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Meeting challenges and finding opportunities during megacity disasters

> Where there is no widespread population displacement, large outbreaks of communicable disease are rare after natural disasters. However, outbreaks are significantly more likely where populations are displaced, where nutritional status is poor, and/or where water and sanitation systems are damaged.[1]
>
> —D. Sanderson et al., *Responding to urban disasters*

> I suppose one of the things that we learned very quickly in Hue City was that if a man was wounded, you didn't pull back and call for a corpsman because then you'd have two guys down … We found out that in the city you have to carry on and leave the guy, that the guy had a better chance of surviving if we just kept going and let the guys behind us pick him up. It's a difficult thing to do.[2]
>
> —Lieutenant General (ret.) Ernest C. Cheatham,
> US Marine Corps

The fighting in Saigon, Hue and other Vietnamese cities during the 1968 Tet Offensive brought together many of the challenges soldiers and others have since repeatedly confronted when violence visits urban areas. That the enemy attacked five of the country's six autonomous cities and 36 of 44 provincial capitals acknowledged the political and social significance of these centres. The combat was brutal. US and Republic of Vietnam

1 Sanderson et al., *Responding to urban disasters*.
2 Quoted in Glenn, *Honing the Keys to the City*, 57.

soldiers fought North Vietnamese regulars and Viet Cong irregulars at intimate quarters. Those taking up arms included mechanics, cooks, clerks and others finding themselves at the sharp end of war for the first time. Infantrymen advancing street by street and block by block had to stay their trigger fingers as civilians unexpectedly appeared from buildings and alleys, fleeing the enemy. Controlling the many refugees was all but impossible. Filtering out enemy infiltrators was likewise. The innocent fled with good reason. The enemy executed thousands in Hue alone; government officials, teachers and others thought to be associated with South Vietnam's government were later found in mass graves.

The attacking North Vietnamese and Viet Cong sought to inspire an urban uprising and thereby cause the collapse of South Vietnam's government. They failed. The fighting left thousands homeless even so. Reconstruction of ruined dwellings was interrupted by a second wave of attacks in May 1968 against fewer urban areas, with the capital, Saigon, the primary focus. The adversary struck again in August.[3] Providing shelter for those made homeless was only one challenge. Distributing food and water, preventing disease among the displaced, caring for the newly orphaned and elderly deprived of caregivers and reuniting those separated during the chaos that inevitably accompanies disaster are only a few of the additional tribulations suffered in excess.

The view through history's lens is far clearer than that of what is yet to come. The view forward tends to be even less sharp when the subject is response to urban disaster because of the unique character of each catastrophe. Inexperience further dims perceptions. Drawing on a military example, the soldier can look back on World War II and find exceptionally detailed statistics on how much fuel was used, ammunition fired and food consumed, which vehicle parts wore out fastest or how many casualties were suffered when fighting occurred in a jungle, on the plains of Europe or in a desert. Not so when the fighting was in an urban area. Such statistics rarely exist.

You are likely among the world's hundreds of millions who were restricted to their homes due to Covid-19. There will surely be books aplenty condemning the misjudgements and misdirection employed as the virus

3 For those wanting to read further about the multiple 1968 offensives against Republic of Vietnam urban areas, see Adrian G. Traas, *Turning Point, 1967–1968*, Washington, DC: US Army Center of Military History, 2017.

spread. More important will be the lessons captured and shared regarding which procedures proved better than others, which policies and regulations helped or hindered and how wiser decisions might be adapted next time so the world's megacities are better prepared. Just as was the case with the 1995 nerve agent attack in Tokyo and the lack of changes made in the ensuing 25 years, however, knowing is not doing. The following pages are aimed to assist those who can and will 'do' when urban disasters call.

Systems as context during megacity disasters

> Tokyo has approximately 63,000 underground areas, with underground paths, subway systems and shopping complexes comprising 40 percent of the total … The Tsukiji-Toranomon Tunnel is buried about 2 meters underground, and is separated by just 30 cm—roughly the width of a Japan Times Sunday page—from an underground utility conduit jointly operated by gas, water and telecommunications companies, among others, that runs beneath it. The conduit, meanwhile, is also located 30 cm above the Toei Mita Subway Line … One can walk all the way from Otemachi, cross Tokyo Station and the Yaesu shopping district, past JR Yurakucho Station and make it as far as Kabukiza theater in Higashi-ginza without ever needing to walk on the surface. All in all, that's a walk of 4.05 km.[4]
>
> —Jun Hongo, 'Tokyo underground'

> Tokyo subways carry 10M per day.[5]
>
> —'Walking Tokyo', *National Geographic*

Not all is what it seems in a megacity. A bridge is a bridge but can be so much more. It is a way out for those fleeing disaster, a way in for those bringing help, a comfort for defenders who know they will have to depart should things go wrong and a means of exploiting success for an attacker pursuing a defeated foe. But a bridge is often more than only its travelled way. We noted that powerlines and waterpipes might run beneath and be the difference between neighbourhood residents' keeping cold or sickness

4 Jun Hongo, 'Tokyo underground: Taking property development to new depths', *The Japan Times*, [Tokyo], 12 April 2014, available from: www.japantimes.co.jp/life/2014/04/12/lifestyle/tokyo-underground/#.XDp77M9KgWo.

5 'Walking Tokyo', *National Geographic* 235 (April 2019): 38–65, at 53.

at bay and death should the span be destroyed by an earthquake's tremors or military force trying to keep an enemy from crossing. Intact lines and pipes mean urban authorities can turn their attentions to other problems in a time of crisis. A destroyed bridge means those same officials must commit resources to providing lost essentials to the civilian population. In times of war, every successful metre gained in an attack imposes an additional metre of occupier responsibility under international law. Is halting an enemy's escape worth having to find alternative ways of providing power and water to a population for days, weeks or months? The potential occupier needs to prepare for two futures even if they have no intention of dropping the span: one with the bridge intact, and a second with it lying submerged beneath the river's flowing waters—for the enemy always has a vote. The bridge's survival is not dependent on one side's actions alone. While the future occupier might wish to see the bridge stand, a fleeing enemy finds itself in a double-bonus situation: destroying the bridge delays a foe's pursuit. Dropping the span further burdens that enemy with additional occupier responsibilities. Should it be an earthquake or other act of nature that fells the span, the problem is not only losing the vital resources in the lines and pipes but also there is one less way to bring relief to the deprived.

Such are the tortuous decisions for the city councillor or attacking infantry colonel. Take a couple of steps up the ladder of seniority and the decisions change in character and consequences. What is the point at which priority shifts from meeting a megacity population's expectations of a quick return to pre-disaster normalcy to restoring far-flung commercial ties that preserve the urban area's status and infuse funds into its traumatised economy? Though the media and community authorities will favour focusing on the directly affected population, what of the thousands or millions who live beyond the city's limits but depend on its ports, airfields, trains and roads for essentials? Given the megacity consists of multiple governments and hundreds of community groups, who decides who gets what when? Every decision made or not made has repercussions—those ripples in nearby and distant ponds that represent second and higher-order effects being impossible to predict, hard to forecast and sure to have consequences for decision-maker and resident alike in both the immediate and the longer terms.

Control during megacity disasters

> Rescue workers rummaged through wardrobes and drawers in bombed homes … Looters freely roamed the streets stealing fuel, food, and even old ladies' clothing.[6]
>
> —Aaron William Moore, *Bombing the City*

> Major Hassan turned to me with an expression of disbelief. 'I face difficulties with these civilians,' he said … 'They just come here and walk around … Sometimes they ask very stupid things.'[7]
>
> —James Verini, *They Will Have to Die Now*

Failure to quickly gain control during urban disaster response means loss of government legitimacy. Coalition operations in early 2003 in Iraq lacked the manpower to prevent the rampant looting and accompanying wanton destruction of the country's southern towns and cities as forces moved north.[8] True, combat forces needed to maintain their momentum if they were to deny Saddam Hussein's forces the time needed to prepare defences. Yet unchecked looting meant the loss of vital property records and delayed the return of public services before the coming torrid summer months. Perhaps greater priority will be given to increasing the number of units in trailing echelons tasked to secure bypassed urban areas during planning for future military urban operations, that in conjunction with increasing military police and more effective efforts to retain local law enforcement with promises of continued wages. These concerns should be no less a priority in the absence of war. Looting, destruction and assaults on innocents are as much a threat to recovery when the environment is one of rioting, as in 1992 in Los Angeles, or of flooding, as in Dhaka, Jakarta or Shanghai. How much force is justified in stopping such behaviour? Like patient triage, guidance is best created and made known before misfortune visits.

Post-disaster evaluations will always include looking over one's shoulder at why preparations failed to identify decisions, actions or behaviours that would later prove ill advised. The 7 August 1998 truck bombing of the US Embassy in Nairobi, Kenya, is no exception. Shots rang out. A grenade exploded as the attacking terrorists responded to guards halting their

6 Moore, *Bombing the City*, 124.
7 Verini, *They Will Have to Die Now*, 256–57.
8 James N. Mattis, Interview with Russell W. Glenn, Palo Alto, CA, 31 August 2014.

vehicle. Curiosity drove embassy workers and those in nearby structures to windows. This understandable reaction was a fatal one. Many died or were maimed when the bomb detonated, shattering window glass that tore into spectators who should have been trained to flee from the sounds of an attack. Seven years later, on 7 July 2005, terrorists struck the megacity of London with three nearly simultaneous bombings. All the explosive devices used hexamethylene triperoxide diamine (HMDT)—a compound that degrades and destabilises when warmed. The NYPD's Michael Sheehan, who is in charge of the department's counterterrorism section, noted lessons that could foretell similar attacks in the future. The terrorists had used commercial-grade refrigerators to keep the materials stable. They had loaded the explosives into coolers for transport before transferring them to the refrigerators. While that may not have been thought suspicious by any but the most security-conscious, the purchase, delivery and movement of the refrigerators into the terrorists' living quarters (described as a 'flophouse') could have triggered lifesaving suspicions, multiplying the opportunities for police to hear of the presence of the abnormal.[9] Public information programs arm potential victims with knowledge. The better the preparation, the better are the choices made that mean the difference between death and survival, disaster and interdiction.

Some of history's lessons might surprise. An estimated one-third of patients hid from contact tracers and would not report to treatment centres as Ebola ravaged Sierra Leone in 2014–15. Others who had tested positive fled treatment centres—at times with the help of family members.[10] Despite pleas from health authorities, families in West Africa also insisted on sharing a last meal with the highly contagious corpse of a recently departed relative during the crisis. The seemingly inexplicable behaviour (until one realises it is a cultural norm) has historical company:

> In 1883, during the fifth cholera pandemic, the German physician Robert Koch established the cause of the disease by isolating the *Vibrio cholerae* bacterium. The following year, the pandemic hit Naples. The city dispatched inspectors to confiscate suspect produce. It also sent out disinfection squads, which arrived at the city's tenements with guns drawn. Neapolitans … responded with an impressive sense of humor, if not necessarily a keen

9 Dickey, *Securing the City*, 212.
10 Manaugh and Twilley, *Until Proven Safe*, 176.

> understanding of epidemiology. Demonstrators showed up at city hall with baskets of overripe figs and melons. They proceeded … 'to consume the forbidden fruit in enormous quantities while those who watched applauded and bet on which binger would eat the most.'[11]

Setting priorities: Doing first things first

> Fifteen-year-old Ono Kazuo was completely disorientated by the annihilation of his neighbourhood in Takamatsu, trying to navigate theretofore familiar streets that were suddenly covered in destroyed houses, downed power lines, and ruined institutions such as schools, hospitals, train stations, and shops.[12]
>
> —Aaron William Moore, *Bombing the City*

> Another put on a blue trilby hat and purple scarf. I asked if he'd found the accessories in the house. He looked almost insulted. 'I wouldn't take another person's clothing,' he said.[13]
>
> —James Verini, *They Will Have to Die Now*

Flexible plans and adaptation in applying them are as close as a megacity's responsible authorities will have to a silver bullet in meeting the challenges rushing at them during a crisis. Getting it perfect will be impossible. Getting it not too wrong, on the other hand, will be a notable accomplishment. Leaders were met with far more challenges than means to meet them when riots broke out in 1992 in Los Angeles. Failing to put a high priority on securing gun shops meant an estimated 3,000 handguns, rifles and shotguns were looted. Only 200 of these had been recovered months later.[14] Decision-making failures at the federal level in the United States during the early 2020 coronavirus outbreak meant the locations most likely to suffer the most rapid spread of the disease—its major urban areas—lacked consistent direction, accurate guidance and policies that ensured rare resources were managed centrally rather than as treasures fought over between states, federal authorities and private interests. The United States' federal response stood out as especially incompetent, but it was not the only subpar performance. Lacking sufficient guidelines from Japan's national leaders, Tokyo Governor Koike Yuriko's more aggressive

11 Kolbert, 'The spread', 61.
12 Moore, *Bombing the City*, 41.
13 Verini, *They Will Have to Die Now*, 35.
14 James D. Delk, *Fires & Furies: The L.A. Riots*, Palm Springs, CA: ETC, 1995, 36.

approach upstaged that of then prime minister Abe Shinzo and included the dramatic step of shutting the red-light district for the first time since the fire-bombings in World War II.[15]

Getting the priorities right—or not too wrong—means recognising what is most important amid the chaos. The great war theorist Carl von Clausewitz provided his thoughts on the traits an effective military leader needed to prevail in such times. His nineteenth-century observation applies no less to those struggling during the initial hours, days and weeks of a megacity crisis 200 years on. Clausewitz called his essential character feature *coup d'oeil*—best translated as a mix of strength of mind, drive and resistance to fluster—which the Prussian himself described as 'the quick recognition of truth that the mind would ordinarily miss or would be perceived only after long study and reflection'.[16] One possessing *coup d'oeil* breaks through the sense of being overwhelmed to which others fall victim. He or she should therefore be able to grasp what needs to be done to address the demands of the present without too greatly risking future success. Leaders must not only manage an in-progress crisis. They must also keep an eye on what were routine day-to-day threats before a disaster while also being aware that some people will see catastrophe as an opportunity for gain at others' expense. Japanese leaders in Tokyo realised this during the 2011 Fukushima Daiichi disaster. With Tokyo threatened and much of Honshu's population under siege, a regional enemy chose to test the country's national security preparedness by menacing Japan's airspace.[17] The United States similarly saw China, Russia, North Korea and Iran all seek to take advantage of perceived US vulnerabilities as it sought to keep the worst of the Covid-19 pandemic at bay.[18] China sank a Vietnamese fishing boat in the South China Sea on 2 April 2020 and dispatched an aircraft-carrier to skirt Japanese and Taiwanese territorial waters, testing America's commitment as the virus sickened US Navy crews. Air force jets intercepted two Russian patrol aircraft near Alaska; a week later, a fighter from that country came within 8 metres of a US Navy reconnaissance aircraft. North Korea's missile launches spiked in

15 'The drifters', *The Economist*, [London], 4 April 2020, 31.

16 Carl von Clausewitz, *On War*, ed. and trans. by Michael Howard and Peter Paret, Princeton, NJ: Princeton University Press, 1976, 102.

17 Glenn et al., *Achieving Convergence during Humanitarian Assistance and Disaster Relief Operations*.

18 Ellen Mitchell, 'Foreign powers test US defenses amid coronavirus pandemic', *The Hill*, [Washington, DC], 19 April 2020, available from: thehill.com/policy/defense/493490-foreign-powers-test-us-defenses-amid-coronavirus-pandemic.

March 2020 while Iranian Islamic Revolutionary Guard Corps vessels made 'dangerous and harassing approaches' to US Navy and Coast Guard ships.

Coup d'oeil alone cannot ensure success. Getting it not too wrong also requires accurate information no matter how strong the mind and calm the spirit. Acquiring the information needed and getting it to where it needs to go will be notably challenging when the environment is the hypercomplex one found in a megacity. It will be a collective effort that succeeds only if all know how to play their parts. *Coup d'oeil* might take on a collective character when the parties agreeing to support a comprehensive approach work together to strip away the fog that otherwise impedes clear decisions.

Knowing what you don't know

> Nearly 65 per cent of the traffic is composed of non-powered vehicles (e.g., rickshaws, bicycles), which are not physically separated from cars, buses, and other powered vehicles.[19]
>
> —Saleemul Huq, 'Environmental Hazards in Dhaka'

> It took a little time to realise that the best 'chatter-up' was not necessarily the most senior member of a patrol.[20]
>
> —MOD, *Operation Banner*

The above two quotations provide lessons for even those savvy in the ways of gathering information. Having seen donkey carts adding to rush-hour in Basra, Iraq, and the deluge of bicycles in Dutch urban areas at seemingly any time of day would not prepare me for Dhaka's streets. Nor would I, as an inexperienced lieutenant, have been smart enough to realise that several of my platoon members were better able to talk the talk with locals in a city whether at home or abroad. No matter how good the pre-calamity information-gathering, events will demand much in the way of updating, refining, disproving and discovery.

Those same databases that provided overview-type input during planning and rehearsals can be fine-tuned to specific needs once calamity strikes. Census information, tax records, marketing survey results, those hyper-

19 Saleemul Huq, 'Environmental Hazards in Dhaka', in *Crucibles of Hazard: Mega-Cities and Disasters in Transition*, James K. Mitchell (ed.), New York, NY: United Nations University, 1999, 128.
20 MOD, *Operation Banner*, 5-1.

important property records—some, all or others can feed the voracious appetite for information depending on the nature of the crisis, location, demographics, gaps in local capabilities and aid provider resources. (The reason property records are so critical—and a reason insurgents or criminals deliberately target them for destruction—is that landownership proves a boon to anyone who can convince a government they own a plot or want to undermine a government by causing it to appear to be the power stealing from rightful owners.) We noted that medical records can tell aid providers who needs which treatments and medications, where they live and which challenges exist (mobility limitations, deafness, asthma, reliance on home respirators and psychiatric problems, for example) if patients have waived release of relevant medical information or local policies permit access regardless. Pharmacy information provides less comprehensive but potentially still valuable insights. The potential to save begs the question of whether policies are in place to make such information available during a catastrophe. Rehearsals and other exercises should point to additional information that healthcare providers could include as data to release in times of emergency. Does the home respirator for a given patient have battery backup? If so, how long will the charge last? If not, does the residence have a backup generator? If so, how much fuel is stored at the location?

While the above can help those hoping to know who lives where and what needs those individuals have, mobile phone data will continue to have notable potential given their 'real-time' character. As we noted earlier, officials have used data records providing call times and mobile tower locations to track malaria outbreaks in Africa and such use could similarly help trace the flow of commuters exposed to biological or chemical contamination. The State of Virginia fielded its COVIDWISE app in July 2020 to track exposures and notify any who downloaded the application that they may have come in contact with individuals testing positive. Geoprofiling shows promise for finding terrorists via analyses of where incidents occur. Recall that attacks might be a shortish distance from perpetrators' dwellings, material storage locations or stores used for purchases to reduce chances of detection. Even knowing where a megacity's sex trade or bar scenes flourish can be helpful if the nature of the terrorist is such that he or she finds such locations unpalatable—or otherwise.[21]

21 Glenn, 'Megacities'.

Cultures can throw outside relief providers a curve, however, and while those non-natives are likely working hand-in-hand with locals, the locals may not know which of their customs the visitors find unusual. Oral thermometers requiring sanitisation between uses weren't a practical choice for medical personnel trying to determine who had the highly contagious Ebola in 2014 in West Africa. 'Fever guns' aimed at individuals' foreheads seemed the logical replacement; they proved otherwise. Some locals thought the technology meant the user was reading minds to determine voting intentions in a pending election.[22] Nor should an outsider believe the developed world is devoid of the seemingly nonsensical. Acknowledging superstitions means some (but not all) buildings in urban areas skip one or more floor numbers. We already noted that providing a two-dimensional grid coordinate gives a location on the ground but not how far above or below that point the item or person of interest might be. Adding the floor or level number would in most cases do the job for someone assisting inside a structure (as floor numbers are generally clearly marked). The view from inside and outside can be considerably different in terms of location, however—a potentially vital bit of information for an emergency medical technician, pilot, sniper, firefighter or another viewing the building from its exterior. Many US highrises have no thirteenth floor—a critical factor should a shooter or victim have to be dealt with from the outside of the structure after a report that the person in question resides on a level above that number. In China, it's the fourth floor or any ending in '4' that might be skipped (in some cases, any floor with '4' appearing at all, which also casts out 40–43 and 45–49). Given the city's considerable Chinese population, one apartment building in Vancouver, Canada, has a sixtieth floor—a pretty amazing feat for a building with only 53 levels. The builder passed over not only all floors ending in '4' but also the thirteenth. (If there's a bit of engineer in you and you are checking my maths, Canadian buildings at times call what Americans would label the first floor the 'ground' or 'main' floor. In the case of this building, the floor immediately above the ground floor is the second, not first, floor. There is no first floor! See Footnote 23 for the maths involved.) Some buildings catering to Chinese also have no apartment or room numbers ending with or containing a '4', complicating responders' jobs even further, especially when smoke or lack of power limits visibility during rescue efforts. Fortunately, Vancouver recently changed its policy

22 Laurie Garrett, 'Welcome to the first war zone Ebola crisis', *Foreign Policy*, 18 October 2018, available from: foreignpolicy.com/2018/10/18/welcome-to-the-first-war-zone-ebola-crisis/.

to reduce these risks; floors with fours and the thirteenth are back.[23] Presumably, so too are suite numbers and the like in new construction, meaning there will be some foured and thirteened buildings (good luck, first responders). The way to communicate vertical dimensions needs to be made known to all relevant parties managing and lending assistance in times of need along with such oddball features as these.

Similar challenges sometimes lurk within other urban addresses. The importance of having an address—and that address accurately reflecting a location—has meant the difference between life and death. John Snow—he of cholera maps and the Broad Street pump—could discover the connection between disease and water source because England's Parliament had in 1765 dictated that all houses have a number. Seventy-two years later, in 1837, births and deaths began to be recorded by the country's General Register Office. These two bureaucratic steps meant Snow could get the date and cause of death and the address at which it took place, thus allowing him to plot that famous map and draw his vital conclusions.[24]

Fine, you might think, but buildings having addresses are not a problem today—well, unless the disaster involves a slum where authorities have either deliberately or otherwise not assigned addresses to homes and other structures. Or maybe crisis strikes a country in which accurate mapping remains a challenge. Or one where a single location has several addresses. Author Juan Villoro lives in Mexico City. His neighbourhood has two official names, Villa Coyoacán and Coyoacán Center. Uber refers to it by a third name, Santa Catarina. His street is named after a strongman from the Mexican Revolution—one of 412 streets, avenues or traffic circles

23 JLee, 'No more skipping 4, 13, 14, or 24 in Vancouver floor numbers', *Vancouver Sun*, 14 November 2015, available from: vancouversun.com/news/local-news/no-more-skipping-4-13-14-24-in-vancouver-floor-numbers. The maths: 53 floors. Delete numbers 4, 13, 14, 24, 34, 44, so add six floors = 59, but if you add six to 53 you have to skip 54, so the 53-storey building has 60 floors on the elevator panel. Remember that what would be the first floor in the United States is labelled the ground floor in the apartment building with that immediately above as the second floor (so our floor count calculations are not affected by what is an anomaly for Americans). European buildings and some elsewhere, however, often have a ground floor with what is called the first floor immediately above. Important? It sure would be if Americans providing assistance in, say, London, were unaware of the difference when sent to help someone on the first floor. Once again, it's about the importance of accurate information—'accurate' having to sometimes include more than might be, well, what meets the eye from the outside of a structure.

24 Deirdre Mask, *The Address Book: What Street Addresses Reveal about Identity, Race, Wealth, and Power*, New York, NY: St Martin's Press, 2020, 40–41.

bearing the name 'Carranza'.[25] But in developed-world megacities addresses shouldn't be a problem, you say. Wrong again, I'm afraid. Understanding the tongue being spoken by a local urban resident might not mean resident and aid provider are communicating in the same language. Those living or working in a neighbourhood sometimes have their own names for streets, squares, buildings or other features. Depending on whom the aid provider is speaking with, even neighbours in a community might refer to a location differently. Author Deirdre Mask found that 'immigrants from different regions in China have their own Manhattan [New York City] street names for the same street according to region and dialect'.[26] No problem—just make sure those unfamiliar with an area have the official address (if one exists), right? Not so fast. Mask goes on to write about 'vanity addresses'—those reflecting locations considered posher than others, and thus ones for which real estate developers can charge more. The problem comes when officials sell or allow addresses that do not accurately reflect the real location (another example of corruption having many forms perhaps?). Manhattan again provides an example, though New York is not the only city with the problem. Mask relates that number 520 Park Avenue isn't on Park Avenue at all; the building fronts East 60th Street, 46 metres away. No big deal (other than for those paying 5 to 10 per cent more for the 'fake' address)? Tell that to the family of Nancy Clay, who lost her life in another city because of such mislabelling. Clay died in Chicago because the city's firefighters did not know her office at One Illinois Center was really on the less posh East Wacker Drive.[27] And that was local fire responders; visiting disaster responders wouldn't have a clue. Fortunately, there are efforts under way to come up with universal addresses for any location in the world. Less fortunately, these are still in development and some of the eventual products may require commercial purchase.[28]

Maps, overhead photography and GPS might get an individual or group to where they want to go, but do they tell them anything about conditions on the ground when they get there? Recalling his visit to Medellín, Colombia, author Richard Sennett relied on young guides who routinely provided tours of city *barrios*. 'They knew every alley and byway,' Sennett wrote:

25 Villoro, *Horizontal Vertigo*, 28.
26 Mask, *The Address Book*, 86–87.
27 ibid., 229–31.
28 ibid., 260–68.

> They gave an exhaustive description of dangerous and safe streets which would have done a policeman proud. Holding my eight-year-old guide's hand, I felt his slight, restraining, cautionary gesture whenever we turned a corner. On a later visit at night to the barrio, I noticed that as my protectors rounded corners they would slow down a bit and survey the lights on in the houses lining the street. If the houses of friends whom they'd just seen were in darkness, my protectors would then stop: why wasn't this family at home when they were supposed to be having supper? Once I asked if anything was wrong; 'no' one ten-year-old protector replied, 'but there might be.'[29]

Even at eight and 10 years of age, locals register the absence of the normal and presence of the abnormal—information that could prove invaluable to a new arrival unfamiliar with a city.

Relying on local support is not without its risks, however. Some offering assistance in the past were taking advantage of the naive newly arrived, employing the unwitting outsider to settle old scores by falsely identifying fellow noncombatants' homes as those of the enemy. The benefits for the misinformation providers were twofold. First, a competitor is eliminated or that old score settled. Second, as it is the foreigner who does the deed, the real perpetrator escapes blame and thus the endless chain of retribution is broken as the naive surrogate becomes the culpable party. It is quickly understood that outsiders, especially those from wealthy countries, also have the means to grant power and provide funds or other favours. Recall again the example of British Army First Lieutenant Ross Kennedy and the Iraqi translator deliberately mistranslating to try to obtain funding for school supplies.

There's obviously more to managing information than simply getting more of it. The wise authority will keep an eye out for damaging lies, destructive use of biases and truths wielded to harm in today's world of pervasive attempts to spread misinformation or disinformation. Despite Pope Clement VI's papal bulls noting that Jews were also dying and thus were unlikely to be responsible for Europe's bubonic plague in 1349, Jewish communities suffered obliteration in Cologne, Frankfurt and Mainz. We remember from the pages above that Tokyo's residents attacked Koreans they blamed for the 1923 earthquake that so devastated Japan's capital. Sometimes second or higher-order effects lend credence

29 Sennett, *Building and Dwelling*, 173.

to conspiracy theorists looking to believe what they want to believe no matter its viability. Sometimes officials undermine their own credibility. Haitians rioted after cholera bloomed in Port-au-Prince after the 2009 earthquake, blaming the United Nations contingent from Nepal for the outbreak. It was an accusation vehemently denied. Unfortunately, for the United Nations' reputation, revelations years later proved it to be true.[30]

Crime and control

> If he has a drug problem at home, he has a drug problem in the refugee center. If he was a spouse abuser at home, he will be a spouse abuser in the refugee center.[31]
>
> —Commander (ret.) Sid Heal, Los Angeles County Sheriff's Office

> The size of urban populations and the scale of needs in urban disasters limit the contribution that any single actor can make.[32]
>
> —D. Sanderson et al., *Responding to urban disasters*

Perhaps the most well-known policing initiative in the latter half of the twentieth century was New York City's zero tolerance 'broken windows' approach to the crime that had for decades plagued America's largest city. Seemingly small stuff previously thought too petty to consume police time became a focus: graffiti, jumping over subway toll barriers to avoid paying—these were given attention, along with former foci like robberies and other forms of 'bigger' lawbreaking. Crime dropped; New York today is far less a feared environment than during those earlier decades.[33] Fast forward to 2003 in Iraq's urban areas where looting went unchecked due to a lack of sufficient coalition numbers. Very different situation, very different consequences. Yet, one is left wondering how the months and years following the allied invasion of Iraq might have gone differently had law and order been a priority from the moment forces crossed the line of departure.

30 Kolbert, 'The spread', 61.
31 Quoted in Glenn et al., *Achieving Convergence during Humanitarian Assistance and Disaster Relief Operations*.
32 Sanderson et al., *Responding to urban disasters*.
33 Sharkey, *Uneasy Peace*, 153.

We touched on alternative approaches. Making it clear to Iraqi police in those urban areas that those staying on the job would be retained and paid might have made a difference. Doing the same with Saddam's military units would have been a greater risk but perhaps one worth taking on a case-by-case basis. (Allied forces in parts of Asia relied on surrendered Japanese Army soldiers to [ironically] keep the peace in the immediate aftermath of World War II until conditions permitted the victors to assume those duties.) Once Saddam's forces were thoroughly beaten, combat units did turn their attention to bypassed cities. By then, unfortunately, much of the looting that stripped property and undermined coalition legitimacy had already set recovery back months, if not years.

There is also the argument that coalition leaders could not have known that looting would be a problem. That explanation does not survive scrutiny, however. The US Army went into Panama less than 14 years earlier, in late 1989, to oust the corrupt president Manuel Noriega. As then battalion commander Lieutenant Colonel Johnny Brooks recalled:

> We authorized the shooting of anyone who had a weapon. A tremendous number of the looters had weapons as they conducted their thievery. Our shooting of the armed ones opened the eyes of the others to the point that it halted the looting … We were able to control the looting in that one case simply by following our ROE [rules of engagement].[34]

Urban areas in both Panama and Iraq suffered combat damage, but the former rarely suffered the denuding of buildings that occurred in the later operation—damage that set back the recovery of communities and entire cities due to the destruction of those vital property records in addition to other resources. For any who might think 'it can't happen here', reconsider. Douglas Brinkley wrote of New Orleans in the days immediately after Hurricane Katrina's landfall: 'The robberies and marauding were paralyzing the progress, such as it was, of recovery … Buses that straggled into the city drew anarchist gunfire. In response, bus drivers took evasive action: they just returned home.'[35]

34 Johnny W. Brooks, Personal communication, Subject: Looters in Panama, 13 September 2004.
35 Brinkley, *The Great Deluge*, 489, 508. Though some debate the existence of snipers and gunfire in the days after Katrina's passage, the number of sources citing the criminality considerably outnumbers the doubters.

Among the solutions: establish on-the-spot courts and temporary detention facilities if the number of miscreants exceeds the available jail space. Swift, appropriately restrained reaction convinces good and bad alike that a legitimate sheriff is in town. That will prove true both at home and abroad. It is worth mentioning in passing: the sheriff needs to ensure their own forces are on the right side of the law. A World War II manual warned against looting by US troops from the purely pragmatic viewpoint that it 'detracts from alertness, slows initiatives, and may seriously interfere with the progress of the attack'[36] (ignoring how it could impact the perspectives of the occupied population). Nor is it only military forces whose feet need be held to the fire of justice. At least one member of a New York City–based group supporting medical efforts during 2016–17 fighting in Mosul, Iraq, took to Facebook to blatantly show off the jewellery she had appropriated from a resident's home.

Dr Aaron Epstein's experiences during his organisation's provision of medical support to those wounded or otherwise injured during that period of fighting make clear the importance of vetting less well-established NGOs and similar groups:

> Within our organization, we have about 1000 medical personnel. About 200 are physicians, 800 are nurses and the like, but we also have people who were coordinating with DoD [US Department of Defense] reps or the intelligence community to determine where to go. Our group was kind of [angered] because they saw these adventurists, war tourists for lack of a better term, dressed up like special ops guys who threw on the Red Cross badge and were putting chest tubes in though they never had done it before … Some were doing CPR [cardiopulmonary resuscitation] just for the sake of doing CPR for a camera crew. There was a case of someone pulling off a chest bandage for the camera, which would have caused the lung to collapse. There are times when no medicine is better than bad medicine as it is just extending a painful death. That's unethical … There are groups who live off these donations. The unfortunate reality is that upwards of 60–70% of participation is just all-out fraud. That's why [our organisation] has 100% volunteers and no one is making a living off it … I know there were some that were trying to pose as DoD or part of coalition forces … Vetting was absolutely inadequate and bordered on criminal negligence … If it's an area where DoD

36 *Attack on a Fortified Position and Combat in Towns*, 66.

> isn't there, then the UN should establish a minimum standard … That way if the military has to hand off a patient to someone, they know that the patient will be getting the care they should.[37]

Dr Epstein was not alone in his observations. Journalist James Verini recalled:

> [T]here were the American volunteer medics, the most flagrant of whom belonged to a group that was led by a wiry, loquacious middle-aged man who said he was a former Special Forces officer and Ranger. He inserted himself into various conflicts around the world, often dragging along his wife and children, and insisted on saying prayers for you at every opportunity whether you wanted him to or not … He also said prayers over the corpses of Islamic State fighters, some of which he claimed to have shot himself. Unlike the other volunteer medics, his group all carried rifles, and it was clear from their behavior they had only the barest interest in doing medical work. They were there because they wanted to kill jihadis, though, aside from the leader, none of them appeared to know their way around their weapons. He told me … he had no formal medical training.[38]

Dr Epstein offered his thoughts on ways to improve the provision of goods and services to needy members of urban populations, including the desirability of expanding the responsibilities of NGOs willing to orchestrate the efforts of others when that capability is otherwise absent. Additional functions would include pre-event planning, running exercises to improve the coordinators' understanding of participating groups, organising participants both before and during operations into primary and backup roles and vetting NGOs. These coordinating (or, ideally, orchestrating) organisations would also be the primary points of contact for military forces rendering aid, local governments trying to manage relief providers and—conceivably—media representatives, to avoid the last's sometimes unhelpful influence when it comes to allocating aid. NGO InterAction's Jennifer L. McAvoy astutely noted that while military, other government or intergovernmental organisations often expect NGO representatives to participate in pre-deployment exercises, they too seldom involve those NGOs during the *design* of these events, meaning their participation can be superficial or ad hoc as the complexity of their support is never properly integrated. McAvoy went on

37 Dr Aaron Epstein, Telephone interview with Dr Russell W. Glenn, 25 September 2019.
38 Verini, *They Will Have to Die Now*, 188.

to observe that ongoing relationships rather than ones based exclusively on occasional exercise participation would further enrich understanding and effectiveness. Further, she noted that inefficiencies during operations in and around Mosul were sometimes due to NGOs not knowing what questions to ask because of their unfamiliarity with combat operations generally and urban undertakings specifically. Chances are good that military and other governmental representatives are similarly ignorant when it comes to asking questions about NGOs' and other potential partners' capabilities.[39] (Readers who conduct such exercises might argue that security classifications impede greater coordination with NGOs, IGOs and other organisations during training. McAvoy legitimately asked why hosts could not design exercises that did not require security clearances. Having participated in innumerable such events, I have found the benefits of including classified material generally pale in comparison with those gained by 'uncleared' partners' full integration.)

The steps taken to promote stability and the rule of law on the ground in megacities can include what Peter Ford described as 'soft checks'. At a 2019 conference, he drew on his experiences as a senior US representative to Rio de Janeiro assisting Brazilian authorities with security during the 2016 Summer Olympic Games. These soft checks 'provided layered security for Rio's transportation system. As every rider was required to have a subway ticket, security personnel posted themselves at key points in the system to ensure multiple checks prior to individuals embarking on trains.'[40] Speaking at the same conference, Lieutenant General Ryuji Takemoto of the Japan Ground Self-Defense Force observed that improved technologies can effectively complement these human checks. Used appropriately, near-ubiquitous security or traffic cameras (at least in some urban areas) and voice and image recognition have demonstrated their potential both during day-to-day policing and in times of heightened concern. Enhanced in years to come by AI, these and other technologies should further assist in improving the responsiveness of humanitarian assistance as well as maintaining law and order after a megacity suffers misfortune.

Good judgement properly balanced with restraint will be key to guaranteeing law and order and protecting citizens' rights. The person on the street wants to be treated with the respect and courtesy that should

39 Jennifer L. McAvoy, Telephone interview with Dr Russell W. Glenn, 4 February 2021.

40 Glenn et al., *Achieving Convergence during Humanitarian Assistance and Disaster Relief Operations*.

be forthcoming for any who have not demonstrated they have sacrificed that right. Such is true during times of crisis no less than otherwise. Mark Twain's pen could gently damn officials who, admittedly in far different times, subjected him and his travelling companions to a seemingly unnecessary procedure during an 1867 visit to Europe. After a lunch at Como on the Italian lake of the same name, the group took a ferry to the town of Bellaggio, where police:

> put us into a little stone cell and presently a smoke rose about our feet—a smoke that smelled of all the dead things of earth … We were there five minutes … They fumigated us to guard themselves against the cholera, though we hailed from no infected port.[41]

It couldn't happen here, readers might again think. Sid Heal, formerly with the Los Angeles County Sheriff's Department, recalled a recent case that proves otherwise—this one due to an arguably overly cautious Los Angeles public official:

> Receipt of a letter containing a powdery substance and accompanying threatening letter had resulted in the evacuation of about 400 business and clerical workers from the targeted office building. As the situation unfolded, my partner became convinced that this was another hoax. Weaponized anthrax is tan in color; that in the envelope was white. Likewise, weaponizing anthrax requires a highly sophisticated process usually requiring an advanced education in chemistry, biology, or related subjects. The threatening letter, however, had numerous misspellings; it also identified anthrax as a virus rather than a bacterium, something that is almost inconceivable to anyone with the knowledge needed to perform the weaponization process. We continued acting as if the threat was real even as my partner sought to convince the incident commander that the threat was a hoax. Unconvinced, the incident commander opted to decontaminate all the people being detained.
>
> The decontamination process was not a pleasant one. We were using 'Kwell lotion' (Lindane), which is sprayed on the naked bodies of inmates to kill lice, crabs, mites, and other parasites. It is often cold and has the viscosity and appearance of mucus. Trusting in our professionalism, these people suffered the indignity of taking their clothes off to be sprayed with this messy substance. They were then wrapped in blankets and filmed by the media as

41 Twain, *The Innocents Abroad*, 127.

> they were released. After discovering that the incident was a hoax and that the authorities could have recognized this prior to the decontamination procedure, those suffering the decontamination were upset despite the explanation that the incident commander was erring on the side of their safety. The implications of the resultant lack of trust are not trivial. How much public cooperation do you think we can expect during future events? What if the next incident involves an actual threat and people refuse to cooperate because they believe we previously violated their trust? If you carry that to the logical conclusion, we could very well end up having to use force on victims![42]

Mission command during megacity disasters

> One of the toughest lessons the US military learned from Operation Tomodachi [to support Japan during the Fukushima Daiichi disaster] is that it sometimes has to fight its natural inclination to take charge.[43]
>
> —Wyatt Olson, 'After 2011 Japan earthquake, US military learned to play supporting role in disaster relief'

> The city had reached the bottom of its existence, and it continued to survive only by virtue of its inhabitants' commitment to making it so.[44]
>
> —Aaron William Moore, *Bombing the City*

Orchestrating the efforts of a megacity police force, its city engineers, fire department, health officials and a military force lending assistance during a crisis response is hard enough. Add the variety of other governmental, nongovernmental, intergovernmental, faith-based, private commercial and whatever other groups will more or less join forces during a disaster—many of which are appearing on the scene for the first time and are therefore completely unfamiliar with the terrain or its population—and it's easy to see why some give up trying to orchestrate a comprehensive approach involving the activities of all relevant parties. Though there will be missteps, guidance *within* law enforcement departments, military

42 Quoted in Glenn et al., *Achieving Convergence during Humanitarian Assistance and Disaster Relief Operations*.

43 Wyatt Olson, 'After 2011 Japan earthquake, US military learned to play supporting role in disaster relief', *Stars and Stripes*, [Washington, DC], 8 March 2016, available from: www.stripes.com/news/after-2011-japan-earthquake-us-military-learned-to-play-supporting-role-in-disaster-relief-1.396953 [page discontinued].

44 Moore, *Bombing the City*, 144.

and other organisations will generally be consistent. Members of each will be marching to the same drummer even if the drummer for a given group has its own beat. Not so across organisations as their numbers grow. Priorities will differ, as will willingness to work with other groups seen as funding competitors.

We have noted that the chokepoints on which these many organisations rely (airports, seaports and border crossings, for example) and the resources they require to operate (mobile phone bandwidth, electricity and access to buildings, vehicles, water and food) will be constant sources of competition. For an example, one need only look at the behaviour of the US Trump administration in barring the American 3M company from providing protective masks to other than US customers in early April 2020 (which included denying delivery of masks already paid for by habitual US allies and partners).[45] Organisations used to being in charge—the US military primary among them—will find their oversight unappreciated or outright rejected, as did the commanding general of the 101st Airborne Division in West Africa during the 2014 Ebola crisis. There can be benefits to granting a leadership role to that sometimes bull in a china shop that is the armed forces. US military tours tend to be longer than those of many of its interagency and international military partners; they thus provide continuity that is valued despite occasional perceptions of heavy-handedness.[46] In other instances, there may be good reason for the soldier to take a back seat. Others more familiar with the conditions at hand (as in West Africa) or whose skills dominate may be the logical choice to assume the mantle of leadership while the military's is more appropriately a supporting role. This was pointedly recognised by the US Army's Center for Army Lessons Learned as it looked back on that Ebola contingency:

> Being subordinate to a civilian agency while maintaining the freedom to insert ideas and suggestions in a multiagency/multinational planning, operational, and execution process is an art. This is an art US Army leadership declines to practice sufficiently (if at all).[47]

45 Jeanne Whalen, Loveday Morris, Tom Hamburger and Terrence McCoy, 'White House scrambles to scoop up medical supplies worldwide, angering Canada, Germany', *The Washington Post*, 4 April 2020, available from: www.washingtonpost.com/business/2020/04/03/white-house-scrambles-scoop-up-medical-supplies-angering-canada-germany/.

46 CALL, 'Operation United Assistance', 37.

47 ibid.

Not assuming the leadership role may mean military leaders find themselves in unfamiliar territory. Soldiers favour unity of command—a condition in which everyone falls under the jurisdiction of a single commander. When not in charge, the military's leaders and led may have to settle for being part of a less hierarchical but frequently more widely acceptable relationship known as unity of effort in which the various parties agree to work towards a somewhat common set of objectives. It is a situation best described as competitive cooperation, where some will be more competitive even as others give precedence to cooperation.

Smaller organisations may find it feasible to exercise centralised management of their assets, including personnel. Teams may be so small that the boss is virtually always present onsite. Larger ones are more likely to benefit from mission command and its reliance on the good judgement of members strewn over a megacity's landscapes and socialscapes. Their judgement will hopefully be guided by clearly stated and well-understood direction that covers the expected challenges but is broad and flexible enough to account for the ever-present threat of ambush by the play of chance. Putting the right person in charge will be key. Once again, we draw on former Los Angeles County Sheriff's Department commander Sid Heal's 30-plus years of experience. Heal recommends turning to the most qualified individual for leadership rather than defaulting to whomever happens to be on duty when the request for assistance arrives. We recall that the individual best able to communicate with the person on a megacity street is frequently not in charge. The same applies here. Leadership called for in a given situation can demand talents different to the experiences and demonstrated skills that saw a senior leader promoted in the past.[48]

Making sure plans and decision-making include the flexibility necessary to deal with megacity complexity has the added benefit of opening the door to resources that might have previously gone unrecognised. New York City's response to Hurricane Sandy's destruction took advantage of its coastal location. Both the US Navy and the Coast Guard rendered assistance. The latter's medium-endurance cutter *Spencer* stepped (floated?) forward to serve as headquarters for orchestrating the two organisations' efforts.[49] Coalition members in Iraq came up with the idea of using concrete barriers to wall off those parts of the city suffering ethnic-

48 Glenn et al., *Achieving Convergence during Humanitarian Assistance and Disaster Relief Operations*.
49 Bucci et al., *After Hurricane Sandy*.

cleansing by religious extremists. We have already highlighted the benefits of employing a thermostat approach to controlling troublesome megacity districts, neighbourhoods or even specific buildings by influencing access to vital resources such as power, water or communications.[50] Access can be a reward for cooperation when such resources are limited. Colonel David Perkins agreeing to stop patrols in Fallujah was the flipside of that coin; local leaders saw not having his heavy vehicles rumble through the city's night-time streets as a reward for their control of violence.

Redundancy is another advantage of mission command savvy. The events of 9/11 and combat operations highlight the exposure to risk suffered by police, fire, military and other leaders in key positions. Well-informed subordinates supported by good planning mean the disruption caused by loss of leaders is kept to a minimum. The 1/5 Marine Battalion's experiences in Hue during the Tet Offensive provide an example. Its C Company lost two of its three platoon commanders. The A Company's commander, executive officer and many of those in the remaining company headquarters were likewise casualties.[51] Both units continued to fight effectively despite the potentially crippling losses thanks to subordinates familiar with their mission and higher-level expectations. Firefighters and police rendering assistance during 9/11 did likewise even as their leaders died during an unprecedented emergency. Equipped with effective training and guidance, subordinates didn't allow chaos to escape its cage.

Exercises and rehearsals are key to ensuring subordinates understand guidance. Including experts in these sessions reveals what otherwise seems obvious only in retrospect. While such events would ideally cover all relevant questions pre-disaster, conducting follow-on exercises and rehearsals once conditions on the ground are known can better inform decision-making. Where, for example, should organisations locate camps for residents displaced by a catastrophe? On the edge of the affected megacity might seem the obvious choice. Expert insight suggests otherwise, as such 'camps can increase displacement and population movement as surrounding populations move in to take advantage of

50 Townsend, *Smart Cities*, 300.

51 Russell W. Glenn, Sidney W. Atkinson, Michael Barbero, Frederick J. Gellert, Scott Gerwehr, Steven Hartman, Jamison Jo Medby, Andrew O'Donnell, David Owen and Suzanne Pieklik, *Ready for Armageddon: Proceedings of the 2001 RAND Arroyo–Joint ACTD-CETO-USMC Nonlethal and Urban Operations Program Urban Operations Conference*, Santa Monica, CA: RAND Corporation, 2002, 63, available from: www.rand.org/pubs/conf_proceedings/CF179.html.

camp services. Alternatively, they can lead to tensions with surrounding populations.' Instead, 'temporary camps should be established as close as possible to neighbourhoods of origin', thereby maintaining community ties, encouraging local recovery and, presumably, easing the quick return of residents to their homes once the immediate crisis passes.[52]

Previous exceptional events offer lessons to those prepared by exercises and rehearsals. Dan Mahoney, a 31-year veteran with the San Francisco Police Department and later a member of the Northern California Regional Intelligence Center, explained how the Bay Area took steps to ensure emergency responders would be able to communicate if a crisis occurred during one of the world's premier sports events:

> The Super Bowl was a nine-day event, not a three-hour game. You had a couple hundred thousand people in a four-block area. Next time you go to a sellout baseball game, tell me how well your cellphone works, because all those cellphones eat up the bandwidth. So police can't talk to fire, etc. because all the bandwidth is eaten up. Technology is not able to keep up with it. So we got cells on wheels (COWS) and cells on light trucks (COLTS). We were thus able to park trailers around the event to grow the bandwidth so that law enforcement/public safety had comms.[53]

The second quotation opening this section again reminds us of the importance of the megacity resident in a catastrophe. Their eyes are allies when it comes to preventing the bad from becoming worse. Experienced organisations know their chances of receiving public support are better if there is a connection between citizen and outsider. The military's default approach when it comes to dividing up responsibilities for an urban area is to do it by organisation. In a coalition with members from multiple countries, that means Americans get some neighbourhoods, Canadians others, and so on. Lieutenant Colonel John Frewen took another tack as commander of the military contingent that went into Solomon Islands' capital of Honiara in 2003. Australia, New Zealand, Papua New Guinea, Tonga and Fiji all sent units to help restore stability in the troubled city. Rather than defaulting to the simplest option of assigning sectors according to national contingent, Frewen wisely chose to create multinational units in which soldiers from the last three countries joined

52 Sanderson et al., *Responding to urban disasters*.

53 Dan Mahoney (Northern California Regional Intelligence Center), Interview with Dr Russell W. Glenn, San Francisco, CA, 12 April 2016.

units from Australia and New Zealand. This meant each patrol had one or more representatives from the smaller nations' armed forces—soldiers whose culture was more akin to Solomon Islanders' than was that of those from the bigger countries. Improved citizen communications and greater willingness to share information were the result—an example of the senior-most member of an organisation recognising that he and other leaders might not be the ones best at bonding with locals.

Informing urban residents how they can assist relief providers helps reveal a city's secrets. Locals know the location of vehicles that might be rented or borrowed, where supplies might be purchased, who possesses the keys to local services such as medical care, policing and firefighting, which leaders can aid in getting word to communities or providing critical expertise and much else. Volunteers or local security forces can be valuable in augmenting relief efforts once trained, equipped and supervised, which goes far towards explaining why cities like Tokyo do so much to educate residents prior to crises. The previous example of hiring locals to provide NGO security in Somalia provides a red flag, however. Care must be taken to ensure the legitimate use of violence remains under the control of proper authorities:

> Community-oriented policing should not be confused with vigilantism. Although widely practiced in the slums of many parts of the world, including in Latin America, and although frequently accepted as legitimate by some local populations and tolerated or even encouraged by official police forces, such community militias and 'watch groups' often are the source of much indiscriminate violence, extrajudicial killings, ethnic cleansing, looting, and other forms of crime. They rarely truly reduce crime—often merely replacing one form of criminality with another—while they further undermine the rule of law and sever the bonds between citizens and the state.[54]

54 Felbab-Brown, *Bringing the State to the Slum*, 16.

The comprehensive approach during a megacity disaster

> The more Moslawis were killed, the more they resented the soldiers, and the more soldiers were killed, the more they resented the Moslawis.[55]
>
> Anne Barnard, 'How a caliphate ends'

> [Regarding] the unprecedented terrorist attack that France experienced in 2015 … After decades that had seen war kept at bay, our population has once again become a target in need of protection. But our population might also be the best weapon to oppose the enemy … Material strength is not enough. The moral strength of the nation has an important role to play.[56]
>
> —Jean-Yves Le Drian, *Who Is the Enemy?*

Both blast and sound rolled through the crowd as the first explosion shredded the innocent at Paris's Stade de France. The thunder of three more explosions roiled the air within 50 minutes, each targeting a popular restaurant or public event packed on that Friday night. Reports of the detonations reached the Assistance Publique–Hôpitaux de Paris (APHP), Europe's largest hospital trust, as information told of four further locations where people had been shot. One, the Bataclan concert hall, where a rock band had been playing, was still under siege. Ultimately, 130 people would die across the megacity of 11 million. Hundreds more were wounded, many severely. APHP's director-general quickly activated the 20-year-old but never used 'White Plan' to respond to the 13 November 2015 terrorist attacks. Forty hospitals mobilised. Directors recalled staff to duty. Personnel prepared beds for the surge of incoming wounded so that emergency rooms could be quickly cleared of patients after surgery. The sky above France's capital reverberated as the blades of 10 helicopters thundered overhead, crisscrossing the city, with air evacuation complementing the mass ground movement of the wounded. Additional 'reservoirs' of medical capacity—Paris hospitals not yet receiving patients and university facilities outside the city proper—stood by should the maimed exceed the capacity of the initial 40 facilities.

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55 Anne Barnard, 'How a caliphate ends: On the frontline of the fight against ISIS', *Foreign Affairs* 98(6) (November–December 2019), available from: www.foreignaffairs.com/reviews/review-essay/2019-10-15/how-caliphate-ends.

56 Le Drian, *Who Is the Enemy?*, 64, 65.

Timely activation 'had a critical effect'.[57] Having the White Plan on the shelf proved key. So, too, did the experience of medical personnel who had treated victims after the attack on the offices of *Charlie Hebdo* magazine the previous January. While helicopters, ambulances and other transport raced the bleeding to hospitals, physicians, nurses and drivers in 45 mobile units sped in the opposite direction to triage patients on the spot and dispatch them to the most appropriate of the 40 waiting facilities. Another 15 teams waited in reserve should there have been additional attacks. Even those inexperienced in terms of previous mass-casualty events were prepared thanks to training in gunshot wound treatment and participation in three recent field exercises focusing on treatment 'in the field'—that is, before wounded reached hospitals. Those preparations had drawn on studies of earlier attacks in Israel, Boston, Spain and the United Kingdom. If a hospital lacked the capacity or expertise needed, authorities transferred victims to other medical facilities. Innovation and decisiveness by doctors, nurses and medical technicians, their hands covered by victims' blood, were commonplace. Patients showed up at hospitals with belts tightened around shredded limbs: mobile medical teams had turned to the expedient when they ran short of tourniquets.

The formal plans, rehearsals, other exercises and initiative meant chaos lapped at the ankles of responders but never overwhelmed. Paris's wounded benefited further from off-duty medical personnel rushing to hospitals without being asked and the good fortune of no second or third bomb attacks deliberately targeting responders.[58] Paris also had an advantage common to all megacities: concentration of the best and brightest minds, large numbers of talented people and the most advanced technologies.

57 This paragraph draws on Martin Hirsch, Pierre Carli, Rémy Nizard, Bruno Riou, Barouyr Baroudjian, Thierry Baubet, Vibol Chhor, Charlotte Chollet-Xemard, Nicolas Dantchev, Nadia Fleury, Jean-Paul Fontaine, Youri Yordanov, Maurice Raphael, Catherine Paugam Burtz and Antoine Lafont, 'The medical response to multisite terrorist attacks in Paris', *The Lancet* 386(10012) (19 December 2015): 2535–38, doi.org/10.1016/S0140-6736(15)01063-6; and 'Paris attacks: What happened on the night', *BBC News*, 9 December 2015, available from: www.bbc.com/news/world-europe-34818994.

58 Commendable perhaps, but as our example of 9/11 showed, there are risks incurred when those in off-duty status or others with responsibilities elsewhere rush to the site of a major emergency, no matter how well intentioned. Plans and rehearsals should include guidance on how all members—on duty and the disaster occurs in their jurisdiction, off duty or on duty but their responsibilities are remote from the crisis site—should respond. The example of the APHP in Paris with its standby facilities and medical teams is a worthy one.

Not all cities are Paris. An NGO, IGO or other relief organisation deploying to a post-disaster megacity might know where to find water supplies. What might be less obvious is whether that water is potable. Beijing's chemical pollution has rendered 40 per cent of its water unsuitable for consumption; Shanghai is worse off yet, with 56 per cent unusable.[59] Yet, it is no coincidence that the doctor treating Patrick Sawyer after he collapsed in Lagos's airport had both the medical expertise to see through Sawyer's lies regarding exposure to Ebola and the strength of character to resist diplomatic pressure to release him. Tax, health, demographic and other records helpful to planning and reacting to calamities will tend to be better in a nation's dominant urban area. It is there that a country and a region's various demographics come together. That means any outsiders should be able to find significant numbers willing to provide information even as others might find the new arrivals less popular. Knowing who has what talents, which resources exist and where, which dangers lurk—such as a general dearth of drinkable water—and how those dangers can be overcome will be as important to success as knowing the opposition is to winning a football game (regardless of the ball's shape). San Francisco's Dan Mahoney, quoted above regarding the Bay Area's Super Bowl preparations, went on to say that knowing the players before a disaster means a handshake or a promise made at the other end of a phonecall will suffice when under other circumstances there might be a demand for time-consuming negotiations and a contract.

Mission command can do much to promote the success of not only individual organisations but also coalitions and partnerships. It is impossible to overstate the importance of trust in achieving these successes, but trust does not exist on first acquaintance. Those TEWG meetings and continuity of leadership in participating organisations mean the cop knows the soldier and the fire chief has convinced NGOs he'll be there when they call. While lengthy commitments to assist at international destinations obviously require rotating personnel, unnecessarily switching people or permitting 'tourist tours' so personnel can punch the 'been there, done that' ticket disrupts established relationships and the trust built. Maintaining crucial associations merits more consideration than is sometimes the case when deciding how long people will stay in high-risk or otherwise unpleasant locations. Trust will also have to survive the

59 Rahm Emanuel, *The Nation City: Why Mayors are Now Running the World*, New York, NY: Alfred A. Knopf, 2020, 226.

inevitable differences in operational approaches taken by organisations. Not all will agree with the policies proposed in these cooperative ventures. Frewen was justifiably concerned that the sudden influx of 2,000 members of RAMSI would seriously disrupt the capital's—and, by extension—the country's economy. He therefore prohibited his soldiers from spending money in downtown Honiara during the earliest weeks of the deployment and later only gradually loosened that restriction. Not all other RAMSI partners adopted Frewen's policy, but as his soldiers represented 1,800 of the mission's 2,000 personnel, keeping their money in their pockets had the desired effect of holding at bay the potential negative economic effects that could have been inflicted by the new arrivals.

Disaster social messaging and the comprehensive approach

> People want to help in a crisis and the currency is not dollars; it's information. We believe that there can and should be a social media layer of data and we're eager to incorporate those data for our own fact checking. Every citizen is a communicator or contributor and we will benefit greatly from those initiatives.[60]
>
> —American Red Cross, *The case for integrating crisis response with social media*

> It is important to communicate with the population in non-military speak. Likewise, it is better to encourage than to order.[61]
>
> —Brigadier Ian Langford, Australian Army

Both the message and how it is conveyed are critical in efforts to influence popular behaviour. Failing in one renders both ineffective. Liberia's citizens needed something more helpful than its government's message of 'Ebola is real—if you get it, you'll die!', as the disease ravaged West Africa in 2014. A more effective message would have been, 'Ebola is real, but if you seek treatment, you have a 50 per cent chance of recovery'. It turned out the Liberian tune 'Ebola in Town', with the catchy line 'Don't touch your friend/I say it will kill you!', had the right mix of message and method for its audience. Marketing during a crisis is just as necessary for public information campaigns as it is when selling cars, insurance or soft drinks.

60 American Red Cross, *The case for integrating crisis response with social media*.

61 Ian Langford [Brigadier, Australian Army], 'Mission command during megacity HADR operations', Presentation to Current and Future Operations in Megacities Conference, Tokyo, 16 July 2019.

The United Nations Children's Fund (UNICEF) incorporated Ebola issues into an American-style radio soap opera to help Sierra Leonean survivors cope.[62]

Social media played a different but similarly beneficial role as China's first Covid-19 hotspot of Wuhan (population 11 million-plus) struggled with the virus. Domestic NGOs included not only the well-established Blue Sky Rescue Team but also new organisations created and mobilised thanks to social media coordination. Services provided included delivery of medical supplies and disinfecting of public spaces.[63]

It's clear that getting a message out effectively is something of an artform—a challenge made all the harder when the artist must deal with power interruptions, an unfamiliar culture and seemingly illogical behaviour. Recall how Miami's and other Florida beaches were packed with spring-breakers in March 2020 while authorities (other than the governor of the state, unfortunately) called for social distancing to hinder the spread of Covid-19. Eight months later, millions more ignored expert advice to stay home for Thanksgiving even as the United States set daily records for new cases and deaths. Parents refused to evacuate their children during the worst of the bombing in Tokyo and London during World War II despite programs offering to take the young to safer locations until the danger passed.[64] Messages must also reach the right audiences. A survey used by Tokyo authorities to gauge residents' reactions after a major earthquake found college and high school students tended to hunker down on campus. Those in their parents' age group were more prone to try to reach relatives who might need assistance. The survey also found that the messages effective with women might be less so for men (ya think?). Further, the latter are more likely to try to get home during a crisis, especially when the fate of families is unknown. This was especially true for men aged in their forties even when obstacles included intimidating distances, walking as the only option, the possibility of raging fires along the route, streets packed with emergency equipment and the fact that recognising even one's own neighbourhood much less unfamiliar ones along the route can be difficult when destruction is sufficiently severe.[65]

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62 Sarah Stillman, 'Ebola and the culture makers', *The New Yorker*, 11 November 2014, available from: www.newyorker.com/news/daily-comment/ebola-culture-makers.

63 'Who you gonna call? Civil society', *The Economist*, [London], 11 July 2020), 32–33, at 32.

64 Moore, *Bombing the City*, 30.

65 Toshihiro Osaragi, 'Modeling a spatiotemporal distribution of stranded people returning home on foot in the aftermath of a large-scale earthquake', *Natural Hazards* 68 (2013): 1385–98, at 1385, 1389, 1396, 1397.

Knowing how to tailor messages to specific audiences in terms of understanding which groups are likely to behave in what manner, how those groups receive information (for example, via television, radio, one or more social media apps, word of mouth?) and 'talking the right talk' is a start. Brigadier Langford's caution to avoid military-speak gets at the heart of it, though interestingly his additional observation that 'it is better to encourage than to order' is—depending on the audience—sometimes more effective in the breach. The Danish Government, knowing its citizens prided themselves on being 'the anarchists of the Nordic countries', bypassed the sensitive approach for an in-your-face one as the coronavirus ravaged parts of Europe in early 2020. While Sweden's government encouraged with gentle messaging such as 'Ahead of the breaks and Easter, it is important to consider whether planned travel in Sweden is necessary', Danish authorities opted for 'Cancel Easter lunch' and 'Postpone family visits'.[66] Airline, fire and other personnel know that nice guys (and gals) let people die. Author Amanda Ripley, in her *The Unthinkable: Who Survives When Disaster Strikes—and Why*, describes how people will hesitate to jump on to evacuation slides even when their plane is on fire:

> If a flight attendant stood at the exit and screamed at people to jump, the pause all but disappeared … People moved just as slowly for polite and calm flights attendants as they did when there were no flight attendants present.

Ripley goes on to describe how:

> in river rescues, members of the Kansas City Fire Department rescue squad yell profanity-laced threats at victims before they get to them. If they don't, the victim will grab on to them and push them under the water in a mad scramble to stay afloat.[67]

Being aware of cultural differences isn't a need limited to those deploying to another country or into communities with unfamiliar religious, ethnic or other characteristics. My flippant 'ya think?' above emphasises the seemingly but obviously not obvious if one looks at recent historical examples in which women's perspectives are ignored. Two men speaking at a 2019 megacities security conference—both with extensive experience

66 'Corona-speak', *The Economist*, [London], 4 April 2020, 70.

67 Amanda Ripley, *The Unthinkable: Who Survives When Disaster Strikes—and Why*, New York, NY: Crown, 2008, 132, 133.

in dealing with disasters—emphasised the indispensability of including women's insights in the design and running of displaced persons' camps, urban shelters and similar facilities, which is an indispensability often overlooked.[68] Another cultural norm: advice is more likely to be accepted when recipients believe the sender is an expert—the inexplicable behaviour of some ignoring expert guidance on Covid-19 notwithstanding. Social pressure also has its place. The charity BRAC sought to get 5 million of Bangladesh's citizens to support its building of toilets where their absence posed health risks. Being considered as expert helped to get poorer segments of the population to accept the need. Getting resistance from some, BRAC built many latrines for the poor, then shamed wealthier holdouts into following their lead.[69]

Communications allow disaster response managers to orchestrate their instruments. Some emergency responders will be unable to reach their places of work due to disrupted public transportation, destroyed personal vehicles, flooding, debris, fires and many other reasons. And those designated locations will sometimes need their services less than do others elsewhere. Designating second and third alternative reporting locations before an event constitutes good planning. Being able to adjust those designations during the response because conditions render plans no longer applicable reflects the flexibility built into any good plan.

Flexibility of mind to accompany that in plans doubles the value. During the British attack on the Dutch city of Arnhem in World War II, army leaders did not realise the local phone system was functioning. Had they (and had the British brought the Dutch coins needed to operate the equipment, which is no longer a problem thanks to the ubiquitous euro), they could have communicated with those who might have provided much needed support to the ultimately unsuccessful offensive.[70] Nearly 30 years later, in 1983, American military personnel in Grenada during Operation Urgent Fury did realise the island nation's phone system was in working order.[71] A Navy SEAL unable to contact an AC-130 gunship overhead called Fort Bragg, North Carolina, from a telephone booth.

68 Comments by Lieutenant General Kobayashi (Japan Ground Self-Defense Force, retired) and Brigadier Langford (Australian Army). See Glenn et al., *Achieving Convergence during Humanitarian Assistance and Disaster Relief Operations*.

69 'Beating the bugs: Sanitation in Bangladesh', *The Economist*, [London], 24 March 2018, 33–34, at 33.

70 Jenkins, 'Some notes on fighting in built-up areas', 32.

71 Mark Adkin, *Urgent Fury: The Battle for Grenada*, London: Leo Cooper, 1989, 221.

He was reportedly patched into the aircraft's radio frequency through which he called down supporting fire that kept an enemy attack from advancing against the governor-general's home where he and others were besieged until US Marines arrived to relieve the exhausted unit.[72]

It pays when the person next to you understands that what you said means the same to them as it does to you. Terminology makes a difference whether talking to other aid providers or members of the population. The British Royal Air Force's Richard William Kelly found that basic terms had different interpretations even when working with fellow members of NATO. The seemingly obvious word 'target' provides an example.[73] Reminiscent of our example from the 1992 Los Angeles riots, for a rifleman, 'target' means something at which to shoot. For a police investigator, it might mean the subject of their investigation. A mayor might speak of a target audience for their public education campaign. British Army Major-General Paul Newton commented on military terms in a way Ian Langford would have appreciated. He noted that 'even the word "campaign" is a military term packed full of implied meaning that others may not get'—including others in the same government that includes the military.[74]

Procedures can be just as foreign to others as language. The United Kingdom's senior political representative in south-east Iraq during the early months of coalition operations found he had fallen down Alice's rabbit-hole when it came to understanding the senior coalition partner's bureaucracy. The United States, as lead nation, dictated that other parties provide spending data so that some idea of who was accomplishing what with how much could be understood. The Americans in Baghdad wanted everyone to follow US accounting practices when reporting. To the savvy Brit Hilary Synnott fell the duty of telling those in the capital that their guidance was a nonstarter. 'I observed that we British unfortunately had no experience of American accounting procedures,' Synnott wrote, 'Hence we were unfamiliar with the various regulations and acronyms … We eventually managed to impress upon Baghdad that we simply could not realistically fulfill US accounting procedures with which our

72 Sharon Tosi Lacey, 'How the invasion of Grenada was planned with a tourist map and a copy of "The Economist"', *Military Times*, [Arlington, VA], 26 October 2018, available from: www.militarytimes.com/veterans/military-history/2018/10/25/how-the-invasion-of-grenada-was-planned-with-a-tourist-map-and-a-copy-of-the-economist/.

73 As quoted in Glenn, *Band of Brothers or Dysfunctional Family?*, 55.

74 ibid., 65.

multinational team were completely unfamiliar.'[75] This was hard enough for someone who (sort of) shares a language with the Americans. The short-sightedness of those sitting in Saddam's Baghdad palace must have been more punishing yet when some other coalition member asked to follow the designated procedures did not share English as a first language. A countryman of Synnott, General David Richards, would later look back on the very successful General Gerald Templer and his leadership while heading Malaya's post–World War II counterinsurgency. Speaking on his experiences in Afghanistan, Richards recalled:

> [W]hen General Templer said to his coalition, 'We're all going to focus on that. Turn right. These are my priorities,' the whole institution turned right. When I as a coalition commander said that in Kabul, a large number might say, 'Who are you to tell me anything?'[76]

We've already noted the potential offered by social media apps and the value they can provide in tracking individuals with a disease or identifying those with whom they come into contact, for example. Other instances from the past abound. 'Scraping' social media for general trends (thus, not requiring the association of specific messages with individuals and so avoiding privacy concerns to some extent) has proved effective in early identification of problems. The US National Weather Service's Mt Holly, New Jersey, office reportedly always has at least one of its large computer screens displaying Facebook for just that reason.[77]

Benefits and pitfalls of the comprehensive approach during megacity undertakings

> Médecins Sans Frontières (MSF) did not originally want to work with the US military during Ebola epidemic operations in 2014 West Africa. Fortunately, conditions mandated these parties come together in the service of population welfare and each organization's objectives. The result was recognition of and an appreciation for the benefits of cooperation.[78]

75 David Richards (General, British Army), Interview with Russell W. Glenn, Wilton, UK, 2 April 2008. The quote appears in Glenn, *Band of Brothers or Dysfunctional Family?*, 63.

76 As quoted in Glenn, *Band of Brothers or Dysfunctional Family?*, 69.

77 Kathryn Miles, *Super Storm: Nine Days Inside Hurricane Sandy*, New York, NY: Dutton, 2014, 60.

78 Benjamin Espinosa (Commander, US Navy), 'Operation United Assistance: The Department of Defense response to the West African Ebola virus epidemic', Presentation to MDB in Megacities Conference, Fort Hamilton, NY, 4 April 2018.

> —Commander Benjamin Espinosa, US Navy, 'Operation United Assistance'

> Many Americans had, in the past few years, volunteered to help the militias fighting the jihadis in the rural border regions of Iraq and Syria, and now a few had found their way into Mosul. The volunteers included soldiers of fortune, Evangelical Christians, thrill-seekers, lost souls, even some combat veterans, and very occasionally—the only one of any real use—medics … A few really knew what they were doing.[79]
>
> —James Verini, *They Will Have to Die Now*

Operations against ISIS in 2016–17 in Mosul, Iraq, make clear how important it is to have a wide range of talents and capabilities during urban operations. As with Manila, Mexico City, Tokyo, New York and any megacity during times of catastrophe, features outside the bounds of the urban area are critical to the welfare of the city itself. North-west of the Iraqi city, Mosul Dam had since 2014 received none of the maintenance necessary to ensure it remained a reliable barrier. The casualties should it fail were estimated at more than 1 million killed in its namesake city downstream.[80] But a greater threat lived among the city's ethnically and religiously diverse residents. ISIS had from the beginning of its occupation shown little concern for the welfare of those who had not fled. It showed even less as time went on, with atrocities including gunning down those who belatedly tried to escape. The insurgents controlled all access and escape routes from December 2016 into February of the next year. Food, medicines and other necessities became scarce. Airdropped and other supplies were first looted by ISIS, thereafter serving as bait when its members fired on residents trying to recover the leftovers. The United Nations considered the humanitarian crisis in Iraq's third most populous city as Level Three—the most catastrophic in their ranking system.

Officials in Baghdad created several committees and assigned them leaders to assist in managing the efforts of Iraqi Security Forces, NGOs, UN representatives and US advisors in Mosul. In an example we will later

79 Verini, *They Will Have to Die Now*, 8.

80 Much of the material in this description relies on material from Lise Grande, 'Humanitarian assistance and disaster relief: Lessons from a combat zone', Presentation to Achieving Convergence during Humanitarian Assistance and Disaster Relief Operations in the World's Largest Urban Areas Conference, Tokyo, 18 July 2019; Jesse L. Skates, Interview with Dr Russell W. Glenn, Fort Eustis, VA, 21 January 2020; and Janette L. Kautzman, Managing internally displaced persons (IDP) in an urban fight, Unpublished paper, n.d.

return to in greater detail, UN Resident and Humanitarian Coordinator Lise Grande worked with Government of Iraq representatives and US military civil affairs personnel to minimise redundancy and fill capability gaps as the offensive unfolded. Attacks pulsed: Iraqi Security Forces moved forward, then paused while commanders and staff coordinated with UN High Commissioner for Refugees (UNHCR) leaders who worked with the several organisations building displaced persons camps or providing medical care, seeking to keep both from being overwhelmed by sudden surges. Some NGOs did not hesitate to work with the armed forces. Others did so under the condition the cooperation was not broadcast. Yet others would not work with soldiers but were helpful in separate locations such as the camps. A fourth group was vehement in its refusal to have any restraints that limited freedom of action but offered value nonetheless.

Not so others. James Verini's quote above reinforces earlier observations regarding groups posing as legitimate NGOs that used the cloak of aid provider to engage in combat or otherwise satisfy a thirst for thrill-seeking. The situation in Mosul was made even more complex by Iraq's omnipresent Sunni–Shia and other ethnic divisions. Shia—soldiers and government representatives among them—often suspected that anyone of Sunni persuasion who had remained in Mosul during the years of ISIS occupation had done so voluntarily in sympathy with the invaders. The consequences of this bias were predictable. Then there were Moslawis who refused to wait for security forces to remove IEDs or other explosives once a neighbourhood had been cleared of enemy, forcing Iraqi units to dedicate much needed manpower to preventing these overanxious people from trying to return home and thereby putting themselves at risk—another example of seemingly illogical (and unpredictable) behaviour on the part of urban residents.

Recognising that what one expert, authority or citizen considers significant might seem otherwise to another, Dan Mahoney described how his northern California organisation created a public information program to enlist the expertise of a long list of volunteer addressees. His Northern California Regional Intelligence Center sent out messages twice a week summarising incidents with possible security implications. In Mahoney's words, the messages were valuable for informing:

> everyone who might be involved. The cop doesn't care about malware threatening hospital databases any more than a doctor cares if someone is taking a photo of a bridge. For example, let's

> say you are one of the Tsarnaev brothers from Boston who blows his thumb off and goes to the hospital to have it sewn on and says, 'Oh, the rice cooker blew up in my hand.' So now we are trying to have people—ambulance drivers, doctors, etc. [report suspicious activity]. Every station has a terrorism liaison officer, at least one. So if the doctor reports to a local police station, the station knows to go forward.[81]

The goal: that someone on the address list will be suspicious of such an explanation whereas someone else might simply treat the wound and not give a second thought to reporting the incident to the police or the FBI. (Individuals saw the perpetrators of the first attack on New York's World Trade Center in 1993 mixing chemicals and acting suspiciously but failed to report their observations to the authorities.)[82]

During the 1995 chemical attack on Tokyo's subway, it was an off-duty doctor who saw news reports and called the police, telling them sarin was the likely agent involved.[83] It was a case of good luck rather than preparation; the doctor was not part of a group like that of Mahoney's in the San Francisco area. The luck did not hold. No-one forwarded the doctor's message, making clear the need for urban authorities not only to have access to experts who can screen citizen reports but also to make known how to filter and share incoming information. Establishing pre-disaster relationships is a virtually cost-free exercise with potentially huge payoffs. Recent coalition operations in Iraq and Afghanistan provide a good template for forming similar relationships for international contingencies. Major Jesse Skates was serving with the US 101st Airborne Division (Air Assault) during operations in Mosul from 2016 to 2017. Despite successes with what resembled a comprehensive approach involving the UNHCR, NGOs and others, Skates reflected:

> The big thing is to get more experience with NGOs … There are those that don't want to be associated with the military, but it would be helpful if they trained with us so we could be familiar

81 Mahoney, Interview.

82 Donald N. Van Duyn, 'Testimony by Donald N. Van Duyn, Chief Intelligence Officer, Directorate of Intelligence, National Security Branch, Federal Bureau of Investigation', in *Lessons from the Mumbai Terrorist Attacks: Parts I and II*, Hearings before the Committee on Homeland Security and Governmental Affairs, United States Senate, 111th Congress, 1st Session, 8 and 28 January 2009, Washington, DC: US Government Printing Office, available from: www.govinfo.gov/content/pkg/CHRG-111shrg49484/html/CHRG-111shrg49484.htm.

83 Dustin Harrison (Lieutenant Commander, US Navy), Interview with Dr Russell W. Glenn, Fort Detrick, MD, 30 March 2018.

> with each other. Most of our [senior] officers at division level have 32–33 years of experience maneuvering units. Then they get to CAPSTONE and get a two-hour block on these niche capabilities. It's too late.[84]

Cooperation among relevant parties is desirable before a disaster; it should be a minimum condition once disaster strikes. While orchestration is the sought-after mark on the wall, avoiding conflict between participants with varied and potentially incompatible goals means more effective use (and sharing) of resources, consistency of messaging to the affected population and faster recovery. Conflicts and disconnects are inevitable; our previous quote from a Red Cross executive makes it clear that there are legitimate limits to the extent to which some organisations will support requests from the armed forces. Nevertheless, leaders can reduce most obstacles to a level that benefits all parties—including the noncombatant population. Complete noncommunication not only sacrifices these benefits but is also foolhardy, especially if operations find these many organisations in a combat zone. Refusing to inform military forces of where an NGO's personnel will be operating and what route they will take to get there unnecessarily puts those personnel, and those they are helping, at risk. Even as technologies allow extraordinary accuracy of munitions—and similar (if less extraordinary) capabilities to discern the character of a potential target—weather, human error or deliberate malfeasance on the part of parties wanting to cause an incident can all lead to confusion, manipulation and fatal mistakes. Clausewitz may have been writing two centuries ago, but his concepts of friction and the fog of war are as applicable to the twenty-first century as to the nineteenth. Diligence in displaying red crosses on buildings or tents is no assurance of safety when a possible target is distant and rain, dust, fog, smoke or darkness limits visibility. The probability of deadly errors spikes even when the targeting technologies are the best in the world if those providing the fire are supporting less-professional or well-trained armed forces. Now add to some or all these factors the complexity introduced by urban environments such as swirling gusts at intersections, laser reflection off glass or other

84 Skates, Interview. CAPSTONE is a course for those promoted to general officer or admiral rank, conducted by the US National Defense University, which describes it as follows: 'The course objective is to make these individuals more effective in planning and employing US forces in joint and combined operations. The CAPSTONE curriculum examines major issues affecting national security decision making, military strategy, joint/combined doctrine, interoperability, and key allied nation issues.' From National Defense University, 'CAPSTONE General and Flag Officer Course', Washington, DC: NDU, n.d., available from: capstone.ndu.edu.

smooth surfaces, lines of sight interrupted by one or more buildings and who knows how many innocents concealed from view. This will be the case even in urban areas that would occupy no more than a pinhead's worth of space in a megacity. That was the case in Calivigny during the 1983 US invasion of Grenada. A soldier passed targeting information to a pilot overhead after spotting enemy fire coming from 'a white house with a red roof on the ridge north of a drive-in movie' theatre, adding the directional bearing from what seemed an easily identifiable landmark. The aircraft made three passes over the target, the ground controller each time confirming when the plane was over the enemy-occupied building. The pilot engaged what he was now sure was the correct structure, firing a stream of 20-millimetre shells into an American command post. Seventeen people were wounded. One would later die.[85] This was an incident involving highly trained and practised military personnel. Taking even the minimum precaution of ensuring those with the capability to inflict harm know of NGO, IGO and other innocents' locations—whether through simply sending a message or coordinating for technologies that identify an organisation's location—adds just that additional datum that could stop a potentially fatal error.

Fratricide has less tragic but nevertheless significant other forms as well. Recall the Western private security contractors poised behind their vehicle-mounted machine-guns, barrels sweeping the crowd, as their small convoy raced past US soldiers conversing with residents of a Baghdad neighbourhood. The fratricide victim that day was the goodwill of those to whom the soldiers had been talking.

Given the importance of community populations, it is surprising that their views are not given more consideration during pre-crisis planning and decision-making when calamity strikes. Several international medical groups working in Democratic Republic of Congo (DRC) provide an example. The organisations understandably sought police escort protection when going into what could be violent neighbourhoods during the 2019 Ebola outbreak. Some citizens were already associating the NGO and the World Health Organization (WHO) with the broadly detested DRC national government. Aligning themselves with similarly unpopular police gave those beliefs further credence despite both groups

85 Adkin, *Urgent Fury*, 286.

operating independently of government authorities. As reported in *The Economist*, health organisations working in the vicinity of the country's north-eastern city of Butembo later recognised:

> that they should have done more to involve local people. 'The response started badly,' complains a young motorbike-taxi driver in Katwa, on the edge of Butembo. 'They came here with police escorts to be protected. That wouldn't have been necessary if they had employed people from Katwa to work with them.' Progress has been made … William Perea, the incident manager for the WHO says that some once-hostile villages are now letting his teams in … The key is 'to get as close as possible to the communities.'[86]

The issue of the outsiders being confused with representatives of an unpopular government is one worth remembering. Guilt by association is not uncommon during international operations. Both the well-intentioned US soldiers and the less-enlightened contractors who raced through Baghdad's community with guns threatening were likely viewed as a common 'them' in the eyes of Iraqis witnessing those three black vehicles.

Knowing that many earthquake and other disaster survivors are saved not by emergency responders but by neighbours able to free victims not too deeply buried under debris, telling a megacity population where to take the injured, how to notify authorities of the types of injuries before arrival (thus allowing them to be rerouted to less busy nearby facilities in addition to giving hospitals early warning regarding the medical skills necessary on arrival) and other vital information will save lives. It will also aid in scheduling medical personnel as most rescues take place during the 24 hours immediately following a sudden onset of crisis with a significant drop-off in rescues thereafter.[87]

Most survivors will not need rescuing, but many will require shelter, food, potable water, medical support for injuries, assistance with pets (including food), delivery of medicines due to loss of normal ways of filling prescriptions and additional forms of support. Urban-dwellers tend be more vulnerable than those closer to the land, where basics such as

86 'Fighting Ebola, and myths: Congo', *The Economist*, [London], 23 March 2019, 42–43, at 43.
87 Andrea Bartolucci, Darren Walter and Tony Redmond, 'Comparative review on the cost-effectiveness analysis of relief teams' deployment to sudden-onset disasters', *Prehospital and Disaster Medicine* 34(4) (12 July 2019): 415–21 at 417, doi.org/10.1017/S1049023X19004540.

food and water tend to be more accessible. Community support will be key. Two megacities offer different approaches to earthquake recovery, both seeking to serve the best interests of victims suffering loss of their homes, one proving in retrospect to be the more successful in terms of rebuilding policies. It was collective toughness that pulled many megacity-dwellers through despite limited communications, lack of sufficient water and the winter cold in the days and weeks following the January 1995 Great Hanshin Earthquake.[88] Japanese wards in the Osaka–Kobe area formed 'Disaster-Safe Welfare Communities' (*Bosai-Fukushi Komuniti* or BOKOMI in Japanese) immediately after the quake. These were part of an informal assistance initiative—one that in later years spread to urban areas throughout the country. Senior citizens', neighbourhood, women's, school and other associations were behind BOKOMI formation, thereby ensuring community consensus during the formation of block groups and their coordinating bodies.

BOKOMI capabilities can be quite elaborate. They include headquarters, aid distribution, firefighting, water and food supply, information dissemination and evacuation guidance teams.[89] Some communities have Disaster-Reduction Junior Teams comprising elementary and junior high school students who augment adult organisations.[90] In Kobe, neighbourhoods created planning processes involving *machizukuri* ('intercommunity dialogue') consultants who acted as community go-betweens with local urban governments. Neighbourhood planning groups used these and other conduits to inform city authorities about residents' immediate needs and longer-term requirements. One *machizukuri* organised temporary housing and parking for displaced residents and access to currency for local retailers. Major decisions remained at city level, but these consultants reviewed what came from those authorities and provided comments when necessary.

A step in the right direction? Undoubtedly, though at least one author thought the neighbourhood relationships with the city should have been tighter and city authorities could have been more open to community inputs when it came to establishing policies. That was notably the case regarding governmental post-earthquake strategies that favoured tearing

88 Acción Contra El Hambre, *Urban Disaster Lessons Learnt*.
89 City of Kobe, *Comprehensive Strategy for Recovery from the Great Hanshin–Awaji Earthquake*, Kobe, Japan, March 2010, 290, 293.
90 ibid.

down damaged structures in lieu of repairing them. Across the Pacific, a different approach benefited residents in Los Angeles after the 1994 Northridge quake. Decision-makers sought to speed the return of the displaced to their properties at reasonable cost while maintaining the community relationships existing before the tremors. Federal recovery funds went into the City of Los Angeles' multifamily housing loan program, which was focused on repairing rather than demolishing and rebuilding even in cases where repairs required stripping a structure down to its frame. Only 500 of more than 36,500 damaged units had to be demolished. Japanese officials looking back at their policy of rebuilding in lieu of repairing in Kobe believe better incentives for the latter should have been on the table after the January 1995 quake. They found that while rebuilding rather than repair improved the speed of rehousing and reduced recovery costs, landlords subsequently tended to charge higher rents once new buildings were in place. Many long-time residents were permanently shut out of their long-time pre-earthquake neighbourhoods as they could not afford the new rates. Both individuals and community cohesion suffered.[91]

Los Angeles has a history of citizen involvement. The Concerned Citizens of South Central Los Angeles formed 57 block clubs to improve community quality of life. Initiatives include preventing dumping in alleys and drug-dealing.[92] The role of *Shomrim* in New York City mentioned previously is another example from the United States' other megacity. In both cases, previously established relations with police mean there exists a means of law enforcement rapidly getting word out to the community and, vice versa, neighbourhood leaders know which authorities to contact when they require assistance. Community leaders can also be conduits of information for an outsider. This can be a valuable means of collection, especially in cases where many urban residents hesitate to reveal their identities or are illiterate—the latter meaning other proven means of obtaining information such as anonymous drop boxes will be less effective. Community representatives can also help when volunteers from neighbourhoods less affected by a calamity are willing to assist elsewhere. Such help can be beneficial but must be managed to preclude interference with other efforts. Here again, working through community leaders can pay dividends.

91 Olshansky et al., *Opportunity in Chaos*, 11-2, 11-15.
92 Sharkey, *Uneasy Peace*, 51.

Established community groups' social networks additionally provide means to communicate with large numbers of people when power is out and mobile phone systems are down. This can lend some measure of control over information flows, helping to route messages so they only reach intended audiences—something impossible with mass messaging. A blanket message regarding where those in need can find food, shelter and other services will result in many who are in less dire straits trying to take advantage of the freebies. Going through only those parties representing the worst-hit communities should reduce such abuse. Even sharper focus (and faster dissemination) is possible if neighbourhoods have established the aforementioned alert rosters (chain communications).

Incorporating commercial organisations during disaster response provides capabilities governments alone cannot. With New Orleans flooded and the population in distress, local government 'sputtered', as one author kindly put it. Coca-Cola and Walmart were among the businesses stepping into the breach. Coca-Cola provided water, juice and other drinks—an added advantage being their fleet of trucks able to complement production with delivery. Walmart opened a smaller version of its box stores to address specific needs of hurricane victims in addition to providing cash donations.[93] Home Depot, in its support of NGO Team Rubicon mentioned above, also dispatched employee volunteers to North Carolina during flooding in 2019. The cynical might say this support is merely marketing. They should not begrudge any economic benefits accrued; not all companies that can help do. They are, however, correct in recognising that aid inherently has a marketing role—one that can as easily work against as for a provider. As with the case of NGO and WHO representatives in the DRC, organisations providing goods and services risk alienating rather than gaining the support of urban residents if the providers are seen to be aligned with corrupt, criminal or otherwise despised local entities—governments included.

Concluding observations regarding a comprehensive approach

> The United Nations Task Force's (UNITAF) [sic] establishment of a Civil–Military Operations Center (CMOC) helped to ensure that both civilian and military efforts to aid Mogadishu's suffering

93 Brinkley, *The Great Deluge*, 252.

> were moving in the same general direction despite their not always sharing identical approaches or motivations. US and multinational commanders developed liaison ties that were a significant element in reducing operational conflicts and misunderstandings. Progress beyond these basic levels of cooperation proved too difficult to attain in many circumstances. Various nations refused to allow their forces to support actions in the city of Mogadishu, restricting personnel to areas away from the capital. The situation was much like that in Bosnia, about which a commander commented that 'every troop contributing nation had its own national command structure within the main UN staff, and each nation had its own political agenda as well as a chief of contingent who held the national red card.' In this and many other regards, Mogadishu offers lessons that commanders are well advised to consider now rather than after they are committed to an urban area in a domestic or overseas theater.[94]
>
> —Russell W. Glenn and Gina Kingston, *Urban Battle Command in the 21st Century*

> An urban area is different from a municipality (also called a city, city proper, or a local government authority). Municipalities have political boundaries that usually constitute only a part of the urban area. For example, the city of Seoul represents less than one-half of the population (and a declining proportion) of the Seoul–Incheon urban area, which extends well beyond the municipality. On the other hand, a municipality may be considerably larger than an urban area and therefore contain considerable non-urban (or rural) territory. Zaragoza, Spain is an example. A large part of the municipality of Mumbai is rural, composed of the Rajiv Gandhi National Park and thus not included in the urban area.[95]
>
> —*Demographia World Urban Areas*

The extent to which the whole is greater than the sum of its parts during a megacity crisis response depends on how well the pieces of a response work together. The talents available can be unique to the disaster at hand. Having been in West Africa during the 2014 Ebola crisis, author Sheri Fink noted the great value of survivors willing to work with aid providers. Anyone recovering from Ebola was immune to reinfection. They were local treasures. Survivors could assist medical personnel without having to wear protective gear. Not only did they not consume supplies of the valuable personal protective equipment; they were able to work much

94 Glenn and Kingston, *Urban Battle Command in the 21st Century*, 11.
95 *Demographia World Urban Areas*, 16th edn.

longer at a stretch than others sealed up and thus vulnerable to overheating, dehydration and exhaustion. Our earlier observation about the value of residents' eyes and ears in providing information takes on even greater relevance when that information need not be acquired face-to-face. Sharp-eyed (and equally quick-witted) Tunisians reporting suspicious activity on a social media site stopped an attack and led to the arrest of 11 potential perpetrators. Those eyes might not be in the urban area itself, or even in the same country. Authors Peter Singer and Emerson Brooking related how several individuals:

> spotted evidence of an impending attack on social media, leading to the arrest of eleven suspected militants. ISIS recruiters in Indonesia, careless in masking their IP address, awoke to a police raid, their identities leaked by hacktivists halfway around the world.[96]

While AI is slowly increasing the breadth and speed of information-processing in many ways, humans will long hold the upper hand in reading between the lines of social media messages.

When war visits: Combat in the megacity

> Within weeks of seizing Baghdad, US soldiers recognized that their inability to address basic human needs and meet fundamental living requirements was turning citizens against them. 'We are dying for help from the NGOs, and we get zero from OCPA [Office of the Coalition Provisional Authority],' said one. 'You can feel it out on the streets; people are frustrated, and we're getting rocks thrown at us in neighborhoods where we never did before.'[97]
>
> —Stephen R. Dalzell, 'Where the Streets Have No Names'

> You're thinking about who's in that house, what's he armed with, how he's gonna kill you, your buddies. You're going block by block, fighting with rifles good to 550 meters, and you're killing people at five in a concrete box.[98]
>
> —Phil Klay, *Redeployment*

96 Singer and Brooking, *Like War*, 213.
97 As quoted in Glenn, *Band of Brothers or Dysfunctional Family?*, 41.
98 Phil Klay, *Redeployment*, New York, NY: Penguin, 2015, 1.

Those ISIS fighters who killed noncombatants attempting to flee Mosul in 2016–17 didn't treat those who stayed well either.[99] Should the Government of Iraq have recommended Mosul's residents stay or attempt to escape? It chose to direct that they stay. And so it was that hundreds of thousands did. And suffered. As did those seeking to relieve them of ISIS cruelty. Aircraft supporting Iraqi Security Forces trying to retake the city had to exercise great restraint just as those warriors on the ground could not use the full extent of firepower otherwise available to them given the presence of noncombatants. Was it the right decision? The civilians would have been subjected to harsh conditions in refugee camps, the government explained—refugee camps that would have been overwhelmed had too many tried to reach them early on. Without the stay-behinds, both sides would have caused more destruction to Mosul's homes and other infrastructure, meaning rough living would continue for months, perhaps years, after the purging of the occupiers. Such had previously been the case in Ramadi and Fallujah. Other cities near Mosul already had housing shortages and problems meeting their own healthcare demands given previous surges of refugees. International NGOs and the United Nations were able to help to an extent but recall that the UNHCR was already working with Iraqi military leaders to balance IDP camp capacity and available medical resources with the number of civilians seeking assistance. UN and other officials observed that the order to stay had worked well in East Mosul during the first part of the fighting, which ended in January 2017.

Iraqi soldiers suffered greater numbers of wounded and dead than they would have had they been able to use artillery and air bombardment more freely. Those in the security forces must have looked on older, denser West Mosul's Old City with trepidation once East Mosul was cleared of enemy. The western environs' twisting narrow streets meant more opportunities for ISIS to set up ambushes. About 150,000 civilians did manage to escape during the earliest fighting for the Old City once the attackers renewed operations on 20 February. That still left an estimated 750,000 people unable, unwilling or too scared to attempt flight.

99 Material regarding noncombatant care during the 2016–17 battle for Mosul is from Shelly Culbertson and Linda Robinson, *Making Victory Count after Defeating ISIS: Stabilization Challenges in Mosul and Beyond*, Santa Monica, CA: RAND Corporation, 2017, 11–28, doi.org/10.7249/RR2076.

Relief workers followed closely on the heels of the advancing attackers rather than waiting for the rest of Mosul's liberation. The cry for medical care was a desperate one as the city had long been without it, or at least what was available went to ISIS members first. Water, too, was in short supply, as was safety for the aid providers braving the many IEDs, snipers and other ISIS hazards. They knew the risks. A single suicide bomber had killed 23 residents and four aid workers in East Mosul the previous December. Despite three provincial hospitals being set aside for Moslawis, beds, medicine and specialist care such as burn treatment were quickly in short supply. The WHO set up another six hospitals just to deal with the casualties resulting from fighting in the Old City. By July 2017, the number of displaced had already reached 1 million. Some had families elsewhere who took them in, but 85 per cent went into the camps set up in the vicinity of Mosul. Each refugee first went through a checkpoint manned by one of the three major Iraqi fighting forces: the Iraqi Security Forces (army), Popular Mobilisation Forces or Kurdish Peshmerga. Those running the checkpoints took into custody individuals whose names appeared on lists of ISIS members. Others were allowed to climb aboard a bus for movement to one of the IDP camps. The flow was too great for all to be thoroughly screened for weapons, allocated beds or receive the care needed despite UNHCR coordination with the attackers. The camps overflowed; thousands slept on the ground. Bureaucracy (and perhaps corruption?) reared its ugly head as both the government in Baghdad and that controlling Kurdish lands were too slow to set aside territory for the camps—a lack of competence that was all the more unfortunate because funds for establishing them were sufficient. Eventually, only 20 per cent of the displaced were housed in camps with the remainder either in urban locations (schools, host families, rented buildings or others under construction) or in 'non-camp' areas so designated because they failed to meet international standards.

Descriptions of urban combat through the ages are plentiful. Josephus describes the brutality of both sides as Romans sought to subdue the Jewish uprising during the first century CE in what is now Israel—fighting that saw the Temple destroyed in Jerusalem. Sun Tzu warned against fighting in cities if it could be avoided—a half-millennium before Josephus penned his history. Alexander the Great took seven months to besiege Tyre, then turned his attentions to Gaza, 240 kilometres to the south, where the defenders 'fought on until all their fighting men were

slain, which can only mean that no quarter was given'. He must have considered the cost worthwhile. Gaza's fall meant Alexander's supply lines were safe. No further major obstacles lay ahead on his trek to Egypt.[100]

World War II witnessed what are among the costliest urban battles of all time—those for Stalingrad, Manila and Berlin among them—while Tokyo, Hamburg, Dresden, London and, of course, Hiroshima and Nagasaki saw thousands upon thousands killed during aerial bombardments and in the fires that followed. Panama in 1989 and Iraq in 2003 remind us that military conquerors should expect looting as the norm when combat comes to a city—a consequence of opportunity and a vacuum of restraint that result when police seek shelter from the violence that accompanies war.

Urban warfare is a particularly brutal teacher, harvesting the inexperienced and unlucky whose deaths are the cost of lessons learned by the more fortunate. Fighting between Chinese Nationalist forces and the Imperial Japanese Army offers both soldiers and future aid providers lessons best recognised before they depart home.

Shanghai, 1937

> Looting soon became widespread. Crowds attacked trucks transporting rice or smashed their way to shop supplies. The authorities were merciless in tackling the problem. On at least one occasion, French police opened fire on a crowd that had attacked a food hawker … The [Chinese] 87th Infantry Division was given disposal of two armored companies, and it lost everything. Some of the tanks had just arrived from Nanjing, and their crews had not had any time to undertake training in coordinated attack, or even simply to establish rapport with local troops … Not all officers trusted reports that their own units sent back to them. One regiment of the 87th Division was under specific orders to document any advance it made. Every time it had taken a key objective along its predetermined route of advance, it was to pull down a street sign and send it back as evidence that it indeed was in control of the position.[101]
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> —Peter Harmsen, *Shanghai 1937*

100 J.F.C. Fuller, *The Generalship of Alexander the Great*, New York, NY: Da Capo, 1960, 215–18.
101 Peter Harmsen, *Shanghai 1937: Stalingrad on the Yangtze*, Havertown, PA: Casemate, 2013, 74–75, 80, 83.

History holds no case of major combat in a modern megacity. Fortunately for those who might try to avoid repeating mistakes such as those in Mogadishu and Shanghai, the past does have plentiful examples from which to learn. The unfamiliarity of Chinese armour crews with the infantry they were sent to support would sound familiar to veterans of Mogadishu in 1993, both when US soldiers mounted Malaysian armoured-personnel carriers for the first time during the Black Hawk Down battle and again later in the year when Lieutenant Colonel Bob Clark's tanks arrived from Fort Stewart, Georgia, to find US infantry soldiers in the city had never trained with the vehicles.

Shanghai was the only Chinese city with which many foreigners were familiar in 1937. Chinese Nationalist leader Chiang Kai-shek believed his forces needed to retain the cosmopolitan city with a long history as a port if the eyes of the world were to remain focused on his people's plight at the hands of the Japanese invaders. 'This was not a distant battlefield, reached by adventurous reporters at overwhelming personal hazard,' wrote author Peter Harmsen, 'but one of the great cities of the world. Foreign correspondents were already present in great numbers, or could easily sail in from places like Tokyo and Manila.'[102] Only Tokyo had a larger population among Asia's cities; Shanghai's of 3.5 million was the fifth-largest in the world. When Chiang ordered his forces to attack Japanese invaders during the night of 13 August, he directed they avoid bringing the fight to the International Settlement to preserve relations with the nations represented there. This protection bizarrely included even the Japanese portion of the settlement. The less well-equipped Chinese initially benefited from the city's neutralising of the Japanese military's technological superiority during the close combat that carried on both day and night. As is so often the case—Manila in 1945, Hue in 1968 being but two examples—early instructions to minimise damage to Shanghai were soon cast aside as Chinese army casualties mounted.

The disaster brought by war far surpassed anything the city's ambulance and fire personnel had previously confronted. They adapted quickly, tailoring their practices as thousands of their fellow residents fell, grievously injured or dead. There had already been thousands of civilian casualties when Republic of China aircraft mistakenly bombed Shanghai on 14 August, on what became known as 'Black Saturday'. An artillery shell tore through the side of a department store on Nanjing Road in

102 ibid., 171. This description of the battle and the impact on its population draws further on this resource.

the city's busiest shopping district only nine days later. The explosions shredded the building's three lower floors. Water coursed through the store from a shattered waterpipe, running red with the blood of the killed and injured as it flowed into the street. Chinese Boy Scouts worked alongside local members of the Red Swastika (equivalent in mission to the Red Cross) and other civic groups to help wounded survivors or remove bodies despite the almost overwhelming stink of the dead putrefying in the summer heat.

Refugees fled combat zones and ruined neighbourhoods, challenging Shanghai authorities' ability to deal with them, much as would be the case in Mosul 80 years later. Criminal gangs filled the vacuum as city officials abandoned neighbourhoods. A cholera epidemic broke out, punishing the poorest most severely. In late September, Father Robert Jacquinot de Besange, a Jesuit priest from the French Concession, approached a Japanese commander, proposing a safe zone to which noncombatants could go and be free of the ongoing fighting. Permission was finally granted more than a month later when a designated district opened on Shanghai's northern edge on 9 November. What came to be known as the Jacquinot Zone soon housed an estimated 100,000 refugees. It would remain open into 1940.

The megacity combat zone

> Beirut was the birthplace of a new and deadly kind of warfare: an urbanized, shape-shifting mode of combat that combined elements of the tribal feud, patron–client relationships, urban street gang organization, Mafia-style 'hits,' and international intrigue with high-tech weaponry, asymmetrical tactics, organized crime, and politically charged media spectacles such as highjackings and bombings. This was not a war for conventional armed forces … No place was safe. No place was predictable.[103]
>
> —Mounir Elkhamri et al., 'Urban population control in a counterinsurgency'

> Windows split the city's great hell into tiny hellets.[104]
>
> —Vladimir Mayakovsky, 'Great Big Hell of a City'

103 Mounir Elkhamri, Lester W. Grau, Laurie King-Irani, Amanda S. Mitchell and Lenny Tasa-Bennett, 'Urban population control in a counterinsurgency', *Small Wars Journal* (n.d.), available from: smallwarsjournal.com/documents/urbanpopulationcontrol.pdf.

104 Vladimir Mayakovsky, 'Great Big Hell of a City', in *Imagining America: Influence and Images in Twentieth-Century Russia*, Alan M. Ball (ed.), Oxford, UK: Rowman & Littlefield, 2003, 46.

Shanghai today has a population of more than 22 million compared with its 3.5 million in 1937. The extent of catastrophe should it or any other twenty-first-century megacity suffer a battle between modern armed forces is difficult to imagine (though ongoing operations in Ukraine as I write provide an unfortunate lens). Recalling that Iraq's security forces could not isolate even so small a city as Mosul during the fighting in 2016–17, it would be delusional to think a military could surround an entire megacity today or operate within every part of it simultaneously. Operations would instead have to focus on select areas chosen for their payoff in attaining whatever objectives a military commander sought. These would be select bites of the megacity elephant. If there is a silver lining, it is that these urban areas are so massive in spread and plentiful in population that no clash of coalitions could threaten all parts simultaneously barring the use of weapons of mass destruction (nuclear, biological, chemical or radiological. There is no silver lining when it comes to those). As retribution for disturbing the urban area's peace, a force choosing to fight in a megacity is likely to find it a voracious beast able to consume whatever quantities of manpower and equipment its generals can bring to bear. Technology will help the combatant, but even technology will struggle. During the summer of 2019, some UAVs flopped to the ground like exhausted dogs, unable to perform during an equipment demonstration in the heat island of New York City.

What does this mean for the soldier other than greater misery while humping weapon, helmet and other gear? We earlier noted that glass is among the surfaces that can reflect lasers meant to guide precision munitions. Dust and smoke impede the ability to see and the strength of those laser signals. Buildings block lines of sight needed to engage targets from both the ground and the air. Any window, door, street gutter opening, rooftop and wall could be concealing a sniper. Some of those marksmen will instead choose to bore their own openings through walls or sloped roofs, making them all the harder to detect before they wreak their damage. Warehouses and parking garages can hide entire tank units. Shadows cast by buildings make vehicles and enemy foot soldiers harder to detect with both the naked eye and other means of surveillance. We recall that tank and other guns can only elevate so far, making them vulnerable to attack from higher floors—something a smart defender will recognise only too quickly. (First-century CE Roman soldiers would have sympathised. Female defenders bombarded them with debris as the Romans fought male town members sword against sword in the streets

of Japha in what is now northern Israel.)[105] Then there is the soldier's basic urban combat conundrum: more firepower saves attacking soldiers' lives but the devastation kills far more innocents than enemy, raising the question of whether what those attackers are trying to accomplish is worth the resulting death and destruction. And while that firepower does tend to kill enemy along with innocent, the rubble created reduces the advantages gained as the defenders have new places from which to fire and new obstacles to hinder movement. US Army Major Jesse Skates noted that one can think of an attack in terms of Force = (Mass)(Acceleration), just as in physics. Narrow streets, buildings and other obstacles make it hard to mass combat power in a city. Debris, defender obstacles and incoming fire challenge any unit trying to accelerate. Thus the difficulty in creating sufficient force to overcome defensive positions. It is a challenge more difficult in some urban areas than others. In the United States, a city normally has between 20 and 30 per cent of its area taken up by streets. In India's Delhi, this is 21 per cent. In Kolkata, the number is a meagre 5 per cent. Mumbai's streets take up but 11 per cent—the average for major Asian cities.[106] Those values differ from location to location within an urban area as well as between them. Regardless of how wide or what percentage of space they take, streets are where the defender hopes to see the attackers. If he can see them, he can shoot them. Lieutenant General Ernest C. Cheatham, veteran of combat in 1968 in Hue, recalled: 'You can't stay on the street. If you stay on the street you're dead. You have to go through buildings and walls.'[107] No wonder the US Army's *Infantryman's Guide to Urban Combat* informs soldiers that only 5 per cent of the targets in urban operations appear at over 100 metres range; 90 per cent are confronted at the very short range of 50 metres or less.[108]

Encouraging the departure of noncombatants when it is feasible (as it was not for many in Mosul) raises the possibility of loosening those constraints otherwise frequently put on the use of artillery or bombing from the air. Or perhaps we should replace 'encouraging' with 'allowing', for an attacker has no obligation to allow an urban defender to evacuate a city's population. There is something of the 'no good deed goes unpunished' should an assaulting force encourage civilians to leave. It then falls to the

105 Josephus, *The Jewish War*, London: Penguin, 1959, 213.
106 UN-Habitat, *State of the World's Cities 2012/2013*, 53.
107 As quoted in Glenn, *Honing the Keys to the City*, 56.
108 Department of the Army, *An Infantryman's Guide to Urban Combat*, Field Manual 90-10-1 [Advance copy], Washington, DC: US Government Printing Office, 12 May 1993, 1-1.

ethical attacker to house, water, feed and otherwise care for the thousands, tens of thousands or more displaced persons just created (while relieving one's adversary of the burdens); Mosul once again provides a cautionary example.

An attacker can be sure that a defender will make winning as costly in time, lives, ammunition and reputation as possible. Philippine army and marine units clearing Marawi took more than a month to oust the last 50 ISIS defenders from a 1,000 by 800 metre area of the city[109] (that's less than two-thirds the size of the National Mall in Washington, DC). The defenders, as with those in Mosul, cared little for the dictates of international law or human decency. Mosques, historical buildings, hospitals, schools, apartment buildings and other structures that should normally be spared military use and destruction routinely housed weapons, ammunition or fighting positions and headquarters, making them legitimate targets for the attackers. The Philippine president nonetheless dictated that mosques were not to be engaged with large-calibre weapons such as artillery. Use of tear gas finally broke standoffs after the repulse of repeated assaults by the Armed Forces of the Philippines.[110] (The same approach was ultimately used in Hue 39 years earlier. Though some of the gas drifted across unwarned and none too happy friendly lines, the unprepared enemy withdrew, allowing US Marines to take 12 city blocks in less than three hours without a single casualty. There are good arguments for revisiting international restrictions on the use of chemicals when those agents are nonlethal and can save both noncombatant and combatant lives.)[111] Knowing that Israeli forces would demonstrate restraint rather than kill innocents on the floors above, Hamas put a headquarters in the basement of Gaza's largest hospital during fighting in 2014.[112]

Each urban area is unique. That makes preliminary studies to reduce information requirements once operations begin all the more important. The United Nations tells us that residential properties occupy more than 70 per cent of land in most urban areas.[113] But we have already observed that to focus on urban land surface area alone is to deny oneself understanding of belowground and aboveground features. Los Angeles

109 Knight and Theodorakis, *The Marawi Crisis*, 17.
110 ibid., 16.
111 Glenn et al., *Ready for Armageddon*, 67–68.
112 Glenn, 'Megacities'.
113 UN-Habitat, *Urbanization and Development*, 12.

has more than 320 kilometres of underground storm drainage.[114] The behaviour of noncombatants will also differ from location to location, but for whatever reason—and as Mosul recently and Hamburg, Tokyo and London in World War II showed—noncombatants will tend to stay in a contested city until housing stock is so badly ravaged that what remains cannot reasonably be used for shelter.[115] Those conducting peacetime disaster relief operations may experience other surprises. Four hundred people lacking local residence permits were found living in an underground bunker in 2017 in Beijing.[116]

ISIS barbarity in Mosul notwithstanding, civilians are more likely to die as inadvertent victims than deliberate targets during combat. The source of death or wounding ranges beyond the obvious weapons of bomb, bullet or shell. Sabot rounds fired from tanks consist of a thin metal rod approximately 1 metre long that weighs more than 9 kilograms (exact specifications depend on the model used). The munitions are designed to kill either via the spalling of metal once the high-velocity shaft penetrates a target's armour or the overpressure caused when it enters the crew compartment at great speed. The penetrator is far too thin to fire from tank guns without packaging that fills the rest of the gun barrel. Sabots are the parts of this packaging that hold the penetrator in place until it exits the gun tube. At that point, they separate from around the metal rod. Travelling at great speed, these discarded pieces fan out from the muzzle and can kill any unshielded individual up to a kilometre from the firing point.[117] Other less obvious dangers to innocents (and soldiers for that matter) include organ damage due to concussion when large guns are fired within courtyards, on narrow streets or in other enclosed areas and threat of injury from military vehicles navigating streets, with the driver often having far less visibility than is offered in an automobile. The combination of military units moving along streets and soldiers' good intentions in the form of tossing candy or other treats to children has more than once resulted in deaths when the scramble resulted in an intended recipient being struck.

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114 Williams and Selle, *Military Contingencies in Megacities and Sub-Megacities*, 44, quoting United States Marine Corps, *Urban Operations I: Introduction*, Basic Officer Course Student Handout B4R5359, Camp Barrett, VA: The Basic School, Marine Corps Training Command, 6.

115 Diefendorf, *In the Wake of War*, 10.

116 Bogan and Feeney, *Future Cities*, 54.

117 *Abrams Urban Quick Reference Guide*, Publication Number ST 3-20.12-1, Fort Eustis, VA: US Army Training and Doctrine Command, December 2002.

Urban areas offer opportunities as well as these downsides. Cities are rich with opportunities for the deceptive thinker. Irish Republican Army attacks repeatedly used a primary bomb to set up additional explosive ambushes targeting police, soldiers or other responders. In another instance, it was a tyre lying in the street with wires protruding that caused a patrol to stop, rightly fearing an explosive device. It was a fake, but one that increased the chances of a sniper's successful shot; hitting a stationary explosives expert while they are checking out a threat is far easier than shooting a moving soldier. ISIS used a drone to drop a small bomb on to an Iraqi Security Forces position. The drone attack was merely intended to draw attention away from the suicide bomber who took advantage of the distraction to drive his vehicle towards the compound unmolested and trigger the explosion. Just as the hum of a megacity's daily activities can shield an evildoer from detection if properly exploited (think of trying to move a truck bomb into a city during rush-hour versus in the dead of night or during the Covid-19 lockdowns of early 2020), these many activities also can help clever good guys. Military units wanting to remain undetected when setting up observation posts drive their vehicles through neighbourhoods on a seemingly random route. Those designated to man an observation post jump out at a spot where no-one is likely to notice their entry into a previously identified structure. The vehicle drives on, just another of many.

The nature of challenges and opportunities will differ depending on the type of organisation involved and what it hopes to accomplish. Units depending on vehicles find that urban areas' curbs, building overhangs and constant travel on hard surfaces wear out tyres and tracks faster, snap antennas and fracture parts due to constant vibration. The same hard surfaces jar equipment, making more frequent calibration necessary. Frequent starts and stops increase fuel consumption and brake wear. Supply units must 'best guess' as to fuel, parts and ammunition consumption rates given the lack of historical data for urban combat. Soldiers' sharing of rations with impoverished noncombatants means resupply of foodstuffs (known as Class I in US military parlance) must be more frequent. On the other hand, the megacity's many warehouses and large parking garages that can be used to store supplies offer shelter from the elements and shielding from unfriendly eyes or enemy fire. Those beleaguered suppliers can also take advantage of urban areas' timber yards, car parts stores and other commercial riches, helping to balance the downside of operating in a built-up area. Underground facilities are also

attractive because their limited access points make them easy to secure against looters or enemy infiltration. Another example of a megacity's yin and yang of challenges and opportunities: transport times are longer when traffic fills streets, but the availability of vehicles for rent or purchase far surpasses that in rural environs. (Eighteen of the world's 35 urban areas with a population of more than 10 million were among the top-50 on the planet for bad traffic in 2019, and Beijing and New York were numbers 51 and 52, respectively.)[118]

Those yins and yangs are especially numerous for medical personnel. The wounds and injuries sustained in urban environments differ from those found in rural areas. Crush and thoracic (chest) injuries are more common due to building collapse or overpressure. That overpressure can be the result of proximity to large-calibre weapons in tight spaces or enemy use of thermobaric munitions that release fuel in aerosol form then ignite it to squash anything beneath. Crush and overpressure injuries can be particularly hard to detect. The sufferer may feel fine in the immediate aftermath and externally seem to be uninjured. Barring savvy medical types, the resulting injury to internal organs can go unnoticed until it is too late for treatment. Introducing intravenous fluids or transport by helicopter can worsen a patient's condition if they have suffered lung damage (the second due to changing atmospheric pressures as altitude changes). Different skill sets and equipment therefore need to be closer to expected injury sites than would elsewhere be the case, including surgical specialists and ventilation support. Leaders of NGO, military and other medical organisations obviously need to be aware of the potential of such injuries and accordingly train, plan and organise for different mixes of medical specialties when the environment is an urban one. This points to medical personnel needing to rehearse for operations no less than do police, fire, military and others. Combat commanders must make the tough decision of sending the few medics they have assigned to them forward with the units expected to meet the greatest resistance or holding them back and dispatching them when casualties become evident. Moving laterally across urban battlefields is difficult and time-consuming even under the best conditions. In combat, it is also extremely dangerous, meaning getting it right regarding allocating these valuable but limited assets is critical.

118 TomTom International BV, 'TomTom Traffic Index'.

It should be apparent by this point that decision-making during urban combat operations is anything but routine. Locating aid stations and field hospitals will be something of an art. Telling those in reconnaissance, logistics or other units which characteristics are needed in this regard increases the chances of finding appropriate locations and having others identified as backups (cover from enemy fire, room to park ambulances, nearby locations where helicopters can land and access to potable water are examples). Accessibility for those segments of the civilian population who are at notable risk might be another factor, with the same being true during flooding, after an earthquake or when another disaster has caused injuries or exposed individuals to disease. In times of combat, policies regarding which treatments can be offered to civilians and where noncombatants should go for care need to be identified early and made known both within a force and to the population. Providing medical care can be a significant first step towards winning or maintaining civilian support for a military when the pace of operations and available resources permit. However, demand for care can expand dramatically beyond what would be expected in rural environs as media members, NGO representatives and others join local civilians in addition to the medical unit's own personnel in seeking services likely to be in short supply during a crisis.

Whether for medical or other purposes, innovation is no less valuable for those seeking to conceal their activities. Use of smoke to conceal recovery of the wounded is effective under some circumstances though the swirling air currents common in cities mean the concealment can suddenly disappear at the most inopportune times. We remember that Armed Forces of the Philippines units in Marawi innovatively used bolts of cloth to block enemy snipers' views of streets. An unlucky soldier (perhaps the fastest in a unit, but still unlucky) would be tabbed to race across the open area holding one end of the fabric, then fasten it to the other side. ISIS used sheets of tarpaulin for the same purpose in Iraq, putting the visual barrier up before coalition forces entered a neighbourhood. The group also suspended sheets of fabric horizontally to conceal movement from manned aircraft or UAV observation.[119] Forces opposing the IDF did the same in Gaza, using corrugated metal or other materials to mask activities in alleyways or on narrow streets.

119 Robert Postings, 'A guide to the Islamic State's way of urban warfare', Article, West Point, NY: Modern War Institute, 9 July 2018, available from: mwi.usma.edu/guide-islamic-states-way-urban-warfare/.

The resulting inability to see and the compartmentalised, twisted-street nature of urban areas mean that recovering a wounded soldier can be hard even after an area has been cleared of enemy. In the future, sensors reflecting a wearer's status and location may help. Knowing whether he or she is alive or the nature of wounds or injuries would allow leaders to make more effective use of those limited numbers of medics, physician assistants and doctors. The dead can wait. Those with particular skills would move to a survivor needing their talents. Minor but debilitating wounds could be assigned to combat lifesavers—soldiers with a bit of additional medical training but whose skills fall short of those of trained medics. The US Army sometimes uses the 'buddy system' in which soldiers are paired, meaning a wounded soldier is more likely to have someone nearby who can render immediate first aid or, if equipped with a radio, inform anyone trying to bring further care. Using procedures such as the buddy system could be a good idea even once those sensors become generally available. The many barriers to lines of sight complicate communications, but not all forms of communication are created equal. That means while sensor data might not get through, a buddy's radio might. If both communications fail, then what aid the fellow soldier can provide could be the difference between life and death. Fortunately, recent advances in individual medical treatment have helped when a soldier must be left behind. The 9/11-inspired wars in Afghanistan and Iraq saw men and women equipped with self-applied tourniquet kits and materials for quickly staunching severe bleeding.

Soldiers speak of the psychological stresses experienced during grinding combat in Stalingrad, Fallujah and other cities. Marine leaders in Hue and elsewhere found that rest, hot food and being out of immediate danger helped stave off the worst of these assaults. Fellow soldiers knowing the telltale signs of combat exhaustion will be the first to notice, offering the possibility of getting attention for those in need before they reach breaking points. Training in what to expect in the way of psychological stressors might benefit as well. The guilt associated with noncombatant deaths can be especially burdensome, as reported by Mark Bowden in his urban combat classic *Black Hawk Down*. Specialist Eric Spalding of the 3rd Battalion, 75th Ranger Regiment, was in a truck as it rolled through Mogadishu, rifle rounds pinging off the vehicle's side when:

> A woman in a flowing purple robe darted past on the driver's side of the truck. [Private] Maddox had his pistol resting on his left arm, pretty much shooting at whatever moved.

> 'Don't shoot,' Spalding shouted. 'She's got a kid!'
>
> The woman abruptly turned. Holding the baby in one arm, she raised a pistol with her free hand. Spalding shot her where she stood. He shot four more rounds into her before she fell. He hoped he hadn't hit the baby. They were moving and he couldn't see if he had or not. He thought he probably had. She had been carrying the baby on her arm right in front. Why would a mother do something like that with a kid on her arm? What was she thinking? Spalding couldn't get over it.[120]

Like Spalding, soldiers fighting in urban areas will continue to find themselves in situations where their or their buddies' survival demands quick use of lethal force—force that will sometimes unavoidably endanger an innocent. Foes have and will continue to use civilians as shields, making that likelihood all the greater. Drawing on another incident from Mogadishu, Ranger Specialist Shawn Nelson found shelter from enemy fire behind a burned-out car:

> Peering out from underneath toward the north now, Nelson saw a Somali with a gun lying prone on the street between two kneeling women. The shooter had the barrel of his weapon between the women's legs, and there were four children actually sitting on him. He was completely shielded in noncombatants, taking full cynical advantage of the American's decency …
>
> 'What do you want to do?' [fellow Ranger Specialist John] Waddell asked.
>
> 'I can't get to that guy through those people.'
>
> So Nelson threw a flashbang, and the group fled so fast the man left his gun in the dirt.[121]

Unfortunately, Eric Spalding did not have the option of using a nonlethal flashbang grenade in his situation. Nor did Sergeant Chuck Elliot elsewhere in the city. Seeing a woman approaching Lieutenant Larry Perino and himself, he noticed there was a gunman behind the woman holding a gun under her arm, ready to engage the two men. Perino told Elliot to fire. Elliot, manning an M60 machine-gun, did so, killing both gunman and

120 Mark Bowden, *Black Hawk Down: A Story of Modern War*, New York, NY: Atlantic Monthly Press, 1999, 106–7.
121 ibid., 46.

shield.[122] Confronting soldiers with these deplorable situations in training will have the dual benefits of reducing the chances of what could be a fatal hesitation to shoot and letting the soldier know that the decision to fire is the right one despite its attending horror. Knowing such is the case before the incident may not lessen the pain after the act, but it will give greater legitimacy to a leader's or fellow soldiers' comforting comments, hopefully reducing feelings of guilt.

The best training includes the most demanding challenges. While on a callout to a reported hostage situation during research some years ago, a SWAT member revealed to me that their instructions on receiving new team members facing a group of criminals or terrorists was 'Shoot the women first' (a line on to which Hollywood later latched). The guidance had nothing to do with gender issues. Rather, culturally imbued standards regarding how to treat women had in the past caused Americans in law enforcement to hesitate that extra heartbeat before firing on a woman versus a male. Women in terrorist groups had also more than once proved more aggressive than their male counterparts, adding a second element to a potentially deadly combination. The guidance was meant to increase officers' chances of survival.

With megacities well known for being among the toughest of environments in which to fight, there are nevertheless potential benefits in finding one's unit in such a location confronting a well-entrenched enemy that aren't available in smaller urban areas. The expanses of larger urban areas present situations like those Clausewitz described when writing of mountain defences. The limited number of passes and rugged nature of mountainous terrain mean military leaders tend to believe these environments favour a defender. Clausewitz challenges this default thinking. 'Defensive mountain warfare [should be] meant to last only a certain time,' he wrote. 'Mountainous terrain is of no help to the defender; on the contrary … it favors the attacker.'[123] He posits that a way to flank defensive positions will eventually be found, just as the Persians outflanked Greek defenders at Thermopylae. The many streets, alleys, underground and aboveground passages and related shields from view and enemy fire mean that chances are good that a diligent attacker will eventually find similar ways to bypass a defender.

122 ibid., 43.
123 Glenn, 'Megacities'.

Concluding observations on megacity combat

> In Raqqa, more than 90 percent of attacks on SDF [Syrian Defense Forces] by IS were in the form of hidden IEDs.[124]
>
> —Robert Postings, 'A guide to the Islamic State's way of urban warfare'

> Wars of the future will not be fighting for cities, but rather fighting within them.[125]
>
> —Levi Maxey, 'Preparing for the urban future of counterinsurgency'

Post–World War II conflicts have unfortunately made it clear that fighting (and conducting terrorist attacks) in urban areas can pay off. The larger the urban area, the bigger is that payoff. Examples include the Al-Qaeda 'public relations' coups rendered by a few misguided individuals on 9/11 and the attention given to the targeting of Paris on a Friday night in 2015. The 2002 takeover of a Moscow theatre by Chechen terrorists initially drew more attention than did thousands of Uyghurs in detention camps in remote western China in 2020 or the hundreds of thousands displaced Rohingya in western Myanmar and eastern Bangladesh during the second decade of this century.

Larger forces are often needed to clear urban areas of an adversary given how manpower-intensive these operations tend to be. The enemy will take advantage where an adversary's strength is less, moving to those locations in what becomes a deadly game of whack-a-mole. A relatively small force can cause even a much larger one disproportionate casualties, embarrassingly extend the duration of fighting and bring loss of legitimacy in the eyes of governing authorities and the population alike.

Urban combat will never be only about the fighting any more than a megacity's recovery from a natural disaster will focus only on repairing buildings. Ultimately, it's about the people. Past urban combat operations tended to handle events sequentially: win the fight and only then worry about what comes after. That is an approach that is both costly and likely to prove disastrous from a humanitarian and a political standpoint

124 Postings, 'A guide to the Islamic State's way of urban warfare'.
125 Levi Maxey, 'Preparing for the urban future of counterinsurgency', *Indian Strategic Studies Blog*, 10 March 2018, available from: strategicstudyindia.blogspot.com/2018/03/preparing-for-urban-future-of.html.

should the future include major combat operations in a megacity. As the preceding pages more than once suggest, looking well beyond the end of hostilities, then backward planning, will prove the wiser method, imperfect though it may be given megacity complexity. Knowing what all participating parties and not just the fighting force seek as ultimate objectives should influence actions taken in the days, weeks and months prior to the adversary's defeat. Is the destruction of a religious site being used in violation of the laws of land warfare worth the consequent diplomatic repercussions? Will working with the local government promote or undermine the city's stability in the long run given residents' views of those authorities? The questions are many and the second and higher-order effects of getting the answers wrong difficult to forecast. Yet, even a modest attempt to look beyond the combat will prove valuable and, very likely, serve as the basis for a quicker, more economical and less painful recovery for all involved.

The military language of counterinsurgency speaks of 'white' areas—those cleared of insurgent influence that can then serve as points from which to expand into contested 'grey' or foe-controlled 'black' areas. Counterinsurgency theory compares this expansion from white areas to the spreading of a spot of grease dropped on a piece of paper. The same analogy applies when trying to assert influence over urban populations regardless of whether the threat is insurgent, criminal or of some other form. The concept has application when providing aid as well—for example, referring to a neighbourhood as white when all diabetes sufferers have received a week's supply of insulin, grey when provision of the medication is in progress and black when supplies are inadequate and a community is going without. In the context of combat, however, as difficult as it is to isolate white areas in rural environments, it will be well nigh impossible in cities. Authorities need to recognise that theirs will be a situation where the best they can achieve is shades of grey rather than the purity of white. Those shades will lighten and darken over time and space as individuals or groups move or change attitudes, making control of neighbourhoods and population segments dynamic and more akin to a lava lamp than a fixed state.

We are fortunate that no megacity has yet suffered major ground combat. Recent history tells us we need to be ready for the possibility.

Sustaining megacity capacity during a catastrophe

> One astute student of Mosul politics whom I know puts it differently. He calls Mosul 'the end of the river.' When I ask him how he means that, he says darkly, 'Like Conrad meant it.'[126]
>
> —James Verini, *They Will Have to Die Now*

> We know many of our soldiers are members of gangs … When those men subsequently put on America's uniform, they were good soldiers. They helped us to understand gang behavior. They were soldiers first and gang members second.[127]
>
> —James Delk, 'MOUT'

Decisions made in support of disaster response will have both immediate effect and lasting consequences whether the cause of catastrophe is combat or otherwise. It is widely accepted that charging even a small amount rather than giving something for free often leads to better use of the resource received; recipients rightly feel they have something invested, giving the good or service value. Poorly thought-out aid can instead have a variety of unintended consequences. Providing funding for all or part of rebuilding even though original locations are in vulnerable areas reinforces views that it is okay to risk repeat events.[128] The form of aid can also influence perceptions favourably or otherwise. When the state of a local economy and availability of essentials allow, some NGOs prefer providing cash or replenishable cash cards rather than delivering food, diapers, medicines and other forms of assistance. The benefits include cash delivery being cheaper and less logistically demanding; a US Government estimate figures transport and other costs consume up to 65 per cent of emergency food assistance funds. The same study concluded that almost 20 per cent more people can receive aid when it comes in the form of cash.[129] As long as a functioning economy remains, cash will tend to go towards purchases needed by the urban resident, who is very likely the individual best able to determine what they most require (like the person

126 Verini, *They Will Have to Die Now*, 59.
127 Delk, 'MOUT', 87.
128 Abbas Jha, Jessica Lamond, Robin Bloch, Namrata Bhattacharya, Ana Lopez, Nikolaos Papachristodoulou, Alan Bird, David Proverbs, John Davies and Robert Barker, *Five feet high and rising: Cities and flooding in the 21st century*, Policy Research Working Paper 5648, Washington, DC: The World Bank, May 2011, 30, doi.org/10.1596/1813-9450-5648.
129 'Free exchange: Hard-nosed compassion', *The Economist*, [London], 26 September 2015, 70.

on the spot best knowing a situation during the application of mission command). Cash distributions will therefore in many circumstances have a better means-meets-needs rate than one-size-fits-all distributions of select foods or services chosen by an outsider. Cash can also be given directly to the individual requiring assistance, helping to hold disaster's close kin of corruption at bay by avoiding one or more middlemen who might skim. If mobile phone towers are working, dispensing aid in the form of electronic cash transfers similarly reduces the dangers of loss from theft as recipients depart distribution points. Given the appropriate conditions and when closely monitored, cash distribution in reasonable amounts further benefits by not feeding inflation.

Another lesson passed on from previous disasters: too many of those in vulnerable urban areas are poor students of history. Electricity components, business computers and other vital infrastructure continue to sit in floodprone areas despite failures in New Orleans, Fukushima and elsewhere. An electrical substation on New York City's East 13th Street sat on the banks of the East River in the middle of a flood zone. The result: three days of blackout for almost all of Manhattan below 34th Street when Hurricane Sandy struck—an area that included two major hospitals whose backup generators also failed because key system parts were in flooded basements. Individual citizens can also be surprisingly uncaring (or too lazy) when it comes to their property. Beekeeper Andrew Coté describes how a man responsible for 20 beehives turned down help to carry his trusts a short distance to higher ground as Sandy threatened to flood the pier on which they sat. Sure enough, the bees were destroyed. Perhaps as predictable as the neglect shown in these several examples is the existence of those willing to capitalise on offers of money following a calamity. In this case, the negligent beekeeper blamed the storm rather than his judgement for the loss, raising more than $22,000 in an online campaign to cover what Coté estimates was $6,000 worth of bees and related equipment.[130] Regardless of the form it takes, corruption is ever the evil twin of disaster.

Catastrophes have a way of bringing shortcomings to light for individuals who fail to do that 'walk around the table' and view their plans, procedures and preparations from all relevant perspectives. The events of 9/11 were a tragedy. Tragic as it was, the situation could have been much worse had

130 Andrew Coté, *Honey and Venom: Confessional of an Urban Beekeeper*, New York, NY: Ballantine, 2020, 222–25.

fires reached the 750,000-litre underground tank of freon that supplied the World Trade Center's cooling system. Heated freon can become phosgene, a gas used in chemical weapons. It is encouraging that officials in some megacities are learning from previous events in their own and other urban areas as climate change increases the chances and likely magnitude of catastrophic flooding and other calamities. Both Tokyo and New York, for example, seek to create comprehensive maps identifying all underground facilities. Less encouraging: neither megacity is close to achieving that goal. Meeting it is a gargantuan task—one that would be monstrous even if the responsible party could get its hands on the details of New York City's 800 kilometres of subway tunnels, Con Edison's 160-kilometre steam delivery system or the thousands of subterranean electrical, sewer, natural gas, water and telecommunications lines, much less who knows how many underground garages, shopping malls or other features in the megacity's five boroughs alone.[131] On top of this, knowing what types of soil these features pass through could prove crucial. George Deodatis, a civil engineering professor at Columbia University, observed that 'knowing the type of soil is very important for the behavior of the infrastructure … If you have a gas explosion, certain types of soil will absorb the blast.'[132] In other cases—Mexico City included—knowing whether the soil above is easily saturated or drains well could mean the difference between being prepared for landslides or allowing construction on ground where liquefaction would put lives at risk. Knowing such vulnerabilities exist before an event is the right answer. Knowing what questions to ask and what to check before a disaster beat finding out only after the lights go dim, an apartment complex washes downhill or hundreds in a slum are buried beneath a landslide. The time to identify those vulnerabilities was yesterday. According to at least one estimate, over half of New York City's power-generating capability will be in the once-in-100-year floodplain by the middle of the twenty-first century—but that was last century's 100-year floodplain. By 2050, those same floods could occur on the average of once every four years.[133] Yesterday was preferable. Tomorrow will have to do. Chances are the day after tomorrow will be too late.

131 Greg Milner, 'Nobody knows what lies beneath New York City', *Bloomberg Businessweek*, 10 August 2017, available from: www.bloomberg.com/news/features/2017-08-10/nobody-knows-what-lies-beneath-new-york-city.

132 ibid.

133 Miles, *Super Storm*, 246.

The right stuff at the right time

> Practically the whole of the south of England supplied the city with food, and the malt used to brew Londoners' ale came from as far away as Norfolk … The city government held huge stores of wheat, barley, oats, and malt on London Bridge and at Bridewell hospital just in case of emergencies, and the lord mayor monitored and sometimes fixed the prices of essential foodstuffs.[134]
>
> —Stephen Alford, *London's Triumph*

> In 717, the besieging forces, led by the brother of the Syrian-based Umayyad Caliph Süleyman, attacked [Constantinople] by both land and sea … That year the city planted wheat in the gaps between her famous walls.[135]
>
> —Bettany Hughes, *Istanbul*

A study done after the 1995 Kobe earthquake:

> found that approximately 77% of those who lost their lives died within an hour [of the quake]. Furthermore, they found that 36% of injured victims who died between three and 12 hours after the earthquake might have been saved if the appropriate initial emergency response had been available … The published literature suggests three days to be the average time for an EMT [emergency medical technician] to arrive and become operational in the affected country … The team focusing on immediate trauma care will arrive too late and find that they are caring for relatively minor injuries and for health problems not directly related to the disaster.[136]

Three to four days is the limit cited by experts in disaster recovery operations. Beyond that point the chances of finding someone alive approach the level of miracle. At a minimum, access to air, escaping severe injury and having a source of liquid to drink all need to come together. As the above quote implies, the right type of assistance will be time-dependent. The wrong type does little other than interfere with the arrival of equipment or services in greater demand given limits on how much traffic ports and airports can handle. Less-essential relief workers further burden the city with additional mouths to feed and bodies to shelter when both food and housing are short.

134 Alford, *London's Triumph*, 20.
135 Hughes, *Istanbul*, xxiv.
136 Bartolucci et al., 'Comparative review on the cost-effectiveness analysis', 419, 420.

It's comforting to know that sixteenth-century Londoners were in no danger of a beer shortage.[137] Then, as now, the bulk of a megacity's essentials came from beyond its boundaries. Yet, remarkably, much was produced within. The parks of London's Croydon community alone provided vegetables sufficient for 15,000 meals a day during World War II.[138] Today, the city's bees provide 10 per cent of its population's honey, while 16 tonnes of vegetables are homegrown every year. Bangkokians reportedly plant on 60 per cent of the city's land area. Amazingly, given the hundreds of millions of Chinese living in cities, virtually all the vegetables and half the meat and poultry consumed in its 18 largest cities reportedly come from within the urban areas.[139] (Well, not so amazingly, perhaps. We need to remember that China's definition of 'urban' is far more lenient than that used here and contains significant stretches of rural terrain.) It is estimated that the poorest of those living in Harare (Zimbabwe), Kampala (Uganda) and Dar es Salaam (Tanzania) produce between 20 and 60 per cent of what they consume. Backyards support yams, cassava, other vegetables, fruits and poultry. Residents in developed nations' urban areas tend to produce considerably less. North of London, Oxford produces less than 0.5 per cent of the food its residents consume.[140] On the other hand, the city-state of Singapore is nearly self-sufficient in eggs, poultry and pork while supplying one-quarter of its population's demand for vegetables.[141] Megacity shortages may be due less to a lack of foodstuffs than to a lack of knowledge of where supplies are short or an inability to find transport. Showing us that the term 'smart city' can have meaning beyond what the government provides in the way of information technology, Birmingham in the United Kingdom is among the urban areas that use an app that provides catering services with information about which charities are ready to take donations of any excess food.[142] The same

137 We recall that if those Londoners had fast-forwarded about 300 years, they would have seen that drinking beer can save lives. See John Snow's own discussion in his 'Instances of the Communications of Cholera through the Medium of Polluted Water in the Neighborhood of Broad Street, Golden Square', in *On the Mode of Communication of Cholera*, London: John Churchill, 1855, available from: www.ph.ucla.edu/epi/snow/snowbook_a2.html; or Hempel, *Medical Detective*.

138 Ziegler, *London at War*, 159.

139 Reader, *Cities*, 166–67. Also see Teng et al., 'Urban food security', 58, 60.

140 Steve Jennings, Julian Cottee, Tom Curtis and Simon Miller, *Food in an Urbanised World: The Role of City Region Food Systems in Resilience and Sustainable Development*, International Sustainability Unit Report, Long Hanborough, UK: 3Keel, April 2015, available from: www.3keel.com/wp-content/uploads/reports/CRFS%20Final%20Draft_0.pdf.

141 Luc J.A. Mougeot, *Urban Food Production: Evolution, Official Support and Significance*, Cities Feeding People Series Report 8, Ottawa: International Development Research Centre, 1994, 21, available from: idl-bnc-idrc.dspacedirect.org/bitstream/handle/10625/14949/103013.pdf?sequence=1.

142 Barber, *If Mayors Ruled the World*, 246–47.

apps could be valuable in times of disaster—power and internet access allowing. Effective distribution information makes for more effective aid. Less-effective control of the information can result in overwhelmed dispersal locations, shortfalls and the possibility of rioting.

Some form of centralised aid distribution oversight is advisable to minimise loss. We earlier alluded to Canada and Sweden refusing to route their aid through the corrupt government of Siaka Stevens in Sierra Leone during the late twentieth-century insurgency plaguing that country and its capital, Freetown.[143] Also worth remembering: UN Resident and Humanitarian Coordinator for Yemen Lise Grande similarly ceased food deliveries to Houthi rebels in that country in 2019 despite the population's desperate needs (and her mother's dismay on being told) after repeated warnings failed to stop misrouting to military or other parties for which it was not intended.[144] These choices are extraordinarily hard ones to make, particularly for NGOs whose donors may not understand the reasons underlying the withholding. But they are essential to the control of corruption and criminality; with them, aid providers support the likelihood of bringing a disaster to a more timely conclusion. Other forms of control include denying funding to unresponsive governments as a way of coercing necessary change. At times, the causes of the need for strong-arming might be less than immediately obvious. Members of Kenya's parliament ensured resources committed to build shelters in the massive Dadaab refugee camp went to favoured contractors. They also dictated that no permanent structures were to be built as these for Somalis would be better than what many Kenyans elsewhere had available to them. The result: 130,000 tents torn asunder in the region's high winds[145]—and perhaps, more money yet for those contractors and their corrupt benefactors.

Lise Grande, Canada and Sweden are not alone in making difficult decisions to halt aid when conditions demand. The United States ceased funding the World Food Programme in Somalia after it became aware that fake NGOs and warlords were taking the majority of that IGO's food and selling it in Mogadishu's Bakaara market. Other organisations were giving over three-quarters of their relief supplies to competing warlords

143 Russell W. Glenn, *Rethinking Western Approaches to Counterinsurgency: Lessons from Post-Colonial Conflict*, London: Routledge, 2015, 253, doi.org/10.4324/9781315744650.
144 Grande, 'Humanitarian assistance and disaster relief'.
145 Rawlence, *City of Thorns*, 112–13, 219.

as bribes to get what was left to the truly needy.[146] Governments and other organisations providing aid in urban areas should ready themselves for similar challenges. The scale of aid delivery needed to meet demand for food and other necessities during a megacity crisis will likely only be within the capacity of national governments to meet. NGOs can certainly assist, but they have historically shown they lack the capability to meet requirements of such magnitude.[147]

A megacity won't survive on homegrown food for long, but internal sources might help residents weather the first days of empty shelves. Feeding urban folk is not the only issue. We know some cities rely on nearby rural regions for leafy vegetables and other perishable products. Shortages downtown can therefore deprive local rural populations when wealthier urbanites suck limited supplies from surrounding farms in time of excessive need.[148] This is fine for the rich but rising costs will be an issue for poorer urban and nearby rural-dwellers alike. Local urban–grown food is already sometimes more expensive than internationally imported products.[149] Chances are demand and unscrupulous sellers will cause an increase in prices, making it even harder for the less well-off to find what they need when damaged ports, airfields, roads and railroads restrict supply. The poor in the world's less-developed countries' largest urban areas spend between 40 and 60 per cent of their income on food.[150] Ho Chi Minh City, Lagos, Istanbul, Kinshasa and Kolkata were megacities particularly hard hit in the not too distant past in this regard.[151] Making matters worse: developing-world urban areas may have a significant number of poor individuals already on the knife's edge of survival *before* a disaster strikes given they are able to afford only one meal a day.[152] Diet-related sickness among urban-dwellers could spike even for those able to purchase food due to changes in diet. City folk tend to eat different foods to those in the country, favouring diets richer in fruit and meat, for example.[153]

146 ibid., 70.
147 Charles Kelly, *Acute food insecurity in mega-cities: Issues and assistance options*, Disaster Studies Working Paper 7, London: Benfield Hazard Research Centre, University College London, July 2003, 9, available from: www.ucl.ac.uk/hazard-centre/sites/hazard_centre/files/wp7.pdf.
148 ibid., 3.
149 Mougeot, *Urban Food Production*, 16.
150 Teng et al., 'Urban food security', 58, 60.
151 Mougeot, *Urban Food Production*, 17.
152 ibid., 18.
153 'Into the urban maw: Cities and farming', *The Economist*, [London], 17 February 2018, 53–54, at 53.

Returning our attention to providers rather than product, bureaucratic restrictions can impact what an outsider is allowed to offer in the way of aid. Japan's restrictions on emergency medical technicians intubating patients during the Tokyo sarin attack make it clear that outsiders need to be well advised regarding local regulations and permission requirements. Across the Sea of Japan, only qualified nurses (and presumably doctors) are permitted to employ intravenous lines in South Korea's military. When a North Korean defector was shot five times while crossing the Demilitarised Zone in 2018, a Republic of Korea Army officer turned to a US non-commissioned officer to provide the lifesaving stabilisation procedures needed during the ensuing helicopter evacuation.[154] There may be good reason for such constraints. Knowing them before deploying relief personnel—like understanding that earthquake victims are more likely to require treatment for crush injuries—should mean sending those with the right skills and equipment. Similarly, NGOs and IGOs differ in their willingness to have their personnel go into harm's way, particularly in combat environments. Determining what level of risk each is willing to tolerate is something worth discussing during planning and rehearsal sessions.

Concluding thoughts on megacity crisis response

> Col Irwin Hunt, the officer in charge of civil affairs for the Third Army and American forces in Germany during World War I … observed that it was 'extremely unfortunate that the qualifications necessary for civil administration are not developed among officers in times of peace.'[155]
>
> —Nadia Schadlow, *War and the Art of Governance*

> Cooperation is difficult, especially with other people.[156]
>
> —Gideon Rose, 'The fourth founding'

154 James Machado (Major, US Army), Discussion with Russell W. Glenn, Republic of Korea, 7 November 2018.

155 Schadlow, *War and the Art of Governance*, 19.

156 Gideon Rose, 'The fourth founding: The United States and the liberal order', *Foreign Affairs* 98(1) (January–February 2019): 10–21, at 14.

The US Army had learned from its lack of preparation for occupying Germany after World War I. Civil affairs officers were trained early and dispatched to assist with occupier duties even as fighting continued in World War II. A civil affairs branch exists in the army today, but chances are it would be overwhelmed by the number and variety of duties falling to its members given major commitment to a megacity regardless of its underlying cause. Civil affairs personnel should partner with NGO and other organisations in such situations, the goal being to fit civil and military capabilities into the whole of an effective, comprehensive response. The needs of a megacity's residents could quickly overwhelm even these combined efforts. That modern forms of communication might be inoperable would make the tough even harder. The Japan Ground Self-Defense Force's Lieutenant General Yamaguchi cited instances during twenty-first-century post-earthquake operations in which Japan's military leaders had to rely on runners to carry messages or return to mid-twentieth-century means such as walkie-talkies when mobile phones and other forms of communications either were not operating or proved incompatible with systems used by militaries from assisting nations. The military relied on floppy disks transported by bicyclists as recently as the 2018 great Hokkaido quake in the north of Japan.[157]

Water, power and transportation could be offline for months following a major megacity disaster. The higher temperatures found in these urban areas would stress humans and equipment alike during summer months or when the city in question is in the tropics. Those arriving from other countries to render assistance could be at the added disadvantage of not knowing how residents will react to the arrival of strangers and their unfamiliar equipment. Planning and other preparations should not stop when relief organisations arrive. Earlier arrivals will learn important lessons. Barring a system to collect and disseminate those lessons, new arrivals will have to gain those insights at the same cost in wasted time and effort. US Army units in Vietnam set up their own schools to teach newly assigned soldiers what training in the United States had not, including enemy tactics specific to their unit's tactical area, local customs and other vital information. Few are the NGOs or IGOs that have in-country training for their newly arriving representatives, much less more ambitious programs that bring individuals together from multiple organisations. Time spent in such training would also provide a period

157 Glenn et al., *Achieving Convergence during Humanitarian Assistance and Disaster Relief Operations*.

of acclimatisation to those high urban temperatures, local weather, food and other conditions unique to the urban area in question. Better yet, predeparture training to complement these post-arrival opportunities to learn and work alongside each other would reduce logistical burdens in the receiving disaster area. The United Nations or NGOs that take it on themselves to coordinate the activities of their peer organisations would be candidates for establishing and conducting these training and education programs. Combined with greater participation during routine planning, rehearsals and exercises conducted before a specific crisis arises, these pre and post-deployment initiatives would bring any undertaking closer to that mark on the wall that is a well-orchestrated comprehensive approach.

This text is taken from *Come Hell or High Fever: Readying the World's Megacities for Disaster*, by Russell W. Glenn, published 2023 by ANU Press, The Australian National University, Canberra, Australia.

doi.org/10.22459/CHHF.2023.07