

USING SYSTEMS THINKING TO DEVELOP ACTIONABLE FUTURES

A fictional Loose Nukes Example

By

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Problem

- How do you translate a future scenario or vision into quantifiable and measurable actions?
- How do you convince a risk-adverse decision maker that your future scenarios are plausible and can be acted upon?
- How do you measure the difference in possible actions?
- This presentation will use a 'simple' four-stage process to arrive at an evidence-based recommendation for strategic decision makers

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Method

- Understand the possible environment
- Develop options
- Identify Strategic Risk
- Present Options

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Example – 'Loose Nukes'

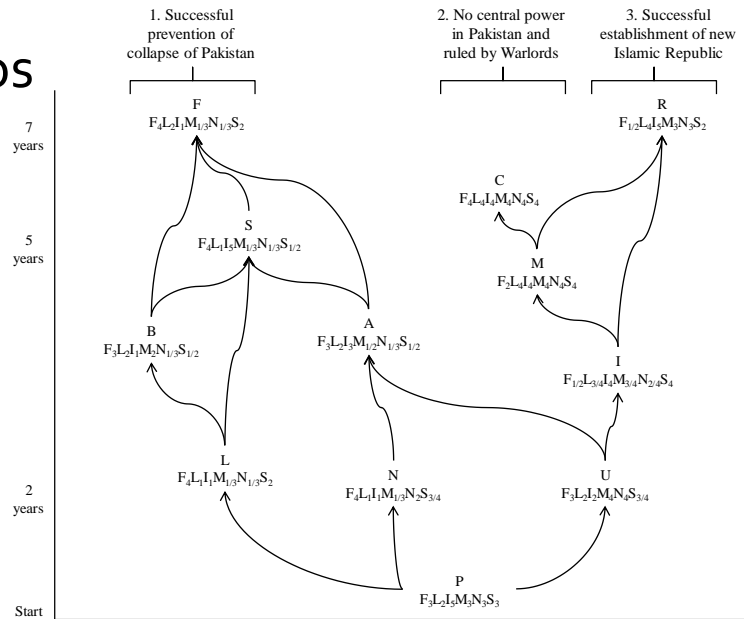
The purpose is to recommend a strategy for the Australian Government in regard to the developing crisis in Pakistan.

The situation in Pakistan is deteriorating rapidly as the threat presented by the break-away Islamic Army Faction (Islamists) and associated Militant / Terrorist groups (Militants) increase. The Pakistan government is no longer functioning in its normal state and, as a consequence, the internal stability of Pakistan is wavering. The majority of the Army is loyal to the government (Loyalists) and has control over most of the country however is under constant pressure from the Islamic Faction. Additionally they have lost control of several nuclear warheads and are unsure of their locations. Fortunately all of the conventional delivery systems are still controlled by the Loyalists although it is possible to convert the missing warheads into 'dirty' bombs.

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Form Scenarios

- Field Anomaly Relaxation method
- Can use any approach



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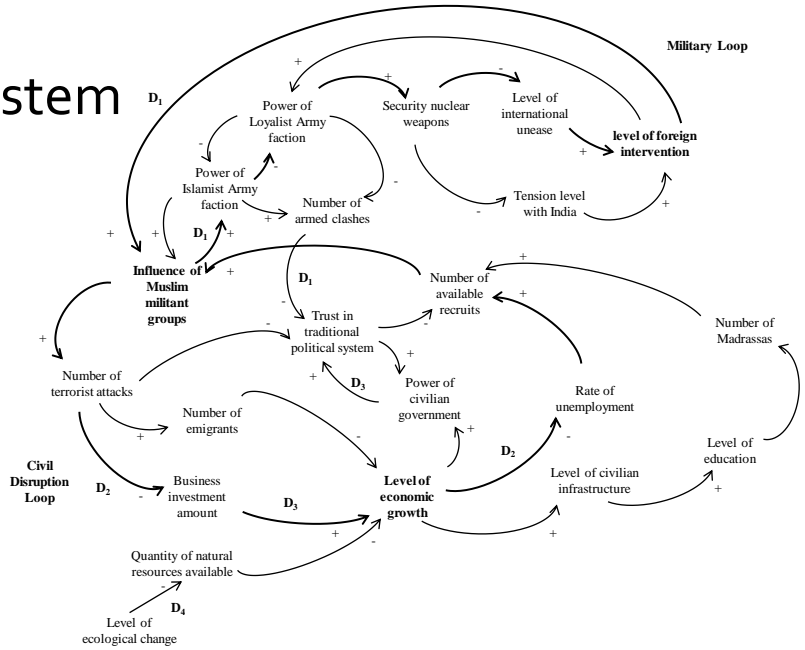
Scenario 1

- The situation in Pakistan is deteriorating due to a rise in power of the Islamic faction and the militant groups based in the North of Pakistan.
- The Loyalist faction has requested international assistance which is provided by the UN.
- The multinational force is able successfully reduce the threat created by the Islamic faction and strengthen the position of the Loyalist Faction.
- This in turn reduces the power of the militants. The Loyalists hope to return rule to a democratically elected government in a short time.

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Model the system

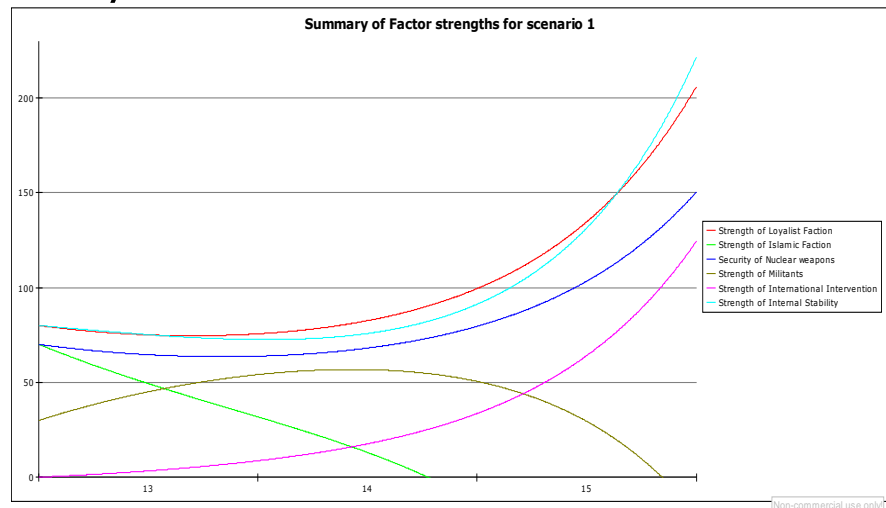
- Understand system behaviour
- Influence Diagram



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Model the System

- Create a model
- Simulate system behaviour



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Important levers in the system

- **Importance of International Intervention** – The affect of an international intervention is only felt if the strength of the militants is derived from the unsatisfied population.
- **Timing of International Intervention** – If an intervention is left too late, such as when the Loyalists are ineffective, then the success of such an intervention is highly unlikely.
- **Importance of the security of nuclear weapons** – The main incentive for the major powers to intercede in Pakistan is the security of the nuclear weapons. As soon as it is evident that the nuclear weapons are unsafe and not controlled, then a rapid response can be expected by the international community (particularly India and US).
- **Flow on effects** – It is important also to understand the order of the flow-on effects. In this situation, most of the problems stem from the strength of the Islamic faction. By immediately reducing this factor, most of the other factors start to normalise.

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2. Develop Options – 3 step TOWS

<p>External Threats</p> <p>T₁ Islamic Faction controls some nuclear weapons T₂ Militants gain strength from unstable nation T₃ Militants are supported by Islamic Faction T₄ Nation is becoming unstable T₅ Pakistan unlikely to welcome external military forces T₆ International will is lacking</p>	<p>External Opportunities</p> <p>O₁ International fear of insecure nuclear weapons O₂ Pakistan used to military rule O₃ US military and resources O₄ India Military and bases O₅ Islamic and Militant forces vulnerable to attack O₆ Loyalists are well organised and ingrained in environment</p>
<p>Internal Weaknesses</p> <p>W₁ Limited available military forces W₂ Takes time to mobilise military forces W₃ Low pool of resources</p>	<p>Internal Strengths</p> <p>S₁ Highly specialised forces S₂ Relatively well respected internationally S₃ Well organised humanitarian relief strategies</p>

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TOWS Step 2

	External Threats	External Opportunities
	T ₁ Islamic Faction controls some nuclear weapons T ₂ Militants gain strength from unstable nation T ₃ Militants are supported by Islamic Faction T ₄ Nation is becoming unstable T ₅ Pakistan unlikely to welcome external military forces T ₆ International will is lacking	O ₁ International fear of insecure nuclear weapons O ₂ Pakistan used to military rule O ₃ US military and resources O ₄ India Military and bases O ₅ Islamic and Militant forces vulnerable to attack O ₆ Loyalists are well organised and ingrained in environment
Internal Weaknesses W ₁ Limited available military forces W ₂ Takes time to mobilise military forces W ₃ Low pool of resources	1. Build a coalition for an intervention (W ₁ ,W ₃ ,T ₆)	7. Focused military strikes on enemy leadership (W ₂ ,O ₃) 8. Increase readiness of military forces for deployment (W ₂ ,O ₃)
Internal Strengths S ₁ Highly specialised forces S ₂ Relatively well respected internationally S ₃ Well organised humanitarian relief strategies	2. Deploy humanitarian forces to stabilise Pakistan (S ₂ ,T ₄ ,T ₅) 3. Eliminate support links between Islamic Faction and Militants (S ₁ ,T ₃) 4. PR campaign that supports an international intervention (S ₂ ,T ₅) 5. Use SF to locate nuclear weapons (S ₁ ,T ₁) 6. Lobby UN in support of intervention (S ₂ ,T ₆)	9. Focus international community on risk of unsecured nukes to garner support (S ₂ ,O ₁) 10. Form coalition with US and India so as to leverage their military assets (S ₂ ,O ₃ ,O ₄) 11. Provide military training to Loyalists (S ₁ ,S ₂ ,O ₆)

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TOWS Step 3

Option A (Actions 1, 5, 6, 9, 10)

- Develop a willing coalition of nations intent on securing the nuclear weapons

Option B (Actions 2, 4, 11)

- Provide humanitarian aid and limited training to stabilise Pakistan.

Option C (Actions 3, 5, 7, 8)

- Conduct limited military strikes aimed at destabilising the Islamic faction and Militants and removing their centre of gravities

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3. Identifying Strategic Risk

- Use preferred risk function to understand impact on significant drivers identified earlier.
- Risk = Impact x Likelihood
- Rank the risks and investigate the most significant
- Alternate view is: Risk = Intent x Opportunity x Capability

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	Description	Impact (0-100)	Likelihood (0-10)	Risk	Rank
	Loyalist				
R ₁	No social support	70	2	140	11
R ₂	Unable to maintain public law and order	50	3	150	8
R ₃	Unable to suppress Islamic Faction	80	5	400	3
R ₄	Infiltration by Islamists	20	6	120	13
	Militants				
R ₅	Have widespread social support	50	3	150	8
R ₆	Can effectively exploit media and information systems	30	4	120	13
R ₇	Have international assistance	50	6	300	5
	Islamic Faction				
R ₈	Are willing to employ nuclear weapons	90	3	270	7
R ₉	Are able to counter capability of Loyalists	80	5	400	3
	International Intervention				
R ₁₀	India conducts first strike	20	5	100	15
R ₁₁	India not supportive	60	1	60	18
R ₁₂	US not supportive	70	1	70	16
R ₁₃	Internal resistance to intervention is high	70	6	420	2

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4. Present Options

- Understand stakeholder preference using value or utility functions
- Quantify relative cost for each option
- Measure against risk

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Understand Stakeholder preference

From $F_3 L_2 I_5 M_3 N_3 S_3$	To $F_4 L_1 I_1 M_{1/3} N_{1/3} S_2$	Pakistan	Australia
F_3 Weak Islamic faction	F_4 Ineffective Islamic faction	++	++
L_2 Strong Loyalist	L_1 Dominating Loyalists	++	+
I_5 No intervention	I_1 Welcomed and effective intervention	+	++
M_3 Supported but weak militants	$M_{1/3}$ Supported / not supported but weak militants	+	+
N_2 Known and unsafe nuclear weapons	$N_{1/3}$ Known or unknown and Safe nuclear weapons	+	+
S_3 Shaky internal stability	S_2 Stable internal stability	+	++

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Evaluating Cost

Factor Sub-category	From	To	Resource Gap
	F ₃ Weak Islamic faction	F ₄ Ineffective Islamic faction	
Focused military strikes on enemy leadership	1	3	2
	L ₂ Strong Loyalist	L ₁ Dominating Loyalists	
Provide military training to Loyalists	1	2	1
Form coalition with US and India so as to leverage their military assets	2	3	1
	I ₂ No intervention	I ₁ Welcomed and effective intervention	
PR campaign that supports an international intervention	2	3	1
Build a coalition for an intervention	2	4	2
Focus international community on risk of unsecured nukes to garner support	2	2	0
Lobby UN in support of intervention	2	2	0

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Recommendation

The situation in Pakistan is deteriorating and numerous simulations of the options indicate that an international intervention is required to strengthen the Loyalists and bring stability to Pakistan.

It is recommended that the Australian Government

- immediately commence lobbying the international community to provide support to Pakistan.
- provide a small humanitarian team and, separately, a training team to prevent further collapse in the stability of Pakistan.
- ready military forces with the view of deploying within a coalition for the express purpose of locating the nuclear weapons and surgical strikes against the Islamic forces.

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Summary

- Understand the need for evidence
- Scenarios only build the 'scene'
- Use auditable methods to develop realistic options that will clearly meet the strategic decision makers' preference