Civil Society as Arms Producer: Oxymoron or Reality? Ukraine's Drone Production in Response to the Russian Invasion

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This article explores how Ukraine's civil society has taken on direct security functions during Russia's full-scale invasion, with a particular focus on the production of weaponized drone technologies. Drawing on and grounded in the "everyday International Relations (IR)" framework, the article assembles a novel database of both for-profit and nonprofit drone manufacturers operating in Ukraine, while applying social-network analysis to trace their patterns of collaboration. The article asks why civilian actors assumed a role usually monopolized by the defense industry and how their micropolitical practices reshape Ukraine's macro-level war efforts. The results reveal a hybridized field in which civic activists, start-ups, and established firms converge, consequently blurring the conventional boundary between market activity and grassroots activist mobilization in the pursuit of national defense imperatives. By illuminating how market logics and activist practices intertwine under conditions of existential threat, the study challenges the standard definition of civil society as a realm separate from the state, family, and market, thereby advancing scholarship on whole-of-society resilience during wartime exemplified by the production of weaponized drones.

Keywords: Russo-Ukrainian War; Armed Forces of Ukraine (AFU); International Relations (IR); drone production; unmanned aerial vehicles (UAV); civil society

 Journal of Political & Military Sociology, 2024, Vol. 51, No. 2: 220–243.
doi: 10.5744/jpms.2024.2004

Introduction

Ukraine's response to the Russian full-scale invasion took the world by surprise, defying the widely held expectation that it would give in within days. Many observers emphasized the whole-of-society response to the invasion, calling civil society "Ukraine's secret weapon" (Melchior 2022) and "the other army" (Applebaum 2022) to point out its crucial role in supporting the Armed Forces of Ukraine (AFU) in repelling the aggressor.

However, civic mobilization was not the only trump card Ukraine had in its response to the Russian unprovoked war. Another was its emerging defense tech industry, which managed to provide quick solutions, namely small drones, which in turn allowed Ukraine to gain a temporary tactical advantage on the battlefield. One of the reasons Ukraine's capacity to defend itself was initially dismissed by many in the West was because drones, especially their cheap commercial types, were not registered among important firepower indicators, like Stockholm International Peace Research Institute (SIPRI) data (Caverley 2023) (also because the Western armed forces "lack[ed] any real equivalent to cheap attack drones" (Kunertova 2023b). According to DeVore (2023, 263), "the Russian-Ukrainian war can rightfully lay claim to being the world's first 'drone war'" in the same way World War I proved to be the first air war. Moreover, the security studies scholarly community undervalued the roles drones can perform down to the level of an individual soldier and discounted the likelihood of their large-scale deployment on the battlefield (Kunertova 2023b, 576).

In mainstream International Relations (IR), the state's monopoly on the legitimate use of violence underpins both realist and liberal views of security and defense production. Along these lines, arms production and procurement are a quintessential state prerogative, which runs counter to current developments in Ukraine. When citizens and civil society actors independently manufacture lethal hardware, they are not merely helping the state but performing core functions of sovereignty outside the formal sovereign apparatus. Indeed, observing volunteer and grassroots makerspaces produce lethal hardware raises an interesting theoretical puzzle: Why and under what conditions does civil society breach the conventional boundary between market activity and activist mobilization in the pursuit of national defense objectives?

We argue that this blurring of lines challenges realist expectations that arms production tracks state power, liberal assumptions that

markets, not volunteers, fill arms manufacturing gaps, and critical-security claims that civil society is chiefly a watchdog or an emancipatory and humanitarian actor. Furthermore, it is worth questioning how "civil" actors can engage in violence while still claiming civil-society status, what categories are needed to analyze war when production is hybridized and distributed across state and non-state lines, and whether this hybridization erodes or enhances democratic control over force generation.

By foregrounding these layers, the article seeks to bridge the gap between "everyday IR" micro-practices and classical notions of sovereignty, opening new ground for theorizing the co-production of security and defense by states and other stakeholders, from tech enthusiasts to charitable foundations, within broader societies. In particular, Ukrainian volunteers and entrepreneurs began designing and manufacturing military-purpose drones to support the AFU. This development, essentially of a civil society turned armed producer, appears to be an oxymoron, since civil society is conventionally associated with peace, humanitarianism, and advocacy, not with the making of weapons. Yet, Ukraine's experience demonstrates that in extreme circumstances, this boundary can be blurred in practice, especially in the case of drone technologies.

The advantages of the small drones are manifold. Drones, unmanned aerial vehicles (UAVs), have become a cornerstone of Ukraine's defenses. Notably, lightweight first-person view (FPV) drones (inexpensive, camera-guided quadcopters often repurposed as loitering munitions) emerged as critical assets during warfare. They are cheap, lightweight, man-portable, and require little operator training and no supporting infrastructure; they offer a great deal of functions, from reconnaissance and intelligence to being disposable ammunition (Kunertova 2023). Since they are commercial and easy to procure, anyone can buy or even make them.

Early in the war, Ukraine relied heavily on commercial off-the-shelf drones, such as DJI Mavics donated by citizens or bought abroad, as well as a limited number of military-grade UAVs, such as the Turkish Bayraktar TB2. As the conflict deepened, it became clear that relying solely on imported technology was unsustainable. Western supplies were often slow, costly, or insufficient, and many Chinese-made drones were unavailable or compromised by export controls and Russia's ties to the suppliers. In response, a domestic drone production movement took shape inside Ukraine, powered in large part by civilians. It was under

these circumstances, as well as the horizontal, decentralized, and bottom-up character of Ukraine's resistance, that the civil society and civilian markets came into play, saturating the military bureaucracy (Chavez and Swed 2023, 594).

This paper brings together these two aspects—civil society mobilization and domestic weapon production—and asks the following questions: What is the role of civil society in domestic drone production in Ukraine? How has the role of civil society as a security actor evolved since the beginning of Russia's full-scale invasion? What does this phenomenon mean for our understanding of civil society in wartime? The research is guided by an "everyday IR" perspective, which directs attention to the micro-level practices of ordinary citizens in shaping national and international outcomes. We argue that in the context of Ukraine, the everyday actions of volunteer drone builders, garage tinkerers, volunteer tech start-ups, crowdfunding campaigns, and other fundraisers can be seen as a form of "micropolitics" that is deeply entangled with and constitutive of the broader "macro" conduct of war. Empirically, the article focuses on Ukraine's drone sector during the first phases of the Russian invasion (2022–2023).

This paper unfolds as follows. First, we explore the current state of scholarship on civil society as a security actor, while identifying the research gaps which this paper aims to address, followed by the complex web of civil and commercial networks in Ukraine. Then, we present the theoretical framework of the paper and outline the data collection and analysis method. This is followed by the findings and their discussion. We conclude by summarizing the contribution of the article to the existing debates

Civil society as a security actor

For decades, the security studies literature relegated civil society to the role of a watchdog that would perform oversight over the security sector (Caparini 2004). However, since 2014, the Ukraine case has challenged this notion, offering data which allowed for the conceptualization of civil society as a service provider in the most unusual realm—that of hard security and defense. According to Zarembo, "Russian aggression led to Ukraine's civil society entering the defence sector on a previously unseen scale, with an unusual function. The consequence of civil society mobilisation in conflict is that it [took] over the functions of a state which, according to the Westphalian notion of a state, are supposed to

be a state's exclusive monopoly—i. e. provision of security and protection of society" (2017, 51).

This civil society mobilization since 2014 led to the creation of "a new civil voluntary movement in Ukraine" (Fedinec 2023), defined as "an umbrella structure which includes individual independent volunteers, individual volunteers under the patronage of civil society organisations and civil society organisations and their staff" (ISAR "Yednannya" and "Democratic Initiatives" Foundation 2023). The functions assumed by volunteers were as diverse as humanitarian assistance, resettlement and adaptation for displaced people, human rights defense, "Black Tulip" missions (finding and identifying bodies of missing soldiers), medical and rehabilitation support (Fedinec 2023), and more security-related activities, like "hacktivism" (Lokot 2017), the analysis of open source intelligence (OSINT), enemy spotting (Winther and Nilsson 2023), crowdfunding practices that support the purchasing of military ammunition, as well as the facilitation of conflict-related offline activities ranging from logistical assistance to actual participation in warfare (Asmolov 2021, 345; Zarembo et al. 2024; Boichak 2017; Patrikarakos 2017).

This article focuses on the production of ammunition, which takes the research on civil society one step further. There is remarkably little literature that explores the relations between civil society and arms production and procurement. Dymond and Rappert (2015) examine the role of civil society in controlling new weapon technologies, specifically in the case of "less lethal" weapons, identifying five interrelated roles: information gathering, analysis, framing, redefinition, communication, and representation. This approach considers the watchdog function of civil society but overlooks its substitution or service provision aspects.

This substitution challenges the conventional state-centric lens on conflict. It also resonates with concepts of vernacular security and everyday resistance (Kurylo 2025), wherein local actors take security into their own hands in response to existential threats. Some scholars have argued that war, especially in the twenty-first century, is becoming a more networked and decentralised phenomenon, involving not just regular armies but also volunteers, hackers, information warriors, and civilian tech communities. The term "crowdsourced war" has been used to describe Ukraine's approach in 2014-2015 (Hunter 2018), and it applies even more to the period of 2022–2023, when thousands of Ukrainians "crowdsourced" the means of war by manufacturing drones and

donating to military procurement. Yet, academic analysis of civil society as arms producers remains scant. Traditional civil-military relations seldom consider civilians building weapons systems. Consequently, examining Ukraine's drone-makers can fill a gap in our understanding of civil society's potential roles. It also speaks to literature on innovation and disruption (Csernatoni and Martins 2023), highlighting how bottom-up innovation and disruptive practices can thrive in an urgent conflict environment, a theme more typically explored in studies of insurgencies and guerrilla warfare.

The role of drone producer for Ukraine's civil society has a more extended history. For instance, in 2014, a Facebook group named Aerorozvidka was established, utilizing drones for intelligence and reconnaissance (Asmolov 2022). The group retained its sustainability and has been operating all along as "a team that promotes creating and implementing netcentric and robotic military capabilities for the Ukrainian security and defence forces" (Aerorozvidka 2023). According to the organization's website, "Aerorozvidka exemplifies the *direct engagement of civil society* in repelling aggression against Ukraine" (Aerorozvidka 2023, italics added). In this respect, existing literature shows that civil society's involvement in war is not entirely new, Ukraine's volunteers in 2014 illustrate civilians supporting defense. Yet, the scope and form of involvement in Ukraine during the period of 2022–2023 go beyond previous patterns, thus warranting a fresh analysis.

Indeed, after Russia's full-scale invasion, the role of civil society as a drone supplier and producer has increased manifold, making civil society the key source of the UAVs. The Ukrainian officials even claimed that commercial drones were deliberately chosen as "the greatest target of volunteer fundraising" (Chavez and Swed 2023) and that the engagement and reliance on volunteers allowed the drone-producing efforts to be "decentralised and nimble" (Melchior 2023, quoted in Chavez and Swed). The vast supply of and fundraising for the drones led to the appearance of new vocabulary such as "dronations" (a portmanteau word for "drone" + "donation") and "AliExpress" and "Amazon drones," hinting at their easy order and delivery procedure.

This improvisational phase relied heavily on existing hardware donated by foreign partners or bought off-the-shelf in retail markets, as Ukraine's own defense industry had produced relatively few drones before the war. However, this phase could not be sustained long-term, as the limitations of this approach became apparent. Supply of foreign drones could not keep pace with losses, and Ukraine was losing

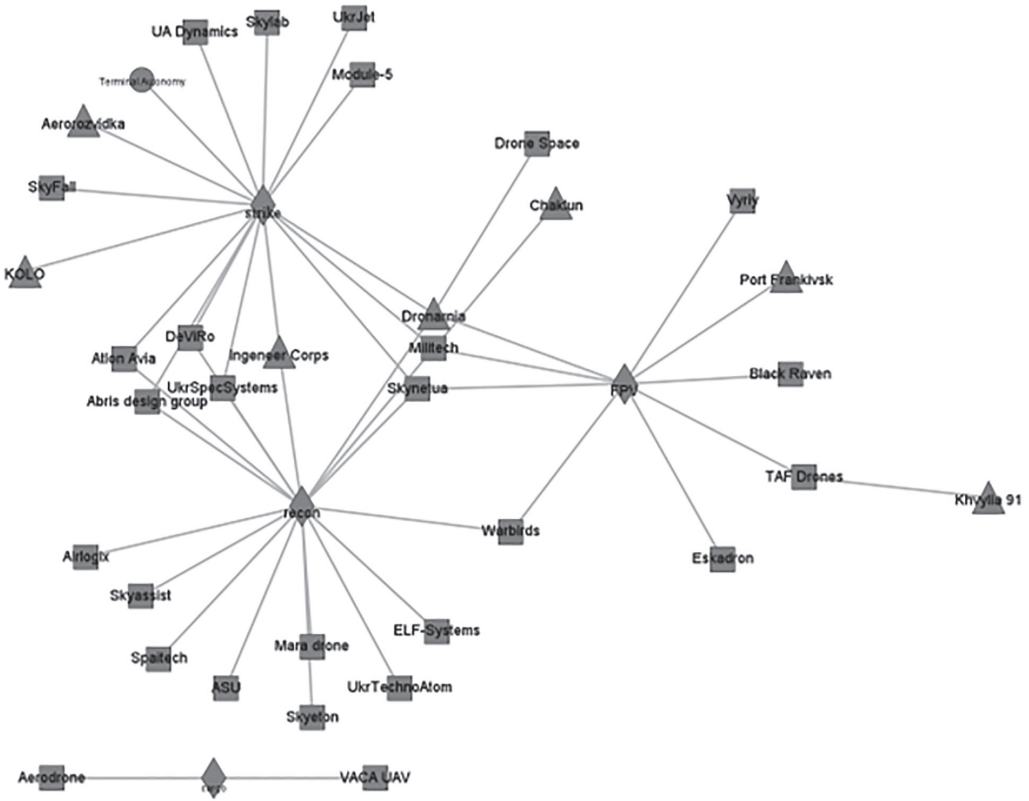
thousands of drones per month on the battlefield. Thus emerged a pressing need for scalable, low-cost, and rapidly adaptable home-grown drone solutions that Ukraine could produce domestically and deploy in large numbers. Crucially, Ukraine's approach to drone development became highly decentralized and agile by design, mirroring the bottom-up civil society energy driving it. Rather than the typical few large state-owned factories, the ecosystem consisted of many small actors. It could be argued that this flexibility and agility, infused by a civil society grassroots logic of bricolage, gave Ukrainian forces a responsiveness that contrasted with Russia's more centralized and larger military industry.

At the beginning of the full-scale invasion, only seven drone models were confirmed for exploitation by the AFU; by 2023, their number had reached sixty-two. According to various estimations, there are more than 200 official drone manufacturing companies and hundreds of unlicensed and atomised "techno-guerrillas" (Lespinois 2022). During the first eighteen months since the full-scale invasion, some twenty laws and normative acts were adopted, allowing for a hundred-fold increase in the production of UAVs in Ukraine. The phenomenon has become so extensive that, according to some observers, the "whole of society drone manufacturing supplied 90% of the Ukrainian drones in 2023" (Interfax-Ukraine, 2024).

In view of the vital necessity of drones for the frontline, the Ministry for Digital Transformation, the General Staff of Ukraine, and the State Service of Special Communication initiated the "Army of Drones" project on July 1, 2022, with the aim of fundraising for the purchase and production of UAVs (Ministry of Digital Transformation of Ukraine 2023). Interestingly, not only money, but a drone itself can also be donated and shipped to Ukraine from anywhere in the world. The initial goal was to purchase 200 reconnaissance UAVs for the AFU (Ministry of Digital Transformation of Ukraine 2023). The project evolved into a flagship state policy, which led to new fast-track procedures for taking the drones into exploitation, simplifying legislative and fiscal procedures, supporting domestic drone production, and training over 10,000 drone operators (Tarasovskyi 2023).

Overall, the drone production in Ukraine is a complex web of civil and commercial efforts. Seven out of thirty-eight producers are clearly nonprofit. Some of them are closely connected to commercial enterprises. For example, the Dronarnia workshop, which produces FPVs and reconnaissance drones, is a charity fund, created in cooperation

Figure 1. Drone producers in Ukraine. Squares stand for commercial enterprises, triangles stand for civil society organizations (volunteer teams, volunteer funds, etc) and diamonds for drone types. For security reasons, the full list of drone producers is redacted from the published version of this article.



with the "Women's Veteran Movement" NGO (Melnyk 2023a). However, it also established the Drone Space commercial enterprise to be able to sell its products legally. The charity fund Khvylia 91 has a similar relationship with a commercial enterprise (Balashova and Melnyk 2023), while other NGOs produce drones directly. Consequently, this complex ecosystem presents a rich tapestry of a nation under existential threat, an empowered civil society taking on the role of arms producers (Figure 1), a legacy of voluntarism, and the fusion of these elements into novel innovation and disruption patterns of a decentralized and agile war-production effort. Against this backdrop, we turn to the theoretical lens that will help interpret the significance of civil society's role as a producer of drones.

Theoretical Framework

This paper belongs to the growing body of literature which investigates how the "secondary actors" (in view of the mainstream IR theories) shape international relations. Zooming out of the Ukraine case, where its resilience has been explained by civic mobilization, decentralization and civil and miltech solutions, this article is in dialogue with the larger corpus of literature on "everyday IR." The concept of everyday IR allows us to investigate, research, and trace the "'the micropolitics' which in its turn shapes, contests and transforms 'the power of the macro order'" (Selimovic 2019, quoted in Björkdahl et al. 2019). From the perspective of everyday IR, "the everyday is an international phenomenon and IR take place within the everyday" (Björkdahl et al. 2019). In other words, "everyday IR" ask us to consider how the lived experiences, decisions, and behaviours of "regular" people can enact, reinforce, or transform the international system.

A key concept here is "micropolitics." In this article, "micropolitics" refers to the day-to-day, and often informal or subtle, practices of civil society actors and their political agency, which, when multiplied across thousands of citizens and civil society stakeholders, accumulates into strategic effects. This lens reorients analysis from high diplomacy and exquisite weapons manufacturing by state actors to grassroots action, allowing scholars to excavate the micropolitics embedded in Ukraine's emergent civil society-driven drone industry. Instead of treating drones as disembodied strategic assets or technological solutions, everyday IR foregrounds volunteer tinkerers, hobbyists, IT workers, and crowdfunders who either transform off-the-shelf components into battlefield

capabilities or showcase unprecedented mobilisation, innovation, and entrepreneurship in launching home-grown drone solutions for military uses.

In this respect, their workshop or networked practices could be construed as sites of security production where bricolage intersects with national sovereignty concerns, creating affective and effective communities of practice around the concept of "making do" in times of existential crisis. By "following" software and hardware components, such as screws, batteries, 3D printers, and code through garages, open-source forums, and front-line hand-offs, we can map alternative supply chains of innovation and disruption that circumvent formal procurement regimes, as well as expose novel power dynamics (Csernatoni and Martins 2023). Applying this to war, a conflict is not only shaped by generals and diplomats, but also by soldiers' practices, civilians' coping strategies of bricolage, and the technical tinkering of volunteers. These are the everyday micropolitical practices of war.

In this respect, a "micropolitical" approach sheds light on how power circulates through blurred boundaries between civil and military, public, and private practices, recasting hierarchies through novel currencies such as agility, adaptability, disruption, and low-cost innovation. Conversely, such an approach highlights the ambivalent politics of participation during states of exception: civil society actors claim patriotic agency, yet they also normalize the ongoing expansions of militarization and lethal automation of drone technologies. Finally, by focusing on "micropolitical" practices, we draw attention to how macro-level and state-led strategies are co-constituted by micro-level emotions, civil society actors, moral economies, and the technical expertise of bricolage (De Certeau 1984).

"Micropolitics" reveals that sovereignty does not only reside in states and the traditional military-industrial complex, but in continuously crafted civil society interventions, thus widening sovereignty and accountability debates by making such enablers more empirically visible today. Traditionally, the macro-order of war is state-centric: the state commands, the army fights, the defense industry produces, and civilians are bystanders or victims. However, when civilians and civil society actors become arms producers and force multipliers, they are effectively rewriting parts of this macro-order. It could be argued that Ukraine's civil drone producers represent a micropolitical challenge to the established macro-order of war. They introduce new actors, like civil society, into a space typically reserved for state agencies, thereby redistributing agency and potentially altering sovereignty.

From the perspective of mainstream IR literature, both civic resistance and small drones would be (and indeed were) overlooked. Chavez and Swed (2023) tie Ukraine's use of small civilian drones to that of violent non-state actors scholarship (i.e., groups that have limited combat resources). While the use of state drones was not treated by the security community as feasible, in fact the "battlefield is saturated with commercial quadcopters used for reconnaissance, fire correction, supply, pressure, propaganda, and with little modification bombing and kamikaze attack" (Chavez and Swed 2023, 592). As a result, "the Russian war against Ukraine became the first full-scale drone war in which both sides have developed thousands of small uncrewed systems for a variety of missions" (Kunertova 2023), with Ukraine setting the trend first and Russia emulating its example.

The concept of everyday IR is also closely related to the concept of resilience. While the concept of resilience has been widely discussed recently, we rely on the definition offered by Fedinec (2023): as Ukraine's "third way" of defense approach, between the "total defence" model of Sweden, Finland, Singapore, and Switzerland, and the strongly hierarchical model of the United States, Russia, and China, where decision-making is centralised in the political leadership. In its turn, total defense is "a whole of society approach to national security intended to deter a potential enemy by raising the cost of aggression and lowering the chances of its success" (Wither 2020, 2). According to Fedinec,

Figure 2. Domestic drone production by civil society as part of whole-of-society resilience.

"The total defence approach concentrates on defence and deterrence, while Ukraine's approach also prioritises resilience—including a comprehensive but agile coordination of a variety of forces *within and beyond* [italics added] the government" (2023, 331), allowing for flexibility, adaptation, and horizontal coordination across various groups of society. It is important to underline that we are talking here about collective (rather than individual) and societal (rather than institutional) resilience, which we dub as a "whole-of-society resilience" for the purpose of this research. Figure 2 graphically represents the theoretical paradigm employed in this paper.

Data and Method

This paper is based on the data retrieved from media publications, producers' websites, producers' media interviews in the Ukrainian language, and via open sources. The data collection was conducted in January and February 2024 in several steps. Firstly, an initial quick search by keywords was conducted through the Google search engine to identify the names of the producers and the models of drones, as well as the media that covers the miltech sphere more than others. A broad list of producers and drone models was compiled. At the next stage, further information was collected about every identified drone model and producer, including the type of producer (business or civil society organisations), type of drone (strike, reconnaissance, FPV or cargo), and the producers' website. After exclusion of the drone models with too little or unreliable data available (e.g., when only the model's name and type are known and not the producer and website), a total of thirty-eight producers were assembled, with thirty-one commercial producers and seven nonprofits. The results of the search are presented in Annexe I. This list is not exhaustive, since many drone producers prefer to avoid publicity.

The results were then coded and visualized as a social network with the help of Visone software (see Figure 1). In Figure 1, squares stand for commercial enterprises, triangles for civil society organisations (volunteer teams and volunteer funds) and diamonds for drone types.

The deficiency of this approach is that it only allows tracking of publicly known producers and not the numerous "techno-guerillas." However, the goal was not so much to track the scope of production but to demonstrate the phenomenon of civil society engagement in drone production. The analysis then operationalizes civil society

engagement by a *donation*, be that of money, materials, time, expertise, or others, into the drone production. It also looked for qualitative data in media publications and on the producers' websites regarding the financing of their work, price formation, and employee payments (i.e., whether they engage in any volunteer work). Only unmanned aerial vehicles are covered by this research (no marine and no ground drones).

The results of this endeavour are presented in Figure 1 and below.

Garage Drones: Weapon Production at No Cost

One of the realms for civil society engagement in drone production is FPV drones. Since FPV drones were adopted as a weapon on the battlefield, they have been manufactured widely by private individuals in kitchens, bedrooms, and garages. With many of them being informal and low profile, it is impossible to track them systematically. However, the media publications suggest that their common denominator is volunteer (nonprofit) work and sale at the cost of the manufacturer. A publicly known example includes "Port Frankivsk," a team of several volunteers from Ivano-Frankivsk in Western Ukraine, who previously supplied ammunition to the frontline (Rykhlitskyi 2023). After repeated requests for drones from the military amid supply shortages, the volunteers decided to construct drones for the military themselves. As of August 2023, the team could assemble fifteen drones per day (Rykhlitskyi 2023). Another volunteer team from Ternopil, headed by a fifteen-year-old high school student, was reportedly able to manufacture thirty drones per month (Savytska 2024).

These grassroots efforts were followed by more significant attempts to sustain them, but again, from the nonprofit sector. In November 2023 a free course, "Drone Engineer," was offered on the Prometheus platform, the biggest online course platform in Ukraine. The course was launched by the Victory Drones, a volunteer project based on the "Ukrainian Centre for Aerial Reconnaissance" NGO and Dignitas Fund. Over 9,000 participants registered for the course, and more than 1,200 graduated (Melnyk 2023b). Dignitas Fund also launched another hands-on course, "People's FPV," where the participants can learn to assemble seven-inch FPVs. Moreover, in addition to "garage" or "kitchen" drones, there are also "trench" drones, which are produced by workshops that operate close to the frontline and are run by the military themselves (Rykhlitskyi 2023).

Little technological know-how is required to produce these drones; they are assembled from imported parts based on a ready-made scheme. This enables ordinary people without a technical background or access to specialized equipment to produce basic FPV drones at a low cost. According to the estimates of a volunteer drone producer, a homemade drone is approximately 35 percent cheaper than a ready-made drone (Pavlenko 2024).

(Non) Profit Start-ups

In addition to small groups or individual volunteers, drones in Ukraine are also produced by large enterprises. These producers tend to be involved in high profile miltech solutions. Some have been around since 2014, while others were only launched in 2022. While these enterprises are registered as businesses (i.e., profit-making), closer inspection of the details of their operations suggests that it is not so easy to make a clear distinction between profit-making and nonprofit operations when it comes to drone manufacturing in support of the Armed Forces of Ukraine. While many miltech producers prefer to keep a low profile, the evidence from media interviews suggests that at least some producers are motivated not by profit but by patriotism and the desire to support their country. For example, according to Maksym Muzyka, the head of UA Dynamics, his company sells its most acclaimed strike drone, Punisher, to the Ukrainian Armed Forces at the cost of manufacture (50,000 USD) (Krasnomovets 2022). Muzyka also admitted that even before the full-scale invasion, he intended to provide the drone to the Ukrainian state for free and make money elsewhere. He claimed to have offers from international customers at 200,000 USD).

Another successful drone producer is Eskadron. This company was launched in 2022 and had 15 percent of the FPV drone market share in Ukraine in 2023. According to *Business Censor*, the owner shared a similar approach to profit making. The owner of Eskadron, who preferred to remain anonymous, admitted in an interview: "We don't do it for profit, really. We invested 200 thousand USD of our own money at the start. [. . .] Returning that initial investment is out of the question" (Kolomychenko and Vynnychuk 2023). He shared that the company provided efficient units of the AFU with drones for free. Eskadron is unlikely to continue operating after the war, he stated, because its goal is to contribute to the defeat of Russia rather than to be part of the defense tech sector. This attitude was expressed also by Oleksandr

Yakovenko, the founder of the TAF Drones company that makes FPV drones. After the production launch, Yakovenko's company initially provided the drones to the military for free and only started selling them after August 2023. According to Yakovenko, TAF Drones invests 40 percent of the revenue into research and development and donates the rest to charity (Zozulia 2024).

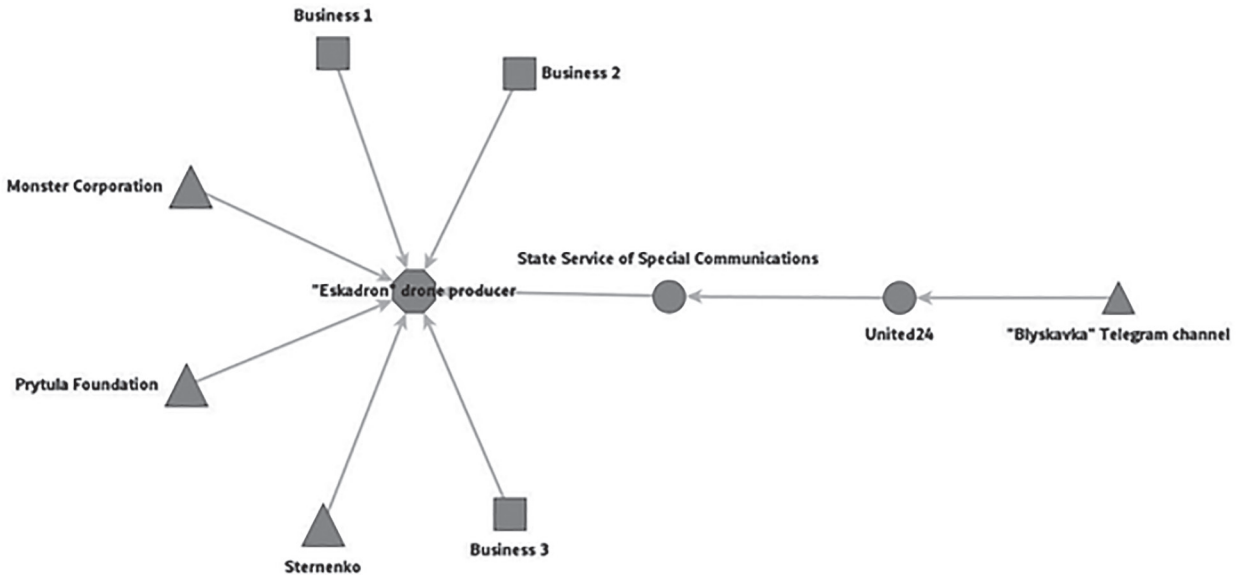
Crowdfunded Drone Production

Regardless of whether the drone production is for-profit or nonprofit crowdfunding, public donations, and private foundations are involved in sustaining these efforts and providing drones to the frontline. Figure 3 illustrates the financing scheme of drone producer Eskadron, for whom the state is only one of their buyers. Their first purchaser was Odesa-based NGO "Monster Corporation Fund." They then managed to increase production four times thanks to the order of Serhiy Sternenko, a popular blogger and volunteer who runs large fundraisers. Probably the most interesting funding scheme from the perspective of this research was Eskadron's order from the State Service of Special Communications and Information Protection of Ukraine, which used the money of the United24 fundraising campaign, [1] which was raised by the Telegram channel "Blyskavka" (Kolomychenko and Vynnychuk 2023). This chain illustrates how individuals, independent media, state-run public fundraisers, and a state institution were involved in organizing the same purchase of the drones for the frontline, expanding well beyond a classic chain with only state and business actors.

The capacities of the civil society organizations that keep the supply of drones flowing to the frontline vary considerably. For example, by June 15, 2023, the national project Army of Drones, implemented and primarily financed by the Ukrainian government, with additional support from UNITED24, procured and provided 12,531 drones of various types for the armed forces. By contrast, the Prytula Charity Foundation had, by the same date, procured and delivered 8,498 drones—approximately 30 percent fewer.[2] Despite the differences in

1. Ukraine's official fundraising platform that invites donations from around the world to contribute to both the defense and humanitarian needs of Ukraine in the Russo-Ukrainian War (United24 2025).
2. According to its website, the Serhiy Prytula Charity Foundation "is focused on strengthening the Defence Forces of Ukraine and providing assistance to the civilians affected by Russian aggression" (Prytula Foundation 2025).

Figure 3. Eskadron's drone purchasers (squares for commercial companies, triangles for civil society organizations, circles for state institutions).



their sizes and scales of operation, volunteer foundations remain among the key suppliers of the drones to the frontline, and they rely to some extent on crowdfunding to sustain their efforts. One of the individual FPV drone assemblers described to a journalist how he raised funds to support his drone production work. He began by offering gift certificates for his professional services—photography—in exchange for donations. Soon his friend, a fitness trainer, did the same to raise more money for drones. In addition, the school that the man's daughter attended held a charity fair and donated the proceeds to his drone "factory" (Negoda 2024).

Fundraising is also not uncommon for private enterprises. Companies "Skyassist" and "Vaca" fundraise through their websites (Skyassist 2025; VACA 2025). The producers of the "Chaklun" reconnaissance drone also run a fundraising campaign through their website, emphasising that their goal is to provide the military with the drone for free (Chaklun 2024).

Overall, this section draws on multiple sources of data to build a granular and comprehensive picture of Ukraine's civil society, drone production, and micropolitics. The approach is essentially qualitative, as well as descriptive-exploratory, aiming to map out the form and significance of civil society entrepreneurship, and resilience, underpinning motivations, organizational structures, fundraising and crowdfunding mechanisms, innovation processes, and an emerging start-up ethos. Concerning the latter, it should be noted that they served as a bridge between the informal grassroots and the formal military structure. They were agile enough to innovate like the garage groups but are organised enough to interface with government programmes.

This section illustrates explicitly such instances of micropolitics, namely the ways in which individuals navigate around institutional barriers or exercise agency, and interactions with the macro-order, such as times when the state co-opted these efforts, or conversely, were influenced by them. We also paid special attention to the "everyday" aspects, the mundane details of how drones were built in non-military settings, in order to capture the dynamics of everyday IR in action.

Discussion

The results present a complex picture of the relationships between profit and nonprofit entities in drone production, in which civil society establishes commercial enterprises, while businesses set up charity funds or

operate on a voluntary basis. The following takeaways can be drawn from them.

First, the findings illustrate how civil society can be a full-fledged security actor in an unusual role for an arms provider and producer. This contributes to our understanding of what civil society can or cannot do and further blurs the conceptualization of "civil/civilian." While weapon production does not make a combatant, civil society actors do become part of a military supply chain.

Further, on top of challenging the state's monopoly on the security provision and substitution of state functions, the lines are also blurred between commercial and "volunteer" arms production and between civil society actors and business (Zarembo 2017). While military technology traditionally belongs to a commercial domain, the case of Ukraine demonstrates that civil society actors.

These findings bear consequences for the theoretical studies of civil society, since they challenge assumed distinctions between civil society, the military, and the market. While a mainstream definition of civil society would stipulate that it is "the sum of institutions, organisations, and individuals located between the family, the state, and the market, in which people associate voluntarily to advance common interests" (Solonenko 2015, 220) or "self-organised, voluntary citizens' activity and their interrelations, which occur in the public sphere between the state and the household, apart from the market" (Stepanenko 2006, 576), we observe that in drone production, this distinction is not clear cut.

Similarly, commercial enterprises do not necessarily pursue profit-making, hence the usual distinction between profit and nonprofit organizations does not apply. "Producing" and "financing" become conflated terms, since the donation of one's own time and efforts is de facto both production and financing of a drone. In other words, economic and voluntary engagement is fused, with a high degree of horizontal coordination rather than top-down bureaucratic hierarchy.

With this fusion of civilian and commercial, one may observe the whole-of-society resilience when all sectors work together for a common goal. These findings also illustrate how everyday small actions of a high number of individuals affect the capacity of a state to defend itself against a foreign aggression (i.e., how the monopoly of a state on the provision of security is demonopolized and redistributed across all societal actors).

Such civil society actors also demonstrated the principle that "everyday" citizens could directly enhance combat capacity with minimal

bureaucracy. This has not only practical effects, namely more forces for the army, but symbolic ones: It boosted morale to know that anyone with the right skills could pitch in to defend the country. From an everyday IR perspective, these volunteers vividly illustrate micropolitics, with their political agency directly feeding into the macropolitical struggle for Ukraine's survival.

Finally, in terms of micro and macro dynamics, it is worth noting that the civil society stakeholders presented in this article affected macro-outcomes through slightly different dynamics. Garage innovators are the most direct micropolitical agents, namely individuals who alter the war locally, one drone strike at a time, with a cumulative effect. The start-ups represent micropolitics that interface with the macro-order; they worked with the system to incorporate their output into the national strategy, thereby asserting civil society influence on state processes.

Crowdfunding flipped a macro process (war funding) into a series of micro acts (individual donations) that then reaggregate at the macro level. All these dynamics showcase how civil society can be given a voice in prioritizing what to fund, which endows such actors with a certain democratic influence over warfighting priorities, (e.g., public-driven emphasis on drones), perhaps more so than on other equipment.

Conclusion

Ukraine's civil society-led drone production in response to the Russian invasion began as an apparent oxymoron; namely, the notion of civilian actors becoming arms producers runs counter to conventional expectations. Yet, over the course of the war, it has proven to be a tangible reality, one that has materially contributed to Ukraine's defense and reshaped ideas about the role of the public in warfare.

This article shows how drone production in Ukraine in the aftermath of Russia's full-scale invasion challenges conventional understanding of the roles civil society can play. First, it portrays civil society in an unusual role as a weapons producer. Second, it contests the distinction between volunteer efforts and commercial market, demonstrating how civil society efforts can contribute to commercial endeavors, while commercial enterprises can act as volunteers.

These findings offer a promising theoretical research agenda. To begin with, it furthers recent attempts to theorize the role of society in the interstate wars, emphasizing the role of non-state actors. It also connects the field of everyday IR to civil society studies. Finally, it

expands the understanding of weapon production and a state's firepower, thus furthering our understanding of a state's capacity to withstand and deter a foreign armed aggression.

To conclude, we revisit our initial research questions. Why did Ukrainian civil society step into the arena of arms production? The answer lies in a convergence of necessity, capability, and spirit. The existential threat posed by the invasion created an overwhelming whole-of-society necessity and call for resilience, to the point that every available means was needed to resist. At the same time, Ukraine already possessed a capable and tech-savvy citizenry (e.g., engineers and entrepreneurs) who could innovate, adapt, and pivot from civilian projects to military ones with relative ease. At its core was a powerful spirit of patriotism and volunteerism.

Ultimately, Ukraine's example and the blurring of lines between state-society relations in weapons manufacturing challenge us to rethink what a twenty-first-century total war can look like and what this means for civil society in wartime more broadly. This suggests that civil society is not inherently pacifist or separate from war; rather, in extreme conditions, it can transform into a direct contributor to warfare, blurring the lines between civilian and military roles.

Acknowledgements

The authors are grateful to two anonymous reviewers for their valuable suggestions and comments to the earlier version of this paper. They are also deeply grateful to the special issue editors, Jenny Mathers and Anna Kvit, for their professional generosity in search for extraordinary solutions in extraordinary circumstances. Raluca Csernatoni's contribution was supported by the EU Cyber Direct - EU Cyber Diplomacy Initiative project at Carnegie Europe.

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