

Drones and CBRN Terrorism Threats and Responses

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An emerging threat

A white quadcopter drone is positioned diagonally across the frame, resting on a patch of green grass. The drone's four propellers and body are clearly visible against the dark background.

But important
to keep things
in perspective

- Drone-pocalypse scenarios, with and without CBRN, are overblown
- Drones do and will offer terrorists new capabilities, including CBRN-related
- Drones offer authorities *significant* defensive and consequence management capabilities

Agenda

- Who am I?
- Assessing the CBRN terrorism threat
- Generalizing about CBRN terrorism with drones
- Unpacking chemical, biological, radiological, nuclear, and CBRN-*like* terrorism
- Generalizing about CBRN terrorism *response* with drones
- Speculating about the future
- Policy responses
- Q&A

Who am I?

- Chemical, biological, radiological, and nuclear weapons policy generalist at intersection of academia, think tanks, and government
- Associate Professor, Nonproliferation and Terrorism Studies Program, Middlebury Institute of International Studies at Monterey
- Former Senior Advisor, Assistant Secretary of Defense for Nuclear, Chemical and Biological Defense Programs
- Co-author of several publications on implications of drones for state and terrorist CBRN threats



Assessing the CBRN terrorism threat

- Terrorists pursue attacks based on strategy, tactics, and ideology, adapting to opportunities and barriers
- CBRN terrorism rare, large-scale CBRN terrorism mostly hypothetical
- Most terrorists lack motivation *and* much capability
- Motivation and capability inversely related for many, but some past and potential future outliers
- Serious threat because even less significant attacks can be consequential *and* more significant attacks possible

How a Cult Used Salad Bars to Orchestrate the Worst Bioterror in US History

Al Qaeda's Pursuit of Weapons of Mass Destruction

Authoritative timeline.

BY JONATHAN TT-LARSEN | JANUARY 25, 2010, 4:48 PM

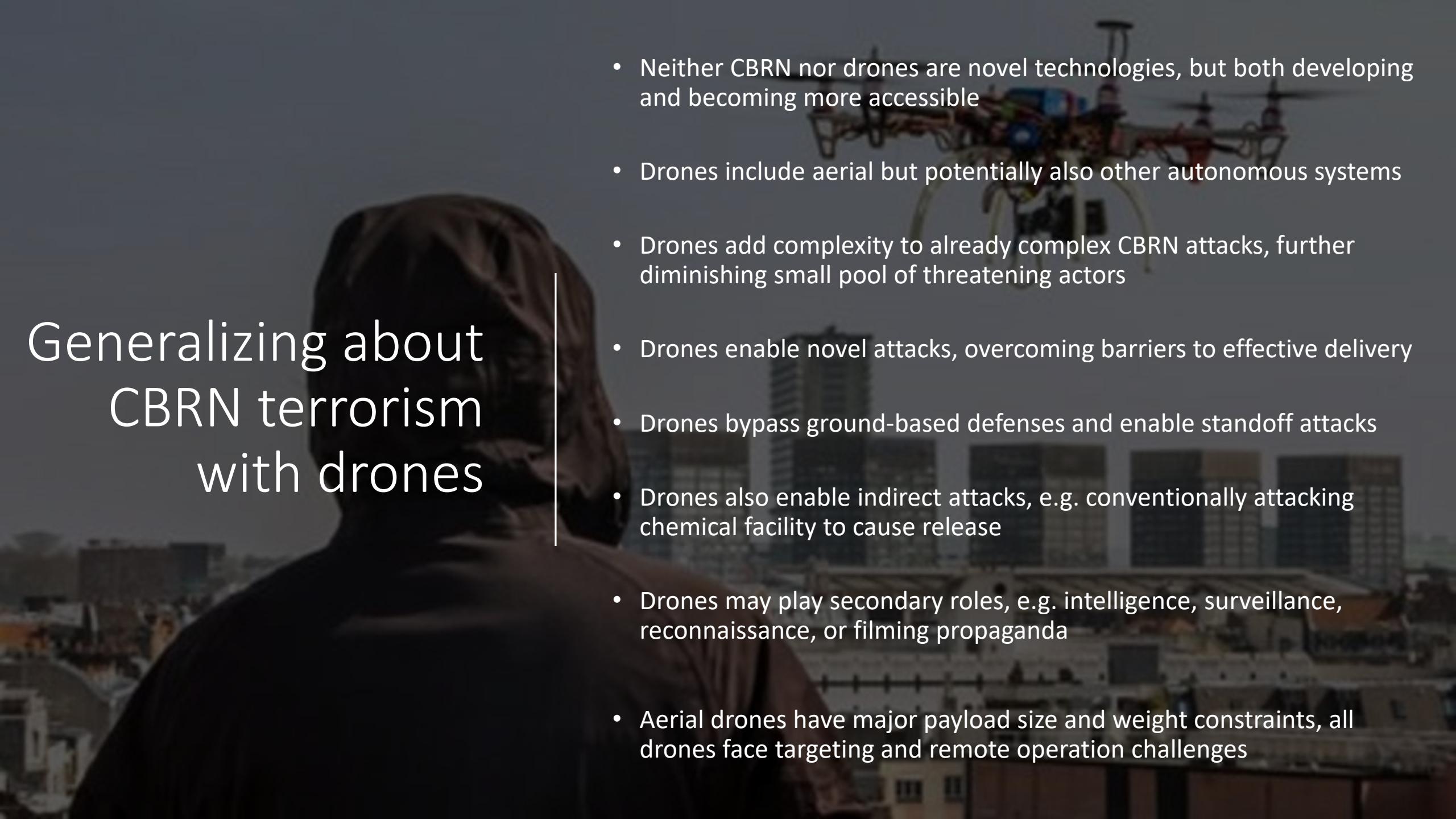
The New York Times

US Used Chemical Arms against Rebels in Syria and Iraq, Report Says

Aum Shinrikyo

Insights Into How Terrorists Develop Biological and Chemical Weapons

By David Danzig, Marc Sageman, Terrance Leighton, Lloyd Danzig, Rui Kotani and Zachary M. Hosford

A dark, atmospheric photograph showing the back of a person's head and shoulders. The person is wearing a light-colored gas mask. In the background, a city skyline with several skyscrapers is visible under a hazy sky.

Generalizing about CBRN terrorism with drones

- Neither CBRN nor drones are novel technologies, but both developing and becoming more accessible
- Drones include aerial but potentially also other autonomous systems
- Drones add complexity to already complex CBRN attacks, further diminishing small pool of threatening actors
- Drones enable novel attacks, overcoming barriers to effective delivery
- Drones bypass ground-based defenses and enable standoff attacks
- Drones also enable indirect attacks, e.g. conventionally attacking chemical facility to cause release
- Drones may play secondary roles, e.g. intelligence, surveillance, reconnaissance, or filming propaganda
- Aerial drones have major payload size and weight constraints, all drones face targeting and remote operation challenges

Unpacking chemical

- Spectrum of chemicals from TICS to more sophisticated
- For aerial drones, payload weight and size constraints are key challenges
- CW most effective in confined spaces, harder for drones to access and operate
- Drones could enable reaching targets, or better dosing targets, in ways not feasible without them
- Drones could facilitate indirect attacks, e.g. causing release from chemical facility



Unpacking biological

- Bio includes toxins – poisons of biological origin – and pathogens, i.e. viruses, bacteria, and others (e.g. prions, fungi, etc.)
- Drones particularly suited to BW delivery, but huge challenges to surmount
- Small payloads of toxins and especially pathogens can be devastating
- Drones enable more effective dosing, response to terrain and atmospheric conditions
- Indirect bio attacks conceivable but less relevant



Unpacking radiological

Expert claims N. Korea develops drone for dirty bomb attack

17:04 December 27, 2016

- Dissemination of radioactive material in solid, powdered, liquid, or gas form
- Potentially effective for area denial, forcing costly cleanup, and/or psychological effects, less effective for harming or killing
- Drones could serve as delivery mechanisms
- Indirect attacks causing radiological releases also conceivable



Unpacking nuclear

- Outlier amid outliers, mostly because technical challenges so significant
- Improvised nuclear device heavy and bulky, requiring truck, boat, larger aircraft, or detonation in place
- Delivery mechanism could be unmanned, but given risks and challenges, less plausible
- Drones could play supporting roles in nuclear terrorism plot

This article is more than 7 years old

US draws up plans for nuclear drones

Nuclear-Armed Drones? They May be Closer Than You Think

Especially for the US military, which is seeking so-called “third offsets” – new technologies in order to redress its growing vulnerability to long-range strike weapons. Against adversaries like China, a strategic drone would probably be quite

The
Guardian

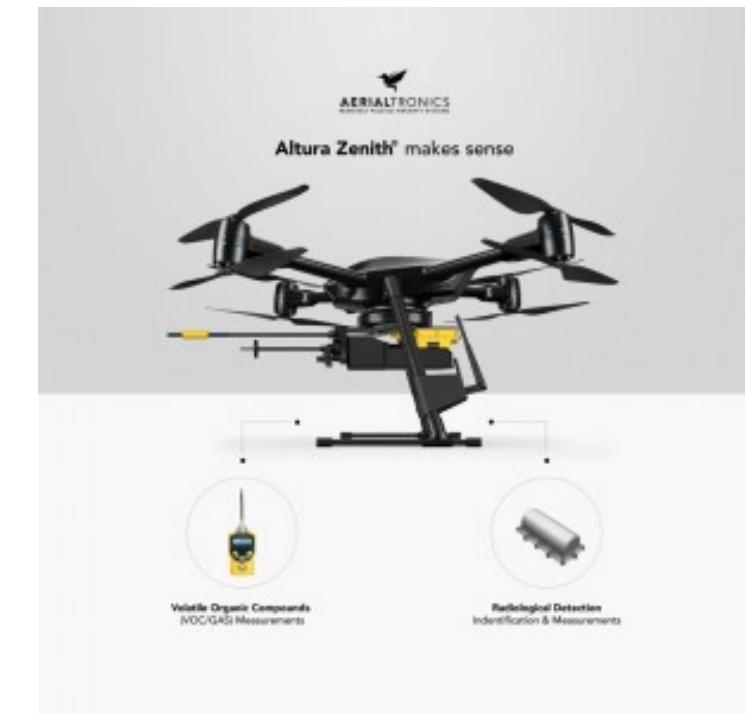
CBRN-like effects without CBRN?

- Drones might enable *non-CBRN* attacks that equaled or exceeded consequences of many CBRN attacks
- Using drones to deliver explosive payloads might yield similar (or greater) effects to the chemical delivery scenario
- Unconventional attack modes could include flying a drone into an aircraft engine or wing to cause a crash
- Many such uses of drones would encounter some of the same barriers discussed with regard to CBRN delivery



Generalizing about CBRN terrorism *response* with drones

- Drones offer unique opportunities to identify, defend against, and manage consequences of CBRN attack
- States have far greater drone capabilities than terrorists
- For foreseeable future, drones more likely to empower state responses to CBRN terrorism than CBRN terrorists
- But state responses with drones create new vulnerabilities and terrorist drones may threaten both drone and non-drone responses



How is (and isn't) the future likely to be different than the past?

- Terrorists are and will increasingly employ drones, mostly for non-CBRN applications
- State responders are and will increasingly employ drones, including for CBRN defense and response
- New capabilities emerging, including improved autonomy, ability to manage larger swarms, etc.
- Drones will interact with, and sometimes enhance, other changes in terrorist threats and responses to them, including readier access to destructive technologies, miniaturized sensors, etc.



Policy responses

- Incorporate and contextualize drones within broader threat assessments and response plans
- Harden key sites, e.g. chemical plants, nuclear facilities
- Build others' capabilities and share best practices and lessons learned



Questions or comments?

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