**Means becoming aim-in-itself?**

**A Virilioan Problematization of the Armed Drones**

**Abstract**

In contemporary armed conflicts, science and technology increasingly plays a determining role and decisively shape outcomes. This techno-scientific discourse has led to development of cutting edge weapon systems, with armed drone as its prime example. This paper aims to explore the interaction of armed drones with strategy making, culture and politics that has barely begun and calls for a critical awareness to tame emerging pro-armed drone discourse that seems to subjugate political processes and strategic decision-making mechanisms in all over the globe. To achive this, the article critically engages in the debate over the relationship between strategy and *technique* through the problematization of the drone warfare relying on the conceptions Paul Virilio. Paul Virilio, a reputable French military philosopher yet poorly studied by the Turkish academia, problematizes the relationship of speed, technology and warfare, and thus, provides an effective conceptual tool box for the critical security studies when analyzing the conduct and consequences of the drone warfare.

**Keywords**: Paul Virilio, drone warfare; military technology, military strategy, armed drones

**Öz**

Günümüzde yaşanan silahlı çatışmalarda, bilim ve teknoloji gittikçe belirleyici bir rol oynamakta ve bu çatışmaların sonuçlarını büyük ölçüde şekillendirmektedir. Son yıllarda tekno- bilimsel diskur en çok silahlı insansız hava araçlarının (SİHA) gelişmesine yol açmaktadır. Bu makale, stratejik karar alma mekanizmalarını etkisi altına almış görünen SİHA’lara yönelik eleştirel bir farkındalık oluşturma amacındadır. SİHA konusunda strateji, kültür ve siyaset arasındaki etkileşimi de irdelemeye çalışan çalışma, ünlü Fransız askeri filozof Paul Virilio’nun kavramlarına dayanarak SİHA örnek olayı üzerinden strateji ve teknik arasındaki ilişkiye odaklanmaktadır. Henüz Türkiye’de hakkında yeterince akademik çalışma bulunmayan Paul Virilio; hız, teknoloji ve savaş arasındaki ilişkiyi sorgulamaktadır. Bu yüzden, silahlı çatışmalarda giderek amaca dönüştüğü görülen araçlar haline gelen SİHA’ların yarattığı gerçekliği anlamlandırmada ve SİHA tartışmalarına eleştirisel bir katkı sunmada Virilio’nun kavramsallaştırmaları önem kazanmaktadır.

**Anahtar Kelimeler:** Paul Virilio, Silahlı İHA, askeri teknoloji

*If technology is the answer, then what was the question?*

**Introduction**

Modern industrial warfare seems to have ended. Science and technology has always played an important role, but in contemporary armed conflicts, they have the potential to decisively shape the outcomes.[[1]](#footnote-1) Development of “cutting edge” weapon platforms with instantaneous communication, real time imaging, all-weather night/day and thermal vision capabilities, armed with precision guided hi-tech weapon systems might have changed the game once and for all. Drone, an unpiloted aircraft that operates autonomously and in an automated mode following a pre-planned mission, is a prominent example of these latest weapons systems. For the first time in human history, the features of eagle sighting in all weather conditions, real time imaging, automated mode of target acquisition, precision guiding and tele-command have been collected in a single system. When its offering of low-cost and low risk solution is accompanied by these extremely lethal capabilities, drone has been claimed as a weapon of choice for military planners and is presented as a “force multiplier” in future battlefields.[[2]](#footnote-2)

The emergence of new cutting-edge systems like armed drones seems to have disrupted the hierarchical understanding of the relationship between technology and strategy. Grand strategy is, with Liddell Hart’s words, “the higher strategy which is to coordinate and direct all resources of a nation towards the attainment of the political objectives of war – the goal defined by fundamental policy.”[[3]](#footnote-3) On the other hand, military strategy refers to the conduct of warfare with military technique, which includes both the new modes of technology in warfare (means) and the military’s tactical expertise in implementing technology in the battle space (ways). Indeed, in the Clausewitzian tradition, strategists identify military strategy as hierarchically subjugated to grand strategy-making. Thus, policy determines the character of war, and consequently policy forms the frame in which military strategy is shaped. Military technique, on the other hand, is conceptualized as mere instruments of the military strategy. However, development of the latest hi-tech weapons systems attests to the fact that military *technique* has begun to determine military strategy rather than the other way round. The overall objective of this paper is to question the extent to which military technique is subjugated to military strategy, and thus to policy with critical conceptual tools and frameworks offered by Paul Virilio. For clarity of the argument, this paper focuses on armed drones, and problematizes their usage to elucidate – in Colin S. Gray’s formulation – whether “the weapons are mere instruments with which war is conducted, or they decide the war.”[[4]](#footnote-4)

As a French philosopher who has written in an unconventional and critical manner on modern technology, Paul Virilio, seeks to provide novel perspectives with regards to the impact of technology on modern life. He is specifically famous for his interest in speed. He problematizes speed of the way in which the escalating speeds of transmission have shaped modern life. Accelerated movement, for him, a consequence of modern technology, shapes our individual and collective apprehension of time and space. Speed constitutes, therefore, the “essence” of Virilio’s thought that unifies all of his thoughts about the impact of technological developments on perception and on socio-political and military development.

Virilio’s ideas are particularly helpful in addressing the major implications of the alteration of our experience with technology and strategy in military strategy making. For example, does it make it easier to kill, when killing is distanced and formalized to the extent that it becomes routine to push the button? To what extent can the traditional instrumentalist and essentialist variants of military *technique* provide satisfactory understanding of the relation of technique and strategy? Accordingly, application of Virilioan thinking to the case of armed drone can provide useful insights for us to better understand the intricate relationship between the military *technique* and strategy, technology and politics. For example, it may shed light on how our interactions with technological systems such as armed drones shape our interaction with the space, which in turn alter the ways of conducting war. In order to show the controversy over how far military *technique* has encroached upon strategy making, these are extremely relevant questions for military philosophers.

The first section of this paper describes the classical Clausewitzian view in which *technique* is subordinate to strategy, and contrasts this view with several recent arguments that *technique* is the determinant, not the result, of policy and strategy decisions. This section simply emphasizes that, in the traditional setting of state-state confrontations, strategy drives technology as a mere means, leading us to the instrumentalist view of technology. This section then goes on to show how this hierarchy between strategy and technique has changed in the last two decades and led us to contemporary drone warfare.

The second section briefly introduces Paul Virilio to the readers to better elucidate his unconventional and critical approach when engaging with techno-scientific discourse and its consequences. At first glance, one may think that there seems to be a disconnect in the paper between the discussion about the relationship between strategy and technology in the first section and Virilionian problematization that presented in the following section. One should however note that, to better looking at the relationship between war and technology, Paul Virilio, as a pioneering military philosopher who started problematizing this intricate relationship in late 1960s, forces us to rethink instrumentalist view of technology in contemporary strategy making by questioning about the body, perception, space, image, temporality. The conceptual tools and critical cognitive templates offered by Paul Virilio would enable us to more critically examine the drone warfare. That is why, fourth section, with a Virilioan problematization, critically engages in the debate about the armed drones to emphasize our lack of critical awareness on changing relationship between technique and strategy, particularly in the low-intensity conflict settings (counterinsurgencies and counterterror operations). Then, the discussion section, being the last one, calls for this critical awareness: unless contemporary military strategy making is emancipated from the dominance of the techno-scientific discourse particularly in the state vs. non-state actor confrontations by critically engaging the debate like the one this paper has attempted, this dominance could turn into a subjugation, state of which emphasizes, with a Virilioan terminology, “the end of politics.”[[5]](#footnote-5)

**War as politics by other means – still relevant in low-intensity conflict settings?**

It has always been difficult to develop a description of war that is both sufficient and necessary. However, one can observe that war is the application of collective organized violence in pursuit of political objectives; that is, with Carl von Clausewitz’s famous words, “war is the continuation of politics by other means.”[[6]](#footnote-6) Translating political objectives of grand strategy into the operational missions in the military strategy is the process of setting operational objectives for campaigns, and from there tactical missions for battles. The other side of this process is the provision of resources with which to do the job, and deciding how to employ those resources. There is thus a cascading series of aims and the concomitant provision of means in a hierarchical fashion. Putting more emphasis on military strategy, Clausewitz described this process as the “dialectic” of aims and means management that is achieved through a strategy.

B. Henry Liddell Hart, putting less emphasis on military strategy than policy, defines strategy as “the art of distributing and applying military means to fulfill the ends of policy.”[[7]](#footnote-7) One should, nonetheless, note that both gave the pre-eminence to political aims over military means. That is, in Clausewitz’s enduring words, “the political object – the original motive for the war – will thus determine both the military objective to be reached and the amount of effort it requires.”[[8]](#footnote-8) One may then suggest that this traditional understanding of technique refers to instrumentality of technology in strategy-making.

In an apparently similar formulation, Colin S. Gray sees strategy as “the bridge that relates military power to political purpose; it is neither military power per se nor political purpose.”[[9]](#footnote-9) For Gray, however, strategy should focus more on “exercising power effectively to adapt constantly to the shifting conditions of the battlefield,”[[10]](#footnote-10) and Gray thus refers more to the conduct of warfare (or military *technique*) rather than policy-making.

Following a narrower conceptualization of strategy and putting more emphasis on the agency of technique, British Colonel Charles E. Calwell suggested in the earlier twentieth century that “strategy is not the final arbiter in war. The battlefield decides.”[[11]](#footnote-11) Following Colonel Calwell’s emphasis on the importance of the battlefield – the importance of soldiers and their weapons, the importance of technique – some modern strategists tend to believe that the entire concept behind policy driving war falls apart in light of modern and future motivations for war. In the twenty-first century, Steven Metz believes “war will be fought not to pursue national interests, but solely to kill enemy leaders [targeted assassinations], to convert opponents to one’s religion, or, sometimes, for simple entertainment.” Taking Metz’s formulation one step further, Peter W. Singer suggests that the change is not solely about how wars are fought, but about the politics, laws, economics and ethics that surround war itself, and then contends that the “techno-scientific” revolution is the “driver of this change.”[[12]](#footnote-12) In his book entitled *Wired for War* where he formulated much of his argumentation on the future of warfare, Singer states:

*It sounds like science fiction, but it is fact: On the battlefields of Iraq and Afghanistan, robots are killing America’s enemies and saving American lives. But today’s PackBots, Predators, and Ravens are relatively primitive machines. The coming generation of “war-bots” will be immensely more sophisticated, and their development raises troubling new questions about how and when we wage war.[[13]](#footnote-13)*

The Baltimore Sun newspaper introduced Singer’s book with these remarks:

*A future already unfolding in the skies over Iraq, Afghanistan and Pakistan, where unmanned drones scan the ground below and blow up people as determined by pilots thousands of miles away. Sci-fi is becoming battlefield reality, and Mr. Singer makes it clear that this is just the beginning. Robotic warfare raises lots of profound questions about how wars are to be fought.[[14]](#footnote-14)*

The dream of eliminating Clausewitz’s “fog of war” is longstanding. Removing unpredictability, increasing lethality with high-precision weapons, increasing the tempo of warfare, and reducing casualties have always been the prime objectives of military decision makers and strategy planners. Lowering the economic and political costs of war have also been key considerations that fundamentally affect the strategy making process. Thus, for almost three decades, the theory of “Revolution in Military Affairs” (RMA),[[15]](#footnote-15) which mainly characterizes the use and incorporation of information technologies to enhance war fighting capacities, has been widely discussed among strategy-makers.

In Operation Desert Storm, for instance, the US-led war against Saddam Hussein’s Iraq in 1991, the use of GPS- or laser-guided weapons delivered by stealth fighters dominated TV coverage and created the perception that the operation was surgically clean thanks to the RMA. Particularly after the Kosovo War in 1999, in which US forces did not lose a single soldier, many suggested that war had become too sterile, creating an almost “Virtual War,”[[16]](#footnote-16) which refers to a form of warfare that is experienced primarily as a series of visual images and representations. In tandem with the notions of RMA and virtual war, the concept of a new Western Way of War has also become increasingly common in contemporary debates over the nature of warfare. For Der Derian, the key feature of virtuality is not its ability to mimic reality, but to create new realities. These newly emerged virtual wars, for him, “create new realities of conflict through reliance on information, the ability to overcome physical distance through the speed of information transfer allowed by new technologies, and, crucially, through the prevalence of forms of simulation.”[[17]](#footnote-17) This final characteristic of virtual war, simulation, has been a common feature of the Western Way of Warfare. Simulations are generally viewed as mere preparations for or representations of real-time experience, but many practitioners argue that they help to produce and delimit new practices of warfare through holistic training and hyper-real modeling, in which the distinctions between the simulated and the real begin to break down. Jean Baudrillard, who argues that increased forms of simulation “threatens the difference between true and false, between real and imaginary,”[[18]](#footnote-18) took this logic to the extreme by declaring that the Gulf War in 1991 did not actually take place. For him, the heavily mediated nature of the Gulf War meant that the majority of soldiers sitting in front of their computer screens and looking through night-vision goggles did not actually experience the reality of the battlefield. They only experienced the Gulf War as a series of images and representations, which effectively superseded the actual reality.

This trend of alienation from the actual reality at the tactical level and emphasis of technique has surely accelerated after 9/11 attacks and global war on terror campaign that led to the invasion of Afghanistan and Iraq. This mega trend has shifted the course of military strategy making from conventional state-state confrontations to the state vs. non-state actor confrontations in low-intensity conflicts such as counterterror and counterinsurgency operations. Hi-tech military assets, which triumph over weather, terrain and demographic constraints to provide a diligent situational awareness, stimulate the strategist to concentrate on choosing the most appropriate military capability in counterinsurgency and counterterror operations. In this era of ‘Global War on Terrorism’ unlimited use of military technique has led to capability- based planning in strategy-making.[[19]](#footnote-19) Thus drone warfare, which indicates the strengthened position of *technique* over strategy in the era of global war on terrorism provides a useful test case for better critically engaging the impact of the techno-scientific discourse on military strategy.

**Who is Paul Virilio and why is he different?**

Paul Virilio engages in a firm manner with questions of the rise of modern media, the impacts of technology on socio-political life, the evolving nature of warfare, and lastly the impact of military-scientific determinism on it. In all his works that hold wide range of disciplines, the question of technology has played a central and determining position. Virilio’s theoretical engagement with the question of technology in an unconventional and critical manner seeks to elucidate why and how technology has been and will keep on to shaping the human experience and history. For Virilio, human life is thoroughly prevailed by technology and- contrasting to our traditional thinking- technological objects are never simple instruments that make our life easier and more comfortable.[[20]](#footnote-20) That is why, Virilio first seeks to understand our strategic interaction with technology and the impact of technology on modern socio-political life. To do this, Virilio states that:

*“We have to take hold of the puzzle of technology and lay out it on the table as the early philosophers put the riddle of nature out in the open, the two being superimposed.”[[21]](#footnote-21)*

For Virilio, our “strategic interaction technological systems shape our culture and our interaction with the environment; modify patterns of human action, influence who we are and how we live.”[[22]](#footnote-22)

Referring to phenomenology in his works, Virilio offers valuable insights to better elucidate key concepts regarding body and impact of technology on bodily experience. Following the phenomenological thinking mainly developed and widened by Edmund Husserl,[[23]](#footnote-23) Virilio provides phenomenological perspectives in his works such as *The Speed and Politics,[[24]](#footnote-24) Desert Screen,[[25]](#footnote-25) Open Sky,[[26]](#footnote-26) The Information Bomb.[[27]](#footnote-27)* By conceptualizing space as that which is first experienced, Virilio, for instance, states that “space is limited to the world of sensible experience and beyond that there is no longer any space worthy of the name.”[[28]](#footnote-28) That is, he thinks space as a “spatial perception or awareness,” which is indivisible from the manner in which our bodies are positioned and conditioned. “Spatiality” is then inseparable from our ability to see, hear, sense and touch within the context of a particular bodily orientation. Our experience or perception of space is indivisible from our position and movement of body in relation to the environment in which it is situated. Our “gaze” on to the world can be conceptualized only as a “gaze,” which is primarily embodied. This question of the “embodied or situated gaze” shapes essential to the way in which Virilio understands our relationship to the world. Our gaze shapes our experiencing with worldly space as it is instantaneously practiced in “embodied perception.” According to Virilio, the “mobility and motility of the body” is above all makes us “worldly spatial creatures.”[[29]](#footnote-29) Virilio particularly seeks to understand how the setting of places and things will come into sight in a different way depending on the way in which they are considered. As an example of this, Virilio cites the situation of a traveler on a train seeing flowing scenery: “it is the movements of my body that are producing this landscape … a bit like a passenger on a train sees trees and horses darting past, sees hills bending away.”[[30]](#footnote-30)

This technological shift and the accelerated way of life have drastically changed the conduct of war as well. While, for Virilio, ancient war depended upon the citizen-soldier, “*soon, war will be waged by automatic answering machines. The new weapons being designed will strike their objectives with a lightning speed of nanoseconds or milliseconds. At the speed of light, man can neither see the weapon arrive nor fend off the attack*.” [[31]](#footnote-31)

For Virilio, war is not simply a matter of material repression and destruction of enemy, but a matter of domination of enemy’s morale, will to fight and more importantly will to do battle. This dimension that targets the enemy’s perceptions and bodily experiences has turned into a “inescapable domain.” According to Virilio;

*“War cannot detach itself from magical spectacle because the production of this spectacle is its goal: destroying the enemy is less a matter of capturing him than it is a matter of captivating him, it is a matter of inflicting upon him, before his death, the horror of death.”[[32]](#footnote-32)*

He then adds that thanks to the in depth tele-imaging and efficiently carried out tele-surveillance, war has moved from the “geographic field of battle” to “the multimedia field of vision.” He states that “a war of images is replacing the war of subjects (people) and objects.”[[33]](#footnote-33) He then concludes that:

*“Technological accelerators like satellite link-ups, real-time feeds and high-resolution augment the power of television do not just to dissimulate but to substitute whole realities in time as well as space. With the appearance of a global view comes the fading of the viewer-subject: our eyes become indistinguishable from the camera’s optics in the immediacy of perception, and critical consciousness, along with the body, goes missing.”[[34]](#footnote-34)*

In modern battlefield, for Virilio;

*“From now on everything passes through the image. The image has priority over the thing, the object and sometimes even the physical present being. Just as real time, instantaneousness, had priority over space.”[[35]](#footnote-35)*

Virilio then suggests that: *“The image is invasive and ubiquitous. Its role is not to be in the domain of art, the military domain or the technical domain, it is to be everywhere. I believe that there is war of images.”[[36]](#footnote-36)*

Virilio asserts that in the human history, we witness three major stages of real war. These are;

1. Pre-historical and tactical stage that includes limited violence. We have “weapons of obstruction” in this first stage such as trenches, swords, arrows, strongholds, armors and fortifications of all sorts.
2. Second is the excessively industrial and purely political Strategic Clausewitzian stage. In this stage, we notice “weapons of destruction” such as fire arms, cannons, tanks and missiles etc.)
3. Third is the Contemporary and trans-political logistical stage. In this stage, science and technology play a decisive and determining role in the destructive power of conflicting sides. We notice “weapons of communications” in this stage such as signals and information that are acquired through radars, optical and acoustic devices and satellites etc. This is, in fact, the stage of weapons of instantaneous communication that have come to govern battlefield, thanks to the rise of globally connected information networks and tele-surveillance. In this stage, the destruction power has been transferred from the armed subjects to weapon systems of mass killing. In this stage, in military terms, physical type of material of war (planes, missiles, tanks, etc.) depends on remote imaging, radar echo or thermal signature as well. As all characteristics of the combat systems have been subjected to this clear-cut imperative of “remoteness and non-detection (maneuverability, agility, velocity, etc.).” Therefore, the central concept, for Virilio, “of this new war game becomes first look, first shot and first kill.” [[37]](#footnote-37) Virilio emphasizes that the growing impact of strategic alliance of industrial, scientific and military communities has drastically changed the nature and extent of conducting warfare in this era.

In traditional terms, the initial occupation of a weapon is the eye: “or sighting.” Before conquering his target, a soldier must constantly take aim, to bring into line his target between his eye and the sight of the weapon. Today however, for Virilio, the difference is “indirect sighting”, the tele-sighting that no longer works with naked eye and bodily experience, but with electro-magnetic waves at the speed of light. The display of the “image” of target on the control monitors or computer monitors causes a mediated perception (tele-imaging with video or radar) not an immediate perception (with one’s own eyes), which is, for Virilio, “a kind of intoxication of perception.” [[38]](#footnote-38)

In this stage, every type of military machine lies within two categories of the “real,” by means of the of object acquisition: the actual presentation- the object is there and it is identified optically (eye) and acoustically (ear). And, the virtual representation – the object is not indeed there in physical terms, but it has spotted and monitored on the screen.[[39]](#footnote-39) To sum, in this new epoch, not the actual target but its representation in the screens, or pixels of the image of targets, is important for “tele-spectator soldiers” sitting before their screens in the air-conditioned OCs (Operation Centers). For Virilio, these tele-spectator soldiers will be the ones who will make war in the future and “paint the electronic battle fields.”[[40]](#footnote-40)

1. **The UAVs (Unmanned Aerial Vehicles): Weapons of Choices or Accelerated Idols of post-modern warfare?**

In *Open Sky*, Virilio asserts that the fact that military-scientific systems make virtual reality more powerful than actual reality is the true accident. He then continues that “*the day when virtual reality becomes more powerful than the reality itself will be the day of the big accident. Humans never witnessed such an unusual accident*.” [[41]](#footnote-41) We do not know whether Virilio thinks that that day has arrived or not but in the contemporary global security environment, it would be the UAV (Unmanned Aerial Vehicle) or “drone”[[42]](#footnote-42) that is the “harbinger” of the extraordinary accident Virilio has mentioned.

A drone is an unmanned flying platform that is either controlled remotely by the operators on the ground and follows a pre-programmed route flying autonomously. Thanks to new military technique, the features of eagle sighting in all weather conditions, real-time imaging, automated mode of target acquisition, precision guidance, unmannedness, tele-command, and extreme lethal capabilities have been collected in armed drones that have emerged as the force multiplier of post-heroic warfare.[[43]](#footnote-43) Relying on armed drones’ sophisticated day and night vision capabilities, “tele-spectator soldiers” who see suspicious activity can easily engage with the suspicious image on their screen and send missiles toward it with a gentle move of the joystick and a simple touch of its button.[[44]](#footnote-44) Armed drones have also been employed in critical missions to conduct extrajudicial targeted killings of suspected individuals around the globe.[[45]](#footnote-45) It is worth emphasizing here how armed drones are the weapons of choice as ‘asymmetric’ means for low-intensity conflict settings such as counterterror operations. Thus, since 2005, for instance, the Pentagon’s drone’s flights tripled from about 170,000 hours to more than 570,000 hours in 2011, with the annual budget for drones growing from $1.9 billion in 2006 to $4.8 billion in 2010. In the same period, the drones’ numbers in the US Military have gone from under 3100 to more than 6500.[[46]](#footnote-46) Estimated worldwide budget of the drone industry reached to $6.5 billion in 2015 and it is expected to reach $14 billion in 2024.[[47]](#footnote-47) Only in 2008, armed drones flew over Iraq and Afghanistan for 140,000 h (equivalent to 16 years of flight) and dropped 189 missiles in numerous air attacks that claimed the lives of 3000 people,[[48]](#footnote-48) the great majority of whom were civilians – the “collateral damage” or unintended consequence of drone warfare. The British military was responsible for 299 drone strikes in Afghanistan through July 2013.[[49]](#footnote-49) Israel has used drones both in and outside armed conflicts as well. During the 2006 Lebanon War, both Israel and Hezbollah were reported to have used drones. Israel conducted a strike against suspected Hezbollah militants in southern Lebanon on July 31, 2006, while Hezbollah was reported to have deployed four Iranian-made drones toward Israel, though none succeeded in its mission.[[50]](#footnote-50) Additionally, Israeli drones were used to conduct an estimated forty-two strike missions in the 2009 Gaza conflict, according to a joint investigation by Israeli and Palestinian human rights organizations, and to conduct cross-border attacks targeting suspected terrorists—such as the August 2013 strike carried out in the Sinai Peninsula with the consent of the Egyptian government.[[51]](#footnote-51)

It is also worth mentioning that, following the fashion, China, Russia, India, Pakistan, France, Germany, Canada, Iran, Turkey, Saudi Arabia, Thailand, South Korea, Taiwan and many more countries have been looking forward to expanding their know-how on drone-related technologies and increasing their numbers of drones in service.[[52]](#footnote-52) As of 2015, over 90 countries and non-state actors operate drones today, including at least 30 that operate or are developing armed drones.[[53]](#footnote-53)

The ability to hit a suspicious van moving at the speed of 60 miles per hour from roughly 8 miles away with exact precision is as crucial as pushing the “fire” button on the joystick from 8000 miles away. The “tele-spectator” soldier who has already owned the space and sight with technique, this time gains omnipotence with the decisively lethal guided missile systems that have the capacity to turn any image on the screen to ashes within the range of 10 miles in 15 – 20 seconds.[[54]](#footnote-54) As US Colonel Theodor Osowski reveals in his Biblical metaphor: “It’s kind of like having God overhead. And lightning shows up in the form of a Hellfire.”[[55]](#footnote-55)

Starting on 23 April 2011, US drones commenced six months of strikes against Qaddafi’s wavering regime in Libya. Crucially, these strikes implemented in the territory of a nation state were not authorized by the so-called “War Powers Resolution”[[56]](#footnote-56) of the US Congress that was designed to curb executive war powers. Neither were the drone strikes in Iraq and Afghanistan authorized by Congress. Seeing the effectiveness of the drone warfare in the so-called “War on Terror” campaigns, Peter W. Singer writes in an optimistic fashion “And now we possess a technology that removes the last political barriers to war.”[[57]](#footnote-57) He adds that:

*For the first 200 years of American democracy, engaging in combat and bearing risk – both personal and political – went hand in hand. In the age of drones, that is no longer the case. Like it or not, the new standard we’ve established . . . is that presidents need to seek approval only for operations that send people into harm’s way – not for those that involve waging war by other means.”[[58]](#footnote-58)*

It is certain that, with its physical limitations, the human body is not capable of matching the speed and lethality of drones. The agency of military technique is so assertive that one may easily suggest that technological systems have come to dominate military strategy and reverse the traditional dictum of subjugation of technique to policy and politics. Armed drones are generally used in three different ways. Firstly, when soldiers initiate ground attacks, or come under attack, armed drones are requested for help and use bombs and missiles for the purpose of close aerial support. Secondly, drones could be used for nonstop patrol in the skies of area of responsibility, seeking for the “pattern of life” on the ground 24/7 with their extremely sophisticated day and night vision capabilities. When operators see any suspicious activity, they can easily engage with the suspicious “image” on their screen and drop missiles only with a gentle move to the joystick and simple touch of a button on it.[[59]](#footnote-59) Thirdly, they are employed in pre-planned critical missions to conduct “targeted killings” of suspected images.[[60]](#footnote-60)

When compared with ordinary piloted aircraft, they are less costly and carry an array of thermal sensors and night/day cameras that are able to monitor in a uninterrupted fashion both day and night. Since being unmanned, drones can fly at altitudes of up to 36,000 feet with no need of temperature control and pressurization in the cabin. The enormous space in a drone means enough fuel capacity that can maintain it in the air incessantly for up to 60 hours even in a single flight.[[61]](#footnote-61) In contrast to a pilot in an aircraft, a drone does not get tired or battle-exhausted. Or a drone does not get stressed and make “humanly” mistakes in the battle field. Moreover, a drone can document all that is happening on the below ground, transmitting the images and footages in a real time fashion back to personnel in the operation center. New cohort armed drones flying at high altitudes are roughly “invisible” and are extremely silent, so the attack is completely unexpected. This characteristic provides the advantage of surprise that is the prime element for any modern military in the conduct of warfare. The operators themselves are not in danger and take no risk as well. They sit in their air-conditioned and comfortably designed operation center and could conduct their mission while chatting on last derby match or vacation plans and eating their muffins, drinking their coffees. In a routinized manner, they carry on their duties in operation center, and when their shift is over they take off for a lunch as someone else takes over the controls. More importantly, in the drone warfare, the risk of a soldier killed in action is zero. As Israeli military spokesperson Captain Gil said “The drone computer has no family to be upset, if it’s killed, so everything’s fine.”[[62]](#footnote-62) To sum, the idea that drones offer a low cost, low risk solution both in economic and political terms make them seductive options, or weapons of choice, for political decision makers.

The first feature of drones that captures attention is their decisively capable “eyes,” or day and night vision systems with Infrared and thermal imaging. The eyes of drones are able to identify the color of anyone’s eyes in the day time and can locate the wandering of small mice on the ground in an open night from roughly 30.000 feet above. The capability to see even minor details on the ground both day and night with a bird’s eye-view is the first enabler that neutralizes the impact of bodily orientations on tele-spectator soldiers. With this enabler, the lucky tele-spectator soldiers own day, night and sky, or simply put conquer the limitations of bodily experienced space and sight.

The second enabler that unchains the tele-spectator soldiers from the burdens of being “worldly spatial creatures” is the real time day and night tele-imaging of “actual living beings” or suspicious “patterns of life” in the area of operation. The real time tele-imaging that enables the tele-spectator soldiers to see the living beings as a group of pixels that contrast with the background tone in their screens, as Virilio emphasized in his writings, has drastically changed the temporal and spatial experiences of tele-spectator soldiers. As Virilio notes, both “virtualization of presence” and ‘instantaneity of communication” leads to the tele-topological structuring of perception and create a sort gap between what is “sensible” and what is “intelligible.” It is likely to assert that the process of turning of actual presentation into visual representation would in fact mean the moving of war from the geographic field of battle to the multimedia field of vision. This exactly means the replacement of war of subjects with the war of images. One should also note that there is a change in the tele-spectator soldiers’ relationship to time as well. While they have past, present and future as anyone else has out of the OCs, in the OCs their choice is nothing more than that between “delayed time and real time.”

Another enabler that leads to the tele-topological restructuring of perceptions is the extremely increased lethal capabilities of drones steroided with precision guiding. The ability to hit a van moving at the speed of 60 mile per hour from roughly 8 miles away with an exact precision is as important as the pushing the “fire” button on the joystick from 8000 miles away. The tele-spectator soldier who has already owned the space and sight with technology, this time, gains “omnipotence” with the decisively lethal and preciously guided missile systems that have capacity to turn any image on the screen to ashes within the range of 10 miles in 15-20 seconds.

Military drones, now employed for life-saving offense as once nuclear bombs were, are bringing new virtual warfare that is already affecting tactical and operational level planning, and will likely bring new strategy formulations to both asymmetric and symmetric warfare. As nuclear weapons brought cultural change and new modes of ethical considerations, expressed in civilian nightmares, international control agreements, and ban-the-bomb movements, so military drones are bringing controversy over virtual killings (mostly civilians) and their consequences for both those who press the buttons and those who do not yet have buttons to press.

The appeal of drone attacks for strategy-makers is clear. First, their effects are measurable and to the point. Many strategists point out that drone attacks have disrupted terrorist networks in many hot spots in the theaters of Pakistan, Afghanistan and Yemen, selectively killing the key leaders and denying the movements of the enemy. Drone attacks create a sense of insecurity among the enemy lines and constrain their interactions with local civilians. Second, because they kill remotely, drone strikes avoid friendly casualties as in the case of nuclear strikes against Japan. However, the question to be asked at this point is: at what expense are these strategic benefits achieved? One would suggest that the costs overshadow these benefits for three reasons. First, drone warfare has created a siege mentality among civilians, particularly in low-intensity conflict settings. The following remarks of Yemeni journal Farea al-Muslimi, who wrote an article titled “America Loses Yemeni People In Drone War” in the *Al-Monitor* journal, deserve attention:

*Even more enraged than urban dwellers were villagers living in towns hit by American drones over the past few days. During the most sacred and festive time of year [In the Month of Ramadan ], the US conducted eight different strikes over a week; the highest rate since US started using drones in Yemen. For the last few days, it has been difficult to follow the drone casualty numbers and to differentiate between strikes. With the public frenzy over the planes hovering over Sanaa and the rapid-fire drone strikes in the countryside, any remaining credibility of the US government’s stated intentions to take a comprehensive approach to Yemen’s economic and political development has now evaporated. Even Yemen’s political elites, who have historically been close allies with the US government, have been pointing fingers at the Americans over the past few days. They all see the US as supporting the transition in one hand and killing it by the other.[[63]](#footnote-63)*

These remarks clearly indicate that while violent extremists may be disliked, for a frightened population they seem less threatening than a “faceless enemy” that wages war from afar and often kills more civilians than militants.

Second, public outrage at the strikes is hardly limited to the region in which they take place. Mainly by means of internet and social media access, the strikes are now exciting regional, and in some events global opposition. It is interesting to note that, covered extensively by the news media, drone attacks are popularly believed to have caused even more civilian casualties than is actually the case. The persistence of these attacks on host states’ territories offends local people’s deepest sensibilities, alienates them from their government, contributes to their state’s instability, and strengthens anti-American rhetoric.

Third, and most importantly, although the use of drones displays every characteristic of a tactical-level operation, it creates an “illusion” of short-term tactical-level achievement (mostly killing some key middle- and upper–middle-level leaders) at the expense of long-term strategic consequences. [[64]](#footnote-64) Another strategic consequence of conceptualization of the drone warfare is the “personalization” of warfare, and thus of strategy-making. David Kilcullen states that:

*The drone campaign is in fact part of a larger strategic error – our insistence on personalizing this conflict with Al Qaeda and the Taliban. Devoting time and resources toward killing or capturing “high-value” targets – not to mention the bounties placed on their heads – distracts us from larger problems, while turning figures like Baitullah Mehsud, leader of the Pakistani Taliban umbrella group, into Robin Hoods. Our experience in Iraq suggests that the capture or killing of high-value targets – Saddam Hussein or Abu Musab al-Zarqawi – has only a slight and fleeting effect on levels of violence. Killing Mr. Zarqawi bought only 18 days of quiet before Al Qaeda returned to operations under new leadership..[[65]](#footnote-65)*

Thus the illusion of “personalization,” which leads to a hunt for some “names,” distracts policy-makers from structural problems and makes it harder to counter insurgencies in the long run. Indeed, the “heroization” of the ranking leaders in the insurgencies is the main unintended consequence of the personalization of strategy-making. It is not hyperbole to suggest that to be in the hunting list of the US military strategists (or to be a prospective candidate of this list) is an enormously prestigious position for those people living in pro-extremist environments and looking for recognition of others.

As the fight against terrorists has expanded globally in the last decade, so too has the use of long-range military drones. There is, however, still an ongoing debate about the effectiveness of armed drones for conventional state-state confrontations, making us turn back to the traditional strategy/means framework discussed in the first section. Some suggest that drone warfare is not revolutionizing warfare because current drones would be easily shot down in moments by a state-owned air defense systems.[[66]](#footnote-66) They then contend that the armed drones are more transformative against insurgent movements/terrorist organizations that lack even basic air defenses. In these cases, the greater precision and loiter time of armed drones, as well as lower cost, can change the battlefield in favor of the counterinsurgent by enabling targeting that would otherwise be too risky or too costly.[[67]](#footnote-67) This is a valid point when considering the current state of armed drone technology and artificial intelligence (AI). One should however note that the idea to use armed drones in the battle space seems to move from first ‘man-in-the-loop,’ then to ‘man-on-the-loop,’ and lastly to full autonomy in decision making mechanisms. It is likely to suggest that the more the armed drones become fully autonomous, the more decisive they will be in state-state confrontations. While this may result in considerable military advantages by enabling drones more effective in state-state confrontations, the policy raises ethical concerns with regard to potential breaches of International Humanitarian Law. Noel Sharkey concludes that current applications of drones offer lessons about how automated weapons platforms could be misused by extending the range of legally questionable, targeted killings by security and intelligence forces. [[68]](#footnote-68) Indeed, currently all armed robots in the battle space are remotely controlled by humans; so called man-in-the loop systems. Humans are responsible for both target selection and decision about power to kill. Thanks to techno-scientific developments, this seems to set to change. The current trend indicates that the role of human in the decision making loop will shrink within 3-4 years and would eventually vanish in the next decade.[[69]](#footnote-69) The question at hand, however, are we ready to shoulder the ethical responsibility of the exclusion of human in the decision making mechanisms and full autonomy thanks to the Artificial Intelligence (AI) capabilities?

**Turkey: An ambitious Actor Seeking to Develop Armed Drone Capabilities**

Turkey is closely monitoring the flourishing armed drone market globally and in the Middle East. The global military UAV market reached $6.4 billion in 2015; that figure is expected to surpass $10 billion in 2024.[[70]](#footnote-70) One should note that armed UAVs are seen as the shining star of the Middle East arms market. They top the lists of defense expenditures and procurement in many countries in the region. The 2014 Global Arms Sales report issued by the Stockholm International Peace Research Institute puts Turkey’s 2014 defense systems/weapons sales at $274 million,[[71]](#footnote-71) making it the 15th largest seller in the world and the second-largest after Israel in the Middle East. (Iran was not included in the assessment because of a lack of reliable data.)

On Dec. 17, 2015, Turkey’s locally made tactical unmanned aerial vehicle Bayraktar TB2 fired an air-to-ground missile on its test flight. It was the first armed UAV flight and test firing in Turkey. The Bayraktar TB2, with a 40-foot wingspan and 1,400-pound takeoff weight, has a 93-mile (150-kilometer) range. In its firing test from an altitude of 16,000 feet, it scored a perfect hit on a 2-square-yard target from a distance of 5 miles.[[72]](#footnote-72) It used a long-range, laser-guided anti-tank UMTAS missile produced by the state-owned weapons manufacturer Roketsan. Roketsan modified the missile, which operates on "fire-and-forget" mode, for TB2 use.

Decision-makers in Ankara are aware of the force-multiplier effect of the armed UAVs in low-intensity warfare. Ankara has been trying to compensate for its security deficiency on the Syrian and Iraqi borders by integrating these armed drones into a system with ground control stations that will provide it with aerial reconnaissance and armed-intervention capacity. Ankara wants to cover a 90-mile border with data link and ground control stations.[[73]](#footnote-73) The intention is to design a border security system that will allow pilots in ground stations to assume control of the TB2s after takeoff from their central base at Batman. Turkey has been trying to execute that plan with Heron UAVs bought from Israel, but has encountered maintenance and operational problems.[[74]](#footnote-74)

Ankara also believes the armed drones will be effective in clashes with the Kurdistan Workers Party (PKK), with which combat has been shifting to urban centers and their peripheries. As most major Turkish cities now have airports, TB2s can be deployed closer to operational zones. In addition to the military, other agencies closely following the TB2's development include the Turkish intelligence service MIT, police and gendarmerie. One should however note that Turkey has yet to develop a policy for the use of armed drones. Legislation that will list where armed UAVs will be used and by which state institutions is not yet available, and there is no joint doctrine for the security/intelligence bureaucracy. For example, will Turkey use UAVs against Turkish citizens? Or, will Turkey use them within our borders? Will the intelligence service or the military be responsible for operating UAVs outside of our borders? Will police be allowed to use armed UAVs? If the answer is ‘yes’ to all these critical questions, how will coordination be ensured among these bodies?

Then there is the ethical aspect of the issue. Although Ankara looks at armed drones as a military force multiplier, UAVs are radically altering the pace on the battlefield. As Paul Virilio beautifully puts, a link has been shown between this pace and the "totalitarian trend" in the current combat environment.

1. **Discussion**

This paper presenting a Virilioan problematization of the armed drones to stress the getting blurred hierarchical relationship between strategy and technique*,* discusses speeding up and reflexivity of war and our lack of critical awareness about this blurring hierarchical relationship.

For Virilio, since the disappearance of direct vision in battle and the replacement of one-to-one combat by the remote and instantaneous modern warfare, military strategy has been dominated by the struggle between visibility and invisibility, psychical being and image of a thing, war of picture/audio and war of objects, real time and delayed surveillance, actual killing and tele-killing, battle ground and battle space, perception and destruction, the rivalries which are in fact embodied in the drone warfare. He then identifies the Gulf War (1991) as the epoch of a new paradigm for warfare. From the industrial to the informational, a paradigm shift has taken place and strategy making has been somewhat contradicted by the subsequent ambiguities that have resulted from this paradigm shift.[[75]](#footnote-75) As Virilio points out in *Desert Screen: War at the Speed of Light* “ A true *deus ex machina*, the electronic war machine is not neutral; politically, it represents a serious danger of contamination of conscience to men of goodwill.”[[76]](#footnote-76) He then concludes that the emerging subjugation of strategy making caused by this contamination should be challenged not to face with apocalyptic accidents.[[77]](#footnote-77) One should note that Paul Virilio is not nihilistic in his outlook. As he advocated in his interview in C-Theory with John Armitage in October of 2000, “Resistance is always possible! But we must engage in resistance first of all by developing the idea of a technological culture.”[[78]](#footnote-78)

Drones, with the Virilio’s words, “as the extraordinary accidents of technology,” have enabled the military planners to reevaluate and even reconstruct the temporal-spatial limitations of warfare. Once, in the pre-modern and industrial stages, after seeing the target, the soldiers in the battlefields were in the mode of “wait and see.” However, thanks to the drones that there is no room for enough time to “rethink” in drone warfare. One should note that because of the instantaneity that the drones have blessed to the operator-soldiers in their dimly lighted and air conditioned operation centers, “see-shot-hit-kill” is a single act, yet formed as the sum of four different verbs. In the drone case, the “hyphens” between these verbs are so minor and these verbs are so intermingled that there is not enough time to separate them from one another. That is why the act of “see-shot-hit-kill” has been captivated by emotions and overreactions, not carefully calculated assessments in drone warfare.

Virilio’s thoughts on mil-technology determinism also indicate that human body is not capable of to simply suck up the speed and lethality of modern warfare. The instrumentality of mil-scientific warfare and systems serving for this purpose dominate human beings and cause a virtual world in which technological systems that have come to rule human beings. In this new kind of warfare Virilio envisions, the early version of which is presented as the drone warfare by this study, human beings are the subjects or merely minor sub-elements of grand technological systems. This lethal transformation, for Virilio, that is submissively accepted for the sake of greater speed and autonomy ends up with the celebration of technology-mania over human experience in the battlefield.

For some, Virilo’s thoughts may have been referred to be extremely pessimistic and negative regarding to the technological developments. The first critique on Virilio would be his vision of technology over-determined by his intense awareness on war and military technology. One may assert that this fallacy leads him to concentrate on predominantly negative and techno-phobic perspectives on technology. Another one would be that nowhere in his writings, does Virilio theorize technology in a systemic or sustained fashion. If Virilio’s writings can at times be found apocalyptic or over-pessimistic, it is because his analysis is deeply rooted from phenomenological thought which retains a deep attachment to the notion of the situated body and affirmation of the material spatiality of lived or embodied bodily experience. In spite of all critiques on his thoughts and stance, Virilio’s is a discourse which allows us to ask, in a rigorous and grounded theoretical manner, about the way in which our perceptions of space, time and presence are being altered with the impact of technological developments. His thoughts allow us to question the nature and extent of this transformation of perception. This transformation has in fact an impact in all areas of life: from the personal to the public, the military to the political, from the urban through to the broader sphere of cultural life more generally and should not be outside the scope critical thinking.[[79]](#footnote-79) As seen in the drone case, there emerge two contradicting interpretations on the role of technique in military strategy. An optimistic interpretation attaches positive value to the determining role of *technique*, a pessimistic interpretation presents a gloomy picture of the determining the role of technique. Both, however, by accepting technique as the escapable destiny, present an “essentialist” understanding of technique, which constitutes the second variant of understanding of technology after traditional instrumentalist variant. The essentialist variant suggests that technology causes social change in a deterministic fashion and military technique fills the frame of strategy to the detriment of politics.[[80]](#footnote-80)

To sum, as epitomized in the case of armed drones, military technique has seemed to have a direct impact on the transition of war from state policy to pro-active reflex. As Paul Virilio beautifully laid out, the encroachment of technique upon policy in contemporary strategy-making has produced new conceptualizations of war: war not as spatially and temporarily defined means in the service of political objectives and within the framework of policy, but as a series of speed-of-light actions that generally sit on the blurred borders between classical conceptualization of war as a mere instrument of policy and the “capability-based approaches” prevailing in contemporary military strategy-making. One should note that the rising complexity in relationships between policy and technique, subject and object, fact and value – this rising complexity has made the description of strategy more complicated. As seen in this study, neither traditional instrumentalist nor essentialist variants can provide satisfactory understanding of the relation of technique and strategy. The application of Virilioan thinking to the case of armed drone seems to confirm this suggestion.

It is then appropriate to ask: to what extent is it justified to sacrifice “effectiveness,” the magical word proposed by optimist essentialists and measured with instantaneity and greater weapon autonomy, for the sake of time-sucking and dependency-creating political procedures? Or, to what extent is it still relevant to assert that drone warfare is simply another means for policy to play its merely “instrumental” role in strategy-making? In short, as suggested by the case of armed drones, do we witness a salient, restructured need for policy to guide strategy-making due to punchy technological necessity interpenetrating time and space? The answer seems ‘Yes’ taking the debate into consideration about the armed drones in the globe. This ‘Yes’ is excessively relevant for Turkey because Turkish TB2 Bayraktar armed drone[[81]](#footnote-81) has been used for the first time against the PKK in Cukurca in September 2016,[[82]](#footnote-82) meaning that the interaction of armed drones with strategy, culture and politics has barely begun. In Turkey, given the rapid advancement of the drone warfare in counter-terror operations both inside Turkey and abroad and growing presence of drones within military force structures, this paper suggests that it is time to start thinking about the future strategic implications of the drone warfare in military strategy making. It is evident that the ethical, legal, and regulatory framework for the military use of armed drones in the Turkish military will evolve in parallel with their technological development. This paper calls for a high need to come to understand the ethical and legal implications of the drone warfare and a more robust scholarly debate about it with this sort of critical engagements. In this respect, Paul Virilio and his critical approach provides enough room for those who seek for critical engagements.

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1. This article, aiming to apply Virilioan thinking on the case of armed drones, involves direct quotes from Metin Gurcan’s earlier article titled ‘Drone warfare and contemporary strategy making: Does the tail wag the dog?’ that was published in *Dynamics of Asymmetric Conflict* in 2013. [↑](#footnote-ref-1)
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3. Basil H. Liddell Hart ***Strategy*** *(* London: Faber, 1967), s.319. [↑](#footnote-ref-3)
4. Colin S. Gray, “Weapons for Strategic Effect: How Important Is Technology?.” Occasional Paper, Air War College, January 2001. [↑](#footnote-ref-4)
5. Paul Virilio, ***Speed and Politics*** (New York, Semiotext,1977), s.3-5. [↑](#footnote-ref-5)
6. Antonio Echevarria, ***Clausewitz and Contemporary War*** (Oxford: Oxford University Press, 2007), 81. [↑](#footnote-ref-6)
7. Basil H. Liddell Hart, ***Strategy***(London: Faber, 1967), 321. [↑](#footnote-ref-7)
8. Antonio Echevarria, ***Clausewitz and Contemporary War*** (Oxford: Oxford University Press, 2007), s.9. [↑](#footnote-ref-8)
9. Colin S Gray, *Modern Strategy* (New York: Oxford University Press, 1999), s.17. [↑](#footnote-ref-9)
10. age19. [↑](#footnote-ref-10)
11. Charles E Calwell, ***Small Wars: A Tactical Textbook for Imperial Soldiers*** (London: reprinted, 1990) s.17. [↑](#footnote-ref-11)
12. Peter Singer ***Wired for War: The Robotics Revolution and Conflict in the 21st Century*** (New York: Penguin Press, 2009) [↑](#footnote-ref-12)
13. age. [↑](#footnote-ref-13)
14. Please see: http://wiredforwar.pwsinger.com/index.php?option1⁄4 com\_content&view 1⁄4 articl  e&id 1⁄4 69&Itemid 1⁄4 71 (accessed September 12, 2015) [↑](#footnote-ref-14)
15. Revolution in Military Affairs (RMA) is a theory about the future of warfare, often connected to technological and organizational recommendations for change in the US military and others. Especially tied to modern information, communications, and space technology, RMA is often linked to current discussions under the label of Transformation and total systems integration in the US military. One of the central problems in understanding the current debate over RMA is due to many theorists’ use of the term as referring to the revolutionary technology itself, which is the driving force of change. Concurrently, other theorists tend to use the term as referring to revolutionary adaptations by military organizations that may be necessary to deal with the changes in technology. Other theorists place RMA more closely inside the specific political and economic context of globalization and the end of the Cold War. [↑](#footnote-ref-15)
16. James Der Derian, “Virtuous War/Virtual Theory.” ***International Affairs*** 76, No. 4 2000): 771 – 788.  [↑](#footnote-ref-16)
17. age. [↑](#footnote-ref-17)
18. Jean Baudrillard, ***Simulacra and Simulation*** Translated by Sheila Glaser (Ann Arbor: University of Michigan Press, 2004) [↑](#footnote-ref-18)
19. Jeffrey Record ***Bounding the Global War on Terrorism*** (Army Strategic Studies Institute, December 2003). [↑](#footnote-ref-19)
20. Paul Virilio, ***The Information Bomb,*** (London, Verso, 2000), p.4-6. [↑](#footnote-ref-20)
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22. David Kaplan ***Readings in the Philosophy of Technology***, (Lanham MD, Kowman and Littlefield, 2004),p.xiii. [↑](#footnote-ref-22)
23. Please see Edmund Husserl, ***Thing and Space****.1907 Lectures, Collected Works* (Dordrecht:Kluwer, 1997). [↑](#footnote-ref-23)
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28. Paul Virilio ***Desert Screen****,* (New York, Continuum, 2002), s.32. [↑](#footnote-ref-28)
29. age, 15. [↑](#footnote-ref-29)
30. Paul Virilio, ***Negative Horizon*** (London, Continuum, 2005), s.30. [↑](#footnote-ref-30)
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34. age.35. [↑](#footnote-ref-34)
35. age, 35. [↑](#footnote-ref-35)
36. Age, ix. [↑](#footnote-ref-36)
37. Paul Virilio, ***Desert Screen***(New York, Continuum, 2002), s.110. [↑](#footnote-ref-37)
38. age,32. [↑](#footnote-ref-38)
39. age, 25. [↑](#footnote-ref-39)
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