



Cui bono?

Analysis of conflict in multi-agent systems

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Contents

- The State of the Art
 - The challenge for defence modelling, literature review
- “Things fall apart, the centre cannot hold...”
 - Factions, Rents, and n-player co-ordination games
- E Pluribus Unum
 - Analysing coalitions-of-force and their properties
- “To reign in Hell...”
 - The PSOM model takes on “Iraq - 2004”

The Challenge

- Change in the strategic environment
 - Less warfighting, more COIN/PE/PK
 - UK desire to promote stability of friendly powers
- Legacy defence models not *necessarily* well adapted for all challenges
- Need to predict *and* model instability



Defence modelling evolves...

Legacy models
Two sided
Static relationships between factions (“war”)
Military dimension
Civil population generally absent
Days or Weeks durations
Symmetrical combat
Physical focus – quantity

Requirements
Many sided
Dynamic relationships (“War” and “Peace” plus others)
Military, social, political, economic dimensions
Civil population represented
Months and years durations
Asymmetrical combat
Cognitive focus – beliefs, values

Existing literature

- Two corresponding bodies of literature
 - Conflict Research
 - Singer & Small etc.
 - Political Instability Task Force (PITF)
 - Economics & Public Choice literature
 - Collier & Hoeffler
 - Tullock / Rent-seeking behaviour

Known risk factors

- “The usual suspects...” *and*
 - Partial Autocracies / Democracies
 - Powerful executives, partially open to competition
 - Factionalism
 - Politics conducted by relatively immutable social groups with few shared values
- Models of regime type give *much* better fit than any single specific cause
 - i.e. instability is structural rather than factor-specific
 - Factions fight because they are incentivised to fight

Factions, Rents, Stability

- Factions
 - *Self-identified* social groups, with *cohesive values* and *organisation*, and *structured capacity* to extract rents
- Rents
 - Set of behaviours enforced on the population
 - Can be non-monetary; reflecting social/political preferences
- What is stability?
 - absence of political violence (between elites)
 - *de facto* monopoly of violence

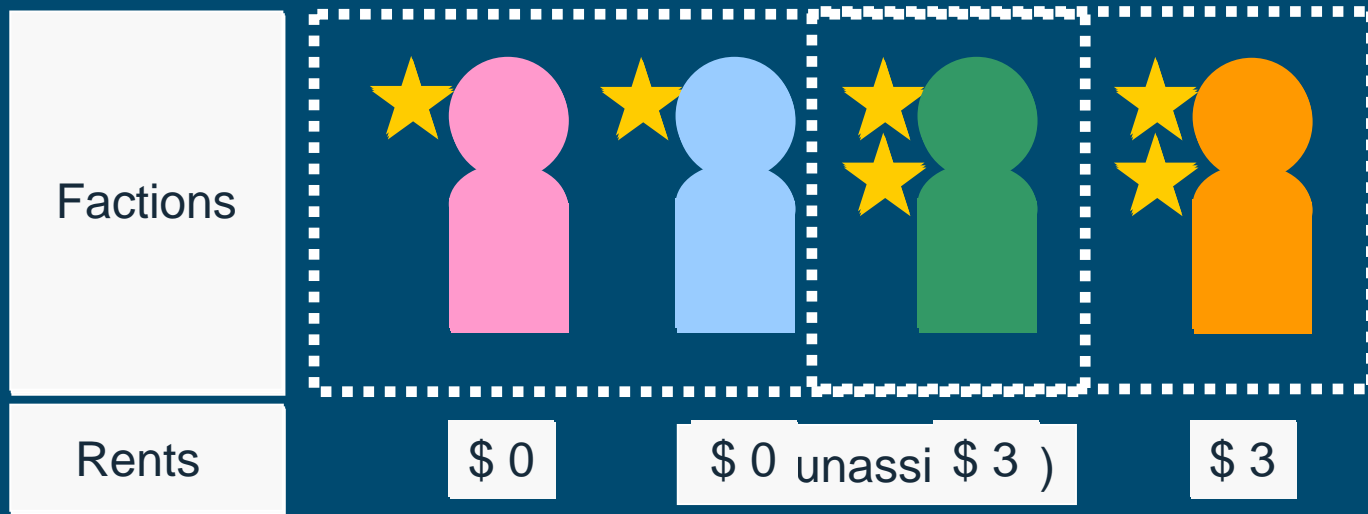
Coalitions of Force

- Coalition of Force
 - A set of factions which commands a sufficient monopoly of violence to impose its will on all others and the general population
 - Co-determines the set of rents
 - Equivalent to a *de facto* stable state
- N-player co-ordination game
 - Which coalitions form?
 - What rents do they impose
 - How stable (or otherwise) is the relationship?

(Simple) Example

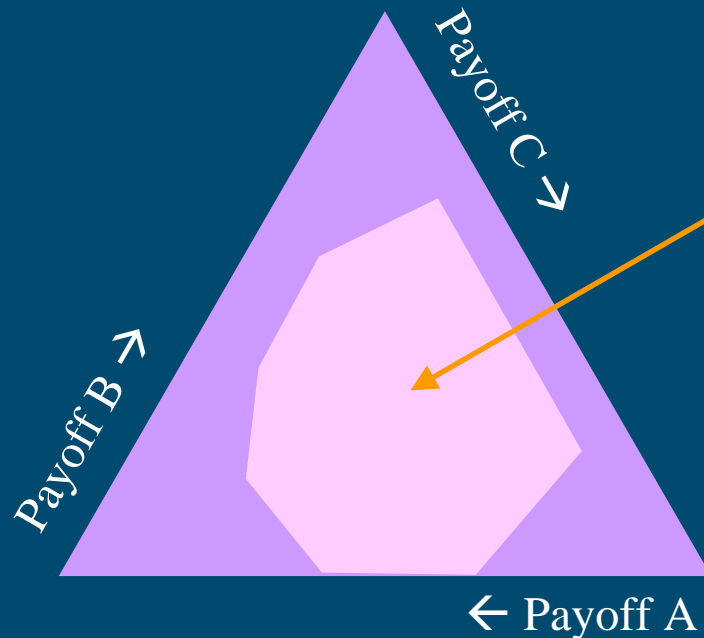
- In a given country there are 4 warlords
 - Two have 10,000 men under arms
 - Two have 20,000 men under arms
- There is only one source of income in the country, a copper mine which produces \$6m dollars profit a year
- Any coalition of warlords which have >50% of all forces control the mine, and split the profits
- What will happen?

(Simple) Example



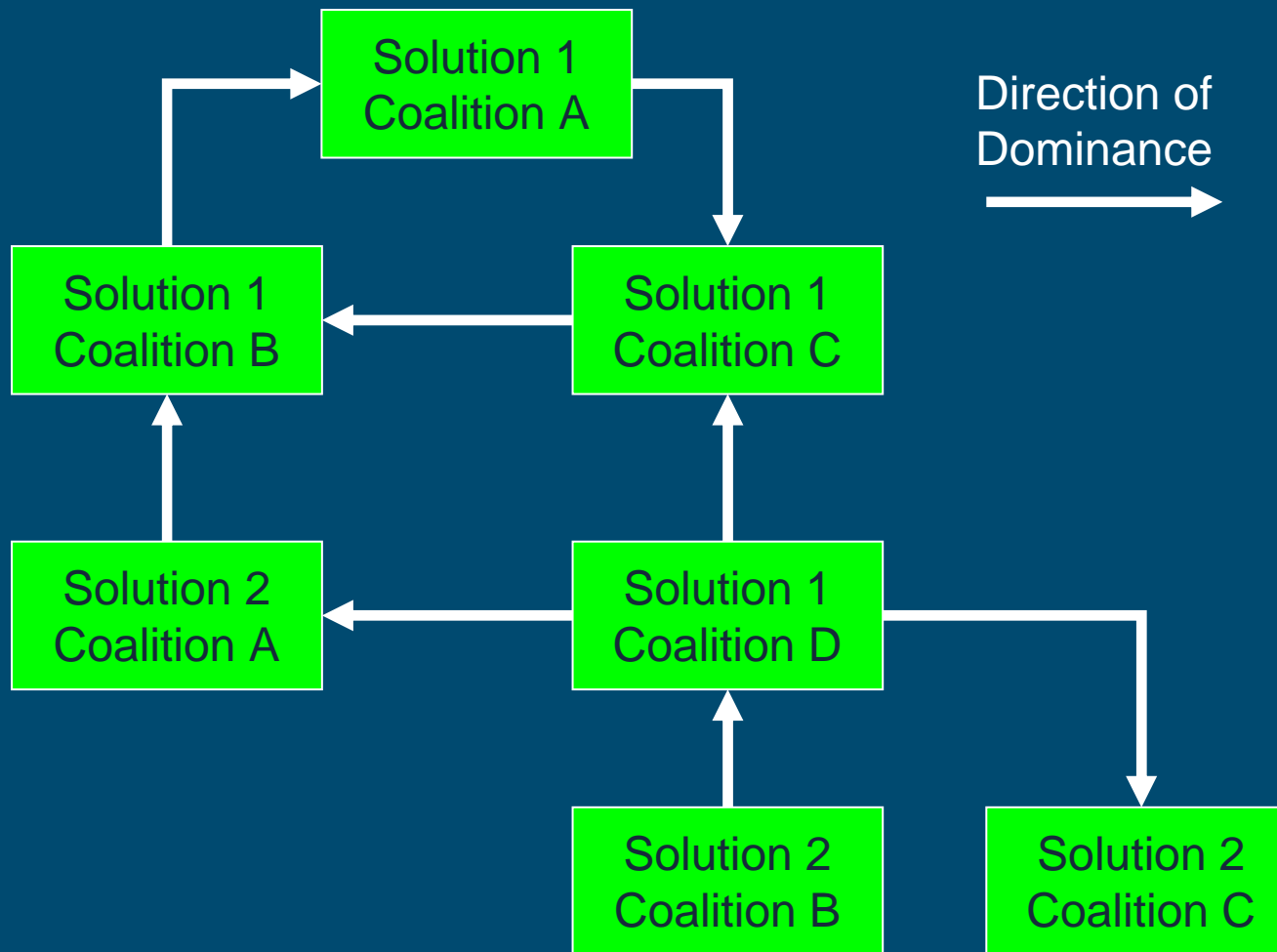
Putative solutions

- Unfortunately, coalitions can “divide the spoils” in many ways; yielding many possible configurations of rents



Putative region established by all combinations of rents

Graphing feasible coalitions



Analysing stability

- Main outputs / indicators of stability
 - Number and “proximity” of feasible coalitions
 - measures of centrality, transition costs
 - Set of likely coalition members
 - Set of likely rents





PSOM in Iraq

- Peace Operations Support Model
 - Computer supported wargame
 - Operational level
- Demonstration / familiarisation Game
 - MoD Main Building, April 2008
 - ~30 participants; military, civil service, stakeholders, NGO's, allies playing all factions
 - “Iraq 2004” scenario

PSOM in Iraq – High Level Game

- Designing the High Level Game
 - Set of factions
 - votes in both Iraqi & International forums
 - variable voting strengths
 - Iraqi government *built* from factions, not a faction in its own right
 - Set of Rents (“Policy Cards”)
 - Each specified *coalition requirements and payoff*
 - Large set (~80), lots of resolution!

PSOM in Iraq – Example of rents

VIP 01 Position Card	Prime Minister   <p>The Prime Minister is the chief executive of the Iraqi Government and architect of policy. All other ministers serve at his pleasure.</p>
	Requirements This office requires... The following conditions... <ul style="list-style-type: none"> • A 2/3rds majority This office can be... the same conditions...
VIP 01 Policy Card	Independent Kurdistan  <p>This policy represents a unilateral declaration of independence by Kurdish factions.</p>
	Requirements This KURDISH policy requires... Activation requires KDP/PUK, Sulaymaniyah and Irbil. REVERSIBLE. Inactivation requires Kurdish control of both Sulaymaniyah and Irbil lost. It may also be inactivated by KDP/PUK, of course. When activate, this policy is REVERSIBLE. It can be repeatedly activated and inactivated. The same conditions apply to inactivation.
INT 05 Policy Card	UN: Agency operations in Iraq  <p>This policy authorises and inserts UN agencies such as WHO, WFP, UNESCO, UNHCR etc into Iraq. It includes associated agencies such as the World Bank.</p>
	Requirements This policy is INTERNATIONAL. It requires: <ul style="list-style-type: none"> • A Majority of International votes • No opposing vote from USA • No opposing vote from UK • No opposing vote from France/Germany The policy is REVERSIBLE. It can be repeatedly activated and inactivated. The same conditions apply to inactivation.
Victory Points Awarded <u>each turn</u> , whilst activated <ul style="list-style-type: none"> - 1 USA +1 UK +2 France/Germany 	
Special UN reconstruction units are deployed. Consult Game Control for details	

PSOM in Iraq - Outcomes

~~Term 3~~

~~By the end of this session you should be able to:~~

~~1. Explain the concept of PSOM~~

I'll make it worth your while to support the status quo... but don't tell anyone

I do X then you do Y then he does Z...agreed?

Only if you support me on A and B first!

Sucker!

“Out of the crooked timber of man, no straight thing was ever made”

~ Kant



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