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Visions of Future Warfare in Russian Military Publications

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Abstract: The article discusses visions of future warfare articulated in recent Russian military publications. There seems to be agreement among Russian scholars that future war will be triggered by Western attempts to promote Western political and economic interests while holding back Russia's resurgence as a global power. The future war with the West is viewed as inevitable in one form or another, whether it is subversion and local wars or large-scale conventional war. While the danger of conventional war has declined, according to several scholars, the West is understood to have a wide range of non-kinetic means at its disposal that threaten Russia. In order to withstand future dangers, Russia has to be able to meet a large number of kinetic and non-kinetic threats at home and abroad.

Keywords: Russia, future war, military scholarship

1 Introduction

Russia has invested heavily in its military and has substantially improved its war-fighting capability in recent years. This has been accompanied by an increased celebration of past Soviet military achievements, notably the Soviet victory during the Second World War. Nevertheless, Russia's military advance has not been a case of turning back the clock. Under President Vladimir Putin, Russia has striven to build a very different military, geared towards very different objectives, than the Soviet Armed Forces. If the Soviet military was set up to wage nuclear wars and large mechanised campaigns, contemporary Russia has expended effort to make its armed forces more nimble and versatile and adapted to a range of conflicts, from conventional confrontations and limited regional wars to smaller campaigns.

Much of the research on Russia's recent military development has focused on issues that are related to problems, conceptions and threat perceptions of the present. Researchers have addressed Russian imaginations of its security environment, security options and emergent security threats. Some have understood Russia's military revival as an attempt to overcome the problems that plagued the Russian Armed Forces in the 1990s and 2000s, and to restore the Russian military to its historical strong standing (Cf. Renz, 2018). Others have focused on Russia's innovative use of military and non-military assets, including its employment of so-called hybrid warfare (Cf. Galeotti, 2015a; Galeotti, 2015b; Schnaufer II, 2017; Lanoszka, 2016; Renz & Smith, 2016; Renz, 2016). Others yet have highlighted changes taking place in mainstream Russian conceptions of warfare, including what is seen as the gradual erasure of the distinction between war and peace in Russian military thought (Jonsson, 2019).

Another strand in the scholarship on Russia's military has considered Russian imaginations of military realities, threats and opportunities further afield, years, if not decades, from now (Chekov et al., 2019; Thomas, 2019; Westerlund & Oxenstierna, 2019; McDermott, 2014; Kipp, 2014; Goure, 2014; Fitzgerald, 1994; Fitzgerald, 1991). This subset of the literature, comparatively small in size, has offered insights about Russian future threat perceptions and expectations of military developments over time.

The present article builds on this latter strand in the literature. It examines Russian discussions of future war in major Russian military publications between 2014 and 2019 within five thematic areas: non-military warfare, types of

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wars and conflicts, effects on operations and tactics, the development of future military equipment and conceptual development. These areas have been chosen because of their prominence in the discussions, and the article considers how Russian thinkers have envisioned developments within them.

The publications that have been examined include *Vestnik akademii voyennykh nauk* (The Journal of the Academy of Military Sciences [VAVN]), *Voennaya mysl'* (Military Thought [VM]) and *Problemy natsional'noi strategii* (Problems of National Strategy [PNS]). The first two are flagship journals of the Russian Ministry of Defense and the most prominent public exponents of scholarly military thinking in Russia. The third is published by the Russian Institute for Strategic Research, a research institute attached to the administration of the Russian president, and features articles by several military and security scholars who also publish in VAVN and VM. In addition, the article considers Igor Popov's and Musa Khamzatov's monograph *Voyna budushchego* [War of the Future] (2016), which discusses possible future military developments and holds an important position in Russian military discussions. The years 2014–2019 have been chosen because they coincide with the period after the Russian invasion of Ukraine, which marked an important turning point in Russian military practice as well as in Russo-Western relations.

The four mentioned publications were chosen for their prominence in public military discussions in Russia and the expert background of many of the authors who are represented in them. Originally a wider set of publications were studied, including the journal *Voenniy-promyshlenniy kur'er* (Military-industrial courier); however, some were removed from the sample because of their more popular orientation or because they did not address the topic of future war. During 2019, the selected publications were reviewed and themes of future war were identified and analysed. In this process, the five thematic areas that are at the basis of the analysis in this article were developed.

Two caveats should be made. First, the article is mum on the question of impact. While some thinkers have suggested that it may be possible to trace the influence of Russian scholarly thinking on Russian military policy-making (McDermott, 2019), doing so is beyond the scope of this study. The article makes no claims about the wider influence of the discussions that are reviewed, but limits itself to pointing out that they form part of the public intellectual context of Russian thinking about future war. Certainly there is no necessary link between visions of future war and changes in military decision-making, in view, not least, of the considerable restraints that act on the latter, including competing political interests, mental and material legacies and the vested interests of Russia's military-industrial complex.

Second, we mostly eschew the visions of future war that have been articulated in non-expert forums, including newspapers, popular journals and works of popular culture, and also do not look at discussions about future war that have been undertaken in non-public settings, such as closed-door conferences of the Russian Academy of Military Sciences (Cf. Gerasimov, 2019). These have been left out for reasons of feasibility and accessibility in favour of focusing on scholarly discussions of future war in public settings.

The paper opens with a discussion of existing scholarship on future war, including Russian discussions of future war. It is followed by a brief historical overview of debates on future war in the Soviet Union and post-Soviet Russia. The third section presents the findings from the review of recent Russian expert discussions on future war, grouped around the five thematic areas of non-military warfare, types of wars and conflicts, effects on operations and tactics, the development of future military equipment and conceptual development. The fourth and final section sums up the results of the study.

2 The Future of War in Scholarship

The scholarship on future war may be divided into two strands. The first of these seeks to forecast how conflicts will be fought in the future, whether it is gang warfare in mega cities (Sullivan, 2000; Kilcullen, 2013; Hills, 2004; Hahn II & Jezior, 1999; Alexander, 2002) or cyber warriors attacking countries' digital infrastructure (Dunn Cavelty, 2010; Arquilla & Ronfeldt, 1993; Stone, 2013). This strand may be described as forward-looking or projective and is largely reliant on scenario-building as a means for painting possible versions of the future. Not infrequently, it has been written from a stated or implied Western perspective. Such is Williamson Murray's *America and the Future of War* (2017), which maps possible lines of conflict that may affect the United States in times ahead, and Robert H. Latiff's *Future War* (2017), which can be read as an entreaty to Western military planners in general and American ones in particular to prepare

for a very different battlefield than what they have been accustomed to – one shaped by mechanisation, biological enhancement and other novel technology.

The second strand of the scholarship is far smaller in size than the first and can be described as meta. It reflects on the ways in which future war has been envisioned in different forms of production, whether scholarly, journalistic or cultural. It understands visions of the future as rooted in wider imaginaries, and addresses how these imaginaries intersect with social, political, technological, cultural and other developments. One of the most celebrated recent works of this category is Lawrence Freedman's *The Future of War. A History* (2017) which offers an overview of visions of future war from the late 19th century until the 2010s, particularly in the Anglo-American world. Antulio J. Echevarria II's *Imagining Future War* (2007) takes a similar approach, considering visions of future war as expressed in Western fiction and non-fiction at the turn of the last century.

Like Freedman and Echevarria, the present article takes a meta approach to the study of future war. Not seeking to predict possible future-war scenarios involving Russia, it considers imaginaries of future war as articulated in Russian scholarly sources. That is to say, a central concern of the article is how visions of future war are expressed in contemporary Russian academic military writing.

2.1 Research on Russian discussions of future war

A number of previous publications have examined Russian discussions of future war. Several of them did so in 2014 (Goure, 2014; Kipp, 2014; McDermott 2014), after the 2008 Russo-Georgian War, as relations between Russia and West worsened after the Ukraine crisis. Others have done so more recently, offering an account of Russian discussions about future war in the wake of Russia's intervention in Syria and the emergence of a new 'normal' in Russo-Western relations characterised by persistent tensions and a political standoff (McDermott & Bukkvoll 2018; Chekov et al. 2019; Thomas 2019).

Daniel Goure (2014) considers various contextual and structural factors shaping Russian ideas about future war and argues that Russia's transformed security environment after the Soviet collapse prevented Russia from developing a 'central security scenario' (much like the United States at the same time). Instead, Russia needed to prepare for a diverse set of potential threats (2014: 66). Nevertheless, it maintained a strong Western enemy image and identified NATO in general and the United States in particular as its main adversary. Over time, Goure points out, Russian ideas of future war came to be shaped by three factors: (1) Russian military weakness, including in conventional operations; (2) the bed-rock assumption that the international security environment is more hostile to Russian interests; and (3) the domestic political utility of maintaining a sense of external security threat to Russia (2014: 73).

Jacob W. Kipp (2014) in turn provides an overview over the evolution of Moscow's thinking about future war since the Soviet period. He has noted that at the time of his writing, Russian thinking about the future centred on two spoken and one unspoken threats. The two spoken ones were Western information warfare against Russia and the West's use of advanced information technology in conventional military operations (2014: 61). The unspoken one was China's rising dominance in Asia, which implicated, among others, the security situation on Russia's eastern border (2014: 61). The threat of Western information warfare was particularly worrisome in view of the fear that it might be used to inflame local tensions, leading them to escalate into larger conflicts (2014: 35-6).

Some of Kipp's observations are repeated by Chekov et al. (2019) at the Moscow State Institute of International Relations. They have surveyed Russian military thinking about future war and its evolution after the collapse of the Soviet Union. Drawing on Russian official and academic sources, the study highlights positions and trends in Russian discussions over time. Among other things, it notes that Russian decision-makers see nuclear conflict as an unlikely prospect, while indirect military actions in the form of proxy action and direct non-military measures (for example, cyber and information operations) are viewed as likely components of great-power competition.

Roger McDermott and Tor Bukkvoll (2018) have focused on Russian thinking about high-precision weaponry. This thinking has a long pedigree, dating back to the work of Nikolai Ogarkov, who was chief of the Soviet general staff between 1977 and 1984 and pioneered thinking on the strategic importance of long-range high-precision weapons. Yet, it is only during Vladimir Putin's tenure as Russian president that a concerted push has been made to develop Russian capacity for high-precision strikes. This comes against the backdrop of worsened relations between Russia and the West after the Russo-Georgian War but also of a general unease in Russia's military establishment with the country's

dependence on nuclear weapons. McDermott and Bukkvoll point out that while the United States is more concerned with high-precision weapons at the tactical level, Russian military thinkers view them as a key strategic asset that may supplement and perhaps, in the future, even supplant nuclear weapons as the country's major deterrent force (2018: 212).

Another important recent article is Timothy Thomas' contribution to *Military Review* on forecasting in Russian military discussions (2019). Here, he accounts for a number of ideas about future war in Russian military discussions between 2012 and 2018, authored by Russian military luminaries such as Makhmut Gareev, Vladimir Slipchenko and S.G. Chekinov, and S.A. Bogdanov (some of whom will be discussed also in the present text), among others. In particular, Thomas notes the importance devoted to the initial period of war (IPW), particularly to the need to thoroughly prepare for the IPW in peacetime in Russian military discussions. He also points out that Russian military thinkers have suggested that advanced information technology may be used to decisive effect in the IPW, ending 'a war before it begins' (2019: 92). Where conflicts escalate, they may, due to the greater destructive power of conventional weapons, lead to the use of weapons of mass destruction, with economic and state control systems remaining priority targets (2019: 92). Combat actions in future wars are likely to be characterised by a broad array of forms and methods, many of which are difficult to foresee due to the fast rate of military innovation (2019: 92).

Building on the previous research, the present article explores major themes in Russian discussions about future war in key military publications between 2014 and 2019. It is based on a review of four publications, *Vestnik Akademii Voyennykh Nauk, Voennaya mysl', Problemy natsional'noy strategii* and *Voyna budushchego*, and considers key ideas about future war grouped into five thematic areas: non-military warfare, types of war and conflicts, effects on operations and tactics, the development of future military equipment, and conceptual development.

3 Russian Discussions about Future War

In general, in the publications that have been studied, future conflicts are described as multi-dimensional, coordinated and synchronised, even if they are not necessarily sequential – and involve non-military, non-kinetic and kinetic means. Interestingly, the least likely future scenario involves a full-scale attack on Russia or a full-scale global war. This is due to the deterrent potential of Russia's nuclear armaments and conventional capabilities. New automated command and control and weapons systems equipped with artificial intelligence will become employed in earnest and will generate strength, even if they will not replace soldiers in a dynamic battlefield. Conceptually, the Syrian campaign represents the type of operation that the Russian Armed Forces must develop a capacity to manage. Work on translating lessons learned from Syria into operational concepts is ongoing.

3.1 Non-Military Warfare

According to the military theorists and retired colonels Igor Popov and Musa Khamzatov, in 'new-type wars' it is important to distinguish between the sponsor of a potential conflict and one's immediate adversary. It is better to deal a preventive blow against the sponsor than to focus all of one's energies on the immediate adversary. Such a blow may take the form of financial, economic, cyber, informational, culturological or other measures before kinetic ('physical' in Popov's and Khamzatov's lexicon) measures are used. Popov and Khamzatov believe that even the most sophisticated kinetic weapons systems may be neutralised through 'contemporary social technologies' (Popov & Khamzatov, 2016: 594-5). For warfare to be successful in the future, the traditional domains of land, sea and air will need to be supplemented with operations in the 'anthroposphere', cyberspace and the cognitive sphere. Rather than seizing terrain or neutralising military forces, the two authors argue, war-waging will chiefly be about controlling the adversary, including by physically and psychologically paralysing him. In parallel with new weapons systems, non-kinetic systems will be developed: informational, psychopharmaceutical, perceptive (*kontsiental'noe*) and cyber systems (Popov & Khamzatov, 2016: 415). This means that the possession of armed forces will not necessarily save a state from collapse, as indeed, is illustrated, according to Khamzatov and Popov, by the events in Iraq 2003, Libya 2011 and Ukraine 2014. Not even nuclear powers such as the Soviet Union were able to prevent 'contemporary social

cataclysms'. Indeed, the 'immateriality of social technologies' may lead potentates in targeted states to underestimate their destructive potential. Yet their destructiveness may be greater than that of kinetic means, which may prove to be more humane in the long run (Popov & Khamzatov, 2016: 595-9).

Sergey Ustinkin, who is the chairman of the Nizhny Novgorod regional branch of the Academy of Military Sciences, and Anatoliy Rudakov, who works at the Institute of International Relations and World History at the Nizhny Novgorod State University, agree that there is great war-waging potential in non-military means. They focus on so-called 'neuro marketing', which, they argue, is the most challenging but also most promising area of development in information-psychological warfare. Here, metadata is used to develop complex strategies directed at changing identity. The transformation of identity may become the basis for processes whereby representatives of different population or social groups, who are present in various structures (from student activists and experts to political elites) are manipulated so as to unconsciously promote the interests of the adversary without order or reward. It is the Soviet concept of reflexive control adapted to the age of meta data.

The technology of neuro marketing is based on the fact that 90% of the psychological activity of humans takes place sub- or unconsciously and is not controlled by individuals. Neuro marketing represents a synthesis of economic theory, neuro biology, neuro physiology and classic marketing, which shape the behaviour of consumers. States with access to large stores of meta data will have an advantage over other states. In particular the United States, according to Ustinkin and Rudakov, possess an advantage since the government may gain access to the data collected by Google, Facebook and Twitter, which fall under American jurisdiction and are obliged to hand over meta data to the authorities upon request (Rudakov & Ustinkin, 2018: 13-15). Strikingly, the article does not mention China, which is harvesting meta data about its 1.4 billion citizens.

Ustinkin and Rudakov believe that the ethnocultural identity of Russia's ethnic groups and people may be manipulated and influenced by malevolent use of meta data. People from Finn-Ugric groups, residents in the Kaliningrad exclave and others may fall victim to 'deformed historical consciousness' and 'altered views about the traditional system of values', which in turn may lead to social and political destabilisation. Threats to Russia's security associated with the loss of a traditional national cultural identity, the deformation of an all-Russian mentality and the watering down of basic cultural and spiritual values are primarily the result of 'negative information effects'. In order to defend against such influences, the state must develop technologies to combat it. But it must also promote and strengthen traditional values and historical consciousness, as well as an 'all-Russian identity' among Russian citizens (Rudakov & Ustinkin, 2017: 35-6).

Aleksandr Bartosh, a member of the Russian Academy of Military Sciences and a prolific writer in all three journals considered in this article, argues that because of Western hybrid warfare against Russia, it is important that the Russian state gains functional control over the strategically most important elements of the political, socioeconomic and cultural *Weltanschauung* spheres. Today, the struggle concerns 'the fronts of the information and economic war and the securing of cyber security for critical infrastructure' (Bartosh, 2017: 171-2).

The examined material is replete with dystopic visions of the future. Probably the bleakest one is offered by Andrey Konurov and Aleksandr Voronin. Konurov is a researcher at the Expert and Analytical Centre of the Military Academy of the Russian General Staff and Voronin works as researcher and deputy head of the same centre. They argue that capitalism encouraged by the West will lead to an increase in the alienation of the world's population. In the vision they put forth, people are reduced to accessories to material possessions, while public morals are depleted. The most humane way of addressing this negative development would be to abscond from the 'capitalist way of human development', yet such a course of action would collide with the interests of the 'world-dominant class'. Instead other ideas are put forth, for instance to stifle scientific development by using ecology as a pretext. An influential 'ecological lobby' campaigns against the excavation of 'sound minerals', the construction of nuclear power stations and industrial development in 'weakly developed countries' etc. The most important member of the ecological lobby is *Greenpeace*. Another way of reining in the effects of alienation, which may take the form of terrorism or organised crime, is the total surveillance of society of the kind that was exposed by Edward Snowden in the United States. An even more radical measure is to engineer a reduction in the size of the global population to limit the ill effects of overpopulation and to make it easier to control the remaining population. It is conceivable that in the near future, poor people in Africa, Asia and Latin America will be declared to not really be human or to not be humans at all, paving the way for wars in which many of them will be killed.

The best way for Russia to resist the aforementioned dangers, according to Konurov and Voronin, is to maintain its 'traditional values in their entirety'. They note that the Russian model has retained its theoretical and humanist content and that interest in this model is spreading throughout 'all the countries of the world', despite resistance from prominent world media. This is why Russia's global resurgence is seen as an existential threat by 'global ruling circles'. It is indispensable to preserve the geopolitical position that Russia has seized in recent years and to not allow other countries to interfere in Russia's domestic issues (Konurov & Voronin, 2018: 4-11).

Thus, Russia's potential adversaries may use measures within the so-called 'anthroposphere' to shake the very foundations of the Russian state (its presumed interethnic and interregional harmony, the very basis of its historical and cultural consciousness and its main sources of income) by unleashing what appears to be modernised 21st century version of political warfare. However, the capacity to keep those threats at bay should still, as we show below, go hand-in-hand with a capacity to wage a number of wars and armed conflicts.

3.2 Types of Wars and Conflicts

Popov and Khamzatov argue that a state should have capabilities to handle 'all kinds of conflicts', and should have military forces adapted for this purpose. The threats of war by proxy, non-linear warfare, asymmetric warfare and hybrid conflicts do not eliminate the menaces posed by large-scale conventional war or a global war that encompasses all continents as well as space and cyber space. Therefore, the defence forces of the future need to maintain their capacity for traditional deterrence with strategic nuclear weapons and different service branches (Popov & Khamzatov, 2016: 588-9). Thanks to Russia's nuclear and conventional deterrence capacity, according to Popov and Khamzatov, it is not likely that a large-scale conventional attack will be undertaken 'from ocean to ocean' against Russia (Popov & Khamzatov, 2016: 110).

How skilfully will Russia wage wars in the future? Popov and Khamzatov consider Russia's potential to handle 'new-type wars' with airborne troops, Special Forces, cyber operations troops, covert missions and cognitive and information operations. The bulk of the regular defence forces would have the capacity to perform shows of strength for the purpose of preventing conflicts from becoming kinetic. The core of the units that would fight 'new-type wars' should consist of regular and semi-regular units. Their base should be constituted by elite troops, including units from the airborne forces, Special Forces, rangers and marine infantry etc. (Popov & Khamzatov, 2016: 589-91). Popov and Khamzatov draw inspiration from Arquillas and Ronfeldts' term 'swarming', which envisages a complex and dynamic battlefield that requires units to change their form according to need and where units and capabilities are deployed in a vast operational space. In that space, forces possessive of a very high ability to disperse and concentrate are coordinated strategically in real time ((Popov & Khamzatov, 2016: 584-6).

Vyacheslav Zimonin, a professor in military history and the academic secretary of the Military History Department of the Russian Academy of Natural Sciences, describes different types of future war that are all triggered by an undefined enemy with strong American features. He writes that the wars will be initiated by economically and militarily powerful states that will take advantage of the power vacuum that has arisen after the collapse of the Soviet Union. They will use 'false pretenses about the defense or establishing of democracy and defense of justice, human rights, universal values, etc.' (Zimonin, 2018: 97). Control over the information sphere and the air will be more important. Despite a greater role for non-kinetic measures, kinetic warfare will remain central. Nevertheless, Zimonin sees greater opportunities for strategic command in the future, which will result in centralised command of the war as such instead of command at unit level. Zimon insists that not all war aims will be military but will consist in producing social, economic and political disorientation in the adversary instead of dealing him a military defeat or annex parts of his territory.

Lieutenant Colonel Nikolay Gerasimov and doctor of philosophy Yelena Shakirova also believe that there will be greater centralisation of command in the future. Yet they go much further than Zimonin and argue that the United States in the future will be able to centrally command a wide spectrum of assets, not merely military ones. In their estimation, the United States intends to organise:

a powerful and large-scale network that will conceptually replace the earlier forms and concepts of the military strategy and combine them in a single schema. A regular army, all types of intelligence services, technological advances and high technology, diplomacy and mass media, economic development and social change, civilians and

the professional military, regular units and individual but as yet amorphous groups, mercenaries and private armies – all of these will be brought together in a single network where information flows (Gerasimov & Shakirova, 2017: 141).

Like a spider in a giant information web, the United States will, according to Gerasimov and Shakirova, be able to oversee armies, mass media, agencies for economic development, intelligence agencies and other actors. The very 'core of the (ongoing) military reform in the United States' is to create an omniscient eye (Gerasimov & Shakirova, 2017: 141). Its purpose is described in strongly subversive terms. In addition to physically destroying the institutions of the adversary, attacks will seek to 'transform the civilizational, religious, cultural, and ethnic identity of the population' (Gerasimov & Shakirova, 2017: 141). With its palette of kinetic and non-kinetic measures, the United States will attempt to vanquish Russia not merely in battle but also in the sphere of identity.

Thus, there appear to be a number of challenges to Russia, with high expectations as to preparedness for a number of potential conflicts and a technologically hyper-advanced adversary with a holistic approach to warfare similar to the Russian approach.

3.3 Effects on Operations and Tactics

According to Popov and Khamzatov, 'new-type wars' will move regular units in the direction of irregular actions and operations. Such units will be more effective on account of their unpredictability. Units for this type of war will not merely carry out airborne operations but will possess an ability to carry out military actions with broad use of assault and transport helicopters and light as well as highly mobile combat techniques. High mobility and manoeuvring ability will be necessary for reconnaissance and combat with an irregular adversary. Such abilities are not possessed by 'traditional' forces, whose overwhelming firepower risk being ineffective, according to Popov and Khamzatov. Instead, high mobility and operationability will be required with the possibility of dealing pinpricks against the adversary. In addition to a company of combat forces, units for 'new-type wars' should consist of units for information warfare and psychological operations, cyber troops and other special structures. One should strive to combine military and civilian experts, including culture scholars, historians, economists, physicists, anthropologists and psychologists. They need also to include a number of women, according to Popov and Khamzatov (2016; 589-593).

Academy of Military Sciences members Pavel Dulnev and Vladimir Orlyanskiy argue that access to new weapons systems will result in the operational reorganisation of troops as well as their equipping with weapons that project targeted energy and means for affecting programmes. This will increase the potential and scale of unexpected actions (*vnezapnye deystvya*). Losses will rise and the entire operational structure may be neutralised, along with technical systems and systems for the war-time organisation of the military. It is conceivable that fighting will be more intense but operations will be shorter in duration, and that kinetic warfare will be undertaken only for 'more decisive goals' (*v bolje reshytelnykh tselyakh*). The tasks that will be most prioritised in the war of the future will be to counter automated command and control systems and high-precision weapons given their long range and great efficacy. As space-based systems are developed, the scale of the use of traditional and new weapons will shift in favour of the latter. Missile forces may for instance increase at the expense of the air force.

Furthermore, Dulnev and Orlyanskiy point out that as the possibilities to influence people with information on and off the battlefield increase, so will the role and importance of operational (and tactical) *maskirovka* (deception), psychological warfare and 'moral-psychological' security. When qualitatively new types of communication become applied in a large scale, this objective may be achieved only through greater information efforts targeting people. This requires states to stay one step ahead of the adversary in the information sphere (Dulnev & Orlyanskiy, 2015: 50-1).

One finds that while new weapon systems and new type of units are introduced, the importance of operations in the anthroposphere will rise, and there will be a need to support or complement the kinetic means by political or psychological warfare.

3.3.1 The Development of Future Military Equipment

Popov and Khamzatov argue that new types of combat vehicles should be developed to meet the highly mobile adversaries of the future. Also, they suggest that land-based weapons systems that have limited effectiveness in urban warfare

should be replaced. Instead, a standard system of special automated infantry helicopters (*spetsyalnye robotizirovannye vertolyoty pekhoty*) should be developed, large enough to accommodate two crews, two gunmen and six infantry soldiers, and they should replace infantry fighting vehicles (*boevaya mashina pekhoty* [BMP]) in urban contexts. The concept should be supplemented with light transport platforms and a range of automated land- and air-based systems (Popov & Khamzatov, 2016: 592-4). The future arsenals of warring parties will consist of so-called 'absolute weapons' (weapons of mass destruction, geophysical weapons and climate weapons), kinetic weapons (conventional, space-based and non-lethal weapons) and non-kinetic weapons (information, cognitive, psychopharmaceutical and cyber weapons).

Popov and Khamzatov believe that within the coming decades the development of artificial intelligence will lead to the introduction of autonomous and semi-autonomous platforms designed to address a series of logistical, maintenance and other tasks related to the preparation, execution and supply of military action. Combat missiles will be based on automated systems equipped with artificial intelligence. On the other hand, they are pessimistic about the possibility to field combat robots in view of their potentially high price tag, the objectives they may conceivably achieve and the possible outcomes of their deployment. Over the foreseeable future, human soldiers will remain superior except for deployment in contaminated areas. A series of land- and air-based systems for intelligence gathering, reconnaissance and other tasks will be created. Yet, in the short-term future, automated systems will only be able to resolve tasks in a concrete tactical context. Possibly, in a longer-term future, the coordination of humans and robots will improve (Popov & Khamzatov, 2016: 602-8).

Popov and Khamzatov also argue that the development of network-based weapons will lead to enhanced capabilities, especially through the shortening of command and control cycles and an increase in the firepower, manoeuvre capacity and other features of individual weapon platforms. The subsequent step should, according to the two authors, be 'knowledge-centric warfare' (*znaniye-tsentrityeskaya voyna*), the essence of which will be based on the transmission of knowledge instead of information. Information about the operational situation that was previously available only for command will now he sharable with individual soldiers, which will facilitate a shift to decentralised command of forces and means.

In general, the future will see far greater coordination among different battlefield systems, according to Popov and Khamzatov. Great spatial envelopment (*prostranstvenniy rozmakh*) will characterise future wars, where battle will happen also in cyberspace, which will form the basis for network-centric integration of various weapon types. Not only new weapons, but also new systems of systems will be developed, bringing together battle components, reconnaissance components, command, navigation, logistics and maintenance, which will be organised, moved and grouped unnoticeably.

In an article in *Voyennaya Mysl'*, V.V. Selivanov, a professor, full member of the Russian Academy of Rocket and Artillery Sciences and head of the High-Precision Airborne Devices Department of the Bauman Moscow State Technical University, and D. Ilyin, a retired colonel, list a number of non-traditional weapons that will be employed in the future (Selivanov & Ilyin, 2017). The weapons have features in common with the weapons envisioned by Popov and Khamzatov, and include radiation, geophysical, frequency-based, genetic and psychosocial weapons, but also high-precision weaponry (Selivanov & Ilyin, 2017: 72). With greater firepower, high-precision weapons may achieve strategic importance and may come to replace nuclear weapons. This also means that we should anticipate the continuing widening of the zone of destruction (Selivanov & Ilyin, 2017: 77-8). These points are made also in Colonel (ret.) S.G. Chekinov and Lieutenant (ret.) S.A. Bogdanov's article about future warfare in *Voyeannaya Mysl'* from 2015. These authors, too, play down the importance of nuclear power in the future and underscore the importance of high-precision weapons, enhanced information sharing and the integration of reconnaissance in future warfare (Chekinov & Bogdanov, 2015: 96). It is worth noting that Selivanov and Ilyin, in contrast to several other Russian researchers, believe that kinetic means will remain central means of warfare in the future (Chekinov & Bogdanov, 2015: 72).

While the authors remain divided as to the role of nuclear weapons in the future due to rise of new high-precision weapons, one finds several common elements in the arsenals of the future: geophysical weapons, and non-kinetic weapons aimed at the cognition and morale of the adversary's leadership and population. New networked intelligence gathering, reconnaissance, command and control and firing system will increase the zone of operations and destruction, supported by autonomous and semi-autonomous platforms.

3.4 Conceptual Development

In regard to conceptual development, the Syrian conflict is addressed in numerous articles. Also Ukraine, Libya and Iraq are discussed as states that collapsed despite possessing armed forces of considerable size. The last three 'fell' (in the lexicon of several Russia authors) on account of Western intervention, demonstrating that it is important for Russia to fend against Western 'hybrid warfare', which will continue to be waged against Russia. Yet Syria receives the bulk of the attention as it is a conflict where Russia has intervened openly.

According to the chief of the general staff, General Gerasimov, the experiences from Syria reveal the importance of high-precision long-range weapons in local wars. One conclusion to be drawn from this is the need to equip each strategic direction with carriers of land-, sea- and air-based cruise missiles. Another lesson is that command structures need to be improved, special units for information gathering need to be created and data complexes for speedier deployment of units need to be introduced.

For Gerasimov, it is the development of command systems that should be prioritised. He believes that the level of automation of information gathering, processing and planning will increase through the delivery of an automated command system for units and systems at the tactical level to the motorised rifle and tank units. This will require commanding officers to develop an ability to act swiftly (Gerasimov, 2018: 19-20).

4 Conclusion

This article has discussed five thematic areas of future war discussions in Russian military scholarship: non-military warfare, the effects on operations and tactics, types of wars and conflicts, the development of military equipment in the future and conceptual development. The findings overlap in part with those of Chekov et al. 2019 and Thomas 2019, notably in regard to the diminishing importance of nuclear weapons and the greater role of advanced command and control systems, but also address numerous other issues, including the place of AI in future military operations and the demands placed on ground forces.

Conventional operations, when they happen, are expected to be more powerful and will be conducted over a large operational space with new command and control and weapons systems that permit concentration and dispersal of forces strategically in real time. Many of the researchers in the articles that have been considered agree that Russia needs to develop capabilities to manage a wide range of future conflicts, including large-scale and conventional ones, even if the latter may be less likely to arise. While the bulk of military forces should possess an ability to display strength to prevent conflicts from becoming kinetic, troops for new-type wars and conflicts should be created through a combination of regular and irregular forces. Such combined forces appear to have been tested successfully in Syria. They should be highly mobile, able to operate across large distances and possess a strong ability for dispersal and concentration. They need to be coordinated simultaneously across all levels and should employ specially designed assault and transport helicopters instead of military infantry vehicles, especially for urban combat. Apart from combat troops, they should comprise units for informational and psychological warfare, along with military and civilian experts. In general, future conflict will be characterised by greater attention to informational warfare.

New and upgraded systems with and without AI, including non-kinetic ones, are expected to change the battlefield and make combats more intensive and operations briefer in duration. There will be greater coordination of systems across different operational spaces, from cyber space to outer space, with greater information sharing across systems and levels.

In general, Russian discussions of future warfare are characterised by a focus on non-kinetic means and tend to relegate kinetic means to the decisive phase of warfare or to the role of deterrents. There are traces of Messnerian thought in this, as demonstrated in the work of Evgeniy Messner, who wrote during the Cold War, arguing that nuclear weapons, by serving as effective deterrents, caused a shift in warfare to the non-kinetic, even non-military, spheres. Today, several Russian scholars similarly play down the threat of large-scale conventional war on account of Russia's effective conventional and nuclear deterrents, while they play up the danger of non-kinetic warfare that may take a range of forms, from cognitive to climatic. It is assumed that the West will use a broad swathe of methods and actors to

target Russia, including diplomacy, non-governmental organisations, demonstrations and migratory flows. These may be used independently, but they may also be used as force multipliers in conventional operations.

The occasional divergences between the articles do not change the fact that there is overwhelming agreement among the Russian military scholars that the future war will be triggered by attempts by the West to promote its political and economic interests at Russia's expense. The image of the West as an enemy is very strong and crowds out other possible enemies, such as China, terrorists and separatists on Russia's periphery, unless they are presented as agents of Western interests.

The strong Western enemy image is also linked to an assumption that conflict, if not necessarily conventional war, is inevitable, given the conflicting interests of the West and Russia. There is little optimism about the future in the sources. Conflict is inevitable even if it may take various forms, ranging from subversion and local wars to – less probably – large-scale conventional and even nuclear war. Several sources argue that the Syrian operation represents a kind of operation that Russia should increase its capability to execute, especially in light of its combined use of conventional and non-conventional forces and successful long-range force projection.

In other words, the Russian researchers imagine a future where Western actors (continue to) use a broad range of subversive measures and actors coordinated through powerful command and control systems. The danger of conventional war, similarly to that of nuclear war, has declined; yet limited conventional conflicts cannot be precluded, particularly if non-kinetic warfare is allowed to escalate. Russia needs to employ its growing strength to establish capabilities that allow it to meet a range of kinetic and non-kinetic threats at home and abroad, which may place particular demands on command and control systems and the deployability and flexibility of combat forces.

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