Promise or Peril?
An Assessment of the Potential of Network Analysis in the Context of Asian Extremism

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The Goal of the Minerva Project

• To provide insight into how cultural norms and extreme Islamist ideologies are born and maintained
  – Scope: Asia
  – Method: Network analysis (broadly construed)
The Theories

- Existing literature proposes numerous causes of religious radicalization:
  - Lack of economic development
  - Lack of democracy/political representation
  - Access to Internet propaganda
  - Sociological processes (e.g. repeated interactions with existing radicals)
  - Et al
The Problems

• Radicalization a poorly bounded concept
  – Truncated & shallow data on Islamist groups
• Incomplete societal context
  – Heterogeneity of Islam in Asia
• Methodological assumptions of network analysis may introduce ambiguity
  – Rigorous formal method *vital* to avoid subjectivity, ambiguity, & bias typical of most existing inquiries
  – Difficult (but not impossible) fit between method & subject matter
Boundary Issues in Existing Data Sets

• Comprehensive databases on Islamist terrorism do not exist
  – The three largest:
    • Worldwide Incident Tracking System (WITS)
      – National Counterterrorism Center
    • Global Terrorism Database (GTD)
      – National Consortium for the Study of Terrorism and Responses to Terrorism (START)
    • RAND Database of Worldwide Terrorism Incidents (RDWTI)
      – RAND
  – All exclude foiled/aborted plots
    • Truncation of phenomenon
An Organizational View of Terror?

- **WITS**
  - Only lists perpetrator type (e.g. Islamist Extremist [Sunni])
  - Impossible to determine orgs’ involvement

- **GTD & RDWTI**
  - Terror groups own claims of responsibility
    - Subject to misinformation (e.g. Abu Hafs al-Masri Brigades)
  - ‘Expert’ assessments
    - No discussion of methodology used to make differentiations
    - Prone to subjectivity/bias
  - No discussion of scale
    - Grants all orgs involved an equivalent role

- **Extent & nature of groups participation in events unclear**
  - Problem becomes even more extreme when considering diffuse subject matter, e.g. radicalization
An Example: Bali 2002

- GTD & RDWTI list AQ & JI as participants
  - Roles far from equivalent

**al-Qaida**
- Participated in 1 of 3 strategy meetings
  - Not present when Bali selected
  - No role in tactical planning of attack
- Provided $25K to JI, but attack ties unclear
  - Ali Ghufron claimed $24K in costs
  - Attacker had $85K at their disposal
- No role in active conduct of attack
  - Trained some attackers years earlier

**Jemaah Islamiyah**
- Participated in all 3 strategy meetings
  - Ali Ghufron, Samudra planned tactics
  - Team on ground made final adjustments
- Generated $60K independently
  - $20K membership dues
  - $40K gold-store robbery
- Conducted every aspect of active attack
  - Many participants lacked any AQ ties
  - Samudra’s students: 1st year in JI

- To understand radical groups & radicalization we must study terror at the individual level
Failed Attempts at Individual Level Data on Extremism

• Single-Case Datasets (Orgs or Events)
  – Boundaries always unclear
    • How distant before exclusion?
  – Generalizability concerns
    • Quantification does not solve small-N problem

• Broader efforts rare
  – John Jay and ARTIS Transnational Terrorism Database (JJATT)
    • Limited public release of data underlying Sageman’s controversial work
  – Center for the Computational Analysis of Social and Organizational Systems Database (CASOS)
    • Carley’s simulation-based approach to modeling behavior of Islamist radicals
JJATT’s Flaws

• Completely non-replicable
  – Group affiliations assigned by expert
    • Subjective & circular
    • “Leaderlessness” of jihad dependent on boundaries of AQ & other orgs
  – Sources remain opaque
    • How many court docs & media articles?

• Limited coverage of Islamist threat
  – 92 total events
  – Many deal with political terror
  – Approx. 24 Islamist events
    • Why these events and not others?

• Opaque
  – Public release completely anonymized
    • Cannot tell who is tied to what
    • Cannot challenge completeness of data

• Prone to conflation
  0. To indicate the absence of a relationship.
  1. To indicate acquaintances and distant family ties.
  2. To indicate friends, moderately close family members, roommates, co-workers, and operational ties, such as those that exist between individuals who “worked closely on a bombing together.”
  3. To indicate close friends, close family members, and members of “tight knit operational cliques [who] would die for each other.”
CASOS’s Flaws

• Slightly more replicable
  – Sources: 202 media articles, 45 court docs, numerous sanctioning lists
  – Org. affiliations straight from media
    • Journalists never define view on organizational boundaries

• Comparable size & coverage
  – No event count available
  – JJATT covers 2,158 people
  – CASOS covers 3,029
    • Many of them not really involved in terror
    • Includes everyone on OFAC’s sanction lists

• Equally opaque
  – Non-deterministic nature of AutoMap

• Equally prone to conflation
  – AutoMap cannot differentiate between relationship types

• I share culpability for many of this data sets faults
  – Wrote codebook for agent attributes
  – Helped to extend dataset’s breadth
“The United States lacks diplomatic ties to Bhutan, Cuba, and North Korea, but maintains close relationships with Mexico and Canada.”

- US to Canada: *everything* is connected
  - All relationships of single generic type
An Imperfect Solution: Modified Snowball Sampling

- Anthropologic method
  - Used to obtain interview samples in hidden populations
  - Facets of Islamist extremism preclude broad use with active terrorists

- 2003: Daniel Pearl kidnapping/execution in Pakistan
- 2008: British documentarian David Rohde in Afghanistan
- 2000-2010: At least 3 separate kidnappings of journalists in Philippines

Apply logic of snowballing to document-based open-source research
- Hand coding
  - Does raise issues of coder reliability
  - Single coder
    - Inter-coder resolvable through formal determination of consensus

* Green actor appears independently in searches 2 & 3
Limits of the Approach for the Study of Radicalization

• Breadth vs. depth
  – Document-based open-sources primarily address operations & finance
  – Method ignores differences in societal cultural variables that may impact radicalization
    • Democratization, anti-Americanism, local religious variation, etc.

• Must limit study
  – Smaller case studies
  – Smaller inquiry permits detailed probing of ideological connections
  – Smaller inquiry enables consideration of societal variables

• Paradox
  – Single-case studies too narrow
  – Global & broad regional assessments too wide

Relative Frequency of Relationship Types Among Salafists

- Financial: 7.93%
- Op-General: 45.55%
- Op-Logistics: 7.82%
- Op-Planning: 3.60%
- Op-Active: 3.91%

- Family: 4.29%
- Friendship: 2.69%
- Ideological: 9.74%
- Training: 5.46%
- Uncertain: 5.46%

Democracy Around the World

THE MAP OF FREEDOM
Limits of the Modified Snowball (Cont.)

• Lack of reliable primary documents in the developing world
  – Mumbai police reports vs. US court documents
    • Did Fahim Ansari or David Headley conduct surveillance?
  – Accuracy of confessions from torture
    • Divergence among Bali bombers (who might have been tortured)
  – Differing standards of justice
    • Dutch release of Samir Azzouz for lacking competency in bomb-making (greater differences in developing world)
  – Resources, resources, resources
    • Typewriters and bare bulbs in Mumbai Police Colony
• On its own, the method may be unable to provide enough high-fidelity data to rigorously test causal variables that explain radicalization
  – Must explore approaches beyond modified snowballing
A Goldilocks Solution?

• Limit initial study to Indonesia
  – Big enough to avoid generalizability issues endemic to single-case studies of events/orgs
  – Small enough to allow detailed probing at individual level
  – Small enough to allow exploration of impact of societal variables via field interviews
  – Clearly an Asian country of concern regarding radicalization
    • Largest Muslim population on Earth
    • Site of several large-scale Islamist-motivated attacks
    • Indonesian groups have repeatedly targeted US interests

• Does not solve all problems
Enduring Problems of Individual-Level Data

- Network perspective fairly intolerant of data omissions/errors
  - Unpopular truth
    - Many studies of extremism ignore/dismiss the issue: Morselli, Krebs, Koshade, Rodriguez, Sageman, et al
  - *Random* networks resilient to *random* errors (Borgatti, et al)
    - *No* research has addressed susceptibility to non-random errors
  - Other topologies less resilient (Frantz, et al)
    - Cellular, core-periphery, small-world, etc.
  - Sparse networks most susceptible to error (Zemljic & Hlebec)
    - Clandestine networks most likely to be sparse (Morselli)
But Omissions & Errors Are Endemic to Data on Extremism

Example: The Changing Relationship Between AQ & JI

- Estimated Regional Training Trends within JI
  - Percent of JI Members
  
  - South Asia
  - Southeast Asia
  - Other

- Dual AQ-JI Members as Estimated Percentage of JI’s Total Membership
  - Percent of JI Members

- Raw Fragmentation Scores
  - Fragmentation
  
  - All Actors Included in Network
  - KSM and Hambali Removed
  - All of Abdul Rasool Sayyaf’s Trainees Removed

- Fragmentation Scores as Percent Change from All Actors
  - Percent
Link Types

1. Direct operational links (Williams)
2. Logistical links (Williams; Sprinzak)
3. Planning links (Sprinzak)
4. Financial links (Williams)
5. Training links (Williams; Sprinzak)
6. Ideological links (Williams; Sprinzak; Horgan)
7. Family links (Clarke, et al)
8. Friendship links (Nasiri; Husain; Horgan)
9. Enmity links (Coll)
10. Uncertain links (Morselli)

Functional Links

- Possible Grouping Options
  - N-Cliques
  - N-Clans
  - K-Plex
  - Newman-Girvan
  - Block Modeling
  - F.O.G.
  - Recursive Neighborhood Means

- Qualitative Components
  - Historical narrative
  - Field research methods
  - Geospatial analyses

Partial Solutions

- Some work by proxy
  - Situate network analysis within qualitative context
- Theoretical ontology of relationships
  - Derived from existing literature on extremism
  - Encompasses all possible outcomes
  - Distinguishes among link types
  - Avoids conflation
- Formal modeling
  - May be able to find boundaries of groups
  - Replicable
  - Unclear which grouping method to use
  - Likely still requires some subjective inputs
  - Still impossible to test

My Flawed Approach: Subject Matter Informed Extension of Newman Grouping
Conclusions

• Must study radicalization & radical groups at the individual level to understand the phenomenon
  – Some portions of inquiry will need to be at higher level of abstraction
• Scope of inquiry should be sub-regional or national
  – Not so small as to lose generalizability to broader phenomenon
  – Not so large as to preclude data collection at individual level
  – Allows for some variance in socio-cultural variables
  – Follow-on studies will address countries/regions beyond Indonesia
• Network-centric mixed-methods approach appropriate to the study of radicalization
  – Combines rigors of formal quantitative analysis with context derived from narrative approaches
• Must use a dynamic, multi-relational ontology to classify relationships
  – Allows isolation of ideological interactions that lie at the heart of radicalization
  – Explicitly acknowledges that relationships change over time
• Must find reliable & replicable means to bound organizations
  – Impossible to track growth/decline of radical groups without estimating their size
Unresolved Questions

• What specific pools of data on radicalization in Indonesia should the study access?
  – Open-source documents?
  – Village-based interviews?
  – Regional polling data?

• Which specific methodologies should be used to compliment the study’s network-based approach?
  – Difficulties & dangers of interview snowballing
  – Issues of access

• Which specific means should the study use to find the boundaries of radical groups?
  – Difficulty of testing results against an unknown reality
  – Sensitivity of centrality & grouping to data fidelity issues

• Ultimately, Minerva must be a cooperative effort
  – Multiple complimentary methods most likely to produce clear answers to remaining questions
  – Scholars from several departments both within and outside West Point will play vital role in Minerva’s success