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Argument on infantry support gun on academic level (1920–1943)[2]

Abstract

In this review I try to show that fruitful argument what happened in the columns of Hungarian military journal Magyar Katonai Közlöny and Magyar Katonai Szemle. Gunner officers of that period had no other choice than turn to academic level because of restrictions of Treaty of Trianon. They tried to solve the same problem, effective artillery support for infantry, but imagined different ways. I will review their articles below.

Keywords: *infantry support artillery, assault artillery, self-propelled artillery, war history*

The Treaty of Trianon contained strict military sanctions against Hungary. It limited the number of artillery guns (field-guns, howitzers, pack-howitzers) according to the number of military personnel. Hungarian Royal Defense Forces could have three guns after a thousand servicemen, their caliber couldn't be up to 105 millimetres.[3] Because the number of personnel was limited to 35.000, the Defense Forces could not have more than 105 guns. An artillery regiment had eight 4-gun-batteries, so Hungary could possess three and a half regiments. The treaty allowed one thousand ammunition for every gun. These sanctions heavily restricted artillery branch and kept Hungarian Defense Forces out of modern developments of military technology.

Hungarian military officers had no other choice to keep abreast of times and international developments than to follow the trends on scientific level. As Maj. János Wagner mentioned in his article in 1934, "*for us only the leaked datas about other armies experiments are available, so unfortunally we can talk about this important question only academically*".[4] Editing the Hungarian military journal, Magyar Katonai Közlöny (called Magyar Katonai Szemle after 1930) was intermitted during World War I and

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[2] József Ondrék, qualified translator and interpreter found the article linguistically appropriate and the article is published on the basis of his expert opinion.

[3] XXXIII/1921. law 104-119. article. Source: https://net.jogtar.hu/jogszabaly?docid=92100033.TV (downloaded: 25.01.2022. 17:13)

[4] Wagner, János dr.: Gyorsanmozgó seregtestek. *Magyar Katonai Szemle* 4, no. 4 (1934). 44.

restarted in 1920. It was the main platform of war scientific argument. Between the two world wars a very active and fruitful scientific life occured on the military journals columns as a result of treaty sanctions.

The main goal of this publication is to present the concepts of gunner officers how to eliminate deficiencies of the branch which were recognised during the Great War. They experienced that field-artillery could not support the attacking infantry perfectly. In the crucial period, when infantry got close (200 metres) to the enemy lines, artillery had to place its fire forward not to destroy its own infantry. The enemy's heavy guns, which survived preliminary bombardment, started to fire at that moment and made serious destruction to the attacking infantry. In many countries of Europe the solution to this problem was thought to be found in developing an infantry support gun. Hereunder I will review some articles, published in the topic of infantry support gun in Magyar Katonai Közlöny (called Magyar Katonai Szemle after 1930), to present the military scientific argument which led to the birth of assault artillery branch.

Maj. (GS) Imre BANGHA suggested the mobilisation of artillery for protection against the newly developed military technology, the tank. The explanation was that if tanks break through the infantry line, artillery stay without protection. He recommended to place the guns into motorized vehicles, or at least change the horse-drawn vehicles to motorized ones.[5]

In 1921, alias S. as a gunner officer, he published an article. The writer said it is necessary to draft artillery element to infantry which permanently follows the attacking forces and if required it destroyes the enemy heavy guns and fortifications with direct laying. In the element heavy machine guns, light mortars, medium mortars and pack-guns would be included. This gunner group must be in close communication with supporting artillery, which possesses bigger destructive power and is able to destroy aims marked by the gunner group. The writer thought a 4-pack-gun battery and a battery with four 14 millimetres mortar was necessary.[6]

Col. (GS) Ottó FERJENTSIK when analyzing the correct execution of the attack, went into details about the role of artillery. He tought it was totally unimaginable in a modern army to carry out an attack without artillery which moves with infantry. Since field-artillery was not able to fire a perfect barrage, what could destroy all of the firemachines of the enemy? Infantry support guns were necessary as basic parts of infantry regiments.[7]

Col. (GS) Géza DEMÉNY emphasized the importance of artillery reconnaissance and the so-called artillery-courier in 1922. He said the connection between artillery and infantry could be provided in this way, so the artillery group-commander would get the information that was necessary to fire effectively.[8]

Cpt. Béla Rákosi suggested to adapt an infantry gun, a mortar, or an assault gun installed on an armoured truck for the effective fire support of infantry's attack. He

[5] Bangha, Imre: A tankok. *Magyar Katonai Közlöny* 8, no.1-2 (1920). 88-97.

[6] S.: A gyalogság támogatása a harcban. Kisérő és támogatótüzérség. *Magyar Katonai Közlöny* 9, no.1 (1921). 54-58.; S.: Kisérő tüzérség. A Militär Wochenblatt 1920-21-iki évfolyama 121. számában megjelent cikk alapján. *Magyar Katonai Közlöny* 9, no. 4 (1921). 258-263.; S.: Még egyszer az „összműködésről", a kisérő gépek és tüzérségről. *Magyar Katonai Közlöny* 9, no. 10-11 (1921). 690-695.

[7] Ferjetsik, Ottó: A támadás. *Magyar Katonai Közlöny* 9, no. 7-8 (1921). 417-438.

[8] Demény, Géza: Tüzérfelderítő és tüzérközvetítő járőrök. *Magyar Katonai Közlöny* 10, no. 2 (1922). 129-136.

said that using a mountain gun as an infantry support gun could not be the solution, because mountain gun had been developed for another purpose, so it was not perfectly able to carry out this task. He recommended to develop a new close combat gun, which could be used with direct laying. Infantry guns and mortars would have belonged to infantry, and assault guns directly to the division as 6 or 8-gun battery. He made claim on an infantry mortar that could be installed to a wheeled gun-carriage for the sake of applicability against armoured trucks and tanks, so it could fire on low path of projectile. He also recommended to adapt *"report bomb-shell"* to bestow reports backward. His requirement was to make assault gun be able to support infantry's attack with the destruction of dangerous fortifications and hostile forces directly. Since he thought it was very effective and became the main target of the enemy when it appeared, it could only be massively deployed on the most necessary frontlines. He added that because of its characteristics it had to be mobile and well-manoeuvrable. Additionally, he recommended to adapt anti-armoured-truck-gun which could be used for anti-aircraft defense. He tought if an anti-aircraft gun was able to fire on low path of projectile, it could be useful for anti-armoured-truck defense.[9]

Col. (GS) Zoltán MÓDLY demonstrated the importance of infantry support gun through an example of the French army in his article in 1923. The French army used 37 mm infantry guns, 81 mm mortars and detached guns from field-artillery, because the expectations toward the accompanying artillery could not be met by a single gun. According to the French protocol, in every case when the connection between infantry and artillery was not sufficiently guaranteed, infantry support artillery was ordered to the attacking infantry. Their role was to destroy battle positions, close guns and tanks. From the German protocol it seems that they used infantry guns and mortars to destroy the hostile heavy guns and tanks, they did not use infantry support guns. He added that the Hungarian Royal Defense Forces did not possess as many guns and mortars as the German Army, and the assets were not modern enough, so Hungary could not copy the German example, but needed modern infantry support artillery.[10]

László BADINSZKY was dealing with three artillery guns developed during the Great War: mortar, infantry gun and anti-tank gun. Based on the world war experiences infantry needed closer artillery support, so either direct support was necessary during the attack, or a more effective connection and communication network had to be developed. In the writer's opinion the presence of infantry support artillery was more effective than the advanced connection. The best solution would have been to develop a gun, instead of the three analysed assets, which could cover all needs. In Badinszky's opinion a small, 40-50 mm caliber, high muzzle velocity and smashing gun would have been adequate. It would have been built into a body of armour, but its protection would have not been primarily due to the armour, but to its agility. [11]

Maj. (Austrian Army) Friedrich HEIGL's article was published in Militärwissenschaftliche und Technische Mitteilungen military journal in German language, it was translated to Hungarian by Endre Ajtay. Major Heigl first reviewed the development of gun

[9] Rákosi, Béla: A modern közelharctüzérség. *Magyar Katonai Közlöny* 10, no. 4-5 (1922). 304-314.
[10] Módly, Zoltán: Lövegek és aknavetők a németeknél és a franciáknál. *Magyar Katonai Közlöny* 11, no. 5-6 (1923). 292-303.
[11] Badinszky, László: Aknavetők, gyalogsági kísérő és tankelhárító lövegek. *Magyar Katonai Közlöny* 14, no. 3-4 (1926). 237-243.

components during World War I, then the changes of gun types. As a conclusion, he wrote *"the future is probably the motorized guns."*[12]

Col. vitéz Gábor MARTON translated and interpreted the Frech artillery lieutenant colonel Buchalet's article that was pubished in July, 1927 in Revue d'Artillerie. As Buchalet wrote, nobody could question the need of a gun that, unlike support artillery, directly followed infantry and destroyed fortified targets which had survived preliminary bombardment. From Buchalet's point of view the best weapon for this task was a mortar.[13]

An unknown author, named G., wrote a review about the Brittish colonel Fuller's and the German lieutenant colonel Seissel's articles. The topic was the effect of motorizing to the modern warfare. Based on the ideas of the foreign authors, the writer's opinion was that the tank would play the main role in the future wasr, and rapid forces would score victory. Since tanks could move forward rapidly, it was necessary to motorize artillery, too, which could follow the fighting units continuously, and support them during the moving battle. The tank-battles gave a new task to the motorized artillery, namely the counter-armouring.[14]

Maj. (Austrian Army) Dr. Friedrich HEIGL wrote an article about counter-armouring and touched the topic of infantry guns, because – after world war experiences – these assets got a new role, the counter-armouring. Major Heigl dealt mostly with the description of the adapted assets, not with predictions. He thought that small caliber, automatic, long-barreled infantry guns were the most effective against tanks.[15]

István CZIEGLER wrote a short review about artillery support for tank division. As a starting point, he assumed that a suitable anti-tank gun would soon be developed, which was low-shaped, had 60 grade sideward fire capability and could fire armour-piercing shell with high muzzle velocity on low path of projectile, so it could be a good counter-agent against tanks. In this case an artillery gun would have been necessary, which could follow the tank attack, because indirect firing could not destroy the accidential guns and other objectives fast enough. It was necessary to armour the asset to protect the manning of infantry support gun, but this would make it similar to tanks. Since the self-propelled gun could carry out the tasks of the tank–except the destruction of infantry-, it would be more effective to use a number of smaller devices (self-propelled guns and armoured machine guns) instead of the tank, so that the enemy's anti-tank forces would also have a harder time.[16]

Gen. Imre SUHAY raised the possibility of developing self-propelled artillery in connection with the question of motorization, but he also rejected it because he thought those assets could move only on well-built roads. [17]

[12] Heigl, Frigyes: A tüzérségi anyag tökéletesítése a háború alatt. *Magyar Katonai Közlöny* 15, no. 6 (1927). 571-585.; *Magyar Katonai Közlöny* 15, no. 7-8 (1927). 639-659.; *Magyar Katonai Közlöny* 15, no. 9 (1927). 742-759.; *Magyar Katonai Közlöny* 15, no. 11 (1927). 933-938.

[13] Marton, Gábor: A gyaloghadosztály tüzérségének felfegyverzése. *Magyar Katonai Közlöny* 15, no. 11 (1927). 180.

[14] G.: A hadsereg motorizálásának befolyása a hadműveletekre és a vezetésre. *Magyar Katonai Közlöny* 15, no. 11 (1927). 923-933.

[15] Heigl, Frigyes dr.: Korszerű harckocsielhárító fegyverek. *Magyar Katonai Közlöny* 16, no. 3 (1928). 277-298.

[16] Czigler, István: Páncéljárműves csapatok támadásának tüzérségi támogatása. *Magyar Katonai Közlöny* 16, no. 5 (1928). 492-496.

[17] Suhay, Imre: A motorizálás kérdése és jelenlegi állapota a nyugati államok hadseregeiben. *Magyar Katonai Közlöny* 16, no. 6 (1928). 583-592.

Árpád MARKÓ wrote a review about the article of Gustav Däniker, a captain of the Swiss Army (published in Allgemeine Schweizerische Militärzeitung). He suggested to adapt a light howitzer for the role of infantry support artillery, which was easily assemblable, dismountable and able to destroy fortifications, machine-gun pits and tanks, so it could provide the success of infantry attack. Cpt. Däniker also raised the possibility that the infantry support gun could be equipped with a caterpillar and protected with armour. However, he soon rejected this idea, as he believed that this would create a tank that would not be able to accomplish the task set as a goal. As a result he stated only men- or horse-drawn gun could be the good way, and the best would be a 50-millimetres gun that was effective against tanks as well.[18]

Retd. Col. (GS) Károly MAYER-CSEJKOVICS wrote an article in 1929 about war in the future. His opinion was a 20-30 millimetres gun would be suitable for job of infantry support artillery in the modern warfare.[19]

Gen. Imre SUHAY translated and interpreted Liddell Hart's (Cpt. of British Army) essay on British tank exercise in 1928. Hart already saw the self-propelled artillery organized alongside the armored troops as a fundamental phenomenon. Beside the power-propelled field-artillery self-propelled 18-pounder howitzers supported the operations of attacking tanks.[20]

István CZIEGLER's opinion was that the solution to effective fire-support of infantry was the specification of fire. He thought the key was artillery reconnaissance. The artillery commander of every division should have been supplied with voice and light spotter company, artillery planes and balloons and improved telecommunication. In addition, in order to distinguish the fire of each battery, he suggested that grenades could be marked with paint, so that during detonation it would be possible to separate the fire of the batteries based on colour.[21]

Lt.Gen. Károly GERBERT wrote a review on the composition of modern tank units in connection with a British exercises in 1928. His conclusion was that a mechanised artillery battalion had to be embedded of light and medium tank mounted mechanised divisions. 24 so-called artillery-tanks would have been in a battalion. The artillery-tanks would have been 10-12 tonnes tracked vehicles, equipped with an 80-90 millimetres caliber gun, organised into four batteries of 6 guns each. Due to the rapid movement of the brigade and the presence of artillery-tanks, field artillery support was not even an option. [22] In the chapter of tactics of tank division he remonstrated that artillery-tank (similar to tanks) had to fire with direct laying. Gen. Gerbert's opinion was that this mechanised guns' task was to support warfare of tanks, as artillery-tanks stayed behind during tank battles and destroyed breaking through hostile tanks.[23]

István CZIEGLER wrote an other essay in 1930, in which he presented a completely opposing opinion than in his last article. He realized that an infantry support gun was needed against tanks, which was able to keep the tanks speed, so the perfect asset

[18] Markó, Árpád: A gyalogság nehéz fegyverei. *Magyar Katonai Közlöny* 16, no.11 (1928). 1064-1073.
[19] Mayer-Csejkovics, Károly: A jövő hadviselése és annak eszközei. *Magyar Katonai Közlöny* 17, no. 1 (1929). 23-42.
[20] Suhay, Imre: Angol páncélos csapatok 1928-ban. *Magyar Katonai Közlöny* 17, no. 2 (1929). 190-195.
[21] Cziegler, István: A megfigyelés kérdése a korszerű tüzérségnél. *Magyar Katonai Közlöny* 17, no. 9 (1929). 890-893.
[22] Gerbert, Károly: Páncélcsapatok. *Magyar Katonai Közlöny* 17, no. 10 (1929). 973-984.
[23] Gerbert, Károly: Páncélcsapatok. *Magyar Katonai Közlöny* 17, no. 12 (1929). 1201-1213.

was a self-propelled gun. For effective counter-armouring the gunner's patience and faith in their gun was critical. This could only be achieved through careful training of personnel. He recommended to start training the gunners for counter-armouring in the Hungarian Royal Defense Forces. Though restrictions didn't allow to modernize the guns, the training could start with obsolete assets, so later – in full possession of the basics – only a retraining for the modern guns would be necessary.[24]

Retd. Lt.Gen. Lajos RIEDL divided infantry support guns into two categories. First, the infantry gun would have had two easily moveable parts that infantrymen could carry easily if needed. Every infantryman would have carried 2 grenades. The gun would have been 35-40 millimetre calibered, had 500-600 metres gun-range and every infantry battalion would have possessed 4 pieces. The other, the infantry support gun would have been horse-drawn, but could have been men-drawn if needed, 55-65 millimetres calibered and had 2000-2500 metres gun-range. Every infantry regiment would have possessed a battery of infantry support guns.[25] This asset would have been the most important when infantry attacked successfully and passed beyond the field-artillery's range. From this moment infantry support artillery would have covered infantrymen against hostile attack.[26] Beside of these, self-propelled anti-tank guns would have also been needed to dispose in frontline checkerly. Their task would have been to eliminate the attacking hostile tanks.[27]

Col. (GS) László HORVÁTH wrote a review on tank warfare and the set-up of tank units. He thought that self-propelled guns would have been parts of every tank division, but these assets were meant to be used on well-built roads which would have slowed down the units, similarly to infantry. In his opinion motorization of artillery was possible only with tow-trucks. Artillery could have supported the tank attack only until the break-through of the enemy lines, but after it guns would have fallen behind and tanks would have fought without artillery support.[28]

Maj. Kálmán KOVÁTS reminded readers to the importance of coordinating artillery and infantry warfare. The memory of the Great War started to fade year by year, and more and more officers who had fought in the war left the Defense Forces, the dependence of infantry on artillery fire support also began to be forgotten. He urged commanders to listen to reports of artillery commanders.[29]

Retd. Lt.Gen. Károly GERBERT wrote an other study on warfare of tank divisions, and described the trends of the European powers in tank development and use. Based on these, the British were the only ones who thought about assigning motorized artillery to the tanks, other nations treated the tank as an independent fighting weapon. Closing the article, the author supported the idea of engine-towed artillery, however he suggested to use it not as an accompanying artillery. A day behind, along with the infantry, it would follow the advancing armoured forces.[30]

[24] Cziegler, István: A tüzérség feladata a harckocsik elleni védelemben. *Magyar Katonai Közlöny* 18, no. 5 (1930). 436-448.
[25] Riedl, Lajos: A tüzérség a világháborúban és a jövőben. *Magyar Katonai Közlöny* 18, no. 6 (1930). 548-565.
[26] Riedl, Lajos: A tüzérség a világháborúban és a jövőben. *Magyar Katonai Közlöny* 18, no. 11 (1930). 1051-1063.
[27] Riedl, Lajos: A tüzérség a világháborúban és a jövőben. *Magyar Katonai Közlöny* 18, no. 6 (1930). 548-565.
[28] Horváth, László: A harckocsik alkalmazása és a jövő harcászata. *Magyar Katonai Szemle* 1, no. 2 (1931). 17-31.
[29] Kováts, Kálmán: Összműködés a tüzérséggel. *Magyar Katonai Szemle* 1, no. 3 (1931). 19-29.
[30] Gerbert, Károly: A harckocsik összműködése a többi fegyvernemekkel. *Magyar Katonai Szemle* 1, no. 4 (1931). 14-25.

Cpt. Imre HAZAI wrote an essay on practical experiences of using infantry guns. He covered the topics of the best placing of the guns, the position of the commander and communication with gunners in details. He praised the horse-drawn version, and rejected the idea of using self-propelled or power-propelled infantry guns.[31]

Lt.Col. Lajos CSATAY treated with the possible ways of modernisation of field-artillery. He wrote that the most important criteria for a modern gun – because of the presence of planes on a battlefield – were mobility, how well it could be hidden and its side-scanning capability because of the appearance of tanks. Taking into account these criteria, the self-propelled gun was considered to be the most suitable, and its 6-wheel- carriage could easily be equipped with caterpillar. He thought every other attempt to modernise field-artillery guns were stopgaps.[32]

Cpt. András DEÁK analysed the European development trends in the aspect of artillery tow-trucks. He set horse-drawn and power-propelling ones against self-propelling ones and as a result he thought horse-drawn and sometimes jeep-propelling were the most appropriate for the needs of artillery.[33]

Retd. Col. József TARNAY analysed Colonel Adolf Fischer's (German Army) article. He reflected on Fischer's work on infantry support guns, and as a result he wrote that more types of guns were needed for different artillery tasks. He distinguished break-through, counter-armour and direct support guns, these assets were organised under infantry regiments as support artillery battalions.[34]

Maj. (GS) József NÉMETH wrote a review on rapid forces, and from his point of view it was pointless to install an artillery device in armour, because due to the long range of the artillery, it could trigger an effect from outside the range of enemy infantry fire.[35]

Cpt. Peremartoni László VIRÁGH published an essay on motorisation of artillery. Comparing horse-drawn and power-propel, he voted for motorisation. He studied the topic of self-propelled artillery, too. He thought that self-propel could be useful in case of some special guns, but for general use it was not appropriate.[36]

Maj. Béla RÁKOSI wrote an article on current battle tasks of field-artillery. In his opinion the development of self-propelled guns way necessary because of the spread of tanks and war mobilisation. The main task of self-propelled guns would have been counter-armouring, and partially replacing the duties of infantry guns. Every infantry regiment would have possessed one battery of self-propelled guns, and infantry divisions directly one or two batteries.[37]

Maj. Viktor ÁRVAY had a research on the cooperation of tanks and artillery, and distinguished two possible roles of a tank. The first one was that tanks covered the fight of infantry, and field-artillery could support the attack. The second one was that tanks

[31] Hazai, Imre: Gyakorlati tapasztalatok a gyalogsági ágyu harcászati alkalmazása terén. *Magyar Katonai Szemle* 1, no. 4 (1931). 41-50.
[32] Csatay, Lajos: Korszerű könnyű tüzérség. *Magyar Katonai Szemle* 1, no. 5 (1931). 117-132.
[33] Deák, András: A tüzérség motorizálása. *Magyar Katonai Szemle* 1, no. 5 (1931). 147-150.
[34] Tarnay, József: Kisérő tüzérség. *Magyar Katonai Szemle* 1, no. 6 (1931). 144-153.
[35] Németh, József: A gyorsan mozgó csapatok időszerű kérdései. *Magyar Katonai Szemle* 1, no. 9 (1931). 29-49.
[36] Virágh, László: A tüzérség motorizálása korszerű hadseregekben. *Magyar Katonai Szemle* 1, no. 10 (1931). 43-60.
[37] Rákosi, Béla: A tábori tüzérség korszerű harcáról. *Magyar Katonai Szemle* vol. II. (1932) no. 6, p. 33-44.

did independent battle tasks, so beside long-range artillery it was necessary to assign support guns as well. These guns could have been tractor-drawn or self-propelled.[38]

Cpt. (GS) Ferenc OSZTOVICS, in his work on artillery support for an infantry attack written in 1933, dealt with how to best coordinate the firing of barrage and the attack of infantry. He stated that infantry support guns were necessary alongside the most perfect barrage, too. These guns followed infantrymen and destroyed hostile fortifications and heavy guns which had survived preliminary bombardment.[39]

Maj. Ernő BILLNITZER wrote about the structure of infantry and cavalry support guns. He proposed to develop a gun for infantry and cavalry which could be easily disassembled, was light-weight, so it could be moved even on foot, and had a low structure for good concealability. He also considered it important to design a gun built into a tank, which, together with the infantry, would ward off enemy targets dangerous to the infantry and to itself.[40]

Retd. Lt.Gen. Károly GERBERT studied the possible use of tanks. He mentioned "artillery tank" as a type of tanks which was developed by the British and Russian army considering it was necessary. In his opinion motorised tow trucks superseded this asset. To support infantry when it invaded enemy positions, and when artillery could not help without threatening its own forces was considered the task of the tanks.[41]

Maj. vitéz Antal ELEKES wrote a review on artillery support for armoured forces. He thought artillery could effectively support tanks only from open fire-position, firing to hostile aims with direct laying. As field-artillery could do this only after long preparation and risking itself, it was necessary to develop a gun built on motorized shell. This device would not have a revolving gun turret, but could target the enemy device by changing direction. Due to the difficulty of communication between the guns, the control of fire should not be determined by the battery commander, but the personnel of the guns should independently search, seek and destroy the targets. Guns would break forward behind the tanks, slightly lagging behind, because they were much weaker armoured than the tanks. In addition, to overcome more distant goals, power-propelled guns would be needed, which would take turns shooting and changing positions to keep pace with the armoured personnel.[42]

Maj. vitéz Antal ELEKES published a new study in 1935 in which he dealt with the artillery support of rapid forces that could be used by poorer countries. The result was that every cyclist and motorised infantry battalion should have directly possessed a secondary battery, which could independently support the attacking rapid force without central control.[43]

Col. vitéz József HESZLÉNYI published an article on artillery of motorised units. He thought that power-propelled light and medium guns (howitzer and gun batteries) were suitable for motorised forces, and self-propelled guns were good for needs of mechanised forces, so for tank units. Because tanks had their own guns there was

[38] Árvay, Viktor: Tüzérség és harckocsik együttműködése támadásnál. *Magyar Katonai Szemle* 2, no. 12 (1932). 121-126.
[39] Osztovics, Ferenc: Támadás tűzhenger oltalma alatt. *Magyar Katonai Szemle* 3, no. 4 (1933). 49-59.
[40] Billnitzer, Ernő: A korszerű gyalogsági és lovassági löveg mozgatása. *Magyar Katonai Szemle* 4, no. 3 (1934). 76-80.
[41] Gerbert, Károly: Páncéloscsapatok és motorizált erők alkalmazása. *Magyar Katonai Szemle* 4, no. 5 (1934). 34-53.
[42] Elekes, Antal: Tüzérség a mechanizált seregtestek kötelékében. *Magyar Katonai Szemle* 4, no. 11 (1934). 135-145.
[43] Elekes, Antal: A rögtönzött gyors seregtestek tüzérsége. *Magyar Katonai Szemle* 5, no. 5 (1935). 69-77.

no need for strong artillery. He recommended a self-propelled light howitzer battalion and one or two self-propelled medium gun batteries for every tank battalion.[44]

Cpt. (GS) Jenő MERSICH, as a proud infantry officer, rejected raison d'etre of infantry support guns. He said infantrymen were able to reach the enemy lines with own arms (supplemented with modern weapons), the task of other branches was to make circumstances better.[45]

Maj. István SAÁRY studied infantry and cavalry support guns separately. In his opinion the previously used 37 mm mountain gun was inappropriate as an infantry support gun. Every infantry battalion would possess a 25 mm gun, and immediately behind the attacking infantry line, a 47 mm gun would advance under artillery command. A new battery would have to be organized under horse-artillery battalion, the firing material of which would be a four horse-drawn mountain gun.[46]

Lt.Col. Ernő BILLNITZER wrote a study on a required gun for infantry and counter-armour devices in 1938. From his point of view a 47 millimetres infantry gun should have been used under infantry units. As this gun could not solve every need of infantry, infantrymen should have got 20 millimetres heavy rifles against tanks. In addition, against targets that artillery could not destroy without endangering its own forces, an 81 mm mortar should be installed as an infantry heavy weapon. He also proposed a small hand grenade launcher based on the Spanish example. So he thought different weapons could solve the requirements of infantry.[47]

Cpt. (GS) Aladár ZUGI recommended to organize so called machine-groups for infantry support. The idea was based on a French sample, but French used the term for multitudinous use of tanks. In Cpt. Zugi's opinion machine-groups should have been composed of 2-4 machine guns, 1-2 infantry guns and two mortars.[48]

Vitéz Kálmán KOVÁTS wrote a review about the structure of the Soviet artillery. He wrote that Soviets organized two gunner detachments as infantry support artillery to infantry battalions. One of them had mortars, the other was a 37 millimetres infantry gun or a 47 millimetres self-propelled gun.[49]

Gen. vitéz József BENKE published a study on future war in 1940. From his point of view in the future tank battlegroups- supported by self-propelled artillery and mechanised infantry- would fight with each other. Small countries like Hungary, which were not able to organise tank battlegroups because of financial reasons, had to prepare to defend themselves from them. So each infantry regiment should possess a six-gun power-propelled or horse-drawn (capable of moving at a gallop on the terrain as well) anti-tank company, an additional power-propelled company should be organized per division as well as a battalion, consisting of two or three companies, per corps (one of them would be self-propelled "tank-hunter").[50]

Lt.Col. vitéz László BOKROSS believed that organizing the artillery directly under the infantry in small countries was unnecessary, because it was expensive and would

[44] Heszlényi, József: Motoros alakulatok tüzérsége. *Magyar Katonai Szemle* 5, no. 5 (1935). 144-160.
[45] Mersich, Jenő: Az utolsó kétszáz méter a támadásban. *Magyar Katonai Szemle* 5, no. 7 (1935). 10-26.
[46] Saáry, István: A kísérő lövegtől a lovas ágyús szakaszig. *Magyar Katonai Szemle* 7, no. 11 (1937). 54-63.
[47] Billnitzer, Ernő: Harckocsi elhárító ágyú – gyalogsági löveg. *Magyar Katonai Szemle* 8, no. 3 (1938). 59-64.
[48] Zugi, Aladár: Gépcsoportok alkalmazása és harca. *Magyar Katonai Szemle* 8, no. 6 (1938). 30-39.
[49] Kováts, Kálmán: A szovjet-orosz tüzérség. *Magyar Katonai Szemle* 9, no. 2 (1939). 44-59.
[50] Benke, József: Elgondolások a jövő háborújáról. *Magyar Katonai Szemle* 10, no. 1 (1940). 31-41.

result in the fragmentation of existing firepower.[51] Cpt. Tibor SZALAY thought the same and added that an artillery battery would cause so big difficulties to an infantry battalion that would greatly hinder its combat.[52]

Gen. vitéz Sándor HORVÁTH published an article on organising tank battlegroups. He explained that tank divisions need artillery support which could keep the speed of tanks. As tanks needed support immediately because of fast moving, indirect-fire was out of question, only direct fire could work. Thus, the gunners had to be on the battlefield which assumed that their self-propelled guns were adequately armoured at least against infantry weapons.[53]

1stLt. Kálmán PRAZNOVSZKY wrote a study on modern weapons of infantry. He recommended to organise infantry support artillery and to equip infantry with mortars and infantry guns which could fire from open position. He was the first who used the term of assault artillery. "To organise assault artillery is important to overcome local resistance and support infantry directly in deep defensives. The lessons of today's war prove that infantry is not immodest when it asks for it."[54]

1stLt. Dénes LÁNG wrote an essay in 1943 on the possible modernisations of mechanised artillery. He believed that guns no larger than 100 millimeters would be built into armour, so they would be able to accompany the infantry in constant readiness on the field. This armoured guns would fire directly and would be effective mostly against hostile tanks. While ammunition had to be inside in armour, small caliber and high muzzle velocity were reasonable because of counter-armouring.[55]

Col. vitéz Artúr GÓTHAY wrote a brief description on the assault artillery. As he explained, the demand that had existed since WWI was met with the birth of the new branch. Assault howitzers directly accompanying infantry could defeat the fortifications, heavy weapons and tanks that would pose a threat to the attacking infantry. Assault artillery was specifically designed to unbalance forces, so that when used in battalion or battery level, it could grip the attacking infantry with itself. Guns would move forward step-like and stop to fire while defending each other. Supported infantry would protect assault howitzers against hostile anti-tank weapons. In his other article he was dealing with the artillery of tank battlegroups. He thought that the support of mechanised infantry regiments would be provided by power-propelled batteries, while that of tank regiments would be adequately provided by self-propelled batteries. In this role self-propelled guns would not perform the function of assault guns or anti-tank guns but rather mobile artillery supporters of tank regiments.

All of the articles presented above were born with the aim of finding a theoretic solution to one of the greatest problems of contemporary artillery in the absence of practical experience. 49 studies were published in this topic in the monitored period (1927-1935). Authors thought the artillery support of infantry could be resolved by:

[51] Bokross, László: Gyalogsági (lovassági) üteg. *Magyar Katonai Szemle* 10, no. 3 (1940). 638-642.
[52] Szalay, Tibor: Adjunk-e a zászlóaljnak üteget? *Magyar Katonai Szemle* 10, no. 8 (1940). 361-364.
[53] Horváth, Sándor: Páncélos seregtestek. *Magyar Katonai Szemle* 10, no. 11 (1940). 311-324.
[54] Praznovszky, Kálmán: A gyalogezred korszerű fegyverzete. *Magyar Katonai Szemle* 11, no. 9 (1941). 568-579.
[55] Láng, Dénes: A gépkocsizó tüzérség fejlődési lehetőségei. *Magyar Katonai Szemle* 13, no. 6 (1943). 593-597.

Recommended solution	Number of articles
Self-propelled gun	21 (+2 trow out)
Infantry gun	10
Power-propelled gun	3
Horse-drawn gun	2
Infantry gun and heavy weapons	2
Infantry gun and self-propelled gun	2
Artillery reconnaissance	2
Mortar	1
Autocannon	1
Improve training	1
Threw out the idea of infantry support artillery	2

The idea of a self-propelled gun was mentioned before 1926 only once, and after it more frequently. The reason is probably that the British army started to organize open exercises in 1926 with mechanised and motorised divisions which had partially self-propelled artillery support. Articles after 1939 studied only self-propelled artillery. In the background there could be German war successes in World War II, and the fact that German used assault howitzers effectively on the battle fields from 1940. It is also interesting that artillery officers published fewer articles after „győri" militarisation program, proclaimed in 1938. It could be interpreted as the result of less pressure and more practical development.

Of the 49 articles published in that era, 16 dealt with the directions of development represented by the European powers. The authors mainly discussed the development of forces and the newly published regulations in France, Great Britain and Germany, and we can find studies on Austrian, Swiss, Spanish or Soviet concepts and modernization intentions. As a lesson to be learned we can say that at least those officers who were responsive to scientific debate were interested in the rest of the world, and were eager to learn about the achievements of other countries.

Only two of the authors aloof from the idea of infantry support artillery, and two more believed that traditional horse-drawn was the proper way for futury warfare. Others supported the idea of modernization. Based on the articles it can be seen that the artillery officers of the time were seriously concerned with the question of how they would be able to live up to the expectations toward them. Most of the authors fought in World War I as young gunner officers, and based on their battlefield experiences, they tried to find a solution to the question of the most effective application of the infantry support artillery.

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