

3.1 TECHNOLOGY AND TERRORISM IN THREE AREAS: CBRN, UAVs, AND TERRORIST USE OF THE INTERNET (Jeremy Littlewood, Carleton University)

Executive Summary

Taking into account the work of Tetlock and others the findings (assessment) are presented in the form of specific questions within defined timeframes. This approach is purposeful to avoid hedging and caveats that leave responses to core questions ambiguous. The specific questions developed were as follows:

1. Will terrorists use CBRN weapons in Canada between 2016 and 2020?
 - a. Will terrorists use chemical weapons in Canada between 2016 and 2020?
 - b. Will terrorists use biological weapons in Canada between 2016 and 2020?
 - c. Will terrorists use radiological weapons in Canada between 2016 and 2020?
 - d. Will terrorists use nuclear weapons in Canada between 2016 and 2020?
2. Will terrorists use UAVs in Canada between 2016 and 2020?
3. Will terrorists use CBRN weapons in Canada between 2021 and 2025?
 - a. Will terrorists use chemical weapons in Canada between 2021 and 2025?
 - b. Will terrorists use biological weapons in Canada between 2021 and 2025?
 - c. Will terrorists use radiological weapons in Canada between 2021 and 2025?
 - d. Will terrorists use nuclear weapons in Canada between 2021 and 2025?
4. Will terrorists use UAVs in Canada between 2021 and 2025?

These questions capture specific weapons / technologies, under two time frames – 2016 to 2020 and 2021 to 2025 – and within a bounded geographic space (Canada). The developed questions are far from perfect, but are used as means to (a) answer a specific question and (b) permit explanation and contextual information to clarify the simple yes/no assessment.

The third technology under consideration in this report – terrorist use of the internet – was too amorphous and ubiquitous to be subjected to a specific question. Terrorists already use the internet and, as Singer observed the simple answer to how will terrorists use the internet is exactly the same way we do, and ‘we must balance chasing the chimeras of our fevered imaginations with watching the information flows where the real action is taking place.’¹ In addition, given the wealth of literature on terrorist use of the internet, the focus of the research in this area shifted to explore notions of “cyberterrorism” and attacks.

In addition to Canada the research included “and Canada’s interests” in order to capture operational and other deployment of Canadian personnel, Canadians abroad, and Canada’s interests (economic, social, political, etc.) worldwide. This was interpreted to mean use of CBRN, UAVs and the internet globally with a direct and identifiable Canadian target. For example, a hypothetical use by the Islamic State (IS) of chlorine bombs against Canadian forces

¹ Peter Singer. 2012. The Cyber Terror Bogyman. <http://www.brookings.edu/research/articles/2012/11/cyber-terror-singer>

training Kurdish units in Northern Iraq would constitute direct targeting of Canadian forces. A Canadian national injured or killed by a chlorine bomb/device used in another state would also be captured, but whether or not Canadian(s) were purposefully targeted or were incidental victims would have an influence on responses to such incidents.

Finally, the fifth wave of terrorism, or its possibility, was explored. The approach was more conceptual and scoping drawing from existing literature and data on terrorism.

CBRN weapons were defined based on two sources. First, the definition as used in the 2005 *Chemical, Biological, Radiological and Nuclear Strategy of the Government of Canada*. Second, the definitions used in international legal agreements, namely the Biological Weapons Convention (BWC) – also known in Canada as the Biological and Toxin Weapons Convention (BTWC) – the Chemical Weapons Convention (CWC), the Nuclear Non-Proliferation Treaty (NPT) and the International Convention for the Suppression of Acts of Nuclear Terrorism.

For ease of reference, this encompasses ‘weaponized and non-weaponized chemical, biological, radiological, and nuclear materials that can cause significant harm’ and would include Hazardous Materials (HAZMAT).² The 2011 CBRNE Strategy released by the Government of Canada was not used as a definitional basis given the lack of clarity in the document and the generic approach that: ‘Chemical, biological, radiological, nuclear material or certain explosives used deliberately or intentionally by terrorists or criminals to cause harm.’³

In summary form the assessments are as follows.

1. Will terrorists use CBRN weapons in Canada between 2016 and 2020? Yes. This is most likely to be chemical. It will probably be low-level and highly localised, using either a toxin such as ricin, a toxic industrial chemical, or a riot control agent.
 - a. Will terrorists use chemical weapons in Canada between 2016 and 2020? Yes. As noted above, it is expected chemical weapons will be used by a terrorist or terrorist group in Canada up to 2020.
 - b. Will terrorists use biological weapons in Canada between 2016 and 2020? Yes, if toxins are included in biological weapons. Given that toxins are covered by both the BWC and CWC, such use would also constitute biological weapons use.
 - c. Will terrorists use radiological weapons in Canada between 2016 and 2020? No. radiological weapons remain exotic and would require a specific kind of terrorist, with rather specialized knowledge, to plan an attack, acquire the necessary radiological source or materials, and conduct an attack. Despite known interest in such weapons among certain kinds of groups, an attack on, or in, Canada, will remain a low-probability event. On balance, my assessment hews to existing

² Public Safety and Emergency Preparedness Canada. 2005. The Chemical, Biological, Radiological and Nuclear Strategy of the Government of Canada (Minister of Public Works and Government Services)

³ Canada. 2011. Chemical, Biological, Radiological, Nuclear and Explosives Resilience Strategy for Canada <https://www.publicsafety.gc.ca/cnt/rsrscs/pblctns/rsln-strtg/rsln-strtg-eng.pdf>

conditions of no use and very little interest, with even less demonstrated necessary skills and knowledge. Nevertheless, a basic radiological dispersal device or the use of radiological material, including HAZMAT, would not be a complete surprise.

- d. Will terrorists use nuclear weapons in Canada between 2016 and 2020? No. Nuclear weapons are complex, expensive, and extremely difficult to manufacture. Technological developments do not indicate nuclear weapons are getting easier to manufacture and the essential fissile material remains very highly guarded. Canada does not possess nuclear weapons and no nuclear weapons are known to be on Canadian territory.
2. Will terrorists use UAVs in Canada between 2016 and 2020? Yes. UAV use is not limited to armed UAVs as platforms for missiles or as aerial bombs. They serve various purposes including as propaganda devices, for intelligence, surveillance and reconnaissance (ISR), and as disruption devices. Given the plethora of commercial off the shelf (COTS) UAVs available – even though many are little more than toys – the use of a UAV by terrorists in Canada is more likely than not in the future.
3. Will terrorists use CBRN weapons in Canada between 2021 and 2025? Yes. By the end of 2020 proliferation of various technology, materials, and knowledge relevant to CBRN weapons is likely and to be within the reach of terrorists with an interest in such weapons. Chemical weapons will remain the most likely.
 - a. Will terrorists use chemical weapons in Canada between 2021 and 2025? Yes. This may remain at the low-level and rudimentary threshold rather than classic chemical warfare agents.
 - b. Will terrorists use biological weapons in Canada between 2021 and 2025? Yes. Again, due to the toxin overlap biological weapons use is assessed to be more likely than not. Whether or not the biotechnology revolution, the emergence of a DIY and hobbyist bio-community, and more specific and concrete instruction manuals and ‘how to’ guides emerge or are made available will have an influence on the scale and scope of any biological weapons use.
 - c. Will terrorists use radiological weapons in Canada between 2021 and 2025? No. The use of RDDs or even basic radiological material anywhere in the world is likely to result in the rapid adoption of mandatory security measures worldwide, and certainly within Canada and other Western states. Weapons selection is influenced by the environment a terrorist operates within: radiological material is not easily acquired at the current time and is not likely to be more accessible in the future. This assessment is influenced by an expectation that a RDD will be used worldwide in the next decade and the consequence of that use will be enhanced security.

- d. Will terrorists use nuclear weapons in Canada between 2021 and 2025? No. Nuclear weapons will not become easier to acquire or manufacture. Moreover, on the basis of an expected RDD incident worldwide up to 2025, nuclear security measures are likely to increase, creating additional obstacles to terrorists with the ambitions to acquire and use such weapons.
4. Will terrorists use UAVs in Canada between 2021 and 2025? Yes. In the period 2021 to 2025 a generation will emerge that is technically savvy, familiar with technological devices, used to tinkering, hacking, and involvement in maker communities, and familiar with ubiquitous UAVs. Commercial and legitimate developments related to the use of UAVs in a variety of business, public safety, social and humanitarian fields will almost certainly generate new COTS options with increased range, payloads, and air time. UAVs serve a number of purposes and their use by a terrorist is very likely to occur in this period of time.
5. Terrorist use of the internet: both empirical evidence and literature point to continued use of the internet by a variety of actors. This includes terrorists. Returning to Singer, his 2014 publication with Allen noted, vis-à-vis terrorist 'cyberwar' they cited a former US Director of National Intelligence (DNI) who offered the following assessment: 'Terrorist groups today are ranked near the bottom of cyberwar capability' but as they went on to note it remains necessary to be 'mindful of threats. "Sooner or later [they] will achieve cyber-sophistication."' ⁴ Existing literature points to low-level, even rudimentary and ineffective, cyber attacks by terrorist groups in the contemporary period. At the same time, proxy actors, such as 'patriotic hackers' exist and a shift to state-sponsorship of terrorism with a cyber dimension is evident. The assessment envisages and anticipates the emergence of state sponsorship that will endow and equip certain (chosen) terrorists with capabilities to increase the sophistication of their cyber attacks. Such capabilities will proliferate to other, non-sponsored, groups – including criminals, hackers, terrorists, and insurgents, raising the spectre of cyber attacks that go beyond hacking, denial of service, defacement of websites, and release of information. Canada will, very likely, experience this and be targeted by certain groups and actors in the period to 2025.
6. Canada's interests and its operations abroad are more likely to be targeted in both periods than the Canadian homeland. As with its intelligence relationship and participation in the five eyes community, Canada also deploys its Special Operations Forces (SOF) with allies and on missions that are covert. Indeed, SOF increasingly operate in a manner akin to a five eyes relationship. The regular deployment of Canadian Forces (CF) abroad on missions also increases the likelihood of such forces, or

⁴ P. W. Singer and Allan Friedman. 2014. *Cybersecurity and Cyberwar; what everyone needs to know* (Oxford; Oxford University Press) p.99.

Canadian missions, diplomatic staff, or employees being specifically targeted by terrorist groups. While any attacks are more likely than not to be conventional, the assessment is that CBRN, UAVs, and cyber attacks will be launched against targets where Canadians are based on in the vicinity.

7. Finally, shifting the fifth wave of terrorism: the conclusion reached in the preliminary study is that the existing fourth – religious – wave will continue up to at least 2025. While other forms of terrorism will also exist – nationalist, right wing, left wing, and single issue – they are not likely to replace religious-inspired terrorism as the dominant, international wave up to 2025. Neither is it envisaged that a new wave will emerge to dominate in this period. However, it is likely that new forms of terrorism and new ideological and political drivers of terrorism will be more easily identified in the next decade. As such, a fifth wave is expected at some point as the religious wave winds down and a new dominant form emerges. Whether or not this is after 2025, in 2030, or beyond is simply speculation at this juncture.

As such, the overall assessment is that Canada will continue to experience a wide range of terrorist acts at home and abroad which affect the homeland, the interests of the state, and its nationals. Most, indeed the vast majority, is likely to resemble terrorism as it has been for over forty years: low-level, not very sophisticated, highly localised and involving firearms and explosive devices. Some, however, will be unconventional (CBRN), involve new platforms and weapons (UAVs and Cyber), and result in mass casualties. Such developments are not inevitable: as in the past, the environment where terrorism operates can be shaped and influenced by counterterrorist activity that maintains significant obstacles before those intent on exploiting technology and pursuing mass casualties.