

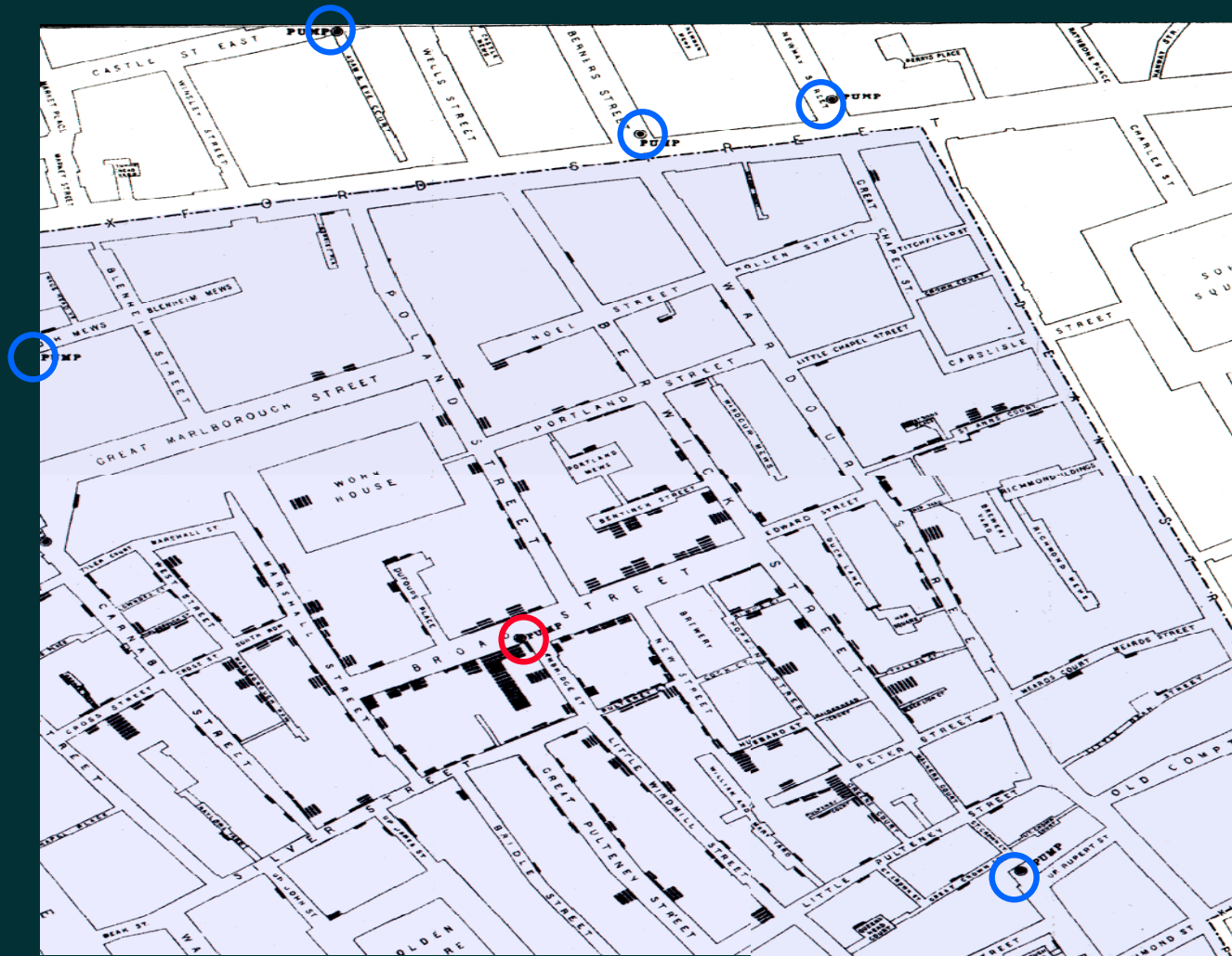
# **Nuggetizing the Elephant:**

## **Managing Urban Complexity During Military Operations**

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**RAND**

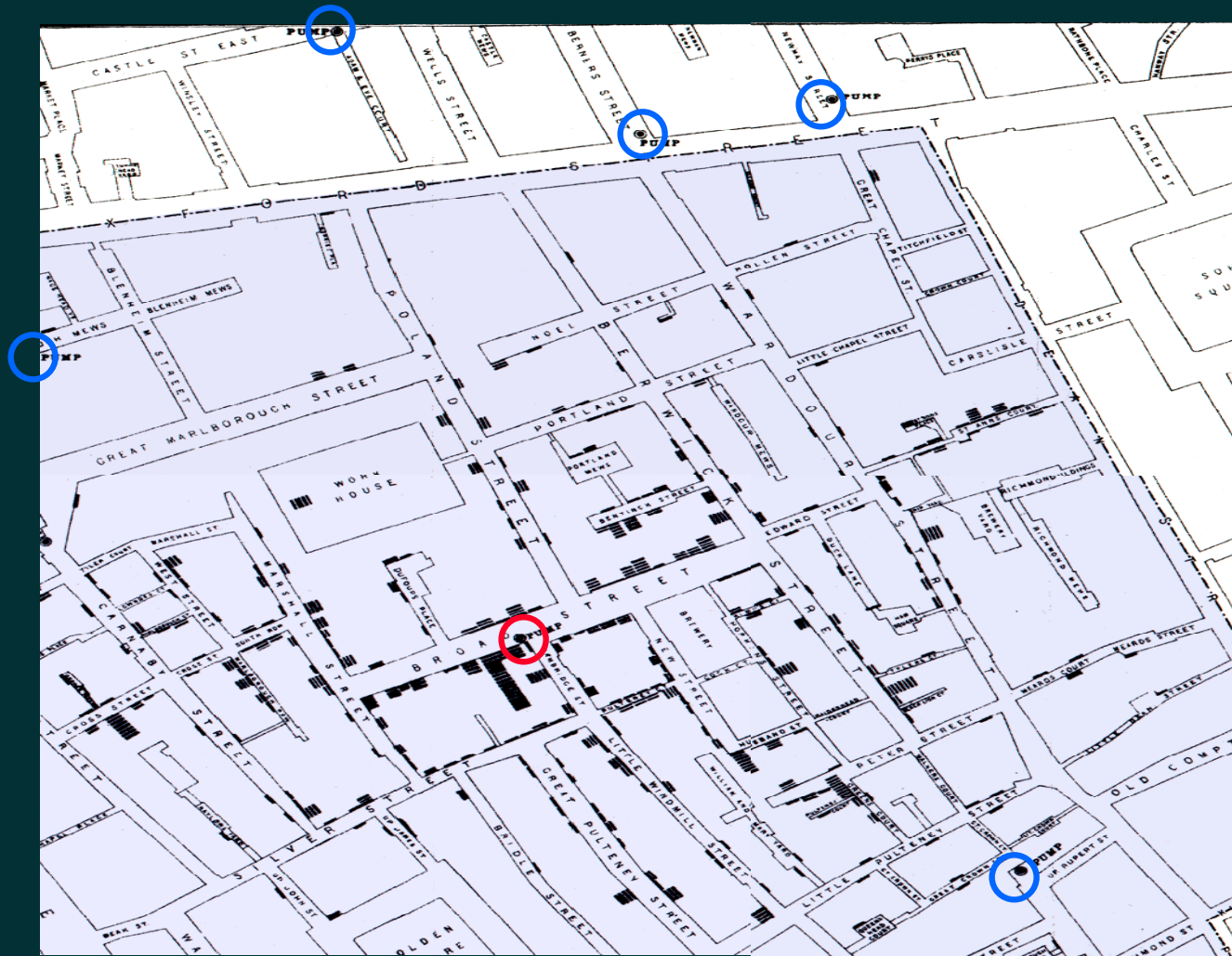
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# Overcoming Urban Complexity: Cholera in London, 1854



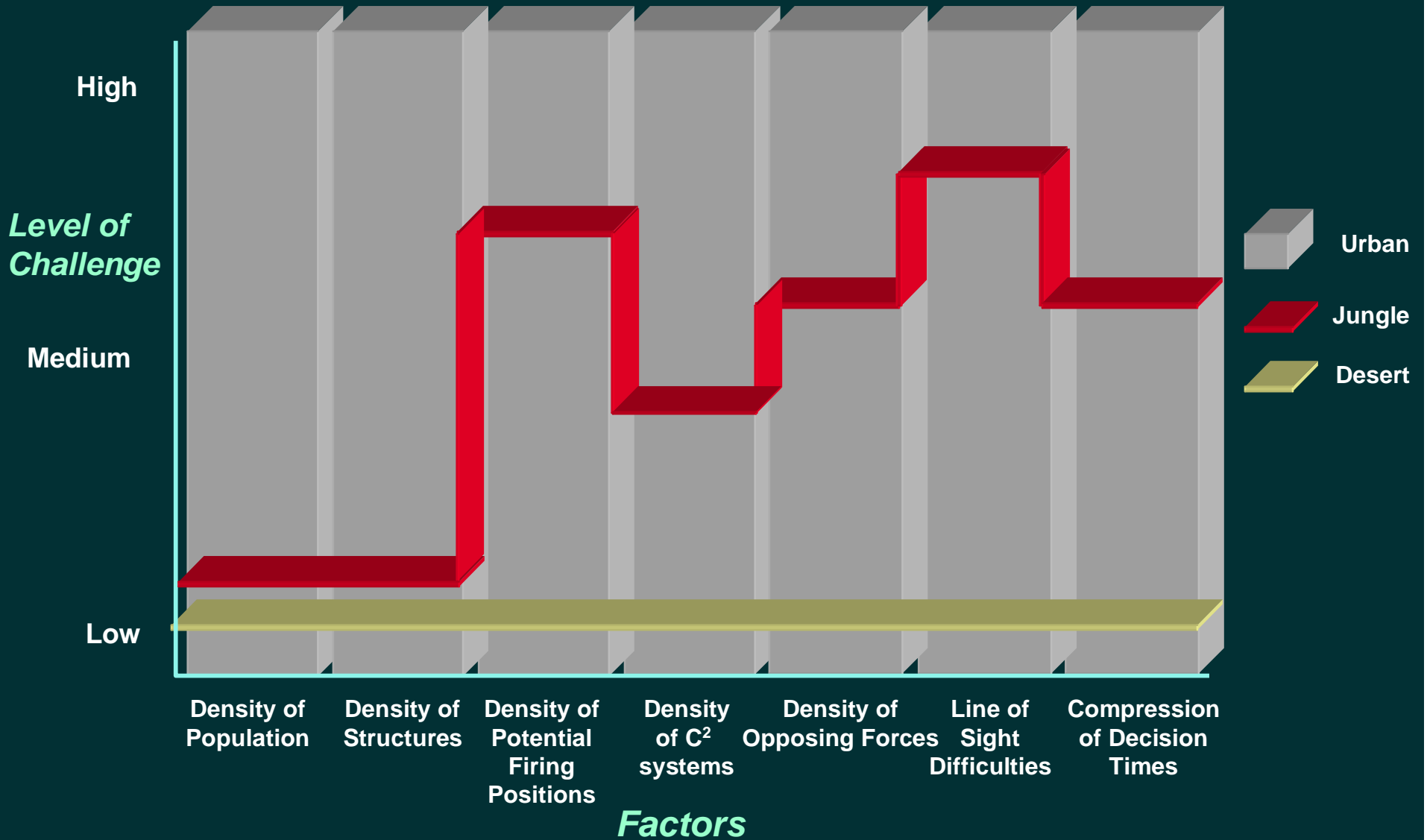
- : Pump locations
- : Broad Street pump location

# Urban Critical Points and Density: The London Cholera Epidemic



- : Pump locations
- : Broad Street pump location

# The Nature of the Beast





# The Modern City:

More People, More Buildings, More Streets, More Vehicles, More Interest Groups, More Influence, More Media, More Crime, More Volume, More Requirements...



Seoul, 1953



Seoul, 1996

# Military Victory = Strategic Loss?

Battle	Noncombatant KIA	US KIA	Noncom: Friendly KIA Ratio
Manila (1945)	100,000 (est)	1010	100:1
Hue (1968)	5,800	150	11:1 (w/ 400 ARVN KIA)
Panama (1989)	202	26	8:1
Mogadishu (1993)	500+	18	30:1

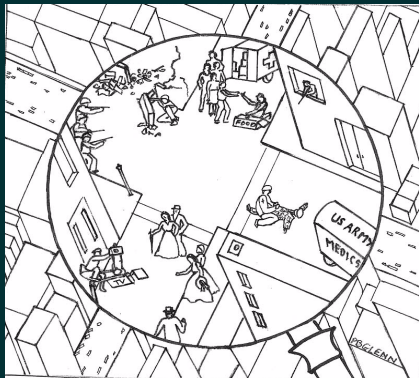
- The traditional definition of operational success may no longer apply. Instead:

***Success = Mission Accomplishment + Acceptable Friendly Casualties + Tolerable Noncombatant Casualties***

# Agenda

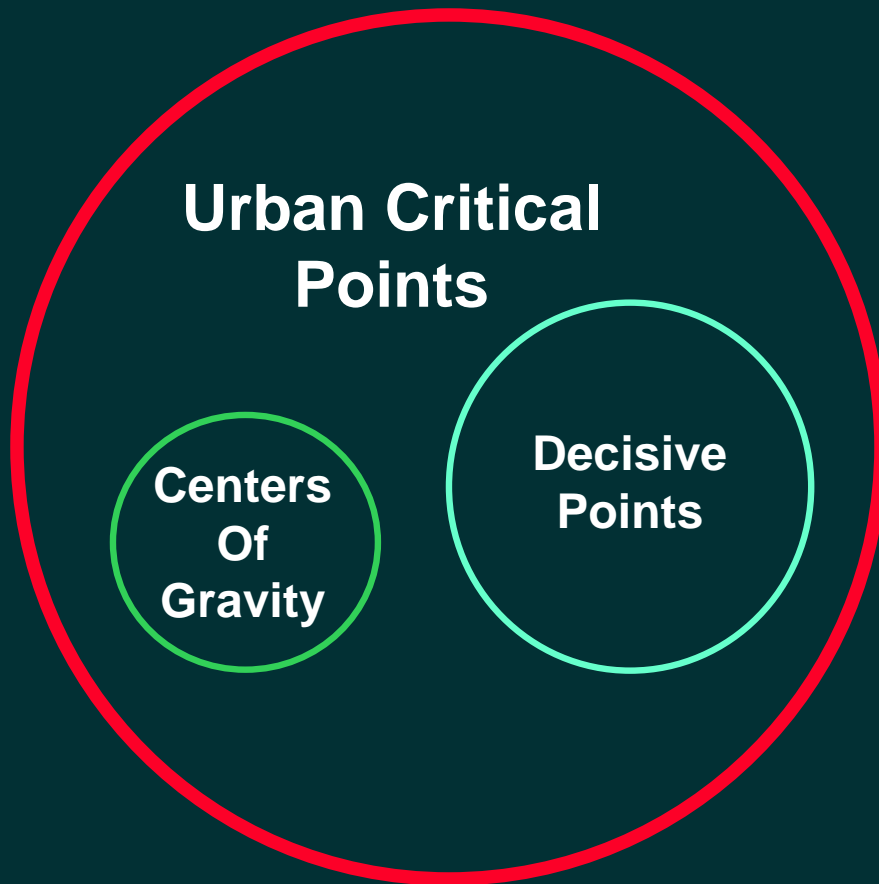


- Critical Points



- Density

# Definitions



- **Critical point:** Point or other element that could have an extraordinary influence on the achievement of objectives
- **Center of gravity:** Those characteristics, capabilities, or localities from which a ~~military~~ force, organization, or individual derives its freedom of action, physical strength, or will to fight
- **Decisive point:** Point that has value due to its potential influence in unbalancing a center of gravity



# Urban Critical Points - Selected Examples

## *Traditional critical points:*

- Command and control
- Reserve forces
- Firepower concentrations
- Key intersections
- High ground
- Selected low density capabilities



## *Urban critical points:*

- Any of those traditional plus
- Concentrations of noncombatants
- Low density support assets, e.g., hospitals, power plants
- Influential civil authorities
- Potable water

# Relationships between Critical Points, Centers of Gravity, and Decisive Points

- Critical points may vary by organizational level.
- What are critical points for one organization at a given level may not be identified as such by another entity at that level.
- Critical points for an organization may change over time, e.g., a center of gravity at time  $t$  might become a decisive point at time  $t + 1$ .
- Critical point analysis applies to friendly forces, their foes, and noncombatant groups, be they military or non-military in character.



Khobal Towers, Saudi Arabia

# The Nuggetized Elephant: Two Examples

## *Hue, 1968*

- VC/NVA model city and select critical points
- Ultimately, NVA failure due to loss of CP outside of the built-up area

## *Operation Just Cause (Panama City)*

- Critical points selected during planning
- Enemy center of gravity identified: Noriega
- Enemy decisive points: Selected Panamanian Defense Force units
- Other enemy critical points: Key terrain features, e.g., bridges of notable operational importance
- U.S. critical point unrecognized by adversary: American families in Panama

# Civil Nuggets I:

## Case Study Los Angeles, 1992\*

### *Los Angeles Riots, 1992*

- Critical points included disturbance “hot spots”
- Other critical points essential to containing spread of “hot spots” or creation of new ones
- Many critical points were demographic rather than topographic in character

\* Delk, *Fires and Furies*, 61-62

# Civil Nuggets II:

## Case Study Los Angeles, 1992

### *Lessons:*

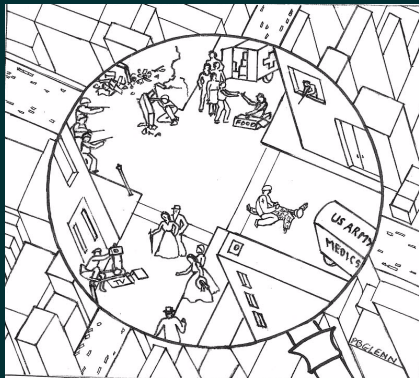
- Lack of familiarity and interagency training led to military-civil disconnects, e.g., military organizations using freeways as unit boundaries, thus ignoring police and fire nodes
- There may be “tiers” of critical points, critical points within critical points (e.g., police stations within a hot spot).
- Second and higher order effects can have more immediate and wide-reaching consequences in urban areas.
- Primacy of human life can be in tension with containing unrest
  - Urban infrastructure means critical points can have far-reaching influence
  - A terrorist organization is not a federation of gangs. Organizations with greater sophistication may capitalize on social sensitivities to further their ends, e.g., threaten a hospital so as to expose power station to attack



# Agenda



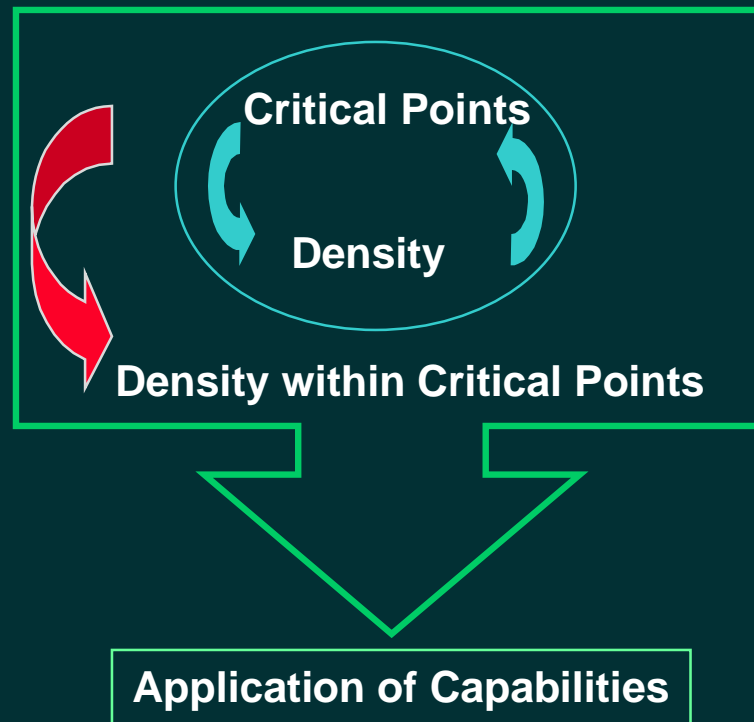
- Critical Points



- Density

# Critical Points and Density: A Symbiosis, not a Sequence

**Density:** The number of elements per unit space or the quantity of activities per unit time

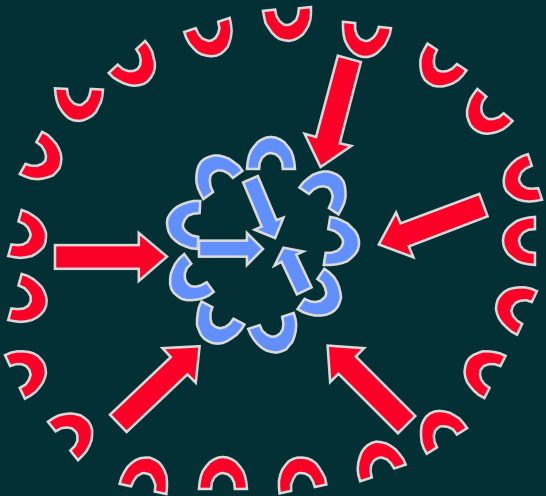


**Critical Point** identification decreases the difficulty of comprehending urban complexity; **density** analysis provides a means of managing remaining complexity

# The Influence of Urban Density: Case Study Vukovar, 1991

## Serb attackers fail to plan for effects of:

- Their own increasing force density
- Their adversary's similarly increasing force density



## Result:

- Serb forces interfere with each other
- Croatian counterattacks become more effective as Serbs advance

## Lessons:

- Both attackers and defenders should plan for consequences of changing force densities
- Commanders should cull forces so as to provide reserve or units for commitment elsewhere
- Defenders may be able to form counterattack forces as perimeter shrinks

# The Influence of Urban Density II:

## Case Study Los Angeles, 1992

*So many potential critical points, so few assets:*

- Some targets obvious and critical (gun shops)
- Fire departments present a “double density” security challenge:
  - Their men and equipment need protection at fires
  - Their stations are vulnerable when firemen go on a call
- Requests came in to guard:
  - Museums and galleries (Department of Cultural Affairs)
  - Welfare offices (County Department of Social Services)
  - Substations and control centers (public utilities)

### *Lessons:*

- Planning should consider practical, political, and private perspectives when identifying potential critical points
- The sheer density of critical points will require a rigorous multidisciplinary approach in determining how to address them

# Confronting Density: Alternative Approaches

- Match Density with Density
- Effectively Reduce Densities
- Maintain Selected Densities
- Address Density Asymmetrically
- Capitalize on Urban Densities



# Agenda



- Critical Points



- Density

# RAND Urban Operations Publications

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