System Thinking, Social-Science, and Humility in Defending Against Terrorism

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November 17, 2010

Presented to MORS Special Meeting on “Optimizing Investments in Critical Infrastructure,” ANSER, Arlington, Virginia
**System Thinking, Social-Science, and Humility in Defending Against Terrorism**

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Preface

- MORS working group is addressing systems approaches to critical infrastructure protection.
- But
- What’s a system? What’s “systems thinking?”
- And what’s special about systems thinking in people-centric problems?
- Analytic paradigms and methods for drawing on the social-science literature?
Topics

- System View in Study of “Deterrence” after 9/11
- Social Science for Counterterrorism, and for Stabilization and Reconstruction
- For Discussion, Given Time
  - Other model types needed
  - Need for exploratory analysis
Deterrence Studies, 2002 and 2009
Background: 2002 Study on Deterrence in Counterterrorism

- Requested by Director of DARPA
  - Separate studies by National Academy and RAND/IDA
  - Motivation: deterrence’s importance in cold war

- Two reports: Davis and Jenkins (2002) from RAND and Bonoan, Davis, Roberts, Utgoff, and Ziemke from IDA (2002)(FOUO)

- Follow-up paper in 2009/2010 for scholarly conference in Zurich (RAND paper and Stanford University Press, forthcoming)
Conclusions in 2002

- Cold-war deterrence is largely irrelevant when dealing with a bin Laden
  - Classic deterrence says “If you do __, we will __ (and if you don’t we won’t)”
  - We’re trying to destroy al-Qaeda already, and will not stop

- Besides, deterrence is too narrow as the supplement to “kinetics”
  - “Influence” is better concept, increasing battle space

- Seeing al-Qaeda as a system rather than monolith changes everything
Spectrum of Influences

Deter next time by crushing now
Deter next time by defeating now
Deter next time by punishing now
Deter by denial
Deter by increasing risks and disruption

Deter by threat of punishment

- Dissuade
- Persuade
- Induce
- Co-opt

Hold at risk what enemies hold dear

Overall: mixed strategy with portfolio of influences

Adapted from Davis and Jenkins (2002)
Elements of System, Each with Different Vulnerabilities
Tapping Social Science
BACKGROUND

RAND survey of social-science literature relevant to counterterrorism, with eye on value for analysis

Going-In admonitions:

- Learn first; defer modeling, and certainly computer modeling
- Go back to basics: what is social science actually telling us?

Midpoint observations:

- Literature is rich, but fragmented
  - Different disciplines, tribes, methods,...; disagreements
  - No common ground for communication
References (www.rand.org)


- Paul K. Davis, Simple Models To Explore Deterrence and More General Influence in the War with Al-Qaeda, RAND, 2010

- Paul K. Davis and Brian Jenkins, Deterrence and Influence as a Component in the War with Al-Qaeda, RAND, 2002

- Special-access RAND reports in 2010 by Cragin, Helmus, and Jackson
## Major Challenge in Tapping Social Science: Different Paradigms

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<thead>
<tr>
<th>Data-Driven (Atheoretical, Empirical)</th>
<th>Theoretical and Theory-Informed</th>
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<td>Factor by factor specialized</td>
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<td>“Data of convenience”</td>
<td>Variables of actual interest</td>
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<td>Statistical modeling</td>
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<td>Correlations</td>
<td>Explanations</td>
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<td>Data-driven empirical</td>
<td>Theory-driven inquiry</td>
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### Status:
- Both are crucial
- Need more and better data
- Need more of theory-informed approach for balance: guide empirical work and serve where data is insufficient
## Relative Advantages in All Science

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<th>Issue</th>
<th>Atheoretical Empirical Work</th>
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Conclusion: Key Elements of Approach Needed

- System view
- Causal modeling with
  - Qualitative variables
  - Multiresolution “factor trees” and influence diagrams
  - Graphical and tabular depictions of complex and processes
  - Random processes due to hidden variables (or unknown values)
- Interactive exploratory modeling for knowledge discovery
- Exploratory analysis amidst uncertainty

For realm of complex adaptive systems (CAS)
Challenge: Introducing Such Thinking Unobtrusively

- **Purpose:** synthesize state of knowledge objectively

- **Criteria:**
  - Be able to discuss complex phenomena with diverse social scientists, policy analysts, and “modelers”
  - Take “system view” in sense of seeing whole of phenomenology
  - Reflect many strands of work (“Where’s my work? Ah, there it is”)

- **Features of Approach:**
  - Humility
  - Simplicity (hide complications)
  - Starting point of abc’s, but laying more ambitious path

- **Aspiration**
  - Structure should itself be useful to “doers:” for checklist, seeing whole, and communications
  - Obvious variant could be basis for “lines of approach”
Step One: Coherence from Cacophony

• Starting point:

Many scholars, many journals, many perspectives, methods, and lingos

Many people emphasizing various single-factor explanations

What Might Any Analyst Do? Answer: Infer Some Structure
Some Examples
Illustrative Factor Tree from Terrorism Study

- Propensity to participate in or actively support terrorism
  - Attractiveness of and identification with cause or activity
  - Perceived legitimacy of terrorism
  - Acceptability of costs and risks
  - Availability of radical mobilizing groups
Factor Tree from Public Support of Terrorism (JIEDDO)

Note "ands" and "ors," as important approximations.

Attractiveness of supporting

- Religious, ideological and ethical basis
- Cultural propensity for violence
- Absence of alternatives

Perceived legitimacy of the tactics

- Necessity, effectiveness or
- History of success

Propensity to actively terrorism

- Ands

Acceptability of costs and risks

- Personal risks and opportunity costs
- Countervailing social pressures
- Emotional factors
- Intimidation

Availability of radical mobilizing groups

See drill-down

Charismatic leadership

Active support-raising efforts by terrorist organizations; counterterrorist efforts

Other factors of environment and context

- International political and political-military factors (including state support)
- Economic issues, social instability, human insecurity (context of demographics, globalization)
- Cultural issues (within contexts of globalization, modernization...)
- History and cultural history
Drill-Down

Attractiveness of supporting the group

- Personal attractions
  - Group and glory
    - Excitement
    - Being part of dynamic group
  - Personal revenge
- Sense of duty
  - Political
  - Defense
    - Revenge
    - Group's social services
- Identification with or appreciation of group
  - Ideological and social-movement considerations
  - Shared goals
    - Kinship, fictive kinship
    - Cultural obligations
- Other social pressures and incentives
  - Intimidation by group

External threat to homeland, people, or group
  - Occupation
  - Coercion
  - Other

Unacceptable group behavior
  - Excessive Muslim casualties
  - Excessive civilian casualties
  - Distasteful religious rules
  - ...

Charismatic, entrepreneurial leadership
Group propaganda; misconceptions; self-deceptions
"Root causes" (tyranny, corruption,...; other grievances)
Terrorist Decisionmaking

SOURCE: Adapted and simplified from Jackson (2009).
Terrorist Decisionmaking

SOURCE: Adapted and simplified from Jackson (2009).
RAND MG849-11.13
Draft Tree from Stabilization Study: Will War Reoccur?

At a slice in time

Likelihood of Decision to Restart Conflict (Resistance)

- Net gains seen in continued conflict
  - Net gains if successful
  - Risk of greater losses
  - Upside potential of conflict
    - Probability of success
      - Military feasibility
        - Arms
        - Financing
          - Internal
          - Diaspora
          - Lootable resources
        - Defensibility
          - Recruits
          - Expected security effectiveness, given effort and vulnerabilities
          - Rugged Safe havens
    - Other aspects of feasibility
      - Weak opposition
      - Fragile commitment of interveners
      - Public support
      - Foreign support
    - Value functions, misperceptions; effects of history, culture, leaderships, political, economic, social situations; external matters...
  - Risk of lesser gains (or of losses)

- Net gains seen for cooperating
  - Beyond: "rational" emotional factors
    - Greed, grievance
    - Weariness
    - Yearnings...
  - Probability of success in cooperative approach
    - Upside potential (hope)
  - Risk of lesser gains (or of losses)
  - Net gains if successful
    - Political power
    - Political improvements
Backups
Other Models, Methods

- Needed
  - System dynamics and other simulations
  - Exploratory analysis under uncertainty
  - Portfolio analysis
- Relationships?
  - Causal models and quantitative social science
System View of Support for Terrorism (public support, accomplices, facilitators...)

- Support for terrorism
- Resources for terrorism
- At-time demand for attacks
- Decision-making propensity to attack
- Terrorist operational capabilities
- Target vulnerabilities
- Attacks' effectiveness
- Context, developments, motivations, ideologies, perceptions...
- Counterterrorism efforts
- Terrorist attacks