Technologies have fostered both sides’ ability in the pursuit of existing material interests and goals and justified the continuous advancement of military equipment (Kollias 2004). Turkey’s expanding border surveillance infrastructure makes visible novel aspects of sovereign violence by seizing distinct moments of Greek activity in the Aegean Sea. Videos assisted by drone footage of the Turkish Armed Forces document Greek violations of international refugee law through “push-back” operations. These videos are stored and increasingly shared publicly. Recordings take the form of audio descriptions of the incident, including earlier communication between the two states, the exact coordinates of search and rescue, vehicle information, and warnings by Turkish coast guards as to the Greek violation of international human rights principles (TCGC 2020). The inhumane treatment of migrants and the latter’s suffering and drowning at sea are not new phenomena although these have largely been invisible in the context of classical Aegean geopolitics. Violence acquires a new materiality through technology by adding new referents of violence beyond bilateral conflictual relations.

### Conclusion

Through the case of Turkey and the Aegean Sea, this article asked how territorial change can occur in conflict settings, where there is no radical transformation in material interests and normative understandings of the parties involved. To address this question, I turned to STS scholarship on the role of technology in organizing the social world. With a particular engagement with Dodge and Kitchin’s work on code/space in airport travel (Dodge and Kitchin 2004; Kitchin and Dodge 2011), I put forward a theoretical argument on the agency of Turkey’s recent radar technology in generating nonconflictual security visions, practices, and interactions as regards to the disputed territory. In the three empirical sections, I demonstrated how the radar technology transforms the directionality of the state’s security vision over territory, extends visualization to migration as a new security referent, and makes possible new manifestations and documentation of sovereign violence. I argued that territory and technology are in a dyadic relationship in the sense that when technology fails, the nonconflictual territorial engagement also fails.

By centering technology in the study of territorial change, this concluding section further discusses how the research findings aim to push academic debates at the intersection between STS and IR. First, an STS approach demonstrates that territorial transformations take place in ways that cannot be sufficiently captured by analyses of macro-level international politics. This research identified a puzzle concerning a mismatch between recurrent crises and obstinate positions in Greek–Turkish bilateral relations, on the one hand, and the transformation of security in the Aegean Sea, on the other hand. An STS approach shows that a new form of technologically mediated security is emerging in the Aegean Sea, and this complicates existing accounts of practices as sites for the unproblematic and automatic projection of

decisions, policies, and processes traveling in a top-down manner.

Second, an STS approach brings analytical attention to continuity/change in conflictual border settings, but beyond the frequent emphasis on the socialization effects of international institutions on state behavior (Diez, Stetter, and Albert 2006). In fact, the Aegean conflict has “long constituted an anomaly in the security community of Europe” considering the limited effect of the EU along with NATO on the resolution of Greek–Turkish disputes (Rumelili 2003, 213). Despite brief periods of de-escalation, the Aegean conflict is marked by continuity rather than change, while classical geopolitics has persisted, not just for two conflict parties, but also the way that the EU has approached Greek–Turkish disputes (Heraclides 2019; Rumelili 2019). An STS approach has a different perspective on the relationship between continuity and change. The study of technology is interested in both the dynamic, unfolding, changing and the durable, continuous and repetitive practices (Latour 2005). In the case of Turkey, border technologies do not erase classical geopolitics through which the Aegean Sea has conventionally been governed; they make a difference by producing a new relational configuration alongside the stable, the enduring, and the habitual mode of differentiation that has long characterized Aegean geopolitics.

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