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TITLE: Take it, Don't Break it: A Megacity Concept of Operations

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Executive Summary

Title: Take it, Don't Break it: A Megacity Concept of Operations

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Thesis: The best way to preserve the economy and the megacity's networks is to win without fighting. Victory without butchery means employing deception, gaining support from inside, and preventing the enemy from using tunnels.

Discussion: Today, the United States has learned that the world expects the United States to fix what it broke in the aftermath of a conflict. The megacity has become a "steer clear" zone in Army doctrine. The expectation that the U.S. will fix what it broke make preparations for the end of a conflict essential throughout the prosecution of the conflict. Fortunately, war is unlikely to generate within a megacity, because of the megacity's economic dynamism. However, if external forces thrust war upon the megacity, victory will require the preservation of the megacity's dynamism and intricate networks. A look at the megacity's mojo shows its economic power. A case study on sieges indicates that the best way to preserve the economy and the megacity's networks is to win without fighting. The case study flows into a concept for victory in a megacity without substantially breaking the megacity. Victory without butchery means employing deception, gaining support from inside, and preventing the enemy from using tunnels.

Conclusion: Foreknowledge will highlight ways in which to apply force most efficiently to achieve victory. At the same time, foreknowledge could reveal vulnerability in the enemy's perceptions of the situation, which could allow the use of a ruse or a misdirecting deception. Foreknowledge is the key to unlocking the siege and bringing a victory without fighting.

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Preface

At the start of the 2014-2015 academic year, the students of the Advanced Studies Program gathered to wrestle with the complex problem of operating in a megacity. We each wrote problem-framing essays as a basis for follow on discussions. Much of what I wrote for that initial problem-framing essay is contained at the beginning of this work. In it, I argue that the economic power of the megacity is what continues to draw people to the megacity and is what makes it imperative to preserve as much of that power as possible. Next we looked at case studies related to our problem framing. I examined historical sieges to draw conclusions about fighting in modern cities and sieges. I found that deception held the key to winning without fighting and used that conclusion to form the basis of my overall concept of operations for approaching the megacity.

I would like to thank Dr. Benjamin Jensen, CDR Russell Evans, Dr. Jonathan Phillips and Dr. Eric Shibuya for their support to the Advanced Studies Program. Their guidance and input has made this journey into the depths of the megacity a rewarding experience. I would also like to thank the other students of the Advanced Studies Program for bringing diverse perspectives and challenging me to think differently about the problem that is the megacity.

Megacity Mojo

Any parent entering the china section of Macy's with a three-year old understands the concept of "you break it, you buy it." All but the stout-of-heart parent would steer the tot clear of the china section all together. Today, the United States has learned that the world expects the United States to fix what it broke in the aftermath of a conflict. The megacity has become a "steer clear" zone in Army doctrine. Like the complexities of keeping a toddler out of trouble in Macy's, the Army grasps the complexities of tackling war in the megacity. Former Secretary of State and Army General Colin Powell acknowledged the expectation in deliberations over the war in Iraq in 2002 with President George W. Bush, according to the Washington Post's Bob Woodward. He called it the "Pottery Barn Rule."¹ The expectation that the U.S. will fix what it broke make preparations for the end of a conflict essential throughout the prosecution of the conflict. Fortunately, war is unlikely to generate within a megacity, because of the megacity's economic dynamism. However, if external forces thrust war upon the megacity, victory will require the preservation of the megacity's dynamism and intricate networks. A look at the megacity's mojo shows its economic power. A case study on sieges indicates that the best way to preserve the economy and the megacity's networks is to win without fighting. The case study flows into a concept for victory in a megacity without substantially breaking the megacity. Victory without butchery means employing deception, gaining support from inside, and preventing the enemy from using tunnels.

The megacity is not one of the "nine terrains" Sun Tzu envisioned, but if he were alive today, Sun Tzu would have to revise his terrains to include the megacity. The world's population is growing increasingly urbanized and more megacities are emerging. Megacities present a multi-dimensional battlespace inhabited increasingly by netizens linked through

complex digital relationships. Megacities frequently stretch high into the sky, dense with towers, while containing depths of an almost equal size below ground in a warren of tunnels. Slums and peri-urban areas are also a characteristic of megacities. How do you fight and win in this complex territory? Given the amount of wealth generated in megacities and their importance to the global economy, the challenge to success in a megacity is to take it without substantially breaking it. Key terrain becomes network nodes for food, water, communications and electricity. Seizing key terrain generally means laying siege to the city.

The growth of urban poverty associated with a megacity seems to drive doom and gloom analysis about the future of warfare. Economic data suggests a different view and there is room for optimism. Megacities are cities of twenty million or more inhabitants. Megacities cluster cheap labor, deliver public goods and services efficiently, generate significant portions of national wealth and provide opportunity for advancement. A look at the data will show the economic power of the megacity and will explain why people migrate to them. The megacity's economic power and resiliency will likely insulate the megacity from warfare in the future.

Pessimism seems to dominate literature on urbanization and megacities. A leading figure in the pessimistic camp seems to be Australian writer David Kilcullen. In his book *Out of the Mountains*, Kilcullen argues that population growth, urbanization, littoralization, and connectedness are factors, which will play a role in the causes of wars of the future.² Kilcullen deduces that population growth and concentration in urban centers such as megacities will cause wars, because war is a fundamental human endeavor. Where humans are, Kilcullen predicts, war will follow.³ Kilcullen reaches a logical conclusion, but data does not seem to support the conclusion and Kilcullen's conclusion falls short on understanding urbanization and the growth of megacities.

Jonathan Kalan, Janice Perlman, and Edward Glaeser have studied megacities and identified causes for optimism. Kalan, a photojournalist who writes for the BBC and *Foreign Policy*, takes on the traditional notions of the megacity's ills. Where some see slums, Kalan argues there is dynamic economic activity and upward mobility. Where some see environmental catastrophe, Kalan suggests that the average megacity dweller uses less energy and emits less than his rural counterpart.⁴ Janice Perlman is a sociologist, who spent forty years studying the *favelas* of Rio de Janeiro. Her research documented the upward mobility of the megacity's slums and demonstrated why people continue to migrate toward megacities.⁵ Harvard economist Edward Glaeser proposes that slums are the sign of a healthy city, because they are the first step on the urban ladder to prosperity. He notes cities do not make people poor, but poor people flock to cities because of the economic opportunity they provide.⁶ Looking at Detroit, the inverse seems true. When a city can no longer provide prosperity, people abandon it.

Three key assumptions underlie the analysis of the likelihood of warfare in a megacity. The first is that a fundamental cause of war is economic. The second is that the most important difference between a city and a megacity is their scale. The third is that the phrase "war in a megacity" refers to urban combat such as the conditions the U.S. military experienced in Fallujah, Iraq. A single violent act or terrorist attack do not constitute war, but could be the precursors to war. Graham Brown and Arnim Langer, scholars of hybrid inequalities, note that, "Empirical evidence suggests that the progress of a country's economy and the likelihood of violent conflict tend to be inversely related...violent group mobilization frequently occurs in situations characterized by a sharp economic decline or lower-than-expected economic progress."⁷ Indermit Gill of the World Bank's Economic Activity Unit emphasized scale in

differentiating megacities from cities.⁸ If megacities are prosperity generators on a massive scale, then it would seem that war would be unlikely.

Megacities attract millions each month, and aggregate their cheap labor into economic success. Nearly 1.4 million individuals per week migrate to cities globally.⁹ If people are rational actors making choices about their future, then clearly they see taking a chance on the cities as beneficial, even if it means trading the countryside for the slum. Mega-naysayers such as Kilcullen predict a “human tidal wave” as a coming catastrophe, but since 1950, the cities of the globe have absorbed the equivalent of New York City’s population every other month.¹⁰ Despite this huge influx, the city continues to deliver on its economic promise to many. Not only do people migrate to cities and eventually improve their economic situation, they generate enough wealth to send it back to their relatives. According to the World Bank, “In 2013, remittances were more than three times larger than official development assistance (ODA) and, excluding China, significantly exceeded foreign direct investment flows to developing countries.”¹¹ The human migration toward the megacities and the remittances demonstrate the economic success of the megacities. Additionally the migration and remittance flows link megacities and rural regions closely together so that it is possible economic shock in one could be felt in another. The megacity’s economic success and increasing global ties are two factors, which will insulate the megacity from the prospect of warfare.

Upward mobility for the urban poor and migrants of a megacity is another key factor in the diminished likelihood of war in a megacity. Janice Perlman, who experienced Rio’s favelas first hand, makes an important distinction about the urban migrants. She observed that these newcomers were the “most far sighted capable and courageous members of their communities. They were the ones with the motivation and willingness to work in the least desirable jobs for the

longest hours ... to provide their children with the opportunities they never had.”¹² The United Nations Population Fund notes that cities concentrate poverty, but they also provide opportunities to escape poverty.¹³ Perlman followed residents of the *favelas* for many years, she found that 67 percent of her original subjects, as well as 65 percent of their progeny, had left the slums. Those subjects who stayed in the favelas noted they had better access to public services and improved household comforts.¹⁴ As long as the megacity continues to churn economically and maintain the prospect of upward mobility for many of its residents, it seems unlikely that war will germinate amid the trickle-down prosperity.

Research suggests that megacities perform more efficiently and with less environmental impact in the delivery of goods and services than rural areas. A 2012 McKinsey Global Institute study found that it was 30 to 50 percent cheaper to provide housing, water, and education in populated urban areas than in rural areas. MGI also found that 90 percent of urban households had electricity as opposed to 63 percent of rural households.¹⁵ Edward Glaeser argues that the average city dweller uses less energy than his country or suburban counterpart.¹⁶ In Glaeser’s view, “The combination of public transportation, smaller homes, higher population density and neighborhoods designed for walking makes cities the most environmentally friendly places for living.”¹⁷ Similar to the argument about upward mobility, as long as the megacity continues to deliver the “public goods” war seems less likely to loom in future.

The flow of over a million people per week and the subsequent upward mobility seems to confirm what the financial data shows. The megacity is a powerhouse of wealth generation. The MGI study found the 600 cities making the largest contribution to global GDP would have created 65 percent of global economic growth by 2025. Of the 600, 440 cities are in emerging economies. By 2025, the 440 cities will have generated close to half of global GDP growth.¹⁸

The Asia Development Bank (ADB) found that cities in Asia produce over 80 percent of GDP in many Asian countries. According to ADB, almost 80 percent of metropolitan areas in the world have average incomes that exceed averages for their nations, particularly in Asia.¹⁹ The other ramification of megacity wealth generation is that the destruction or disruption to the megacity is not in anyone's interest. For countries depending on the megacities to drive their national economy, violence in the city disrupting the economy and the flow of goods and services is a mutually assured destruction situation.

War is not likely to take place in megacities, because megacities are efficient dynamic aggregators of economic wealth, distributors of goods and services, mechanisms for upward mobility. As long as megacities maintain their economic dynamism, war will remain an unlikely occurrence in a megacity. That does not mean that the megacity will be able to provide everything to all its inhabitants. Nor does it mean that violence, crime and slums will not exist in megacities. It also does not mean that megacities are invincible. Possible causes for disrupting the success of megacities are state failure or interstate conflict. Yet, it seems that the megacity contains sufficient resilience and economic capacity to prevent such shocks from completely disrupting the megacity mojo.

In the event state failure or interstate conflict bring conflict to the megacity, it seems logical that the conflict could take shape as a siege. In the past, warring parties could bypass, occupy, besiege or destroy enemy held cities. Of the four options for dealing with a city, one of the most complex military options is besieging a city. The density and territorial expanse of a megacity magnify the military challenge the megacity poses. Examining methods of ending sieges offers lessons, which could apply to the megacity. Several methods of ending a siege appear common, treachery, deception, tunnels, surrender, and negotiated settlement. Leave

surrender and negotiated settlements to the diplomats and politicians. Treachery, deception, and tunnels seem the most applicable to the military practitioner, because opposing forces have used them all in sieges to compel an enemy to surrender or to resist an enemy's blockade.

Siege Case Studies

A case study of 19 sieges on four continents across 2,000 years of history does not chronicle siege technology, but rather the people on both sides of the walls (figure-1 for list of sieges). The case study shows how people betrayed, deceived and dug their way to the conclusion of their respective impasses using deception, treachery and tunnels. Case selection included geographic considerations to ensure observe global siege conditions. Methodology for siege breaking also factored into the case selection as well as the availability of sufficient information documenting the use of deception, treachery or tunnels. Surprisingly, the most common conclusion for a siege is that one of the parties simply capitulates once reaching the end of its ability to resist. The cases where resistance succeeded or deception brought swift victory are of greatest interest to this study. The significance today of sieges is that, as the number of megacities grows, 21st-century conflict is likely to take place in or around a megacity. The key to victory in a megacity may lie beyond the Trojans and the trebuchet in understanding the siege as a complex military option for approaching conflict in a megacity.

Medieval walled cities and megacities bear some comparisons worth exploring. A megacity is an urban population center containing more than 10 million inhabitants characterized by vast geographic area and dense concentration of people and infrastructure.²⁰ Megacities draw strength from generating enormous amounts of economic activity and the resiliency derived from the interconnectivity of the cities' inhabitants.²¹ At the same time, megacities remain

vulnerable, because the inhabitants depend on water and produce grown outside of the city for sustenance. Not unlike the walled cities of the past, the density of the megacity makes visibility into the heart of the city difficult for an enemy. In addition, megacities must import the elements of sustenance, food and water just as its medieval urban forbearers did. The need to sustain life through resources brought into the city makes both a walled city and a megacity vulnerable to sieges.

According to the Oxford Dictionary, a siege is a “military operation in which enemy forces surround a town or building, cutting off essential supplies, with the aim of compelling the surrender of those inside.”²² The term siege is different from the term blockade in that the purpose of a siege is to compel surrender through denying the enemy life-sustaining materials. In contrast, a blockade by definition does not have a stated purpose other than denying the import of sustenance. According to Merriam Webster, a blockade “is to stop people or supplies from entering or leaving (a port or country) especially during a war.”²³ The Army’s *Operational Terms and Graphics* omits a definition of both words, but both remain viable military means to achieve objectives today. The task to “isolate” is listed in the *Operational Terms and Graphics* as, “A tactical mission task that requires a unit to seal off-both physically and psychologically-an enemy from his sources of support, deny him freedom of movement, and prevent him from having contact with other enemy forces.”²⁴ None of these definitions includes walls as a requirement. The key element in sieges is compelling the enemy to act and the enemy’s resistance to that compulsion. For nearly 2,000 years, both the attackers and defenders in sieges have used treachery, deception and tunnels to compel enemy action and achieve victory.

For the purposes of the case study, treachery is the provision of privileged information provided from inside source, which allows an opposing force to achieve foreknowledge in

support of victory. The fruits of treachery can either provide insight into enemy centers of gravity, critical vulnerabilities or preconceptions. According to Abram Shulsky, the former Director of the Office of Special Plans at the Department of Defense, “deception refers to the effort to cause an adversary to believe something that is not true...with the goal of leading him to react in a way that serves one’s own interests, rather than his.” A study from the Office of Research and Development at the Central Intelligence Agency in 1980 divides deception into two types of deception. A-deception involves increasing the enemy’s ambiguity by diluting the truth’s signal strength and increasing the possible number of alternate explanations.²⁵ The other type of deception, M-deception, is misdirection where alternate explanations are limited to those false conclusions the enemy is intended to draw in accordance with a plan.²⁶ Whether A-deception or M-deception, feedback that the enemy is interpreting signals as intended, improves the overall success of any deception operation.²⁷ Privileged information from the inside is one key feedback mechanism.

In some cases, betrayal from an insider represents an efficient path to victory. In 634 AD, General Khalid ibn al-Walid laid siege to Roman-controlled Damascus. A resident of Damascus seeking refuge for his bride, informed Khalid that the city planned to mark the birth of the Roman governor’s son with a celebration. Additionally, the Roman informant told Khalid that the inhabitants of the city would be drunk and the walls lightly defended. Khalid selected a few men to scale the walls, open a gate, and allow Khalid’s army to enter.²⁸ Privileged information provided Khalid visibility into the activities within the walls, and allowed Khalid to take advantage of an operational opportunity. Operations in a megacity will similarly require insider information to overcome the density of the megacity and inform operational decisions.

Similar to Damascus, insider information proved decisive in the Siege of Smolensk.

Lithuanian forces besieged Russian-controlled Smolensk from 1609-1611. Lithuanian forces finally broke through when an informant, Andrei Dedishin, told the Lithuanian forces the location of city wall's vulnerability.²⁹ Lithuanian forces dug under the wall and placed a powder charge underneath the wall to punch a hole and provide an avenue for attack. The city fell in a day following the wall's breach.³⁰ Once again, an insider provide critical to the enemy's understanding of critical vulnerabilities and played a decisive role in ending the siege.

In Metz, France, during the Franco-Prussian War, *Wilhelm Stieber*, Otto von Bismark's head of the *Feldgendarmarie*, employed an extensive network of sources.³¹ Stieber had a source in French Marshal MacMahon's staff that reported the French plans to relieve French forces under siege at Metz.³² Prussian General Helmuth von Moltke used the source's report to out-manuever the French relief force and trap the relief force in the fortress of Sedan including Emperor Napoleon III. Not only did the source's information compel the surrender of Metz and Sedan, it ended the war by crushing the French Army's ability to resist.

Deception changes risk gain calculations, often allowing one side to persist until reinforcements arrive or convincing a side that continued resistance is futile. In 1899, British Colonel Robert Baden Powell and a garrison of 1,500 men withstood a siege by 8,000 Boers for 217 days at Mafeking.³³ Colonel Baden Power and his men employed a variety of deceptive tactics to buy time until reinforcements could break the siege.³⁴ For example, Colonel Baden Power's men placed dummies on the fortifications to draw fire from Boer positions offering British snipers a chance to attrite the Boer force. When Boers grew skeptical of the dummies, the British played accordion music as the dummies made their appearance on the fortifications.³⁵ Colonel Baden Powell also cobbled together improvised dummy forts, guns and armored trains to draw enemy fire.³⁶ The British would also "fatten-up" any emissaries sent to treat with the

Boers during the siege in order to give the appearance that conditions in the fort remained tenable for a significant period.³⁷ Colonel Baden Powell also arranged Sunday cricket matches to aid the impression that all was well within the walls and the British could hold out indefinitely.³⁸ Colonel Baden Powell's ruses bought sufficient time for British reinforcements to raise the siege. In the case of Mafeking, deception served as a force multiplier and allowed the British sufficient time to reinforce their position and lift the siege.

The British success at Mafeking illustrates not only how deception can change the risk gain calculation, but also how deception conditions the enemy through repeated actions and small changes. The British representative's appearance and attitude conditioned the Boers with whom he treated to believe that the men within Mafeking's walls had sufficient stores. The cricket matches also supported the deception by making the besieged seem more able to resist.

In Detroit during the War of 1812, the British employed the "Magruder Principle" of deception offensively to even the odds of victory. The Magruder Principle states, "it is generally easier to induce an opponent to maintain a preexisting belief than to present notional evidence to change that belief."³⁹ In Detroit, British Major General Isaac Brock played upon the fears and beliefs of the American commander Brigadier General William Hull that the British force exceeded the American force significantly and his fear of Native Americans. In a letter to Major Thomas Evans, General Brock credited Major Thomas with the idea to clothe the British militia in discarded uniforms from the 41st Regiment of regulars. Brock told Thomas he thought the ruse doubled the size of his force in the Americans' eyes. Additionally, to increase the apparent size of the British force, Brock ordered that soldiers walked through the chow line in a loop such that they surreptitiously dumped the contents of their mess kit in a pot and returned to the end of the line.⁴⁰ Brock received an intercepted letter from the General Hull indicating his fear of

attack from Native Americans to the American Secretary of War William Eustis. Brock used the knowledge of Hull's fear to draft a message to Hull playing on Brock's alliance with Tecumseh and the Shawnee. Brock noted that he would be responsible for the good conduct of his men; however, he could not control the actions of the Native forces under his command. The letter clearly influenced Hull's decision to surrender Fort Detroit with barely a shot fired on 18 August 1812.⁴¹

Used offensively in the case of Fort Detroit, deception served as a force multiplier and played an important role in ending the siege swiftly. Brock disrupted Hull's ability to command and control, because he thoroughly skewed his perception of reality. RAND Corporation's Scott Gerwehr and Russell Glenn suggest that, "Deception is used to adversely affect an opponent's decision-making processes, most often to influence or degrade enemy command and control (C2)."⁴² Gerwehr and Glenn saw the effects of deception as applicable even down to the individual enemy soldier in a "low intensity urban insurgency."⁴³ The isolation of the American troops defending the walls of the Fort in part allowed Brock's deception to work, because the defenders could not verify Brock's claims regarding the Natives and could not properly assess the size of the opposing force. The density of a megacity will also likely make deception a tool, which both sides could use.

Tunnels are ancient weapons which remain a part of the repertoire of modern warfare. Tunnels provide life support, or efficient means of employing limited resources to attack enemy forces.⁴⁴ Historically, armies and insurgents have used tunnels to gain advantage over numerically superior opponents. Tunnels tend to prolong sieges; opposing forces tend to use tunnels when they have sufficient time and expertise to construct them. Although tunnels can prolong conflict, tunnels can also end sieges when used as a weapon, such as in the Siege of

Smolensk. There is psychological advantage in the use of tunnels.⁴⁵ Like the leviathan lurking beneath the sea's surface, a tunnel can deliver an unseen threat to an enemy without warning. At the same time, tunnels are symbols of resistance such as in Gaza. The tunnels provide a morale boost to the Palestinians as both a symbol and a means of Palestinian resistance.⁴⁶

In Turin, during the siege of 1706, tunnels extended the ability of the city's Austrian/Savoyard defenders to withstand the French Army until reinforcements arrived to lift the siege. Both Turin's Austrian/Savoyard defenders and their French opponents used tunnels to try to break the four-month siege. The French, under the command of General Louis Francois Aubusson, Duc de la Feuillade, even tried to build a trench around the city. By late August 1706, Austrian forces feared they would run out of powder and ammunition to sustain the fight and knew they had to develop a strategy to break the siege. The Austrian commander, Weirich Philip Lorenz, Count von Daun, focused Austrian efforts on mining and countermining operations as the most efficient means of opposing the French with his limited resources.⁴⁷ The Savoyard sappers constructed tunnels nearly reaching the French lines. In one case, French forces located a tunnel into the city and a Savoyard sapper had to blow up the tunnel to prevent their entry into the city and lost his life in the process.⁴⁸ Rather than dueling artillery, the main effort in the Siege of Turin appears to have taken place underground. The tunnels did not deal the final blow to the French forces; however, the subterranean cat and mouse game engaged the French for months until the armies of Prince Eugene of Savoy could and Victor Amadeus, Duke of Savoy could relieve the siege.

The Battles of Petersburg (1864) and Somme (1916) took place nearly 50 years apart yet followed similar patterns. In both cases, the attacking force opposing a well defended, fortified position used tunnels to shock their enemies in the hope of breaking a stalemate. In the case of

Petersburg's Battle of the Crater, Union troops secretly dug a tunnel under the Confederate lines, filled the tunnel with barrels of black powder, and detonated the powder.⁴⁹ Unfortunately, due to errors in executing the plan, which followed the explosion, the blast trapped advancing Union soldiers in a crater.⁵⁰ Unable to scale the crater walls, Union soldiers became easy-pickings for the stunned Confederates.⁵¹ At Somme, British soldiers detonated 450,000kg of explosive underneath Hill 60 on Messines ridge creating an 800-meter crater.⁵² The explosion killed or entombed 10,000 German soldiers and eventually the British took the ridge.⁵³

The Palestinian tunnels at Gaza demonstrate the asymmetric use of tunnels in warfare. In 2014, Israeli Defense Forces (IDF) destroyed 31 military crossing into Israel.⁵⁴ These sophisticated tunnels 60-feet below the surface contained weapons caches, and avenues to move Hamas fighters, equipment, and kidnap victims. Some tunnels were large enough to drive trucks through.⁵⁵ For more than a decade, the tunnels have also provided vital support to the inhabitants of Gaza as the means for smugglers to move goods into Gaza for resale. Smugglers have moved everything from food and small household items to cars and building materials through the tunnels.⁵⁶ When Israel cut off fuel deliveries to Gaza in 2008, smugglers even established a pipeline for fuel and the price of fuel fell by nearly 50%. The longer the siege persists, the more sophisticated the tunnels become.⁵⁷

Treachery, deception, and tunnels are likely to remain important tools in modern sieges, particularly in a megacity. Today's sieges may take place without encircling walls, as in Gaza, but the key principle of compelling an enemy to surrender its position remains. In the sieges examined, opposing forces tried to use treachery, deception and tunnels to gain an advantage and break a stalemated situation. Sources of privileged information regarding the enemy situation and center of gravity serve to hasten victory without significant loss to friendly forces. Deception

changes risk-gain calculations, and can act as a force multiplier in uneven contests. Tunnels can offer sustainment, or a means of delivering a knock out punch from below to attack enemy forces. Tunnels bring a psychological advantage to the fight. They can carry with them the terror of the unknown or act as a symbol of resistance. In combatting the density of the megacity and the megacity's complex networks, understanding how treachery, deception and tunnels have contributed to victory in siege warfare will be critical to success.

Concept of Operation

With the "Pottery Barn Rule" in effect, or its "Macy's corollary," it seems clear that a military operation aimed at gaining control of a megacity or its inhabitants must have a different approach to the problem. Gaining control of a megacity will likely involve depriving certain sectors, or even the entire city of at least some sustainment in order to compel them to conform to the attacking force's plan. This siege without walls will require a new approach, which preserves the megacity and its power and can harness that power to achieve victory. The new approach will require foreknowledge, deception and misdirection in order to change the enemy's reality and bend the enemy to conform to the will of the attacking force without unduly damaging the features making the megacity so valuable.

Sun Tzu stresses the importance of "foreknowledge".⁵⁸ Foreknowledge gained through intelligence collection is the central element in battlespace preparation. Foreknowledge requires using all sources of information effectively to understand the center of gravity of the enemy city. While all forms of intelligence are important, gaining insights from human sources within the city with access to key network nodes is the most important. Not only can these human sources inform as to how the network works, they can also highlight critical vulnerabilities, or

exploitable enemy preconceptions and in some cases assist in the exploitation of those vulnerabilities. For example, the right source at the public water company could provide information about how to control the flow of water to certain sectors remotely. Access to major telecommunications companies offers similar benefits. Treachery from within leads to foreknowledge for the attacking force and increases the opportunity for surprise.

Surprise is frequently an important bi-product of deception. RAND Corporation's Scott Gerwehr and Russell Glenn noted in their 2000 monograph that surprise attacks can significantly diminish the cost of attacking in an urban environment. Their research indicated that, "surprise changed the ratio of casualties in favor of an attacker from 1:1 to 5:1."⁵⁹ U.S. Army General William DePuy also agreed that surprise changed the combat calculus, although he disagreed with Gerwehr on the magnitude. DePuy assessed that surprise doubled combat power for either side. Regardless of the precise magnitude, it seems clear that surprise lends an increase to combat power. Dr. Barton Whaley, a noted scholar in deception from the Naval Post Graduate School, observed that of the 68 major battles fought between 1914 and 1967, combatants increasingly relied on deception to achieve surprise.⁶⁰

Foreknowledge can feed a successful deception or influence campaign, because deception campaigns rely on an accurate understanding of the motivations and desires of the deceived. Noted political scientist, Robert Jervis, wrote an essay on misperceptions in which he hypothesized that decision-makers tend to force new information to fit their existing analysis of a given situation.⁶¹ Foreknowledge is essential to understanding an opponent's preconceived notions, in order to lead an opponent to misperceive the threat and make tactical errors. General Brock in the Siege of Detroit is a classic example of this technique. Brock used Hull's belief about the size of the British forces and Hull's fear of a violence attack from Native Americans to

achieve victory. Each megacity will differ in terms of what motivates the leadership, and inhabitants. However, shaping the beliefs of the inhabitants of the megacity at all levels of society to achieve desired outcomes for the attacking force seems to be as essential to battlefield success as artillery rounds. Some examples of possible ways in which to lead the enemy to misperceptions could be using deception to increase the apparent size and capability of the attacking force. The deception shaping could include planted stories in local news and social media outlets about a new capability, which could radically change the conflict. In addition, include news stories about the benevolence of the attacking forces to civilian populations, especially those people who cooperate with instructions and do not pose a threat to the attacking forces.

Another important use for deception is to misdirect the location of your attack. Misdirection is particularly effective when paired with an enemy's preconception.⁶² The Allies were very successful using this tactic at Normandy. Hitler remained convinced that the Allies planned to invade at Pas de Calais. The Allies had foreknowledge based on Ultra intercepts of Hitler's conviction and used it to craft the Allied deception plan associated with Overlord.⁶³ Data from a 1980 study completed for the Central Intelligence Agency's Office of Research and Development indicated that deceptions, which played to enemy perceptions succeeded more frequently than those that did not.⁶⁴ An attacking force could use control over the network nodes, particularly communications, to create the appearance of an impending attack far away from the intended target. The operational plan should include a psychological campaign in order to undermine the enemy's will to fight. The psychological campaign could incorporate the deception plan, but could simply use information gained from sources to attack the enemy's morale.

As seen in the Siege Gaza, tunnels have served as a lifeline for the inhabitants of Gaza. They became both symbols of resistance as well as a means to circumvent the blockade. Given how many megacities have miles of underground tunnels already constructed to accommodate public transportation, denying the enemy the use of these tunnels is critical lest the tunnels protract the siege. A ruse suggesting that a contagion dwells in the tunnels or that the attacking force has rigged the tunnels with explosives and traps would keep people voluntarily out of the tunnels. The ruse could serve as a force multiplier so that attacking forces would need fewer personnel to guard the tunnel access points. The ruse is not likely to be durable as a stand-alone effort. The ruse has a long military tradition, because according to Vietnam veteran Lieutenant Colonel Richard E. Mack, “the commander who can successfully outwit the enemy doesn’t need fire superiority, nor necessarily the advantage of a larger force.”⁶⁵ In the age of social media, it becomes easy for residents to spread ground truth about situations on the ground and therefore the ruse execution must be thorough and nested within a larger plan to gain control swiftly.

Conclusion

The ultimate goal should be, as Sun Tzu recommends, to win without fighting.⁶⁶ The megacities worldwide continue to grow and drive prosperity. However, megacities are not without their weaknesses. Similar to ancient walled cities, megacities seem particularly sensitive to the continuous flow of food, water and supplies from outside the megacity. The case study on sieges showed how opposing forces used treachery, deception, and tunnels to gain an advantage in sieges. The case study demonstrated that foreknowledge gained through the treachery of an insider and a deception represented excellent means for ending sieges to the deceiver’s advantage. Tunnels presented a mixed bag. When forces on either side of the walls used tunnels to breach the walls, but the tunnels succeeded most often when combined with deception

or treachery. Tunnels also served as symbols of resistance and often prolonged conflict. Therefore, in the interest of taking a megacity with numerous subterranean tunnels, it seems best to render the tunnels useless to the opposing side. Foreknowledge, deception and treachery will attack the enemy's "awesomeness" and sap his will to resist. Capitulation with minimal destruction of the megacity is vital to prevent a massive humanitarian assistance problem and to preserve the megacity's economic power. Keeping the "Pottery Barn Rule" in mind, foreknowledge will highlight ways in which to apply force most efficiently to achieve victory. At the same time, foreknowledge could reveal vulnerability in the enemy's perceptions of the situation, which could allow the use of a ruse or a misdirecting deception. Foreknowledge is the key to unlocking the siege and bringing a victory without fighting.

Figure-1

	Treachery	Deception	Tunnels	Negotiate	Notes
Siege of Damascus 634	X				insider threat, told of opportune time when it would be best to conduct attack on walls
Siege of Rome 408				X	Senators bought their way to the end of the siege
Siege of Masada 73					brute force, Romans took the city
Siege of Damascus 1148	X				insider threat informed of weakness to city
Siege of Detroit 1812		X			psyops re size of attacking force and native american contingent
Siege of Mafeking		X			psyops re conditions within the walls and commitment to resist
Siege of Smolensk 1609-10	X				traitor revealed weakness in walls attackers exploited, siege ended that same day
Second siege of Batavia	X				dutch burned rice barns and logistics through spies
battle of petersburg			X		tunnel built under confederate lines
3rd Battle of Ypres			X		tunnel under Hill 60 largest explosion of its kind up until that time (Battle of Passchendaele)
The Alamo					causing the Texans to sleep then kill the sentinels
Siege of Turin 1706			X		Tunnels allowed for efficient use of military equipment such that the defenders could hold out until help arrived
Siege of Sarajevo 1995				X	negotiated settlement
Siege of Gaza		X	X		used for life support, weapons caches, troop movements
Siege of Beirut 1982			X	X	negotiated settlement
Siege of Metz 1870	X				insider information provided time to attack

Siege of Shimabara 1672		X			Ninjas obtained uniforms, snuck in and broke the siege
Siege of Smolensk 1706	X		X		insider provided wall weakness information and invaders breached the wall with explosives
Siege of Batavia	x				insider Dutch told where rice supply was and the Dutch burned it

¹Bob Woodward. *Plan of Attack*. New York: Simon & Schuster, 2004, 150.

² David Kilcullen (2013-09-03). *Out of the Mountains: The Coming Age of the Urban Guerrilla* (p. 28). Oxford University Press, USA. Kindle Edition.

³ Ibid.

⁴ Jonathan Kalan. 2014. "Think again: Megacities." *Foreign Policy* (206): 69.
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⁶ Edward Glaeser. (2011-02-10). *Triumph of the City: How Our Greatest Invention Makes Us Richer, Smarter, Greener, Healthier, and Happier* (Kindle Locations 368-370). Penguin Group US. Kindle Edition

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⁸ Kalan, 70.

⁹ Karen C. Seto, Shobhakar Dhakal. *Human Settlements Infrastructure and Spatial Planning*. Intergovernmental Panel on Climate Change Working Group III-Migration of Climate Change. 2012.

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¹² Perlman, Kindle Locations 216-221.

¹³ "Linking Population Poverty and Development", United Nations Population Fund, last modified May 2007, accessed 13 November 2014, <http://www.unfpa.org/pds/urbanization.htm>

¹⁴ Kalan, 71.

¹⁵ McKinsey Global Institute. *Urban world: Cities and the rise of the consuming class* (Kindle Locations 24-25). McKinsey Global Institute. Kindle Edition.

¹⁶ Ethan Wagner. "Two Tales of a City." *Journal of International Affairs* 65 (2): 189-191.
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¹⁷ Ibid.

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- ¹⁸ McKinsey Global Institute, 25.
- ¹⁹ "Urban Development Overview," Asian Development Bank, accessed 13 November 2014, <http://www.adb.org/themes/urban-development/overview>
- ²⁰ Jonathan Kalan. "Think again: Megacities." *Foreign Policy* no. 206 (May, 2014): 69.
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- ²² Oxford University Press Online Dictionary.
http://www.oxforddictionaries.com/us/definition/american_english/siege
- ²³ *Merriam-Webster's Collegiate Dictionary*. 11th ed. Springfield, MA: Merriam-Webster, 2003. Also available at <http://www.merriam-webster.com/dictionary/blockade>.
- ²⁴ Global Security.org.
<http://www.globalsecurity.org/military/library/policy/army/fm/3-90/appb.htm#par2-9>
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- ²⁶ Ibid, 22.
- ²⁷ Abram Shulsky. "ELEMENTS OF STRATEGIC DENIAL AND DECEPTION." *Trends In Organized Crime* 6, no. 1 (Fall2000 2000): 17. *International Security & Counter Terrorism Reference Center*, EBSCOhost (accessed March 6, 2015).
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- ³² Ibid.
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- ³⁷ Hargreaves.
- ³⁸ Dawson.
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- ⁴² Gerwehr, Scott and Russell W. Glenn. *The Art of Darkness: Deception and Urban Operations*. Santa Monica, CA: RAND Corporation, 2000, 20.
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