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The economics of military innovation under anarchy: The case of the Ukrainian Civil War of 1917–1921

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ABSTRACT

This paper argues that anarchic societies can successfully engage in military innovation. To do so, it explores the novel case of the Ukrainian civil war of 1917–21 and the anarchist movement of Nestor Makhno. The anarchists' primary military innovation was the tachanka, a sprung-wheel cart that was pulled by four horses and featured a machine gun platform, which allowed for firing on the go. Tachanka formed the core of Makhno's army and enabled it to achieve a multitude of crushing victories against numerically superior state armies. Makhno's forces were able to successfully innovate for three reasons. First, the anarchists were incentivized to substitute innovative capital combinations for labor because of their small numbers and large territory to defend. Second, the anarchists used their local knowledge and spread their influence in southeastern Ukraine, the only region with an abundance of a specific asset needed for tachanka-centered innovation: the sprung-wheel cart. Third, the cooperation of Ukrainian peasants secured through social closeness and norms allowed the anarchists to create an innovative system of horse-changing stations, through which tachankas retained top mobility. My analysis adds to the literature on military innovation and innovation without the state, and it has implications for modern times, particularly amid the conflict between Russia and Ukraine, as it shows that even with the potential for state collapse, military innovation can continue.

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1. Introduction

The October Revolution of 1917 led to the Russian Civil War, and many territories of the former Russian Empire became engulfed in the conflict. Ukraine in particular saw some of the bloodiest fighting, lasting from 1917 to 1921. Many factions wanted to control Ukraine, with key forces being the monarchist White movement, the Bolshevik Red Army, and the Ukrainian anarchists under the leadership of Nestor Makhno. The anarchists controlled sizable territories in the Ukrainian Southeast (see Appendix A) and defended them against both the Whites and the Reds until Makhno's defeat in 1921.

The Ukrainian anarchists were particularly noted for their military innovation, with their most recognized achievement being the tachanka, a sprung cart that was pulled by four horses and featured a machine gun platform,[1] which allowed

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[1] The anarchists were not the first to plant a machine gun upon a cart. The British military used similar contraptions against the indigenous populace of Africa at the end of the nineteenth century, and German forces put machine guns on carts during World War I. However, the British and German vehicles were primarily used to transport the machine gun and not as mobile machine gun platforms, and they did not form entire mobile fighting units, which makes the anarchists' use of the tachanka truly innovative.

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for firing on the go (see Appendix B). Tachankas formed the core of Makhno's army and allowed the anarchists to employ hit-and-run tactics, leading to many victories despite a disadvantage in manpower and significant distance to cover. Entire regiments of the anarchists' army were based around the tachanka.

The existing literature (see, for instance, Farrell 1996; Beckley 2010; Gennaioli and Voth 2015; Ford 2017; Weiss 2017; Hoffman 2021) has largely ignored the possibility of military innovation under anarchy.[2] However, the case of the tachanka shows that military innovation in anarchic societies is possible. This paper's goal is to uncover the economic principles behind military innovation under anarchy and understand the forms it takes. In the case of Makhno's army and its use of tachankas, three key factors incentivized military innovation and made it possible.

First, Makhno's army could not rely on coercion to mobilize labor yet had to somehow defend a significant territory on multiple fronts against armies that outnumbered it. Accordingly, the anarchists had to substitute for labor innovative combinations of capital that would allow them to offset these disadvantages. Low administrative costs and incentives in the form of promotions facilitated their experimentation with different capital combinations. Ultimately, the tachanka, with its machine gun platform and mobility, allowed the anarchist army to fight against larger armies and cover large distances along the vast frontline.

Second, the anarchists used local knowledge, as they spread their influence in southeastern Ukraine, which had a crucial asset for tachanka-centered innovation: the sprung cart. Russian and Ukrainian peasants usually used carts without sprung wheels, which were ill suited for tachankas. However, the "more prosperous German colonists" (Malet 1982: 73) in the Ukrainian Southeast used sprung carts, which were more suitable for being fitted with a gun platform. The anarchist army provided money, weapons, products, and security against the White and Red Armies in exchange for sprung carts.

Third, the anarchists negated opportunism by forming units largely consisting of combatants from the same village. This meant creating close-knit military units with high social homogeneity, high trust, and strong incentives to fight for the combatants' home. In such circumstances, informal mechanisms such as shaming, exhortation, and threats of exile often secured cooperation, which allowed the anarchists to create a system of horse-changing stations that let tachankas stay highly mobile.

Economists have not yet analyzed the case of Makhno's army and its military innovation, which makes my research novel. I also contribute to the literature on innovation in the absence of state enforcement (see, for instance, Moser 2012; Boldrin and Levine 2013; Thierer 2016) and the literature on military innovation and adaptation mentioned above. My research also has implications for modern times—particularly during the current conflict between Russia and Ukraine—as it shows that even when a state is weakening or at risk of collapse, military innovation can continue.

My analysis leans on the theoretical contributions of scholars such as Mueller (1988), Bernstein (1992), Landa (1994), Anderson and Hill (2004), Powell and Stringham (2009), Leeson and Coyne (2012), Leeson et al. (2014), Allen and Leeson (2015), Taleb (2018), and Wood (2019, 2021). Empirically, my paper is supported by the contributions of Malet (1982), Palij (1976), Telitsyn (1998), Shubin (2014), and Mentzel (2017), which describe the organizational aspects and history of Makhno's movement. Likhomanov and Lomachenko (2019) describe the tactical principles of Makhno's forces. Danilov and Shanin (2006) describe the anarchist movement and compile important eyewitness reports and archival documents about it. Kapustjan (2018) offers important descriptions of social order in the stateless territories of southeastern Ukraine. Antonov-Ovseenko's (2017) notes describe the civil war and his perspective on Makhno's movement as a Bolshevik commander. Figes (1990), Bozhko (2000), Brovkin (2003), Twiss (2009), and Mawdsley (2011) provide important data on the army sizes, organization, and equipment of the civil war's factions. Finally, I consult the Russian State Military Archive and the State Archive of the Russian Federation (Brjanskij 1919; Makhno 1919; Central Committee of Communist Party of Ukraine 1920; Pamphlet "Za chto borjutsja Makhnovcy?" 1919; Prikaz No. 1 po udarnoj gruppe vojsk imeni bat'ko Makhno 1919; Prikaz No. 1 komandira 1-go Donetskogo korpusa A. Kalashnikova 1919; Gorbunov 1920; Tezisy CK KP(b) Ukrainy «O mahnovshhine i ee likvidacii» 1920; Bjulleten' No. 118 sekretno-informacionnogo otdela SNK USSR o mahnovskom dvizhenii na Ukraine 1921; Bipetskij 1922) for documents on Makhno's movement.

The paper is structured as follows. The second section provides an overview of the anarchist movement in Ukraine in 1917–21 and the role of tachankas in it. The third section explores the economic principles behind military innovation under anarchy in Makhno's army. The fourth section concludes.

2. A brief history

The tachanka originated during the civil war of 1917–21 in the stateless Ukraine Southeast, where Nestor Makhno, lovingly called batka (father) by the local populace, led an anarchist uprising (Kapustjan 2018: 32). Makhno was born in 1888 in a family of former serfs near the southeastern settlement of Huliaipole and joined a local anarchist group in 1905. He was eventually arrested and sentenced to execution in 1910, a verdict later replaced by lifetime imprisonment in Moscow's Butyrskaya prison (Telitsyn 1998: 17). After the February Revolution in 1917, Makhno escaped and swiftly returned to Huliaipole in March, where he began to organize an anarchist uprising amid the brewing civil war.

As noted, many factions fought for control of Ukraine during the civil war, attempting to impose their government upon the populace. They included the smaller German occupation army and the Directory under Simon Petliura as well as the

[2] One exception is Horowitz (2010: 62), who mentions terrorism and guerilla warfare as the most significant military innovations of nonstate groups. Scant and passing mentions of nonstate agents are made in Barno and Bensahel (2020).

more prominent White Army under Denikin and Vrangel and the Bolsheviks' Red Army.[3] In many cases, attempts to impose state control resulted in oppression of the peasantry. For instance, the White movement extensively looted the peasants during their military campaigns while promising to restore the tsarist system that the peasants longed to escape (Brovkin 2003: 199). The Bolshevik regime with its war-communist policy of agricultural product confiscation, its labor-mobilization campaigns, its repression, and its denial of self-governance also caused peasant dissatisfaction (Brovkin 2003: 200–201).

Makhno, in contrast, aimed to create a region free of political power and social oppression, self-governed through local village councils called soviets (Malet 1982: 87). According to the protocol of the 2nd Huliaipole Congress, the soviets would "build . . . economic life and protect . . . genuine interests without the interference of . . . commissars, who impose their . . . oppression from the top" (Danilov and Shanin 2006: 84). The economy was to develop through voluntary cooperation among peasants (Palij 1976: 57). The Military Revolutionary Soviet was instituted to "coordinate civilian affairs"; however, it "presented itself only as a steering body and had no rights of its own, all power being vested in the local organs. Everything boiled down to each village and each district directing itself with complete independence" (Mentzel 2017: 178).

In time, the anarchist movement spread over a sizable area in the Ukrainian Southeast with a population of approximately two million people (Arshinov [1923] 2005; see Appendix A). However, Makhno's army, because of its inability to coercively mobilize the population, was much smaller than its rivals and could not protect this territory by relying on manpower alone. At its peak, the anarchist force comprised around 20,000–40,000 combatants (Malet 1982: 74). At the same time, the Bolshevik and White Armies fielded 188,000 and 111,000 people respectively (Bozhko 2000: 115; Mawdsley 2011: 335).[4] Furthermore, Makhno's force could not overcome the difference in manpower through traditional guerrilla tactics such as retreating to difficult terrain or using natural chokepoints, as most of southeastern Ukraine is a steppe, without much natural cover. Finally, being surrounded on many fronts also required Makhno's smaller army to be extremely mobile and react to sudden battlefield developments. The anarchists could not resort to using automobiles, as at the time they were unsuitable for traversing difficult terrain.

To overcome these disadvantages, the anarchists developed the tachanka. Malet (1982: 72–73) and Danilov and Shanin (2006: 17) note that the anarchist army introduced the vehicle to the Ukrainian civil war as early as September 1918,[5] and by 1919, about a thousand tachankas formed the core of Makhno's force, an "army on wheels" (Likhomanov and Lomachenko 2019: 177). Four horses pulled the cart, allowing it to cover approximately sixty kilometers a day, which reduced the army's dependence on railroads. The machine gun used for the tachanka was the "Maxim machine gun, a rugged and almost indestructible weapon that could fire for long periods without cleaning or oiling" (Worrell 1994: 24).

The tachanka could be used for both defensive and offensive maneuvers. Defensively, tachankas could turn and repel the enemy offense with a wall of machine gun fire. Offensively, tachankas supported the infantry with cover fire or engaged in flanking maneuvers. Another advantage of the tachanka was time efficiency in its weapon setup, as the machine gun could be fired from its special platform on the wagon.

Tachankas contributed to many military achievements of the anarchists. One of the most well-known battles that featured the use of tachankas was during the White movement's offensive in 1919. Makhno's forces, mounted on tachankas, were able to outmaneuver the forces of the White Army's General Slashchov in late summer and launch a counteroffensive in September 1919 that defeated those forces (Palij 1976: 85–86). The mobility of the tachankas and their machine gun fire tipped the scales and allowed Makhno to continue his advance upon the White Army in three tachanka columns. As a result, the anarchists captured Melitopol, Berdyansk, and Mariupol. The anarchists threatened Denikin's general headquarters in Taganrog and were only pushed back by the overwhelming force of around sixty thousand men.

In 1920, Makhno's army launched an assault on the Red Army's rear guard and supply lines, which forced the Bolsheviks to initiate peace talks. Without the mobility and firepower of the tachankas, such assault would not have been possible, as the offensive spanned seven hundred kilometers over the course of two months (Likhomanov and Lomachenko 2019: 180). In 1921, when the Red Army abrogated the peace treaty with the anarchists, Makhno was able to avoid encirclement by commander Mikhail Frunze near the Sula river. The mobile tachankas allowed Makhno's forces to "disappear right under the Red Army's nose" and inflict significant casualties upon the Bolshevik forces (Shubin 2014: 273).

3. Military innovation under statelessness

Military innovation among the Ukrainian anarchists seems puzzling. Without a monopoly on coercion enjoyed by the state, which provides greater resource mobilization, negates free-rider problems through obligatory payments, and allows for effective collective action (Leeson et al., 2014: 51–52), the possibility of military innovation under anarchy appears as

[3] While Makhno's movement forged brief alliances with the Red Army, it nevertheless kept the anarchic territories clear of any Bolshevik presence. Red commissars were not allowed to spread their influence, and later, the anarchists even openly fought against the Red Army to prevent the establishment of a communist dictatorship.

[4] These numbers must be treated carefully for all armies, as they include the wounded and soldiers in training. Accordingly, the actual combat-capable force of any given army was lower (Danilov and Shanin 2006: 263). Moreover, some detachments of the Ukrainian Red Army were transferred to the southern front during the conflict. At the same time, the anarchist army cooperated with many civilians, who are not counted in combatant numbers. Yet civilians often hid the anarchists from pursuit, supplied them with food, and helped organize important military structures such as horse-changing stations in their own villages.

[5] A folktale attributes the creation of the tachanka to Makhno himself. According to this tale, he heroically hauled a machine gun onto a horse carriage after a successful raid, instead of slinging the weapon across a horse. The feat of strength by the batka thus allegedly propelled the innovation forward.

improbable. However, as Allen and Leeson (2015: 685) point out, "military technology adoption is often constrained by institutional context." Accordingly, anarchic groups, operating under different institutions and different economic constraints, may find alternate pathways to military innovation, allowing them to successfully innovate even in the absence of a state and its coercive apparatus. In the case of Ukrainian anarchists, three elements were key in enabling military innovation.

3.1. Substitution of labor with innovative capital combinations

With a monopoly on coercion, states can mobilize vast resources for war, including labor. Stateless groups, in contrast, cannot easily resort to coercion and are usually smaller relative to states—the better to support social order through informal means (see, for instance, Mueller 1988; Bernstein 1992; Powell and Stringham 2009; Leeson and Coyne 2012)—which limits their pool of available combatants.

This difference in labor resources was especially evident in the Ukrainian civil war. The Bolshevik and White Armies outnumbered the anarchists' forces by at least three to one and often relied on their numbers advantage.[6] For instance, Leon Trotsky claimed that the military successes of the Whites were "wholly and entirely due to the superiority of larger over smaller numbers," and the Red military commander Vatsetis "told Lenin in January 1919 that all Red victories had come from local numerical superiority." The situation was made even worse for the anarchists because the labor they could attract was insufficient in quantity to cover a vast territory without much natural cover, especially if attacks came from multiple directions.

However, these circumstances incentivized the anarchist army to substitute labor with innovative capital combinations. The machine gun was a component of this substitution, as a machine gun operator could fire at a higher rate and density than numerous riflemen. The quantity of machine guns in Makhno's army was three times higher per combatant than in both the Red and White Armies (*Prikaz No. 1 komandira 1-go Donetskogo korpusa A. Kalashnikova* 1919; Malet 1982: 75). Miroshevskiy (1922: 199) also confirms the abundance of military capital at the anarchists' disposal, emphasizing that machine guns "especially were available to Makhno's forces in large quantities."

The machine guns for Makhno's army were often acquired through trade, either with peasants who already had weapons or with the troops of demoralized armies (Palij 1976: 85; Danilov and Shanin 2006: 734). Another important source was captives and deserters. For instance, in the winter of 1919, when the White Army under General Denikin began to oppress the population, "many of the peasants mobilized by Denikin went over with their arms to Makhno" (Palij 1976: 65). At times, the weapons were supplied by the Bolsheviks in temporary alliances against the White Army.

However, the machine gun alone would not have been sufficient to negate the numbers disadvantage. By putting it on a sprung cart, the weapon became exceptionally mobile and quick to set up. Instead of using a vast number of combatants to cover vast stretches of land, the anarchists could quickly repel an attack in one place and then promptly move to another.

Experimenting with innovative capital combinations was also cheap because administrative barriers were minimal. Likmomanov and Lomachenko (2019: 178–79) directly attribute the tachanka innovation to the unimpeded "revolutionary creativity" that stemmed from the anarchist army's operating "with a minimum of red tape, something few other administrations then or since can boast of" (Malet 1982: 91) and its lack of organizational structures that could impose significant administrative costs, such as "economic, supply and similar departments" (Malet 1982: 77).

The army's promotion method may have also incentivized individuals to generate and implement innovative ideas, as junior commanders, from sergeant majors to junior sergeants, were elected by privates and corporals based on their performance (Pamphlet "Za chto borjutsja Makhnovcy?" 1919).[7] Shubin (2014: 458) and Likhomanov and Lomachenko (2019: 179) suggest that the anarchists thus had an incentive to enact creative initiatives and quickly rise through ranks in a bottom-up fashion, unburdened by red tape. The incentives to become commander were twofold. For the more ideologically predisposed individuals, the commander rank carried the important ideological benefit of making the individual a leader of a revolutionary movement.[8] The second benefit was material, as, according to *Bjulleten' No. 118 sekretno-informacionnogo otdela SNK USSR o mahnovskom dvizhenii na Ukraine 1921* [Bulletin No. 118 of the secret-information department of SNK USSR about the Makhno movement in Ukraine], the money at the disposal of the commanders was often abundant. The bulletin mentions the commander Zabudko, who was noted to have been in possession of at least 1.5 million rubles for "various needs."

Innovative concepts could also freely flow from unit to unit for development, as "Makhnovist military organization was elastic: units split up or amalgamated as necessary" (Malet 1982: 79). While such an army structure faced the trade-off of lost organizational strength, it nevertheless benefited from excellent internal communications, which fostered the spread of innovation.

[6] Such reliance was perhaps a part of the state armies' historical legacy, as even before the civil war of 1917, the Russian Empire routinely relied on manpower advantage to overwhelm its enemies. However, this does not mean that the Russian Empire or the Red and White Armies were averse to using capital or did not militarily innovate.

[7] However, Makhno handpicked some of the higher commanders himself.

[8] Commanders also had a degree of independence, and in 1919, three corps in the South, Olexandrivske, and Katerynoslav "were acting semi-independently of each other" (Malet 1982: 72). Shubin (2014: 609) mentions that the individualistic and independent qualities of the Makhno fighters and commanders were well developed. However, overall, the commanders "were subordinated to the main staff of the partisan detachments of . . . Makhno and to Makhno directly" (Palij 1976: 82).

3.2. Asset specificity, local knowledge, and monopolistic control

Another source of the military innovation of the anarchists was their influence over the Ukrainian Southeast. The region had a crucial capital asset that was necessary to make the tachanka work as a full-fledged military vehicle—namely, the sprung cart, which was "very common among the generally more prosperous German colonists" (Malet 1982: 73) in the region.[9]

At first glance, it seems unlikely that such a simple capital asset could form the basis of a military vehicle. However, following Wood's (2019: 453) logic, a capital input's simplicity does not "necessarily mean that its contribution to defense is small," and the absence of such an input "can have a significant impact on the level of defense provided." By leveraging the use of such assets, "voluntary providers of defense can still have a large impact on the overall level of defense by focusing on the provision of situationally high-return military capital," despite "facing tighter budget constraints than tax-funded defense agencies" (Wood 2019: 453).

The sprung cart was a crucial component of anarchist military innovation, as the majority of peasants in the Russian Empire used simple wheeled carts, which, while useful for the supply trains of many armies, were unsuitable for combat. Simple carts were heavier, more difficult to maneuver, and slower than their sprung-wheel counterparts. They were also less durable, which necessitated frequent repairs and resulted in substantial costs. Putting a machine gun on a simple cart also meant rattling the weapon when riding, which could have damaged it and caused it to malfunction. Furthermore, without the spring damping, a machine gun was much less precise.

Without establishing a de facto monopoly over the region that had the largest supply of sprung-wheel carts in Ukraine, Makhno's army would not have been as successful in creating a tachanka-based army. It is possible that the establishment of this influence simply sprung from Makhno's desire to make his home village of Huliaipole in the Ukrainian Southeast the center of the anarchist movement. However, Makhno's own peasant background and his peasant-centric movement hint that the movement leveraged its local knowledge to spread its influence in the Southeast. Local peasants were well aware of the strengths of sprung cart and knew where these carts could be found.

Makhno's army obtained the sprung carts in exchange for rifles, sugar, money, and promises of security against the Red and White forces (Danilov and Shanin 2006: 649; Miroshevskiy 1922: 199). The security promise was especially important, as "terror and coercion by the military [the Red and White Armies] against the population . . . became an integral element of the civil war" (Figes 1990: 172). The White movement extensively looted the peasants during its military campaigns in Ukraine while promising to restore the tsarist system, which the peasants longed to escape (Brovkin 2003: 199). As noted, the Bolshevik regime's confiscation of agricultural products, labor-mobilization campaigns, repression, and denial of self-governance also drew the peasants' anger (Brovkin 2003: 200–201).

Peasants in the Ukrainian Southeast were also "striving towards free socioeconomic organization" (Malet 1982: 120), and retaining markets was important for them to sell their produce. Peasants frequently criticized the Bolsheviks for their anti-trade policy, revealing a great tension "between the anarchistic, anti-centralist tendencies of the village and the centralist, dictatorial trends of the Communist party" (Figes 1990: 170). Peasants complained that "they [Bolsheviks] themselves do not trade and do not allow others to trade, while the people are bloating from hunger" (Telitsyn 1998: 146).

Makhno's army, despite having been founded upon anarcho-communist theories, was in practice peasant-centric in its goals and did not ban markets across the stateless Southeast. The Central Committee of Communist Party of Ukraine (1920) noted in a report that speculation and free trade were rampant in the stateless territories. Archival document *Tezisy CK KP(b) Ukrainy «O mahnovshhine i ee likvidacii»* (1920) states that Makhno's forces created the "best conditions for the blossoming of armed kulaks and speculators" and that Makhno's movement with its free trade and free speculation stood in direct opposition to the Soviet system of centralized state planning. Money was also not abolished, and a system of competing currencies prevailed; all "cash and credit notes—Romanov, Kerenski, Soviet, Ukrainian, Duma, Don—coupons of all sorts" (Malet 1982: 90)—were freely exchangeable against each other.[10] As it was a time of war, the money supply of each of these currencies was steadily increasing, but the peasants could switch from one currency to another to make inflation more tolerable (Kubanin 1926: 100).

3.3. Securing cooperation

Military innovation may also be impeded through opportunism. Opportunists could steal scarce capital specific to the innovation or even change sides and turn this capital against their former colleagues. In a stateless society, which cannot easily leverage coercion to enforce cooperation, such problems seem especially acute.

In Makhno's army, cooperation was required for the tachanka to reach full efficiency. For the tachanka to move at rapid speeds and cover more ground than infantry and regular cavalry, a system of horse-changing stations—like "horse depot[*s*]" (Palij 1976: 87)—had to be organized to keep a supply of fresh horses readily available. However, a smoothly functioning system would have been impossible if horses, carts, or machine guns were stolen during the change. But how could theft be avoided and cooperation secured under statelessness?

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[9] The majority of these peasants resided in Tavria, the "old Tsarist province which covered the Crimea and the northern littoral of the Azov Sea" (Malet 1982: 72–73). The name tachanka could thus be thought as a derivative of *tavrychanka*, the original name of the sprung cart.

[10] Some folktales claim that Makhno even printed his own money, but historical evidence lends no credibility to them.

The literature is rife with examples of how anarchic societies can secure cooperation—for instance, through norms or private rules, which work best in small, socially homogeneous environments (Landa 1994). Close-knit relationships also enable reputation-based mechanisms, such as ostracism (Anderson and Hill 2004), in which "a loss of reputation generated by a rule violation today creates even larger losses in terms of foregone revenues from potential future interactions, facilitating rule compliance" (Leeson and Coyne 2012: 849). In a military context, a high degree of social commonality between the stateless army and its volunteers (Wood 2021: 121–22) also aligns the interests of volunteers with the force they seek to join, making them less likely to behave opportunistically. An army with a smaller number of participants "will also have a lower cost of monitoring their volunteers" (Wood 2021: 121) and punishing them. Moreover, if stateless agents have skin in the game (Taleb 2018)—that is, they share the risks of a particular military innovation—their cooperation may be further enhanced.

Makhno's army can be characterized this way. The anarchist units were largely formed of peasants from the same village, which established a high degree of social commonality. According to Likhomanov and Lomachenko (2019: 179), "Villagers served in the same unit under the command of their friends, who they, as a rule, knew from a young age and trusted." Between the units and the commanders, social closeness was fostered through "common origin . . . common language and common aspirations" (Malet 1982: 84). Bipetskij (1922) mentions that peasants "gladly joined Makhno" and considered him "one of their own," signifying commonality with the leader of the movement as well.

Anarchist combatants also had skin in the game, as horse stations were organized in their own villages (Palij 1976: 87). While horse stations could be quickly disguised to appear to be civilian dwellings, substantial risk remained. If the stations functioned poorly or were threatened by opportunism, then the peasants risked losing their own assets and relatives in the war (Shubin 2014: 279).

The interests of villagers also aligned with Makhno's, as they knew that their social and economic freedoms were at stake if they did not join the anarchist cause. Figes (1990: 209) argues that "White leaders were too closely associated with the old landowning class," and their epaulets "were associated by the peasants with the old regime and the discipline of the imperial army, both of which they had rejected in 1917." The Red Army also "lacked the active support of the rural population" because of its unpopular labor and tax policies. Thus, the short-term benefit from stealing a horse or machine gun and thereby ruining the horse-station system was greatly outweighed by the long-term costs of oppression.

Jointly, these circumstances "greatly lessened the need for iron discipline" (Malet 1982: 84) within the anarchist army. For the most part, cooperation was automatically secured, but in cases in which cooperation started to wane, exhortation and shaming were often sufficient to restore it (Malet 1982: 84). When such mechanisms were inadequate, anarchists resorted to a gathering called the skhod (Shubin 2014: 61),[11] in which a unit or village decided upon punishment for opportunists. One such punishment was social exclusion (Shubin 2014: 563),[12] which came with acute cost during a war, as getting excluded from a homogenous community within a war-torn region came with a high risk of death. The threat of exclusion was also credible, as information about an opportunist in a small, close-knit, monolingual village would be uncovered at small cost and spread quickly to ensure that the punishment was met.

In some extreme circumstances, opportunists were executed after a decision by the skhod. For instance, in October 1919, the skhod in Katerynoslav executed the commandant Lashkevich for "embezzling funds," and "a brigade chief of staff was shot at Olexandrivske" for similar embezzlement (Malet 1982: 84). Makhno was also known for personally executing opportunists in Huliaipole, which, according to eyewitnesses, left a "great impression" (Gutman 1923: 63) on the local populace.

Despite the occasional breakdowns, cooperation within the anarchist army was satisfactory[13] (*Bjulleten' No. 118 sekretno-informacionnogo otdela SNK USSR o mahnovskom dvizhenii na Ukraine* 1921) and allowed the horse-changing stations to function smoothly. The stations allowed the anarchist army to cover eighty to one hundred kilometers a day with a change of horses, while a regular cavalry unit covered forty to sixty (Palij 1976: 87).

4. Concluding discussion

Innovative stateless defense in southeastern Ukraine eventually ended in 1921. Its demise can be attributed to a lack of anarchist influence outside of the Ukrainian Southeast, frequent outbreaks of typhus, and weariness from protracted fighting. The movement's lack of strategic influence was further amplified by the introduction of the Bolsheviks' New Economic Policy, which made the peasants marginally more tolerant of them.

However, the tachanka itself lived on, and its success in the war was so widespread that it was adopted for use by other armies. The tachanka was adopted by the Red Army in the Russian and Ukrainian civil wars by the Bolshevik commander

[11] The historical roots of the skhod can be traced back to the medieval republic of Novgorod and its similar veche referendum. Cossacks also had a similar institution, the krug, which dealt with questions of self-governance and selection of war leaders.

[12] Social exclusion was also often complemented by confiscation of horses.

[13] Such a feat was especially impressive during the civil war, during which even state-led armies often failed to secure cooperation. In the White Army, "there were incidents of whole units changing sides and soldiers shooting their officers . . . soldiers went home as they withdrew through their native provinces," and some military actions were carried out "in a completely disorganized fashion" (Mawdsley 2011: 286). Mawdsley (2011: 393) also points out a lack of control over production centers and poor logistics. In contrast, the Red Army, "with its gangs of deserters, has been called a 'bubbling volcano.'" Cases of desertion were often rampant, and many recruits "signed up just to get a gun and some uniform before running off home, or deserting to sell their booty and start the process over" (Figes 1990: 175).

Budyonniy and during the Russo-Polish War from 1919 to 1921 (Higgins 2018: 18).[14] However, the use of the tachanka was limited in those settings and did not extend to entire units, unlike in Makhno's army, and Budyonniy himself preferred to largely rely on regular cavalry (Mawdsley 2011: 399).

The lesser reliance on the tachanka by the Red Army compared to the anarchists can be attributed to numerous factors. The first reason is that the Red Army faced a different set of constraints compared to the anarchists. The difference in army size meant that more soldiers could be used to cover ground, without need for the tachanka. The Red Army also had an advantage in regular cavalry, which further reduced the need to extensively use the mobile machine gun platform.

The second reason is that Ukraine was perhaps the only place where tachankas were worth the investment because of the ubiquity of plains. Producing the necessary cart for the tachanka would have also diverted scarce resources during a civil war to a vehicle that could be deployed only in limited circumstances. Buying the cart from foreign countries would have been difficult, as the Red Army belonged to a nascent state with an uncertain future, which made it an unreliable trade partner. The situation was also complicated because after World War I, Russia and its political successors had many rivals, such as Germany, who embargoed trade.

Finally, during the civil war, the Red Army had high administrative costs related to bureaucracy, which may have slowed its adoption of some military technologies. Leon Trotsky was particularly scathing in his critique of the Red Army's administration. He stated that Soviet bureaucrats had a great distrust "towards any great expert, outstanding organizer, technician, specialist, or scientist" and that the Soviet bureaucracy as a whole was a "real historical ballast—already conservative, sluggish, complacent, unwilling to learn and even expressing enmity to anyone who reminds it of the need to learn" (Twiss 2009: 106). Overall, the "red-tape-ism" in the Red Army was characterized by Leon Trotsky as "criminal" (Figes 1990: 194).

Such bureaucratic costs in the Red Army did not end with the civil war but lasted until 1924, when a series of military reforms were launched. However, these reforms lacked "direction" and often overloaded the Red Army personnel with office work regarding "miniscule" bureaucratic matters, preventing them from working on important military developments (Zharkov 2009: 199). Only through two more reforms in 1926 and 1928, which focused on reducing and reorganizing the army's central administrative units, was the bureaucratic efficiency of the Red Army improved (Zharkov 2009: 199, 201). As a result, from 1926 the Red Army began developing an exceedingly detailed manual for the tachanka, based on the model from the same year, and finally the vehicle was officially adopted for use in 1928 (Rukovodstvo artillerijskoj sluzhby 1928). By that time, however, the vehicle's effectiveness was diminishing, as armored vehicles and tank technology were developing rapidly. Still, as a tachanka was cheaper than an armored vehicle and required less skill, the vehicle stayed in use up to the early 1950s, primarily for machine gun transportation or as a stationary platform for antiaircraft machine guns.

The Polish army also adopted the tachanka and used it as late as 1939 in its war against Germany, also largely out of cost considerations (Nogaj 2020: 612). However, the tachanka force was largely ineffective in combat against the armored-vehicle-based German army and was primarily used for scouting or machine gun transportation.

Today, new forms of tachanka-style implementations are used in combat. For instance, machine guns or rocket systems are mounted onto the backs of pickup trucks in Ukraine.

The analysis that I presented is subject to criticism. The first criticism concerns whether Makhno's movement was truly stateless. An argument has been made that Makhno and his followers in fact established a state of Makhnovia in Huliaipole and its neighboring regions (Skirda 2004: 331–33). This criticism is primarily based on the presence of Makhno's commandants in the cities, held by the anarchist army in the summer of 1919, such as Katerynoslav, Olexandrivske, and Nikopyl. According to Malet (1982: 78), "Despite assurances that the town commandants did not interfere in the civil life of their cities, they did have a lot of power." This manifested in cases in which commandants issued centralized orders and attempted to impose top-down authority upon the urban populace. This might point to the problem of self-governance failing in urban areas because they lacked cultural homogeneity and had larger populations. In liberated villages and rural settlements, the peasants could self-govern without issues. The same could not be said about large cities, where a commandant was installed first and informal institutions of governance developed afterward. However, commandants did not have much control over the organization of national defense, as the overall strategy of the anarchist army stressed mobility, not urban combat. This stress was necessary to avoid encirclement and to fully exploit the tachankas' advantages. Makhno's emphasis on military mobility did not allow the anarchists to hold onto cities for very long, thus making the commandant-related issues less representative of the peasant-centric anarchist system as a whole.

Another contention stems from some archival documents (Bipetskij 1922) that hint that some wagons and horses may have been forcibly expropriated from the peasants. Such confiscations could have occurred because of opportunism when norms broke down or because of alcohol abuse within the anarchist army. Archival documents show that drunkenness reached the point at which Makhno routinely tasked his army with dismantling moonshine machines (Gorbunov 1920). Still, Makhno (1919) himself condemned and battled confiscations, and his commanders were incentivized to not stain their reputation by tolerating expropriation (*Prikaz No. 1 po udarnoj gruppe vojsk imeni bat'ko Makhno* 1919). Furthermore, the extent

[14] Malet (1982: 73) laments that despite Budyonny's adoption of the tachanka, "the debt to its originator was acknowledged neither at the time nor since." Even the museum in Huliaipole still lists Budyonny as the creator of the vehicle, possibly for political reasons, and attempts to foster an image of Makhno as a primitive bandit in the eyes of the Soviet populace.

of this expropriation could not have been significant compared to voluntary exchange with peasants (Danilov and Shanin 2006: 637), and the scope of excesses by Makhno's army was much smaller than that of rival state armies (Danilov and Shanin 2006: 15). Antonov-Ovseenko (2017) also argues that by leveraging force, Makhno would have lost his entire base of support.

Another potential criticism stems from Makhno's so-called voluntary mobilization, a term that may indicate that the anarchist leader was able to mobilize labor in the manner of a state. However, the protocol of the 2nd Huliaipole Congress, held in 1919, clarifies this contradictory term. According to the document, voluntary mobilization was not "based on the principle of top-down violence and orders"; it instead relied on peasants themselves realizing their obligation to enlist in the army. Makhno used propaganda to get peasants to enlist before a Red commissar might appear "with a punitive detachment to take you [the peasant] by compulsory mobilization" (Danilov and Shanin 2006: 75). Exercising violence against peasants to mobilize them would also have been counterproductive, as it would have undermined their support for Makhno's army, according to Antonov-Ovseenko (2017). Accordingly, the extent of state-like coercive power that Makhno could have employed for mobilization was limited.

My analysis is relevant for modern times, amid the military conflict between Russia and Ukraine, initiated in February 2022. Wars always carry the potential for government collapse or, as frontlines shift, the creation of political voids. My analysis shows that even stateless regions may still innovate in their defense through the creative application of capital and its new combinations.

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Declarations of Competing Interest

None.

Data Availability

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Appendix A

Fig. 1.

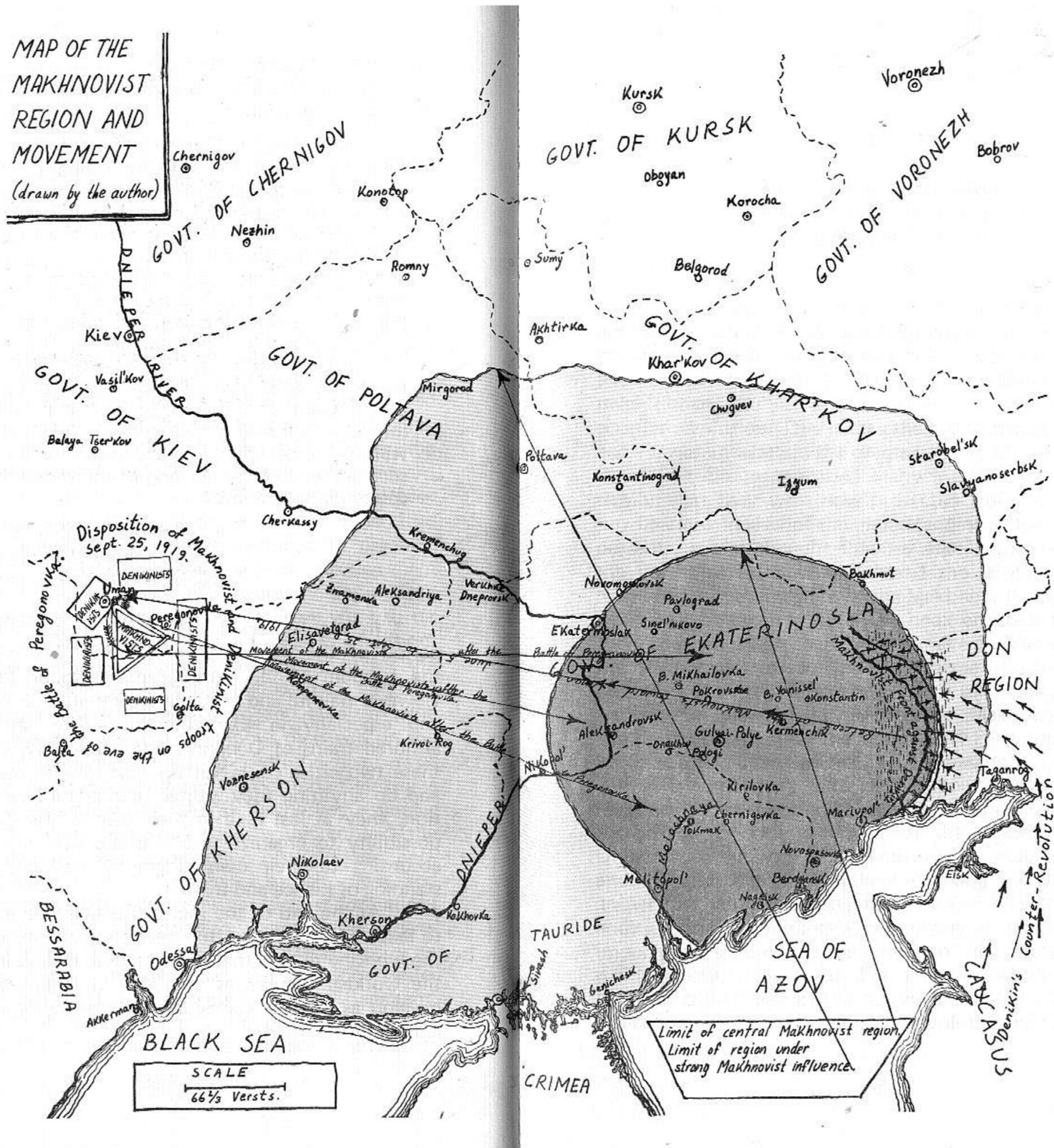

Fig. 1. Map of territory under Makhno's influence. Source: Arshinov ([1923] 2005).

Appendix B

Fig. 2.

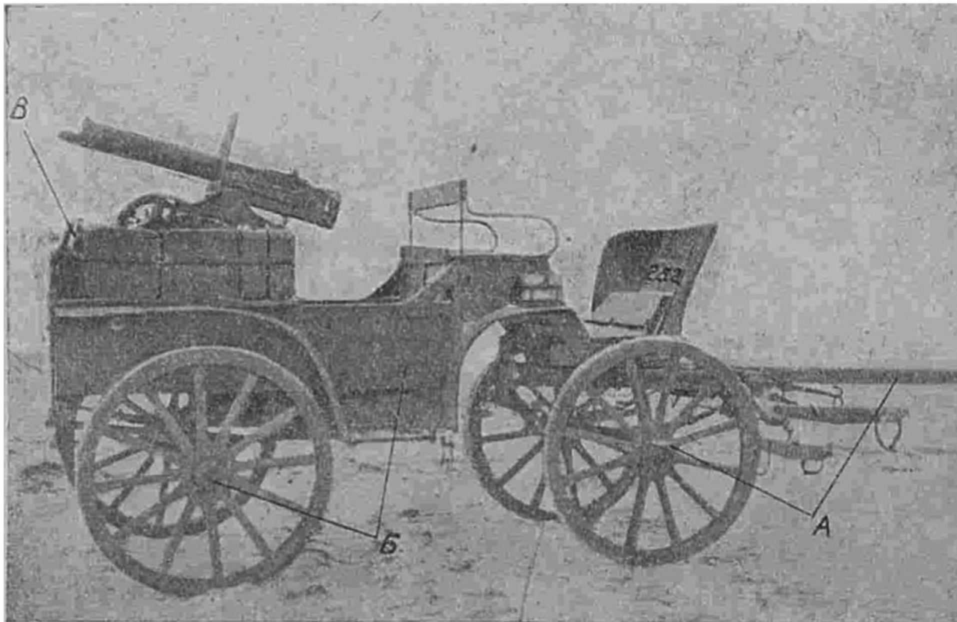

Fig. 2. Tachanka. Source: Rukovodstvo artillerijskoj sluzhby (1928: 8).

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