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Megacities: The Good, the Bad, and the Ugly

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Introduction

“When [U.S. military] officers objected that Kahn was ill-equipped to speak on military affairs...he’d shoot back, ‘How many thermonuclear wars have you fought recently?’ ... They admitted they had no actual experiences with these weapons. ‘O.K., Kahn would grin, ‘Then we start out even.’”[\[i\]](#)

-- Ghamari-Tabrizi, *The Worlds of Herman Kahn*

Today’s armed forces and those accompanying their security efforts worldwide have no more conducted major operations in a megacity – those urban areas in excess of ten million population – than have they participated in a nuclear war. Fortunately, however – and unlike the case with the officers above – recent experience and history’s lessons from undertakings in cities short of the ten million mark have much to offer. Much, but those offerings will fall short of the comprehensive. The same is true for those in civilian clothes – government and otherwise. Megacities are sure to challenge every member of a coalition.[\[ii\]](#) How these urban areas might do so in the intelligence realm in the near future is the primary focus of this offering, one that can but provide but a brief taste of the sweet, savory, and bitter implications involved.[\[iii\]](#)

The facts are well known, some so often repeated as to be all but common knowledge. Among them:

- Over half the world now lives in urban areas; nearly a quarter resides in those with over one million population.[\[iv\]](#)
- Eighty percent of the world’s population lives within one hundred miles (160 kilometers) of a shore, most in cities.[\[v\]](#)
- There were 132 cities of population one million or more in 1965. Such urban areas numbered 494 in 2015, thirty-four of which were megacities (urban areas with populations of ten million or more).[\[vi\]](#)

Though the waters are muddled by varied definitions of “city,” “urban area,” “metropolitan area,” and others, it is inescapable that the world increasingly urbanizes and its largest cities/urban areas/metropolitan areas tend to swell at an even greater rate.[\[vii\]](#) Implications for coalitions are numerous and far-reaching. Non-state actors in particular have turned to urban terrain’s density of hides, firing positions, and civilians providing sustenance willingly or otherwise to avoid confronting superior

Western military technology and training, both of which tend to be designed for more open environments. Fortunate indeed will be the future military leader finding his enemy willing to evacuate a city as did the Iraqi Army Basra in 2003.[\[viii\]](#)

Were these not challenges enough, the varying definitions conceal social, political, and economic implications no less problematic. The *city* of Los Angeles proper – the political entity – is home to a population of but 3.8 million within the greater Los Angeles *urban area* of 15.1 million beings.[\[ix\]](#) (Thus Los Angeles qualifies as a megacity.) A coalition operating in such a region would find itself coordinating with hundreds of administrative jurisdictions: political, fire, law enforcement, transportation, and health to touch on a few, this regardless of whether the mission at hand involves armed force or not. Nor would opposing force's evacuation of an urban area guarantee relief. Removal of what might well have been coercive authorities too typical of the Third World removes the lid from a simmering pot; looting, surging criminality, and latent sectarianism could be only three of the newly arrived's rewards for assuming responsibility.

Yet all is not darkness. Though man has no more conducted major operations in a megacity than had those in Herman Kahn's audiences fought a thermonuclear war, we need to remind ourselves that similarities between undertakings in smaller urban areas have much to offer coalitions confronting others when a population exceeds ten million mark. The remainder of this essay will only sparingly touch on these commonalities. Analysis instead seeks to focus on issues particular to megacities. As the title suggests, operations and campaigns in these environments will provide the good (opportunities), the bad (challenges), and the ugly (especially difficult issues).

The Good

A recent chief of the US Army Capabilities Integration Center's Future Warfare Division stated, "Dense urban terrain favors the defender," a daunting prospect when one considers the expanses of tightly packed man-made structures characteristic of the world's largest urban conglomerations.[\[x\]](#) Reality fortunately confounds this common belief. Defense of cities, especially the vast expanses that are megacities, presents a situation akin to that described by Clausewitz in his contemplations of mountain complex defense:

Defensive mountain warfare.... Is it meant to last only a certain time or to the end in definite victory? Mountains are eminently suited to defense of the first type.... For the second type, on the other hand, they are, except for a few special cases, generally not suited at all.... A small post can acquire extraordinary strength in mountainous terrain. [However,] in a decisive battle, mountainous terrain is of no help to the defender; on the contrary...it favors the attacker.[\[xi\]](#)

As in extensive mountainous terrain, the megacity defender will tend to lack the manpower, weaponry, and knowledge to prevent circumvention of its defensive positions. Further, unlike the Persians at Thermopylae, there will be no need for reliance on the good fortune of finding the singular individual knowledgeable in this regard. Residents familiar with their city and willing to guide a force to surface, subterranean, or super-terranean bypasses should not be hard to locate.

A first lesson is therefore to recognize that megacities' substantial populations, geographies, infrastructures, and other features offer benefits in addition to difficulties. Existing doctrine, past experience, and theory will all offer points from which to adapt. Factors more likely found only in these largest urban areas will enhance these opportunities. Larger built-up areas tend to offer a breadth and depth of information lacking in less populated environments. The navigation application Waze, for

example, can be of limited value in infrequently traveled rural regions. Relying on user-submitted data, it is of notable value in densely populated areas, however. Waze tells users not only how to get from point A to point B but also provides real-time status regarding ongoing construction, accidents, roadway debris, and (yes) police speed trap and fixed camera locations amongst other information. The app employs this input to redirect users from their normal home-to-work and other routes to less congested alternatives. Military units could conceivably adapt such applications, allowing for inclusion of secure inputs regarding threat locations, raw material stockpiles of potential operational value, and suspicious road conditions (e.g., possible spots where an improvised explosive device might have been emplaced), perhaps linking drivers' observations targeting assets. Integrating secure with Waze (or a similar application's) open-source information would at once increase routing efficiency and force protection while reducing opportunities for theft of supplies. (Armed robbers in Lagos, Nigeria, for example, routinely rob occupants of vehicles trapped in the city's notorious traffic jams.)[\[xii\]](#)

Urban areas are also hives of official and commercial demographic information. Robert Dixon's "Bringing Big Data to War in Mega-Cities" discussion regarding the types and value of urban databases applies equally to humanitarian response and other contingencies not involving combat.[\[xiii\]](#) Census information, marketing survey results, and property records are but a sampling of what military and broader coalition authorities would find beneficial for addressing tasks inherent in urban undertakings. Cell phone data has especially notable potential to assist a coalition during crises. Call data records providing the number, time, and cell tower location of use have already been used to track malaria outbreaks in Africa.[\[xiv\]](#) Captured in a timely fashion, they could similarly help trace the flow of commuters later found to have been contaminated in a biological agent attack. As with an interactive traffic application, larger urban populations enhance the potential value of analyzing cell phone record data; those in cities are more likely to possess cellphones than others in remote rural areas. The sophistication of databases and their potential value may surprise. Geo-profiling shows promise for finding terrorists via analysis of where incidents occur. Most attacks are within a short distance of perpetrators' residences or materials storage locations, reducing chances of confronting checkpoints when moving to targets. Further, extremists may avoid certain neighborhoods due to discomfort with activities there, e.g., those in which the sex trade is commonplace.[\[xv\]](#) Police records and accompanying analysis software in some US cities provide timely color coding regarding risk levels associated with individuals and addresses. Dispatched officers receive in-route evaluations after database searches regarding information such as whether a resident has a record of weapons possession or past violent crimes.[\[xvi\]](#) These capabilities could be used in conjunction with local knowledge as possessed by members of Terrorism Early Warning Groups (TEWG) such as that found in Los Angeles. TEWGs offer arriving coalition members valuable local and broader regional knowledge memberships that include representatives from police, fire, coast guard, federal law enforcement, and other organizations familiar with both the immediate urban area and more far-flung reaches. (Links between various city's TEWGs or similar organizations can likewise be invaluable when an event in one megacity threatens distant locations, e.g., when the aforementioned bio-contaminated individual departs for another destination.) Knowing how to access, organize, and make good use of these various troves of information will take practice. Training with megacity authorities such as those in TEWGs would provide insights regarding both the specific urban area represented and others more generally applicable to such megalopolises.

Nor should one assume capabilities of this type are restricted to the First World. When Liberian Patrick Sawyer collapsed on arrival in the Lagos, Nigeria airport, local authorities soon recognized he – and potentially passengers on his plane – posed a potential medical disaster. Sawyer had brought the Ebola virus to Africa's and one of the world's largest megacities, estimated population 30.6 million. Despite the city's doctors being on strike, refusal of the Nigerian Medical Association's chairman to terminate the

strike in the face of the threat, and exposure of hundreds to those confirmed or possibly infected, actions by working medical personnel, aggressive and successful efforts to trace and get in touch with the 891 individuals possibly or actually exposed, and coordination of operations by a Gates Foundation-funded clinic converted into an emergency command center precluded wider infection.^[xvii] The quick reaction included nongovernmental, inter-governmental, commercial, and governmental organizations in addition to mobilized volunteers and the United States Centers for Disease Control.^[xviii] That Lagos was so large an urban area increased the likelihood that appropriate medical facilities were on hand. (Two laboratories in the megacity were able to test for the Ebola virus.) That Nigeria's capital was also an epicenter of the country's educated and the expert and being a "wired city" was fundamental to the disease being interdicted with only twenty infected and a total of eight deaths. A doctor in the hospital to which Sawyer was taken not only recognized the symptoms; she prevented the uncooperative patient from forcibly leaving the medical facility and resisted pressures that included those from the Liberian embassy.^[xix] World megacities are more likely to have similar in-place emergency response procedures and other resources key to effective crisis response. Even preparations for dislike events have potential to assist a coalition's urban operations. Provisions for action in the aftermath of a major earthquake, for example, will have value during responses to other disasters, e.g., a major terrorist attack.

Access to megacity information, authorities, and other key resources will assist not only during general planning and conduct of urban area operations. They will likewise be invaluable in determining what specific communities within a built-up area (or country or region more broadly) offer greatest promise for supporting (or impeding) coalition objectives. No force will be large enough to control an entire megalopolis. Knowing likely hotspots, identifying centers of gravity and decisive points, and locating acceptable base areas from which to conduct operations will do much toward making the apparently overwhelming a manageable undertaking.

The Bad

A megacity is the un-consumable elephant; the number of bites needed to address all of its requirements would far exceed any coalition's capabilities. Progress and ultimate success is further made difficult in that the armed forces likely to lead such ventures have doctrines that go little beyond generalities when it comes to dealing with the largest of urban agglomerations. A United States Marine Corps comment from over a decade ago holds true both for its specific topic and other functional areas during urban operations:

Formal, written urban combat reconnaissance doctrine—the foundation (at least in theory) for the planning and execution of operations and training, the development of organizational structure, and the basis for equipment procurement—is essentially nonexistent.^[xx]

The need for more urban (and megacity)-specific doctrine is evident to any who since 2002 found themselves in Baghdad, Kandahar, Fallujah, or any other of the many urban environments in which the men and women of the US and its closest partners have served. There will be "other-governed" communities, those ruled by less-than-official (but not necessarily less effective) authorities, often with criminal or other nefarious intentions, Sadr City in Baghdad being an exemplar. Misnomers, misunderstandings, and mistakes left unaddressed in recent guidance pose threats to urban operations success; they portend outright disaster when the numbers involved grow to double-digit millions. The assumption that provision of aid and quality of life improvements is fundamental to gaining and maintaining public support is one perhaps resting on dubious foundations. Eric Hoffer's classic *The True Believer* warns of a conundrum rarely recognized: the destitute are too worried about the source of their

next meal to have interest in rebellion or resistance. Lifting them from this hand-to-mouth existence, however, threatens creating tinder ready to flare given expectations of yet further improvement, expectations that may be beyond the abilities or intentions of a coalition to meet, particularly one confronting the scope of issues inherent in megacity operations.[\[xxi\]](#)

Intelligence implications are clear. Far more than estimates of conventional enemy capabilities and intentions will be called for. Those of the many insurgent, criminal, militia, and other armed threats will be no less important. Identifying key formal and informal power brokers in neighborhoods and political jurisdictions and determining the most effective means of communicating with both these social nodes and the population at large will be fundamental to maintaining even minimal control. The larger the urban area, the greater the number of threat groups and the wider the regional dependencies linked to the city. Collection of the information needed to feed what is sure to be a voracious intelligence beast will demand manpower and equipment resources in excess of any currently available to even the most ambitiously conceived deployed force. The sheer extent of megacity operations-related information from human, visual technology, acoustic and vibratory sensor, signals collection, and other sources will overwhelm today's analytic capabilities. Add to this quantity the vast expanses of line-of-sight terrain and additional influences such as having to separate relevant information from the mundane inherent in the habitual "noise," "hum," or vibration of megacity daily activities and the challenge is further exacerbated.

The Ugly

Munitions are now delivered reliably from distant launch systems and brought onto target by units that can remain hidden.... It means the demise of infantry battalions, tank regiments and armoured brigades as they are currently structured for major combat operations.[\[xxii\]](#)

Christopher L. Elliott,

-- High Command: British Military Leadership in the Iraq and Afghanistan Wars

Not so fast, general. Let us not fall victim to believing that past activities will accurately reflect the nature of those yet to come. The same marines decrying doctrine's lethargy in meeting 21st-century urban reconnaissance demands found "controlling fires is difficult for us" urban area's ubiquitous buildings, the smoke and smog degrading both vision and laser designation, and polished surfaces reflection of those beams. Hamas and other foes confronted by the Israel Defense Forces (IDF) during recent operations increasingly make use of urban subterranean hides, headquarters, and passageways to deny observation and targeting. Below ground facilities are already inherent physical features of today's cities, their number and dispersion increasing as does population growth and accompanying structural spread. Detecting entrances and exits to facilities can be extremely difficult; determining their underground route nearly impossible given the depth of some such infrastructure and clever concealment of air shafts.[\[xxiii\]](#) Even when detected, valuable targets may be left unhindered due to their being positioned under proscribed civilian infrastructure. A Hamas command center remained unscathed beneath Gaza's largest hospital during 2014 Operation Protective Edge despite IDF leaders knowing its location.[\[xxiv\]](#) Determination of favorable laser designation and launch system locations; analysis of rotary-wing flight routes minimizing exposure to likely enemy air defense weapons sites; development of algorithms to support such analyses in operationally relevant timeframes; and commitment of resources to detecting, tracing, and targeting subterranean facilities all pose worthy challenges for the intelligence community.

Nor is it only those in uniform who will find megacity challenges overwhelming. Demands for capabilities

essential to aiding so large an urban area's recovery may exceed what international and coalition governments can bring to bear even for a short period. The problem will be more difficult yet should years of assistance be necessary, a problem magnified if that assistance be needed beyond the bounds of the megacity alone. Difficulties are made worse yet when inappropriately manned advance parties and early information collection efforts fail to identify and thereafter focus on priority challenges.

No less ugly are cases in which shortfalls during previous urban campaigns are repeated. The commander drawing militarily-typical unit boundaries along physical features such as roads, rivers, and the like will find those boundaries become self-inflicted wounds should they not be realigned once combat operations recede. Savvy leaders can instead minimize liaison, communications equipment, and other demands by realigning boundaries with existing administrative jurisdictions. It is a lesson unfortunately repeatedly learned and forgotten, two of the most recent instances being during the Los Angeles 1992 riots and in 2003 Baghdad. Intelligence personnel's recognizing the importance of identifying administrative delineations, then providing them to operational planners could preclude yet another recurrence.

Toward Solutions

To describe megacities as "information rich" environments is an understatement. No less than their towering buildings and teeming masses, the information oceans can seem an overwhelming flood. Some simple – and logical – first steps can provide a means of lending form to the seeming deluge. Regarding these environments in terms of underlying terrain, buildings, infrastructures (physical, social, and informational), and people creates "bins" to assist in managing collection and analysis...given that the bins do not become stovepipes hindering system-wide analysis. Likewise, recognizing that megacities' physical, human, and other characteristics can differ from smaller urban areas in terms of familiar concepts such as density assists in making the seemingly ungraspable graspable.[\[xxv\]](#)

Innovation will prove an indispensable commodity. Recognizing how lessons from previous operations in sub-megacities and during counterinsurgency operations can be molded in the service of new challenges would be a significant step forward. Modifying proven and well understood concepts will likewise provide payoff. Bringing maneuver into the 21st century would be one such re-forging. Previous operations – both urban and counterinsurgency – demonstrate the value of a comprehensive approach during which military, government civilian, and other relevant participants cooperate. All the more reason to embed the essence of maneuver's traditional definition:

Employment of forces in the operational area through movement in combination with fires to achieve a position of advantage in respect to the enemy[\[xxvi\]](#)

ane in a more encompassing conceptualization:

The employment of relevant resources to gain advantage with respect to select individuals or groups in the service of achieving specified objectives.[\[xxvii\]](#)

Similarly, the long-held understanding of a coalition as "an ad hoc arrangement between two or more nations for common action"[\[xxviii\]](#) would benefit from recognition that the scope of efforts requires synchronization of more than national assets alone. A better definition would account for nongovernmental, inter-governmental, private, and other organizations able to offer needed capabilities, making a coalition "an ad hoc arrangement between two or more organizations in the interest of common

action.”[xxix] Conceiving of “intelligence coalitions” along similar lines could significantly increase the number of information providers in support of megacity events. Much of the information needed to support intelligence requirements implied both explicitly and implicitly above is available in open sources. Pre-deployment and reach-back employment of interns and others to mine databases could dramatically increase the number of assets providing data. Much of the information would require revalidation, particularly in cases where physical destruction due to natural or man-made disasters is extensive or the numbers of displaced persons high, making large numbers of those capable of datamining an even greater asset. Manning would have to include sufficient personnel to confirm and reconfirm findings. Information sources inevitably conflict; some official sources are notoriously little more than fabrications designed to keep in-place authorities in power. It is obvious that training data miners should be undertaken before future operations the better to identify likely information requirements and minimize response times.

On the urban ground itself, the infantryman, pilot, NGO aid provider, truck driver, and every other participant becomes a potential source of information and recipient of resulting intelligence products (understanding all such participants are not equal when it comes to intelligence provision given differences in security clearances). Embedded personnel assisting with various government organizations should wear multiple hats. Those assisting in building governing capacity should at the same time be incorporated into information collection efforts, thereby enhancing understanding of megacity key relationships, fault lines, vulnerabilities, emerging requirements, and sources of opportunity in the service of coalition objectives. These same individuals will ideally be monitors confirming or alerting responsible parties when activities put short and longer-term objectives in tension as did one command in Iraq when members proposed providing small business startup grants at the same time other coalition authorities hoped to establish a program of bank micro-loans.

The far-reaching consequences of getting it right (or wrong) during operations in megacities demands not only innovative thinking, fresh doctrine, and multi-disciplinary assessments. Extreme war-gaming must become the norm. The Arizona Market outside Brcko, Bosnia-Herzegovina was a brilliant initiative, reestablishing as it did regional ties with that small city after years of violence had shattered previously longstanding economic links. Yet the immediate benefits gave way to the market’s becoming a center of black marketing, fencing high-value products from Western Europe, and trafficking of women.[xxx] Rigorous and frequent war-gaming of possible alternative outcomes linked to intelligence collection regarding market activities should have been required the better to identify factors likely to promote slippage of the facility into illegitimacy. Such failing to actively monitor and analyze events during operations in a megacity could have adverse consequences extending well beyond the immediate region. The implications are once again complex. War games would require robust computer support given the rapid spiraling of second, third, and higher-order effects inherent in any action taken in megacities’ innumerable and compacted interrelationships. Those interrelationships (and therefore those effects) will undoubtedly have regional, probably nationwide, and quite possibly worldwide effects. (Consider the global impact of the 9/11 attacks on New York City.) Change may be hard to detect given the constant and varied levels of activity in these megalopolises alluded to earlier. This need to war-game the status quo – what could happen from the situation as it is now – suggests the analysis will have to be nearly continuous. To assume otherwise is to overlook the very real possibility that today’s brilliant successes are potentially seeds for tomorrow’s disasters. The implications reach into pre-operation preparations: backward planning should begin at an end condition well beyond the re-assumption of governing responsibility by local authorities.

This monitoring and war-gaming assumes an understanding of a megacity’s routines and patterns. Determining these patterns and variations therefrom will necessitate data compilation and analysis beyond anything available to coalition leaders today. Sophisticated use of the aforementioned big data, overhead

monitoring by long on-station systems, and establishment of and reporting by contacts in local governments (e.g., police, fire personal, building inspectors, and tax collectors to mention only a few) and communities (taxi drivers, delivery personnel, neighborhood watch volunteers, and those manning hospitals) will have to be constant. Those in coalition militaries will be crucial components of this pattern definition. Logistics providers and foot patrols are among those from whom reporting should be frequent and for whom debriefings must be thorough, both of which will be enhanced by assigning these individuals “beats” similar to those of neighborhood policemen to the extent feasible. Those interviewing members of the population will have to be schooled in intelligence tradecraft. Anti-gang squads in Los Angeles, for example, canvas entire neighborhoods or city blocks in order to conceal the identify of the one individual from whom they know information is forthcoming. Robots, security cameras, and other means could provide additional monitoring. Shortages of interpreters can to an extent be overcome via reach-back sessions employing Skype- or Facetime-like connections with language speakers remote from the city itself. Simpler translation needs might be met one or more of the smartphone applications or other software currently available.

The challenges inherent in undertaking operations in a megacity will extend well beyond the sampling of intelligence-related concerns touched on above, instead permeating every military function and many civilian as well. New challenges will be commonplace, adapting lessons from those confronted before a routine necessity. New yes, but little will qualify as revolutionary. The urban-experienced soldier, sailor, marine, and airman will be a valuable asset, as will any who are well-read in the ways of urban operations, megacities, and fields with obviously applicable insights such as the previously mentioned counterinsurgency. Demanding as future megacity contingencies will be, however, innovations and initiative in drawing upon professional education and experiences are sure to provide far more of value than overzealous claims of having discovered a heretofore never seen form of conflict. The observations of both Eran Zohar and General James Mattis provide pertinent closing thoughts in this regard:

Wars became hybrid wars.... Being an old tactic practised by armies and guerrilla rebels, the “new” idea of an enemy that “disappears” from the battlefield and wages urban warfare is a fraud.... That rhetoric characterizes an organization that fails to conserve its memory and learn lessons from the past.”[[xxxix](#)]

-- Eran Zohar

“Israeli military intelligence’s understanding of the security environment in light of the Arab Awakening”

For all the “4th Generation of War” intellectuals running around today saying that the nature of war has fundamentally changed, the tactics are wholly new, etc., I must respectfully say... “Not really”: Alex the Great would not be in the least bit perplexed by the enemy that we face right now in [2013] Iraq, and our leaders going into this fight do their troops a disservice by not studying (studying, vice just reading) the men who have gone before us.”[[xxxix](#)]

-- General James Mattis

End Notes

[i] Sharon Ghamari-Tabrizi, *The Worlds of Herman Kahn: The Intuitive Science of Thermonuclear War*, Cambridge, MA: Harvard University Press, 2005, 48-49.

[ii] 21st-century operations and campaigns – those in larger urban areas in particular – demand more than a “coalition” as currently defined in US joint doctrine: “an arrangement between two or more nations for common action.” [Joint Chiefs of Staff, Department of Defense Dictionary of Military and Associated Terms, Joint Publication 1-02, Washington, D.C.: Joint Chiefs of Staff, November 8, 2010 as amended through January 15, 2016, 34, http://www.dtic.mil/doctrine/new_pubs/jp1_02.pdf (accessed February 3, 2016)] A broader conceptualization is called for: “an ad hoc cooperative arrangement between two or more organizations in the interest of supporting a common action.” [Russell W. Glenn, *Band of Brothers or Dysfunctional Family: A Military Perspective on Coalition Challenges During Stability Operations*, Santa Monica, CA: RAND, 2011, 41, <http://www.rand.org/pubs/monographs/MG903.html> (accessed February 3, 2016).]

[iii] That many if not all observations made regarding megacities herein apply to the larger of world’s cities with somewhat smaller populations is a given. Westerners’ liking for multiples of five and ten should not cause us to limit insights to the serendipitous choice of the ten million mark.

[iv] *Demographia World Urban Areas*, 11th edition, 2015, 2, <http://www.demographia.com/db-worldua.pdf> (accessed January 28, 2016).

[v] Jonathan W. Greenert (Chief of Naval Operations, US Navy), “The World is Dependent Upon the Oceans...,” presentation hosted by the Strategic and Defence Studies Centre, The Australian National University, Canberra, Australia, January 8, 2015.

[vi] Statistic for 1965 from Ronan Paddison, ed., *Handbook of Urban Studies*, Thousand Oaks, CA: Sage, 2001, 24. 2015 statistics from *Demographia World Urban Areas*, 11th edition, 2015, 2, <http://www.demographia.com/db-worldua.pdf> (accessed January 28, 2016).

[vii] Statistics such as those just cited suffer from these sometimes considerable differences in definition. I will use the following descriptions for urban-related terms in this essay:

“An urban area is best thought of as the ‘urban footprint’ – the lighted area that can be observed from an airplane (or satellite) on a clear night. National census authorities in Australia, Canada, Denmark, Finland, France, the Netherlands, Norway, Sweden, the United Kingdom and the United States designate urban areas. Except in Australia, the authorities use a minimum urban density definition of 400 persons per square kilometer (or the nearly identical 1,000 per square mile in the United States)... Urban Areas Contrasted with Metropolitan Areas: An urban area (built-up urban area or urban agglomeration) is fundamentally different from a metropolitan area.... A metropolitan area is a labor market and includes substantial rural (non-urban) territory or area of discontinuous urban development (beyond the developed urban fringe).” *Demographia World Urban Areas*, 11th edition, 2015, 3-4.

[viii] Christopher L. Elliott, *High Command: British Military Leadership in the Iraq and Afghanistan Wars*, Oxford: Oxford University Press, 2015, 151-152.

[ix] 2015 city of Los Angeles population estimate from "Suburban Stats: Current Los Angeles, California Population, Demographics and stats in 2014 and 2015,"

<https://suburbanstats.org/population/california/how-many-people-live-in-los-angeles> (accessed February 2, 2016); Los Angeles urban area population estimate from *Demographia World Urban Areas*, 11th edition, 2015, 35, <http://www.demographia.com/db-worldua.pdf> (accessed January 28, 2016).

[x] William Matthews, "Megacity Warfare: Taking Urban Combat to a Whole New Level," *Army* (February 12, 2015) <http://www.armymagazine.org/2015/02/12/megacity-warfare-taking-urban-combat-to-a-whole-new-level> (accessed January 3, 2016).

[xi] Carl von Clausewitz, *On War*, ed. Michael Howard and Peter Paret, Princeton, NJ: Princeton University Press, 1976, 419, 420, and 423. (emphasis in original)

[xii] "Paralysed: Urban traffic," *The Economist* (November 7, 2015), <http://www.economist.com/news/middle-east-and-africa/21677665-why-nigerias-largest-city-even-less-navigable-usual-paralysed> (accessed February 2, 2016).

[xiii] Robert Dixon, "Bringing Big Data to War in Mega-Cities," *War on the Rocks*, January 19, 2016, <http://warontherocks.com/2016/01/bringing-big-data-to-operations-in-mega-cities/> (accessed January 19, 2016).

[xiv] "Call for help; Ebola and big data," *The Economist* 413 (October 25, 2014), <http://www.economist.com/news/leaders/21627623-mobile-phone-records-are-invaluable-tool-combat-ebola-they-should-be-made-available> (accessed February 2, 2016).

[xv] "Shrinking the haystack: Counter-terrorism," *The Economist* 418 (January 16, 2016): 78-79, <http://www.economist.com/news/science-and-technology/21688368-software-helping-search-guerrillas-and-terrorists-safe-houses-and> (accessed January 24, 2016).

[xvi] Justin Jouvenal, "The new way police are surveilling you: Calculating your threat 'score'," *The Washington Post* (January 10, 2016), https://www.washingtonpost.com/local/public-safety/the-new-way-police-are-surveilling-you-calculating-your-threat-score/2016/01/10/e42bccac-8e15-11e5-baf4-bdf37355da0c_story.html (accessed January 14, 2016).

[xvii] Michael Bailey and John Via, "Military Medical Implications of Future Megacity Operations," *Small Wars Journal* (February 13, 2015), <http://www.smallwarsjournal.com/printpdf/21402> (accessed January 3, 2016); Geoffrey York, "Ebola: How Nigeria and Senegal stopped the disease 'dead in its tracks'," *The Globe and Mail* (October 19, 2014, updated October 20, 2014), <http://www.theglobeandmail.com/news/world/ebola-how-to-stop-the-disease-dead-in-its-tracks/article21159394/> (accessed February 2, 2016); and Akintunde Akinleye, "Nigeria isolated Lagos hospital where Ebola victim died," Reuters, July 25, 2014, <http://www.reuters.com/article/us-health-ebola-nigeria-idUSKBN0FX15420140728> (accessed February 2, 2016)..

[xviii] International Federation of the Red Cross and Red Crescent Societies, "Emergency Plan of Action Final Report-Nigeria: Ebola Virus Disease," August 31, 2014, <http://reliefweb.int/sites/reliefweb.int/files/resources/MDRNG017FR.pdf> (accessed February 2, 2016).

[xix] John Tozzi, “How to Avert an Ebola Nightmare: Lessons From Nigeria’s Victory,” *Business Week* (October 20, 2014), <http://www.bloomberg.com/bw/articles/2014-10-20/ebola-how-nigeria-averted-a-nightmare-in-densely-populated-lagos> (accessed February 2, 2016); and Will Ross, “Ebola crisis: How Nigeria’s Dr Adadevoh fought the virus,” BBC, (October 20, 2014), <http://www.bbc.com/news/world-africa-29696011> (accessed February 2, 2016).

[xx] Russell W. Glenn, et al., *Honing the Keys to the City: Refining the United States Marine Corps Reconnaissance Force for Urban Ground Combat Operations*, Santa Monica, CA: RAND, 2003, 11-12.

[xxi] Eric Hoffer, *The True Believer*, NY: Time, 1963, 29-30.

[xxii] Christopher L. Elliott, *High Command: British Military Leadership in the Iraq and Afghanistan Wars*, Oxford: Oxford University Press, 2015, 238-39.

[xxiii] During the 2014 Operation Protective Edge in Gaza, for example, IDF soldiers could not find tunnel exits in buildings despite being aware of the general location of the egress points and searching for them extensively, later suffering surprise attacks after Gazans emerged behind Israeli positions. Russell W. Glenn, *Short War in a Perpetual Conflict: Implications of Israel’s 2014 Operation Protective Edge for the Australian Army* (draft), 2015, to be published in 2016, 123.

[xxiv] Russell W. Glenn, *Short War in a Perpetual Conflict: Implications of Israel’s 2014 Operation Protective Edge for the Australian Army* (draft), 2015, to be published in 2016, 26.

[xxv] For a further discussion of urban densities and their influence on military operations, see Russell W. Glenn, *Heavy Matter: Urban Operations Density of Challenges*, Santa Monica, CA: RAND, 2000.

[xxvi] Joint Chiefs of Staff, *Department of Defense Dictionary of Military and Associated Terms*, Joint Publication 1-02, Washington, D.C.: Joint Chiefs of Staff, November 8, 2010 as amended through January 15, 2016, 145, http://www.dtic.mil/doctrine/new_pubs/jp1_02.pdf (accessed February 3, 2016).

[xxvii] Definition from Russell W. Glenn, *Rethinking Western Approaches to Counterinsurgency: Lessons from Post-colonial Conflict*, Abingdon, UK: Routledge, 2015, 270.

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[xxix] Russell W. Glenn, *Band of Brothers or Dysfunctional Family? A Military Perspective on Coalition Challenges During Stability Operations*, Santa Monica, CA: RAND, 2011, xiv.

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[xxxi] Eran Zohar, “Israeli military intelligence’s understanding of the security environment in light of the

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