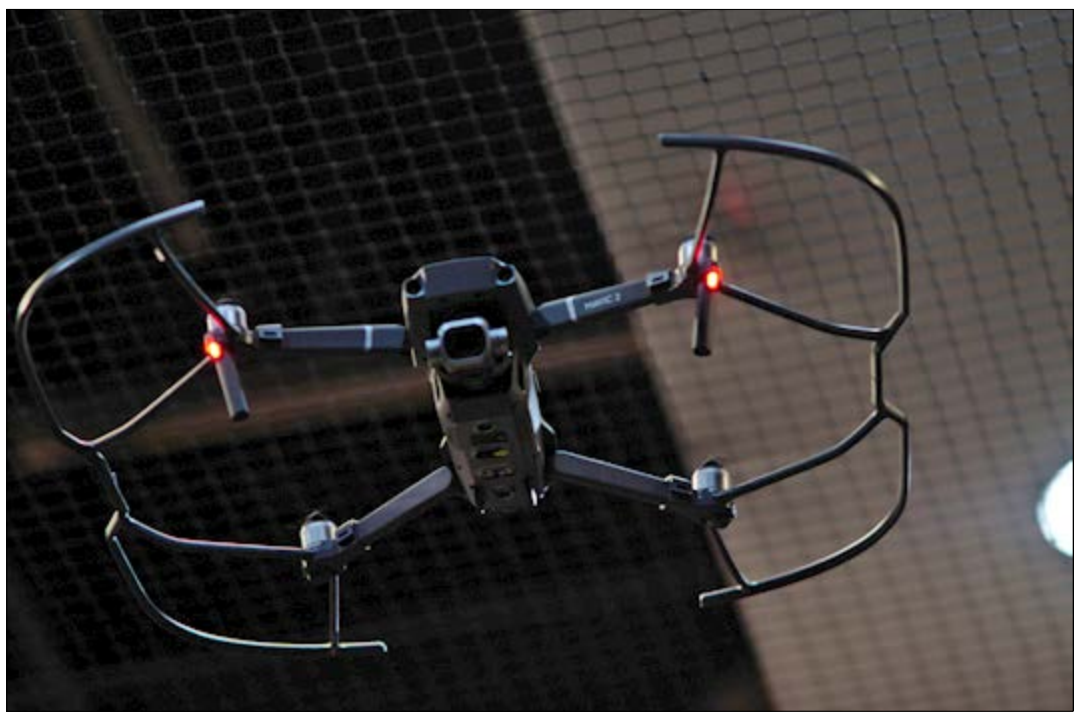
A Chinese Perspective on Intelligent Warfare and Future Urban Operations

OE Watch Commentary: As the source publication points out, Chinese military thinkers are imagining how cutting-edge technologies such as AI, cloud computing, and the internet will shape future combat operations. Chinese publications frequently refer to the next stage of warfare as "intelligent warfare", a deepening of the integration of sensors and communication networks from "informationized warfare" in which human and machine intelligence are combined to operate across platforms, domains, and environments. One of the theorists imagining how these technologies will change warfare is Wu Mingxi, who recently published a book, *Intelligent Wars*, which covers not only AI but also other technologies that are developing in parallel and which will converge to have an even greater effect.



DJI UAV.
Source: Thomas Vogt via Wikimedia, https://upload.wikimedia.org/wikipedia/commons/9/9d/DJI_UAV_%2843139863710%29.jpg Attribution: CC BY-SA

Trained as an engineer, Wu has worked on cutting edge technologies in the Chinese state armaments development system and defense industry for around 30 years, including positions in the Central Military Commission's General Armament Department, as Secretary-General of Chinese arms company NORINCO's S&T committee, and as a technical expert for the Chinese Central Military Commission's Equipment Development Department and S&T Committee.

The translated excerpt below is from an interview with Wu in the popular magazine *Ordnance Knowledge*, in which he describes how some of these emerging technologies may play out in urban operations.

The global trend in urbanization is leading to larger and larger cities, and as noted by Wu, they will remain the focal point of conflicts. China, of course, ranks first globally in terms of the total population with over 1.4 billion people. It not only has some of the largest megacities (cities with over 10 million inhabitants) but also over 100 cities with more than 1 million inhabitants. For context, according to the U.S. Census Bureau, the U.S. had just ten cities with populations of over 1 million inhabitants in 2015.

Technological shifts will alter how conflicts play out in these areas. In particular, operations in non-physical domains, including psychological warfare, public opinion, and collection of information, will take on increased significance. Avoiding civilian casualties will require precision operations, but the proliferation of sensors will make this mode of conflict much more dangerous and require human-machine teaming to clear complex, three-dimensional urban environments.

While Wu is imaging the future, there are some indications that the PLA is already working on man-machine teaming. PLA army aviation units in northeast China, for example, have already begun testing attack helicopter-UAV teaming to improve situational awareness and help overcome the difficulties of operating in built-up environments (See: "PLA Tests Armed Helicopter/UAV Integration," *OE Watch*, August 2019). Aerial reconnaissance drones are now commonly used at every level, from massive strategic UAVs to hand-launched drones deployed at the platoon level. The Chinese defense industry is rapidly improving the individual soldier systems available for PLA ground forces and developing exoskeletons to further enhance their capabilities. But as noted by Wu, entirely new concepts of operations will be needed to tie these capabilities together to and adapt to dense urban environments." **End OE Watch Commentary (Wood)**

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-- Wu Mingxi

Continued: A Chinese Perspective on Intelligent Warfare and Future Urban Operations

Source: "大数据、城市、灰色与智能化作战——吴明曦研究员谈智能化战争 (Big Data, Urban, Gray, and Intelligentized Operations—Researcher Wu Mingxi Discusses Intelligent Warfare)," Ordnance Knowledge [兵器知识], May 2020, 14-19.

Interviewer: *"The book devoted a chapter to the analysis of future urban operations. Judging from the news, it seems like urban warfare has indeed become very common from Iraq to Syria. Why is urban warfare so common?"*

Wu: *"Cities are concentrated places for human civilization, and they are bound to become important targets and the focus of all kinds of military confrontations. Especially with the development of informationized warfare, the boundaries between the front lines and rear areas have become increasingly blurred. The U.S. military believes that 'war under conditions of informatization means to seizing cities rather than attacking hilltops.'*

The city is the most complex battlefield, with densely concentrated buildings, vertical and horizontal streets and pathways, and numerous targets. Military targets, civilian targets, above-ground targets, underground targets, fixed targets, mobile targets, equipment and facilities, and other hard targets, as well as 'soft targets' such as key figures and social organizations. Relying on intelligent technology and intelligentized military [forces] to solve the complex problems in urban warfare is a relatively good approach."

...

Interviewer: *"What are the effects of dense urban buildings, vertical and horizontal blocks, and complex social environment on combat operations? What problems does intelligentization mainly solve?"*

Wu: *"...To deal with the characteristics of cities, new theories of operations, concepts and methods should be put forward to enhance combat capabilities, especially light of [factors including] full environmental awareness, precision targeting, and strikes, enhanced command capability, control of operational risk, the need to reduce collateral damage, prevention crises of public opinion and adapt to social changes, etc."*

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Reporter: *"Is competition for control of the physical domain of urban areas still important? Are there other requirements for "inteligentized" [warfare]?"*

Wu: *"Physical domain operations in urban centers are still the core and focus of competition in the era of intelligentization. But judging from the trend of 'civilized warfare,' future urban operations in the physical domain should not include indiscriminate bombing.*

At the tactical level, future urban operations will very likely be based on three-dimensional, precision operations with human operators in command but dominated by unmanned systems connected by a network information system, requiring higher levels of intelligentization and facing greater demands. Take offensive operations as an example. First, using information on targets and the situational gathered beforehand, distributed swarms of low- and medium-altitude UAVs, etc. would carry out accurate targeting and strikes in urban neighborhoods. Unmanned ground platforms (commanded from manned platforms in the rear) would then be used as the main force to make breakthroughs and provide targeting. Relying on accompanying strike systems at the front and rear, combined aerial reconnaissance and three-dimensional precision strikes could then be carried out against armored ground targets and concealed positions and snipers. At the same time, mixed manned-unmanned special operations teams and the individual soldier systems, using an 'unmanned systems in front, personnel behind' posture, could carry out coordinated operations to search and clear buildings, buildings, underground parking lots, underground tunnels, subways, etc., and eliminate blind spots."

Reporter: *"In addition to competing in the physical domain, are virtual and cross-domain combat operations also important in urban operations? What are the focus points for intelligentization?"*

Wu: *"Future urban operations represent a shift from a traditional mode of combat where attacks in the physical domain are the focus to a new mode of combat where virtual and physical space are fused, and psychological attacks are more prominent, and collateral damage is low. This will be reflected in all stages of conflict (pre-conflict, during, immediately after and in peacetime) and will mainly include perceptions and cognitive confrontation* [认知对抗]*, control of public opinion and intervention, surveillance of key targets and crowds, electronic deception and interference, 'soft' and 'hard' regional blockades and isolation, and post-conflict defense and counter-terrorism and other tasks such as management of critical infrastructure."*