

# Spatial Theory in 2-space

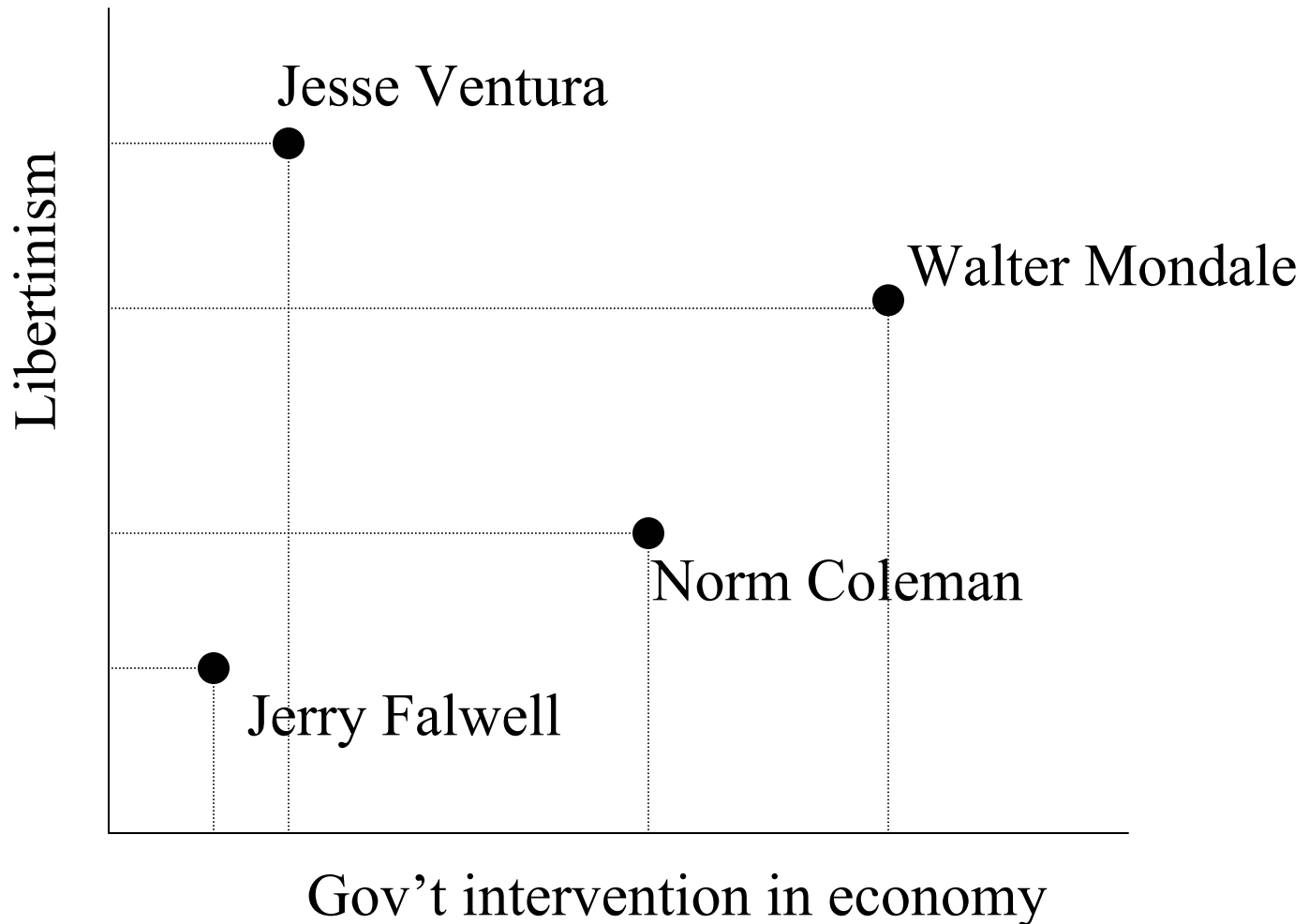
17.251

Fall 2004

# Throat-clearing

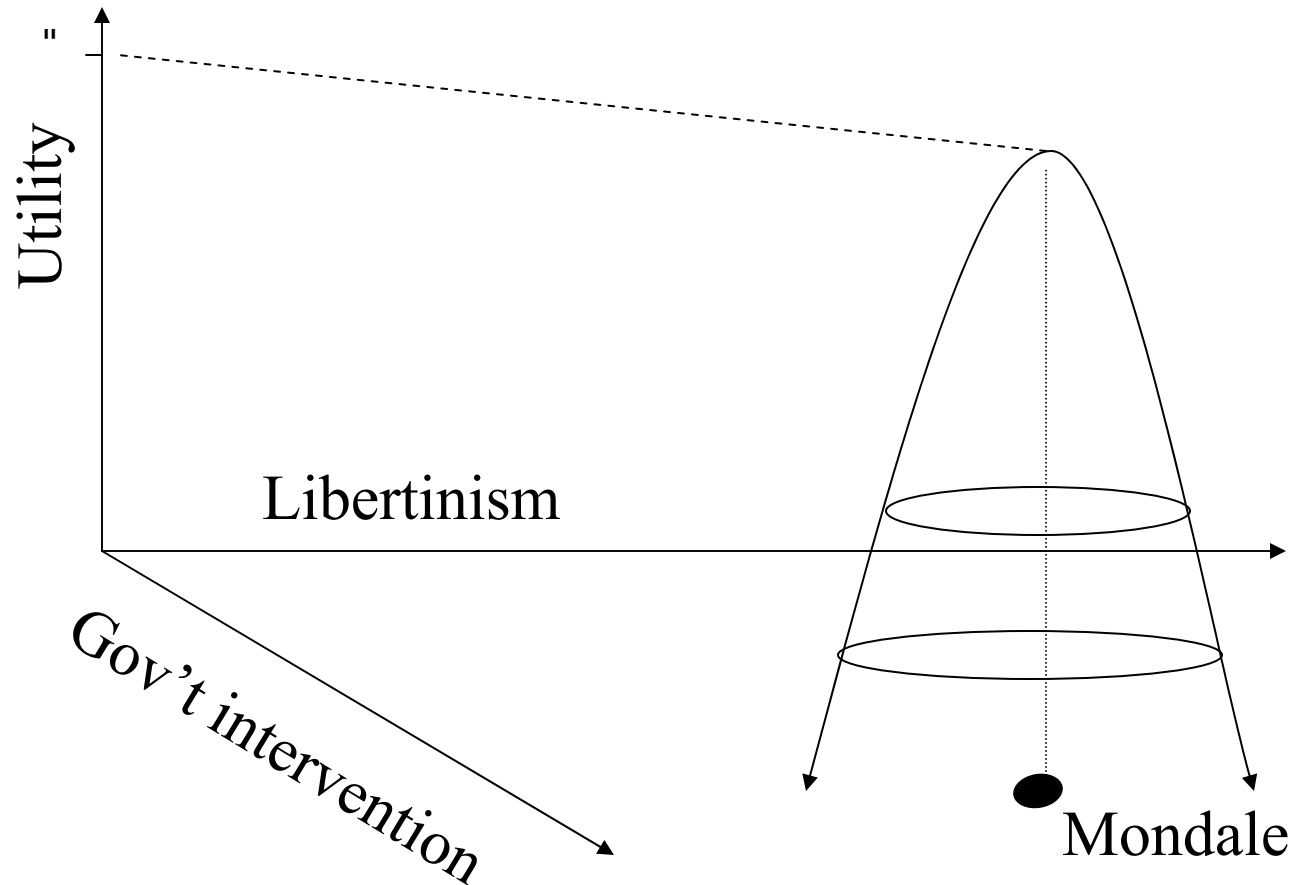
- Fundamental finding of unidimensional spatial model
  - Pure majority rule: the median prevails
  - More generally: the pivot prevails
- Fundamental finding of multidimensional spatial model
  - The center doesn't hold
  - Preferences can't induce equilibria
  - $\hat{\cdot}$  institutions (or something else) must enter

# Basic set-up: Ideal points



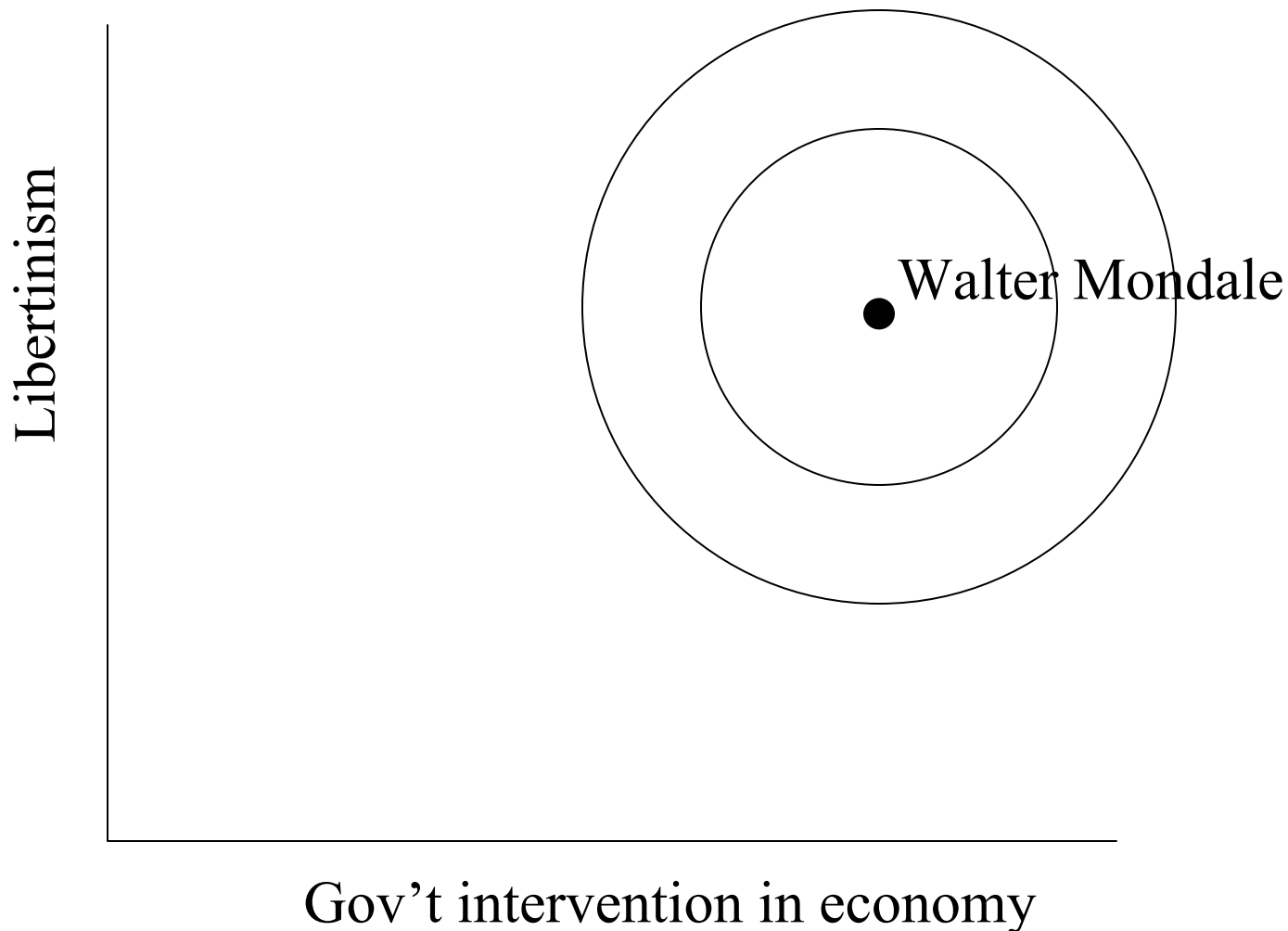
# Basic set-up: Utility curves

$$U_{Mondale} = \alpha - \beta(x_{Mondale} - x)^2 - \gamma(y_{Mondale} - y)^2 \pm \delta(x_{Mondale} - x)(y_{Mondale} - y)$$



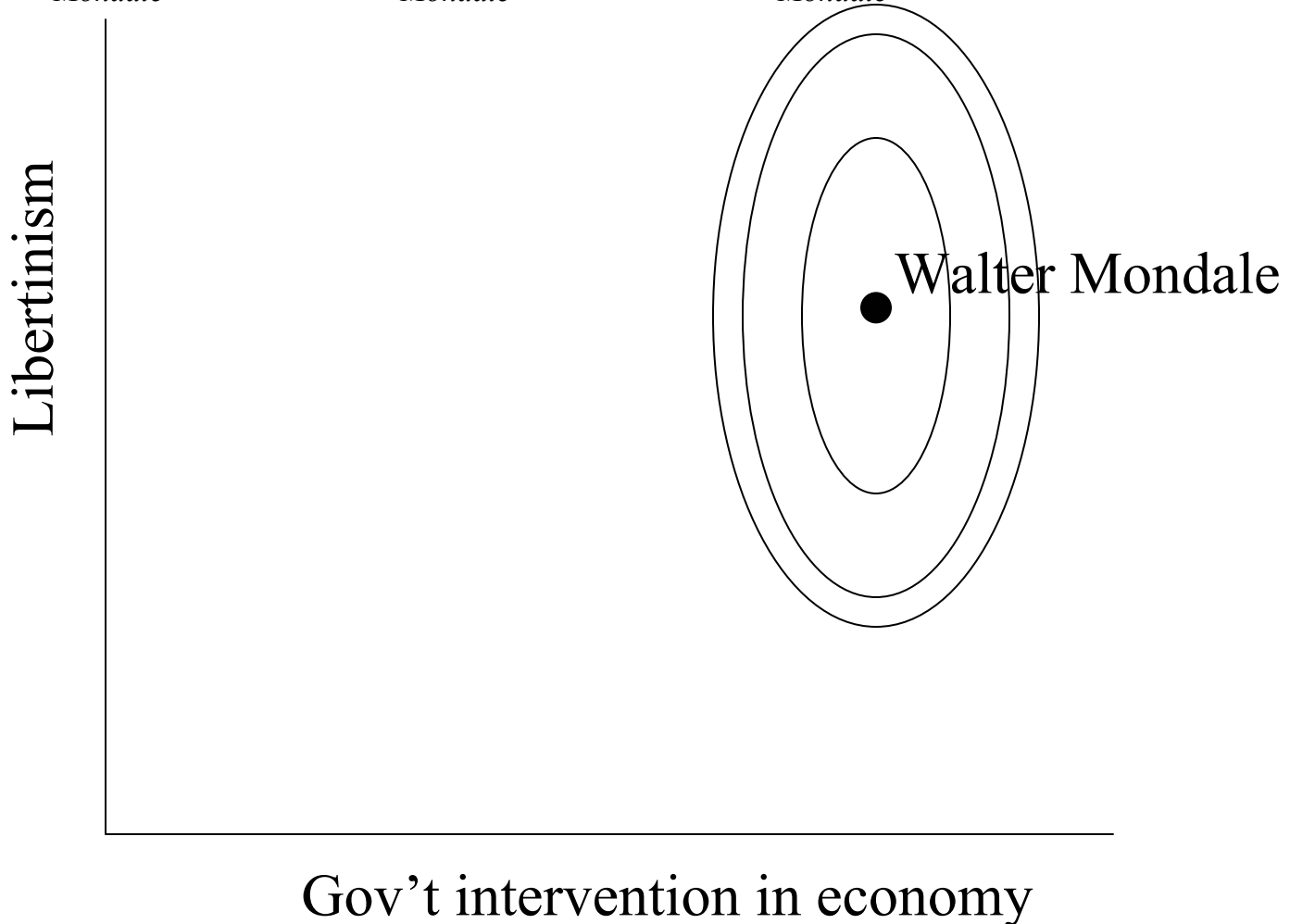
# Basic set-up: Indifference curves

$$U_{Mondale} = \alpha - (x_{Mondale} - x)^2 - (y_{Mondale} - y)^2$$



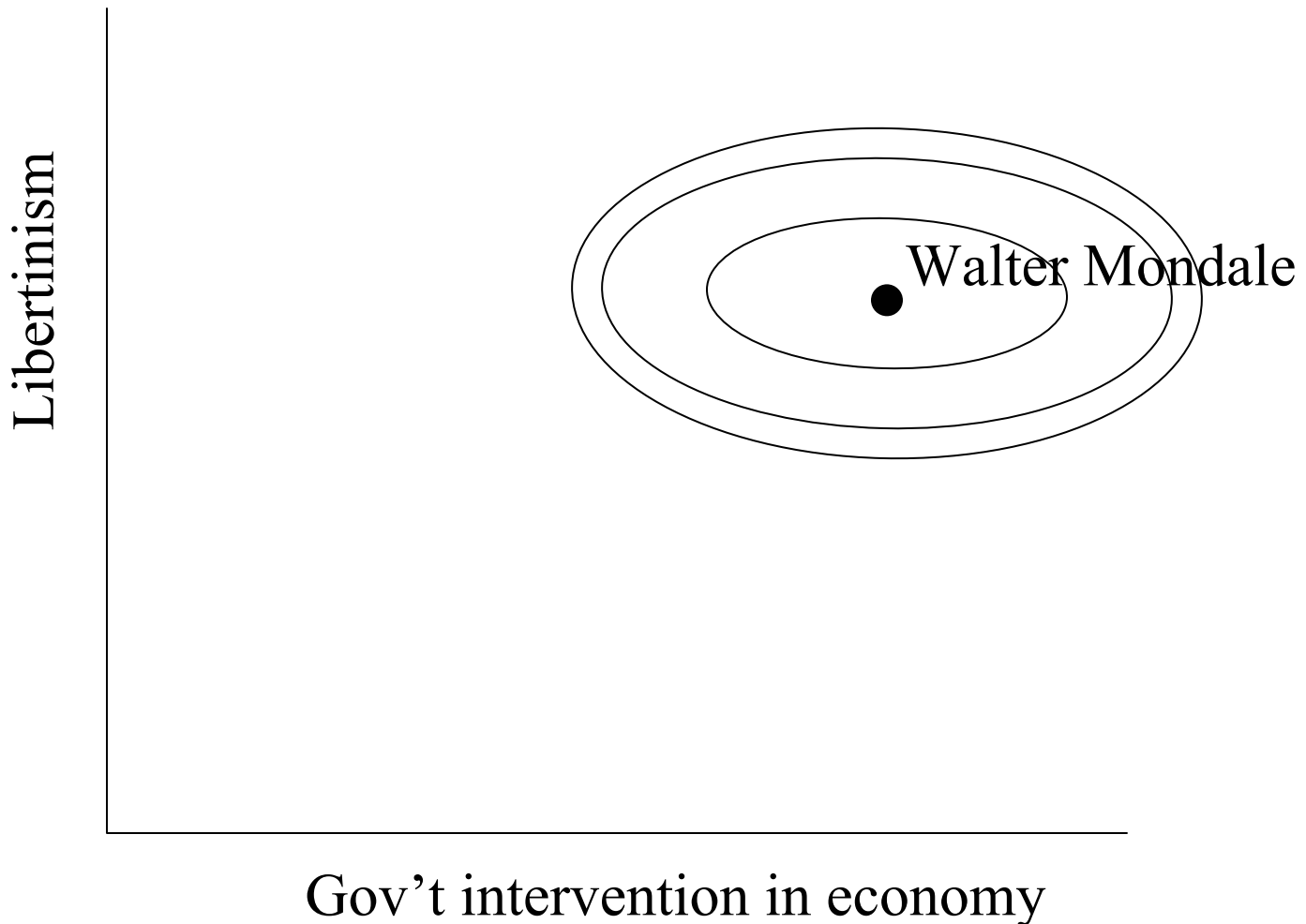
# Basic set-up: Indifference curves

$$U_{Mondale} = \alpha - \beta(x_{Mondale} - x)^2 - \gamma(y_{Mondale} - y)^2, \beta > \gamma$$

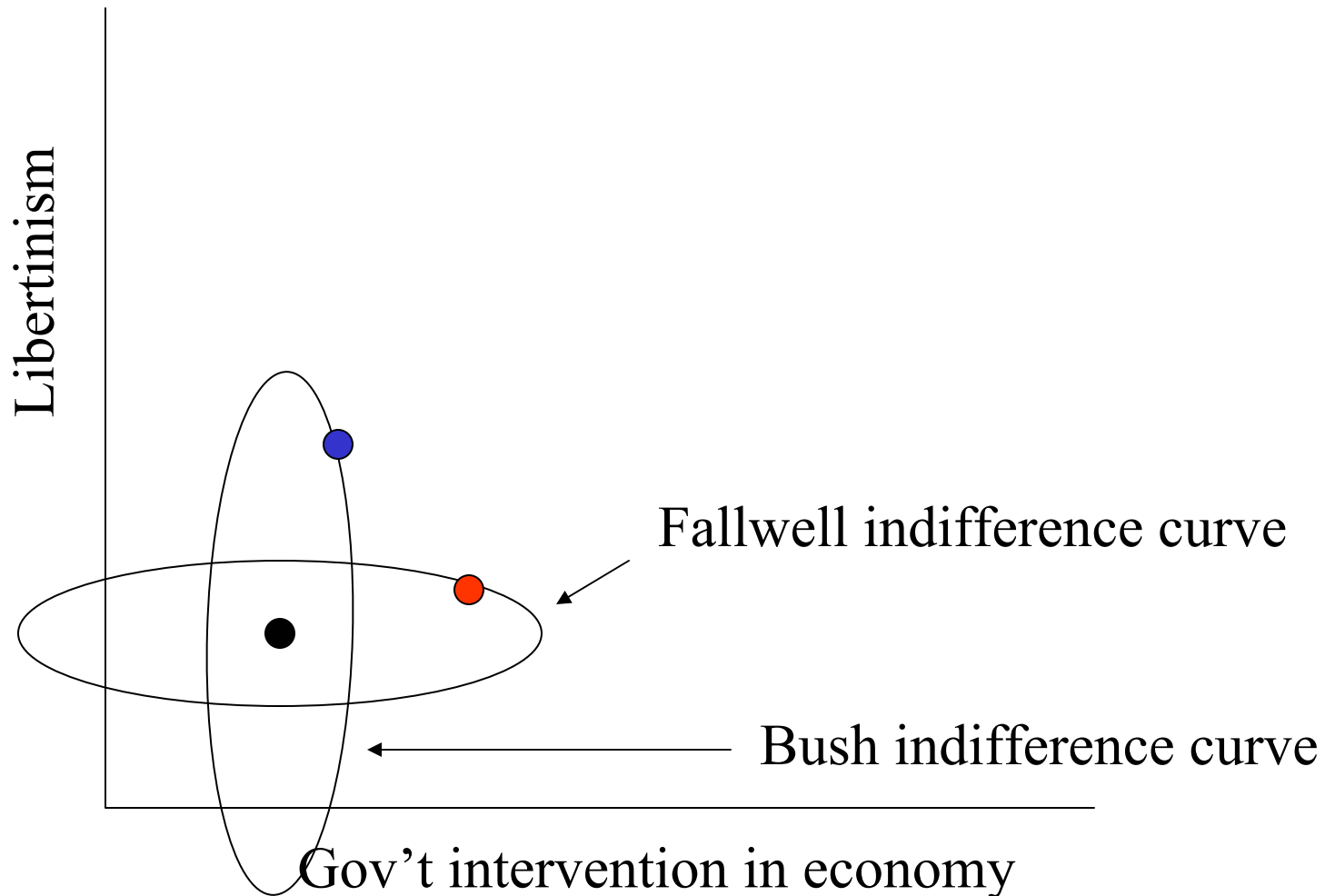


# Basic set-up: Indifference curves

$$U_{Mondale} = \alpha - \beta(x_{Mondale} - x)^2 - \gamma(y_{Mondale} - y)^2, \beta < \gamma$$



# Why it matters: Jerry Falwell vs. George Bush

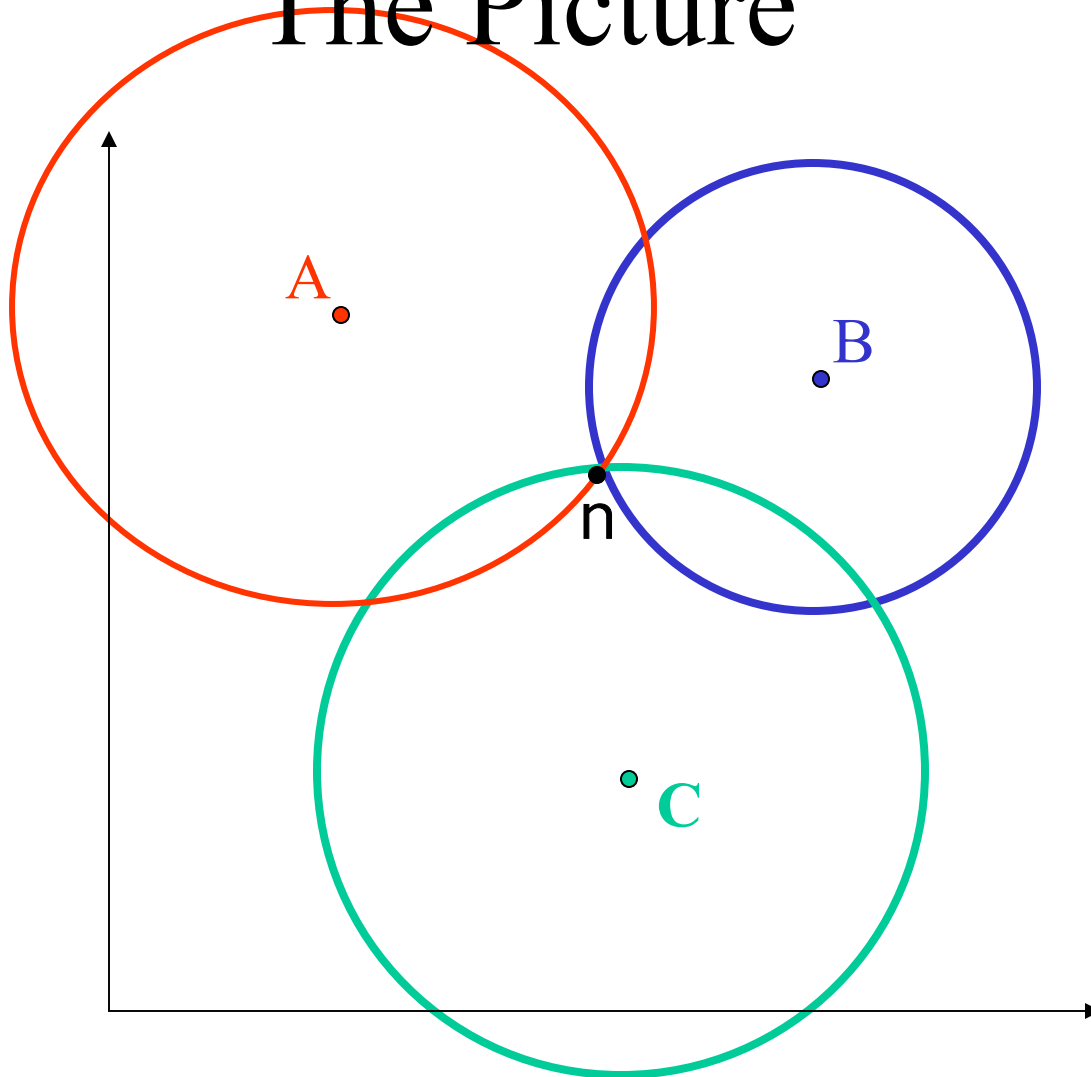


# The Simple Euclidean System: The Equation

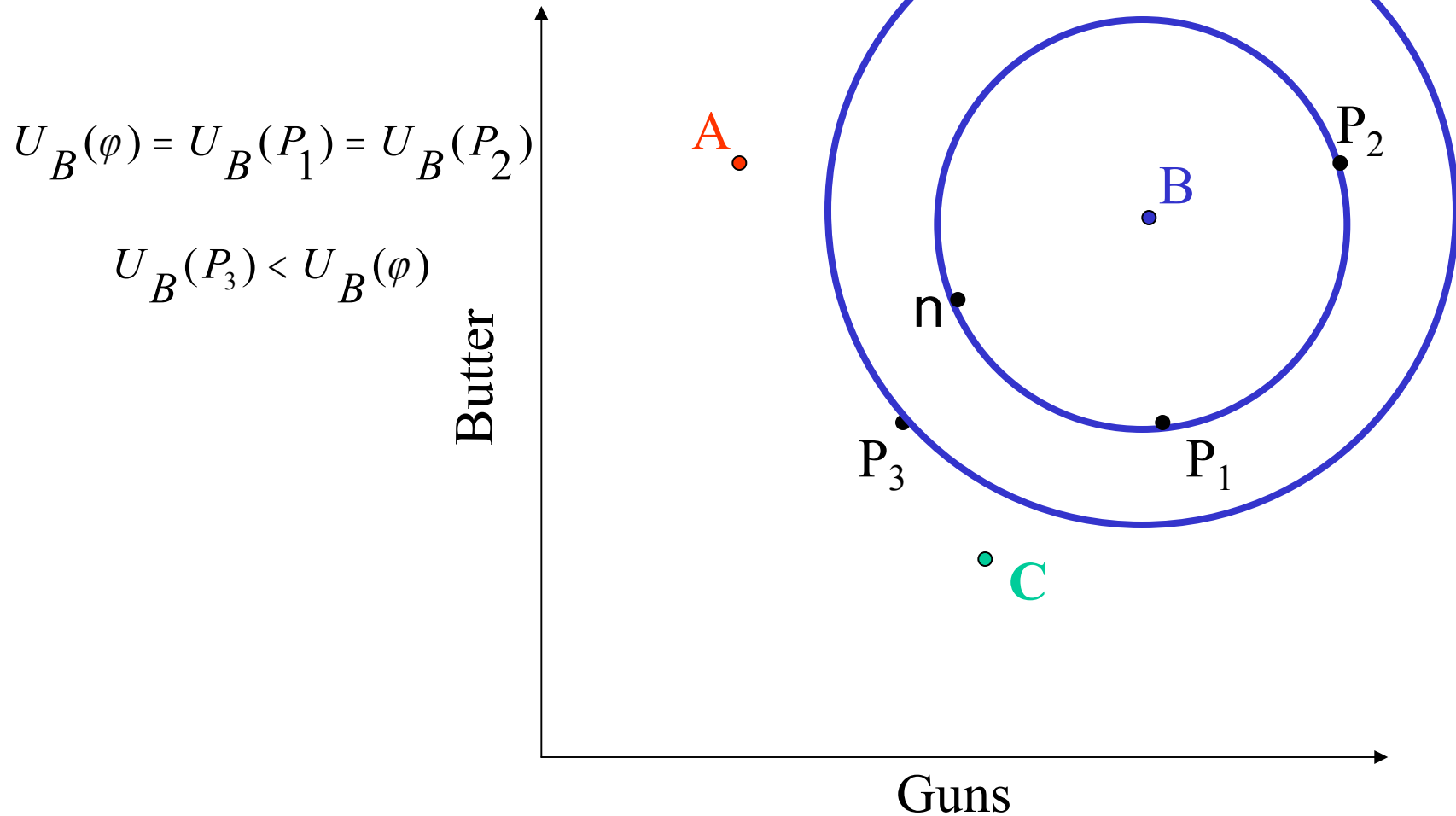
$$U_i = a - (x_i - x)^2 - (y_i - y)^2$$

# The Simple Euclidean System: The Picture

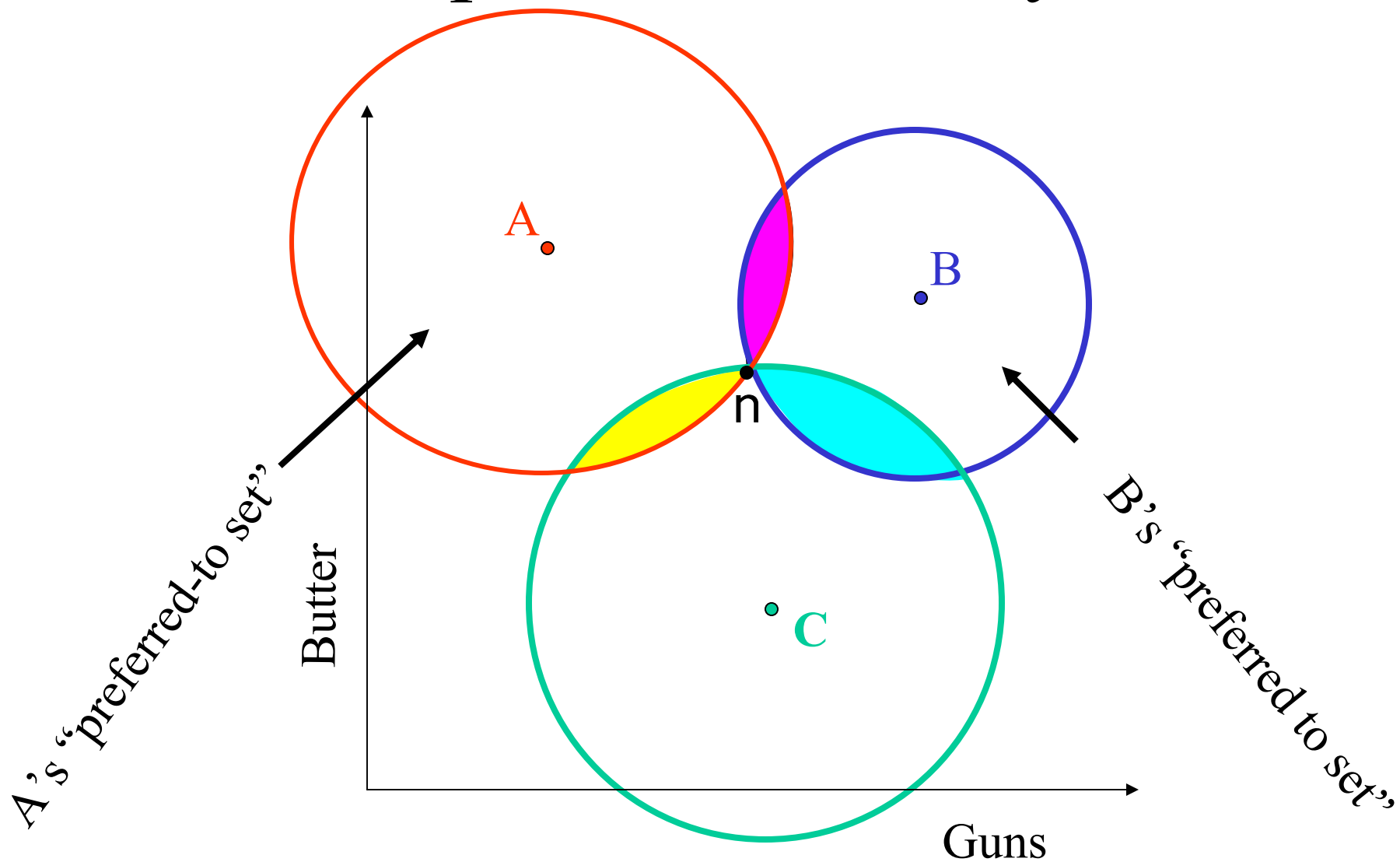
Ideal points  
Status quo  
Indifference  
curves



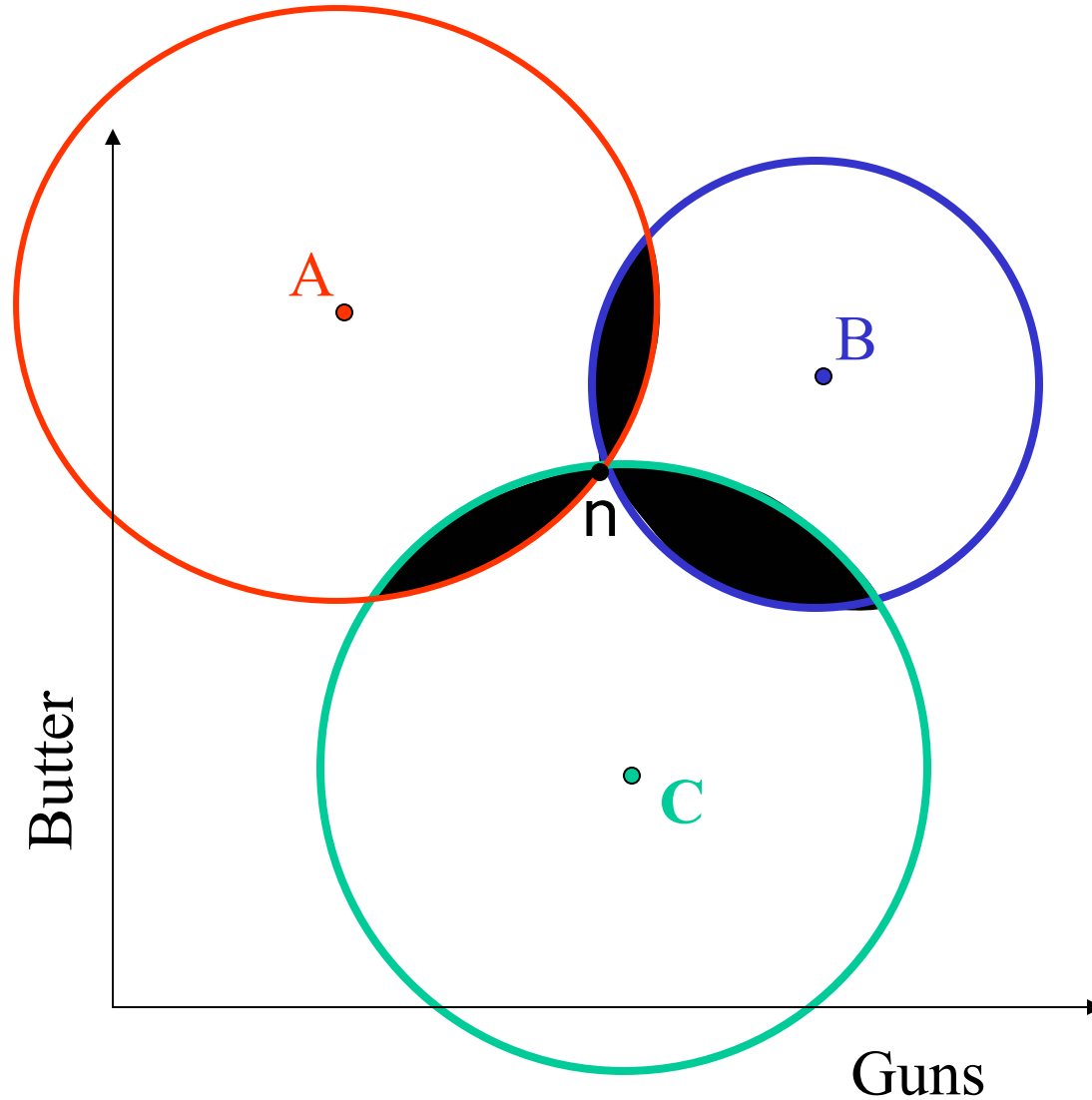
# The Simple Euclidean System: Preference relations



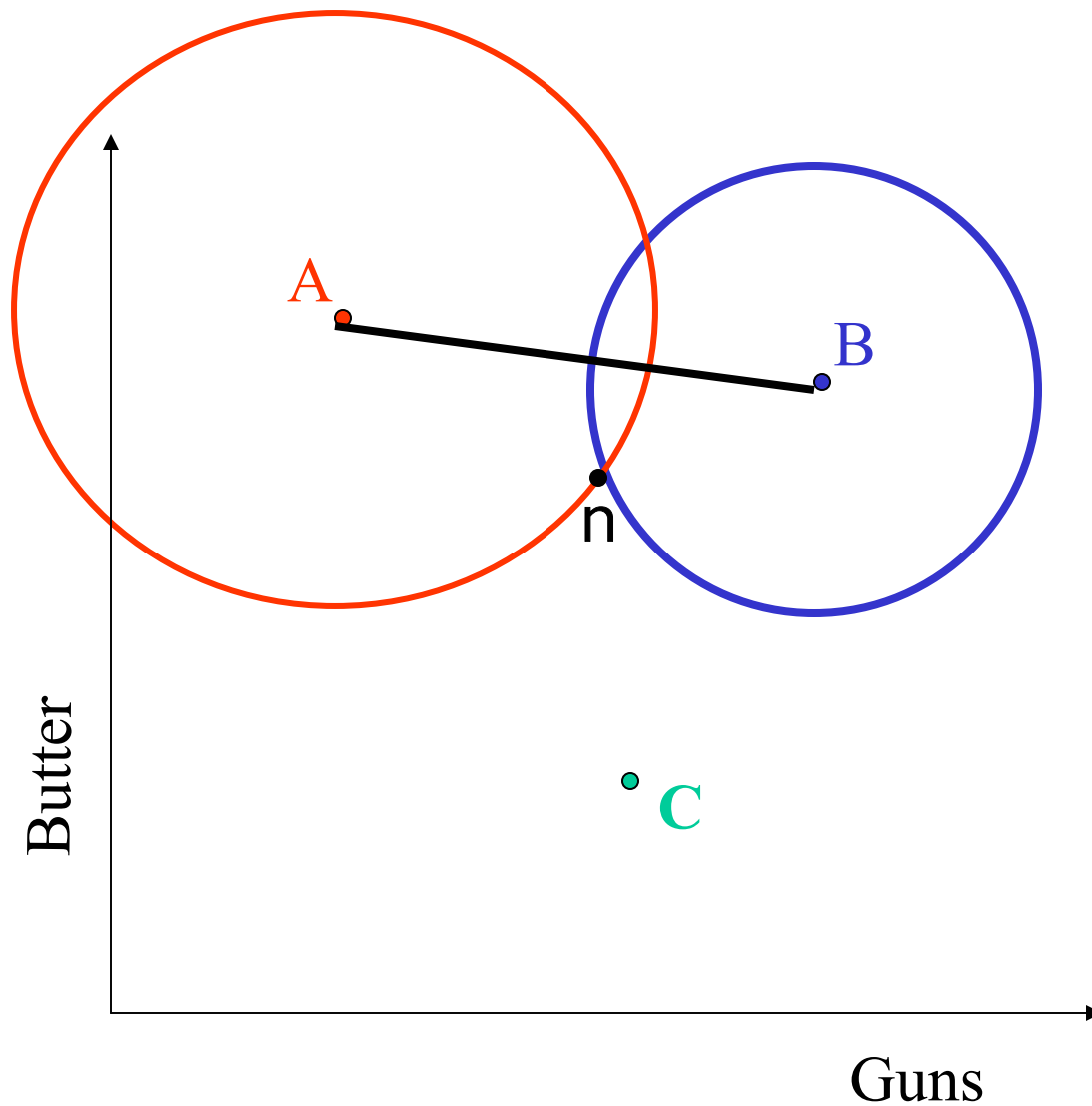
# The Simple Euclidean System



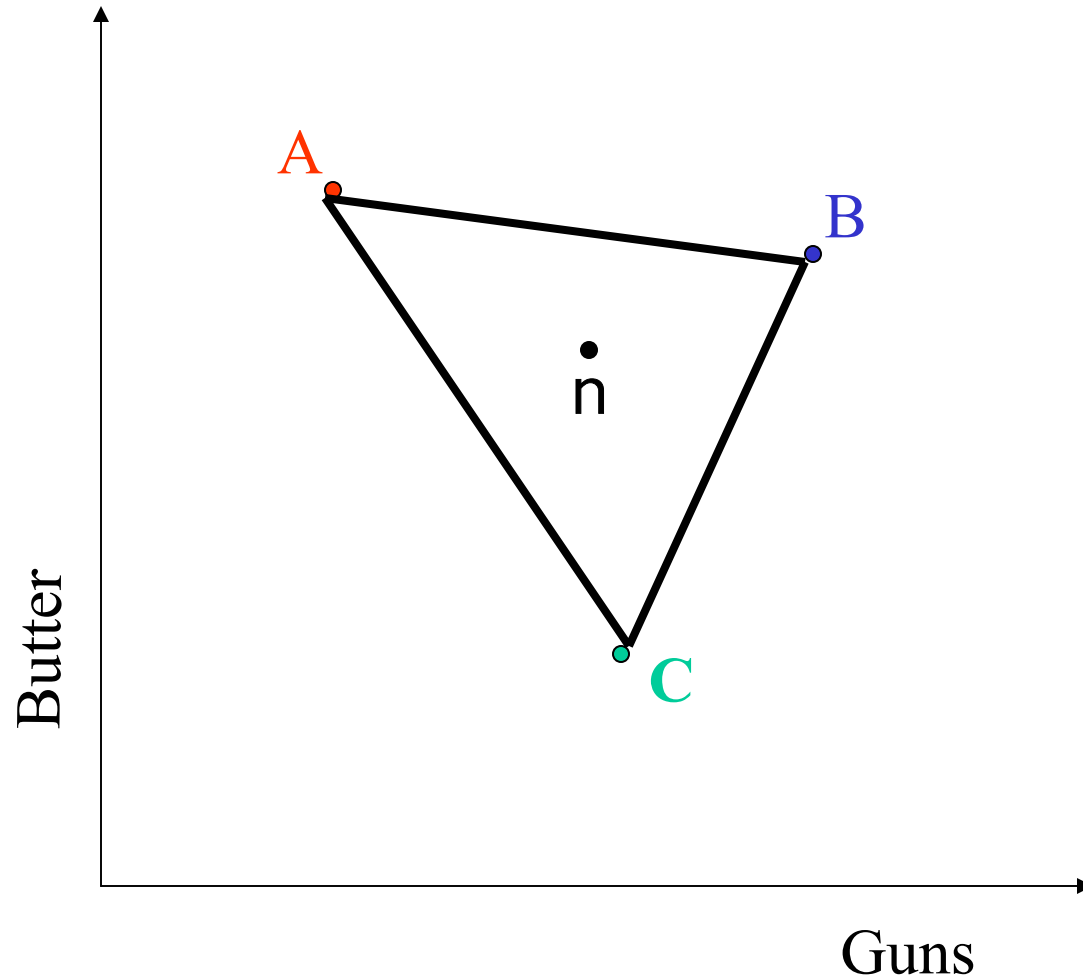
# The Win Set, $W(n)$



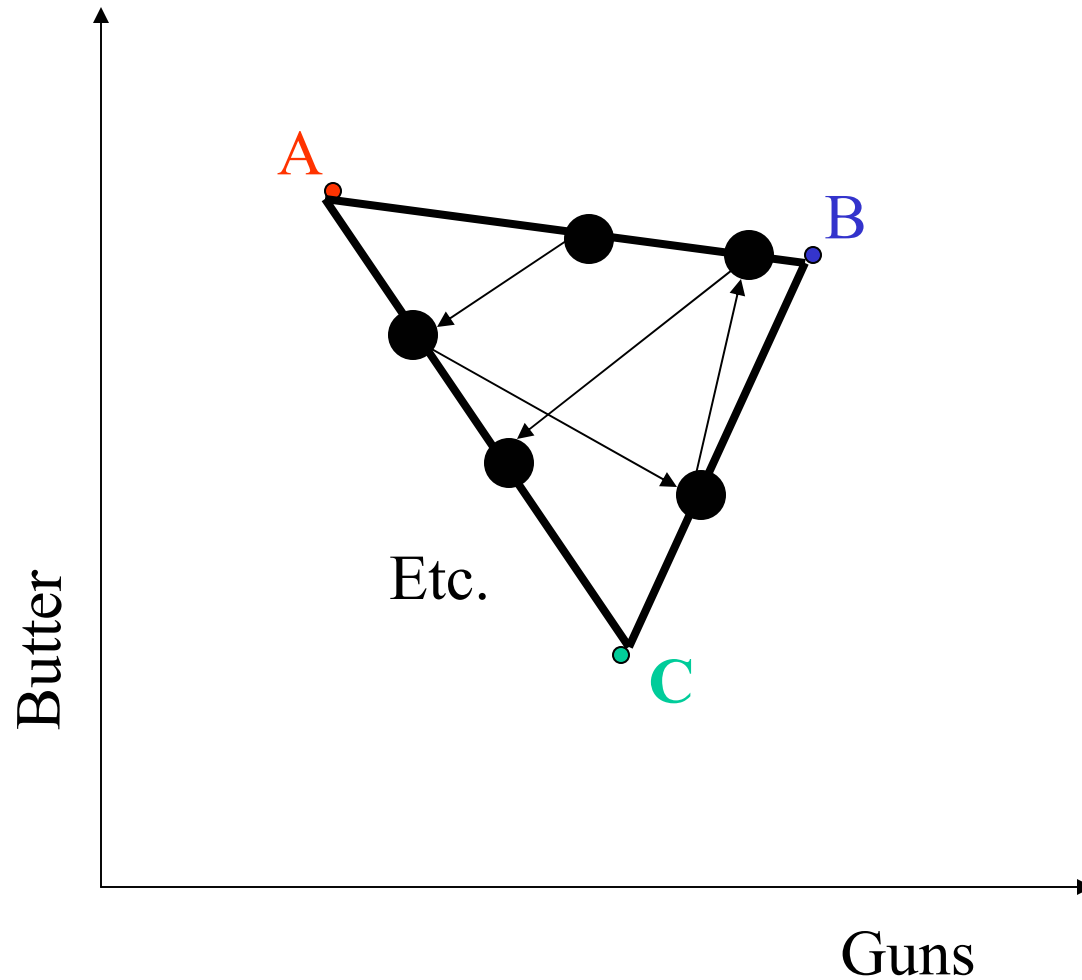
# The Contract Curve



# The Pareto Set



# You are always off a contract curve



# McKelvey Chaos Theorem

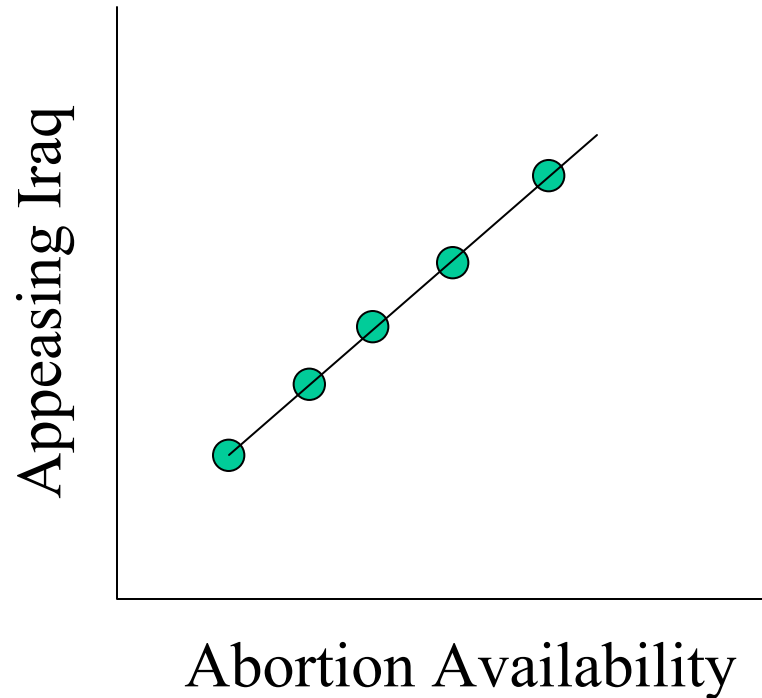
- With multiple attributes and multiple decisionmakers
  - There is no equilibrium of tastes
  - Anything can happen
  - I.e., the median voter result doesn't hold
- This is really important

# What Might Induce Stability?

- Tastes
- Undertainty
- Impatience
- Rules

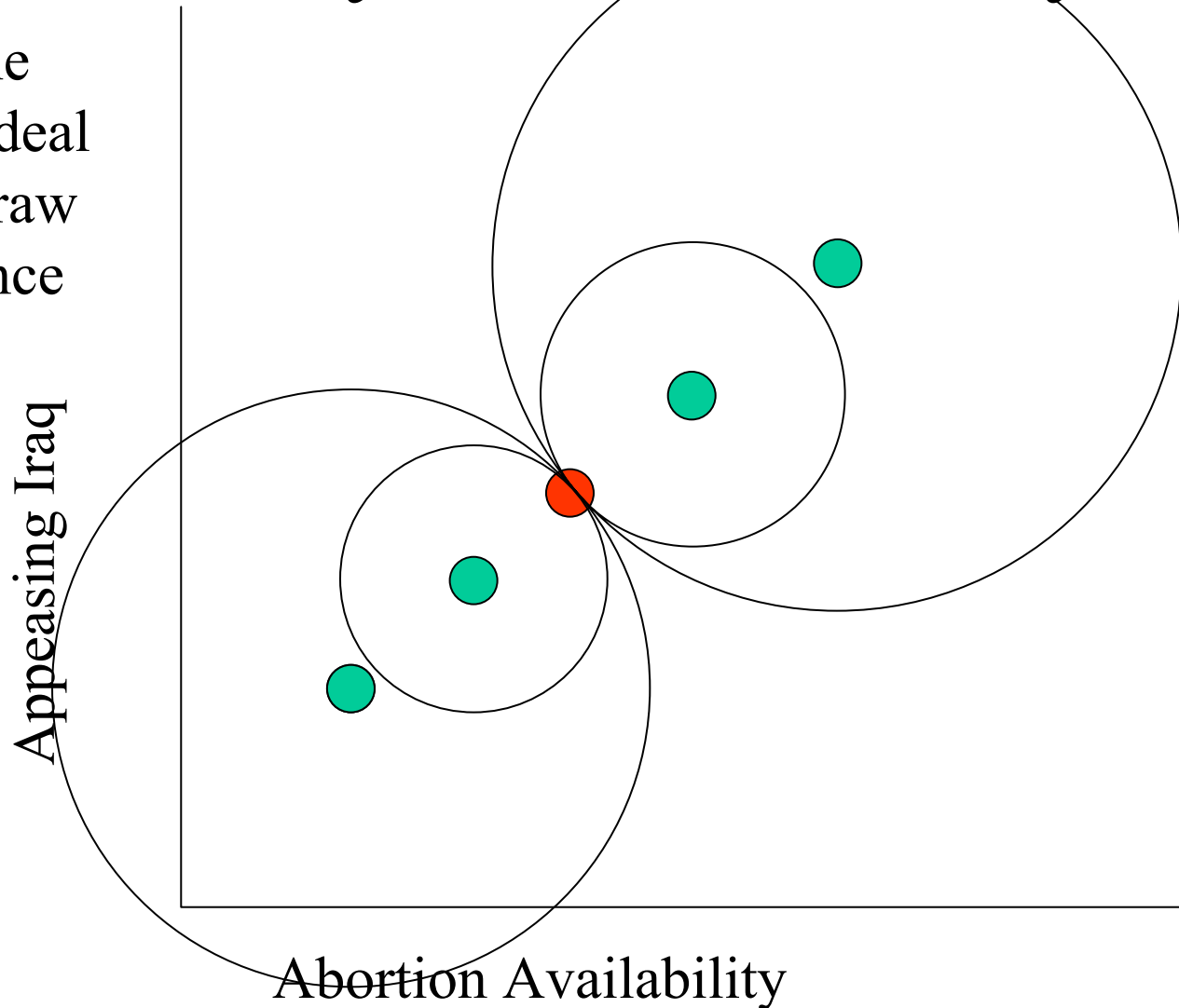
# Tastes may induce stability

- Ideology
- “Median in all directions”

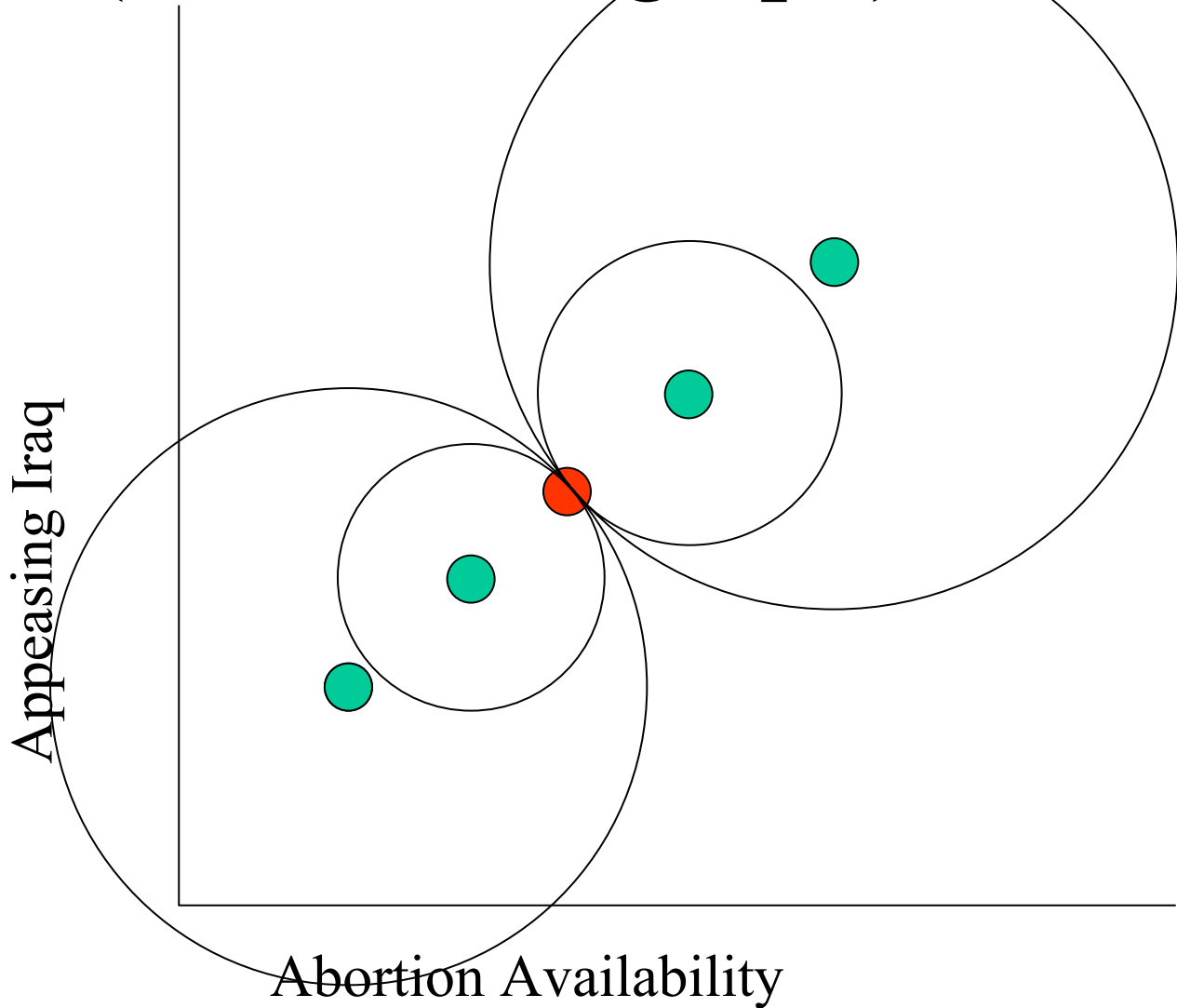


# Tastes may induce stability

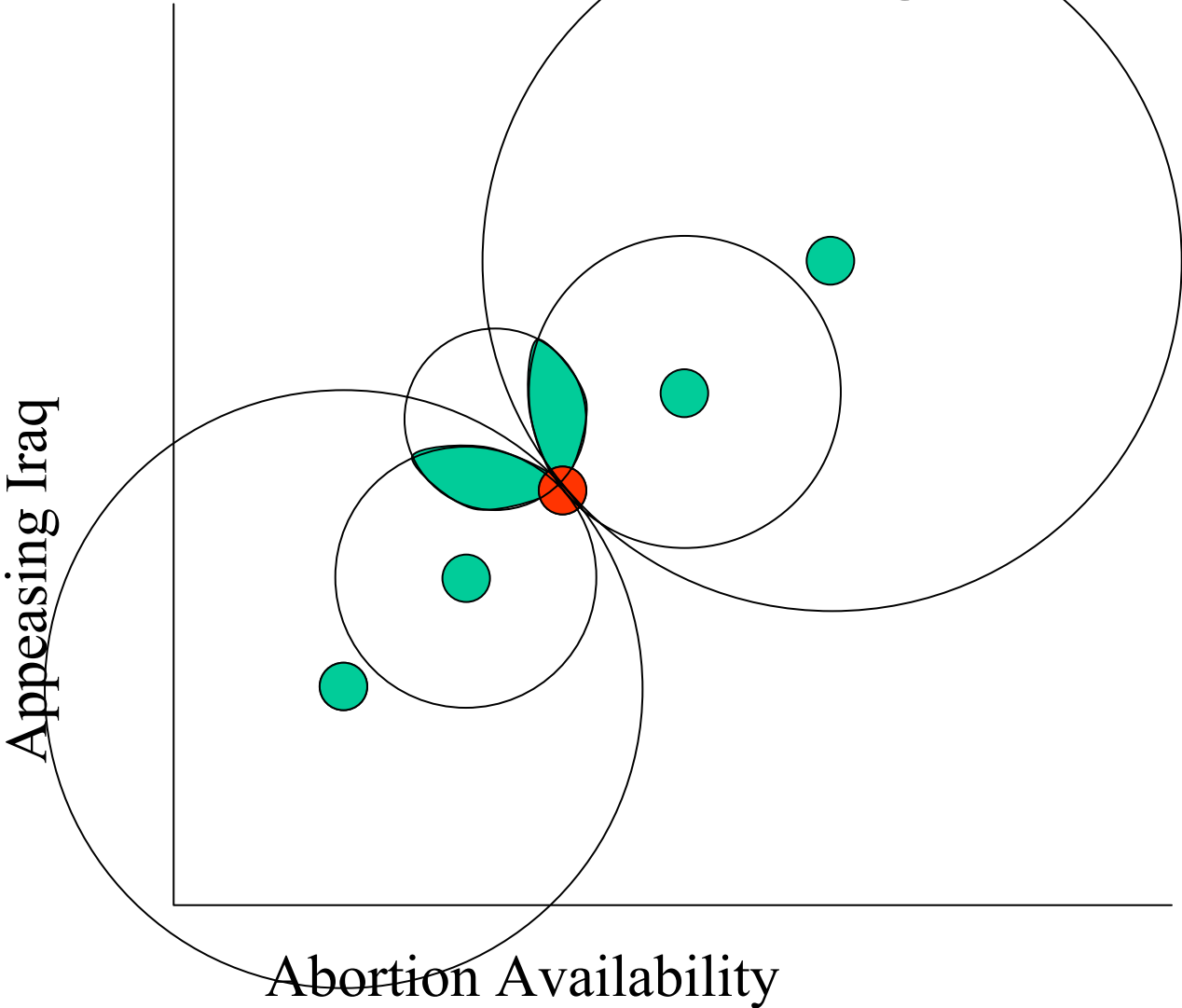
(Make s.q. the “median’s” ideal point, then draw the indifference curves)



(Rotate this graph)



# The result is knife-edged



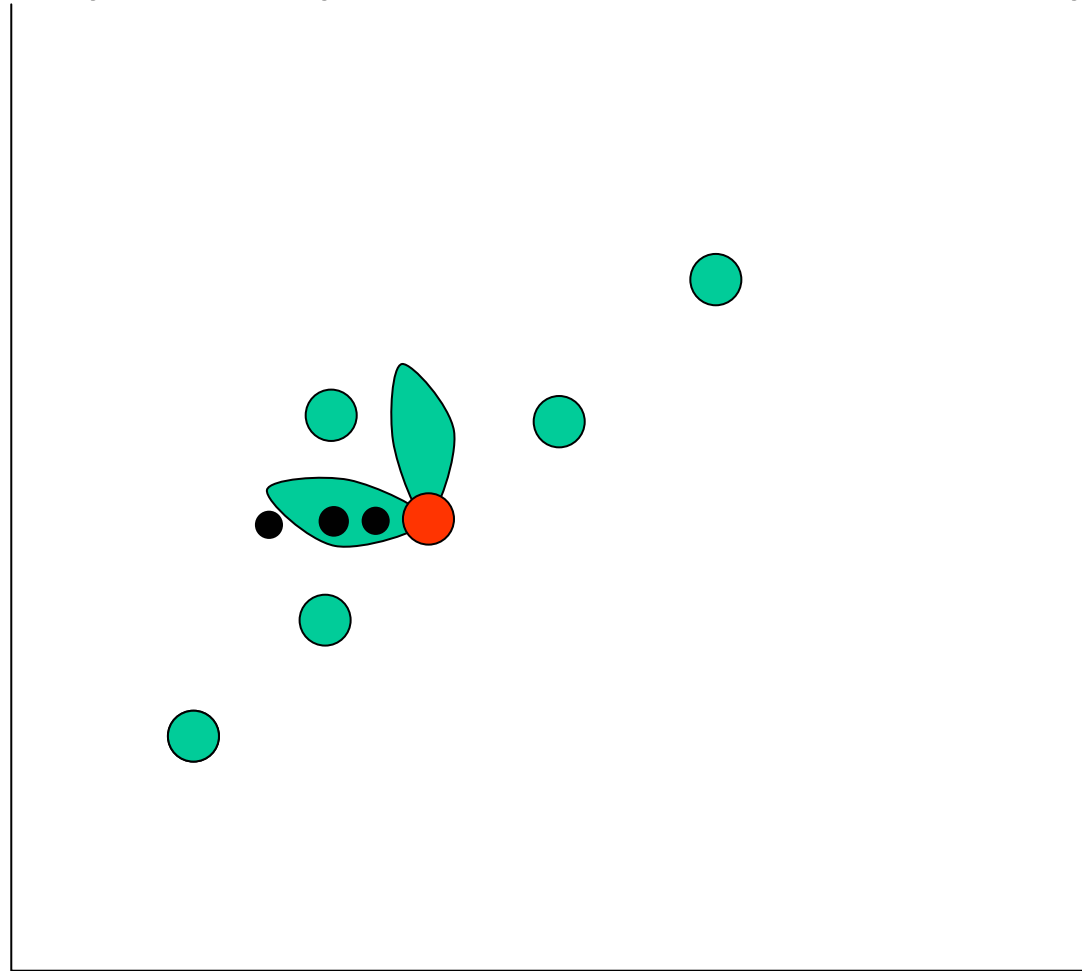
# Uncertainty may induce stability

Policy w/  
certainty

Policy w/  
uncertainty

Appeasing Iraq

Abortion Availability



# Impatience may induce stability

- Rubenstein bargaining

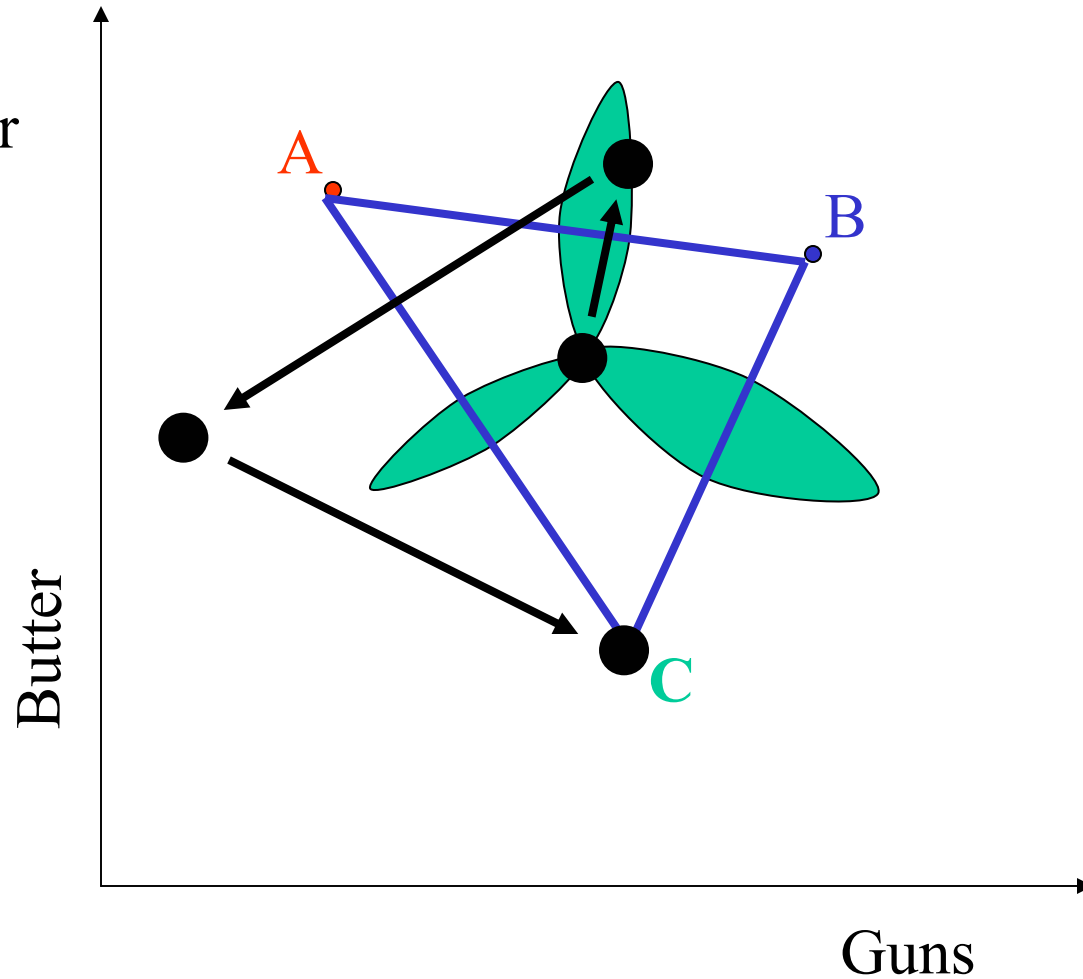
$$U_{i,t} = [\alpha - \beta(x_i - x)^2 - \gamma(y_i - y)^2](1 - \delta)^t$$

# Rules may induce stability

- Floor rules, e.g.
  - vote on status quo last
    - Not stability so much as guarding against “anything can happen”
  - Germaneness rules
- Committees

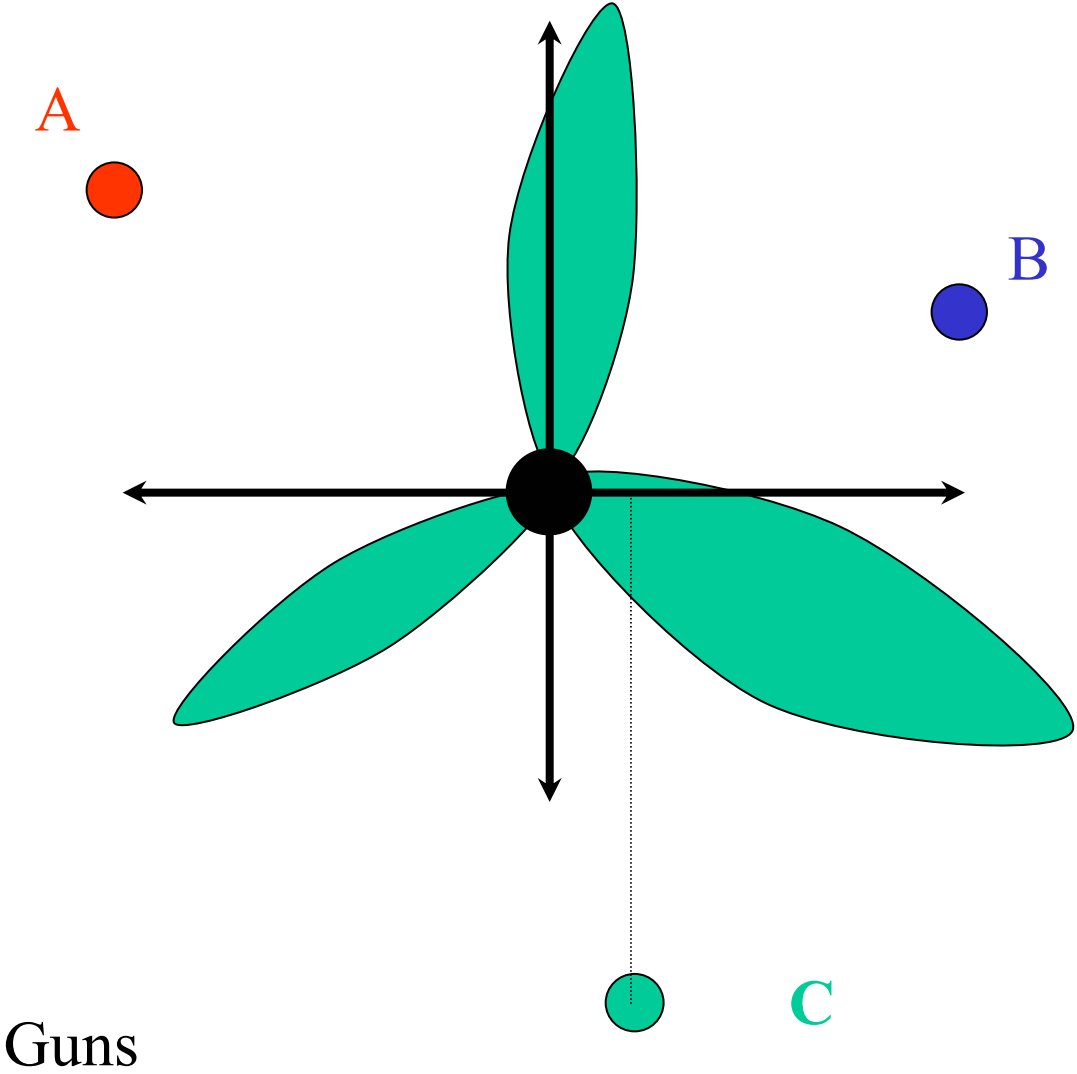
# Status quo last

“C” is Speaker

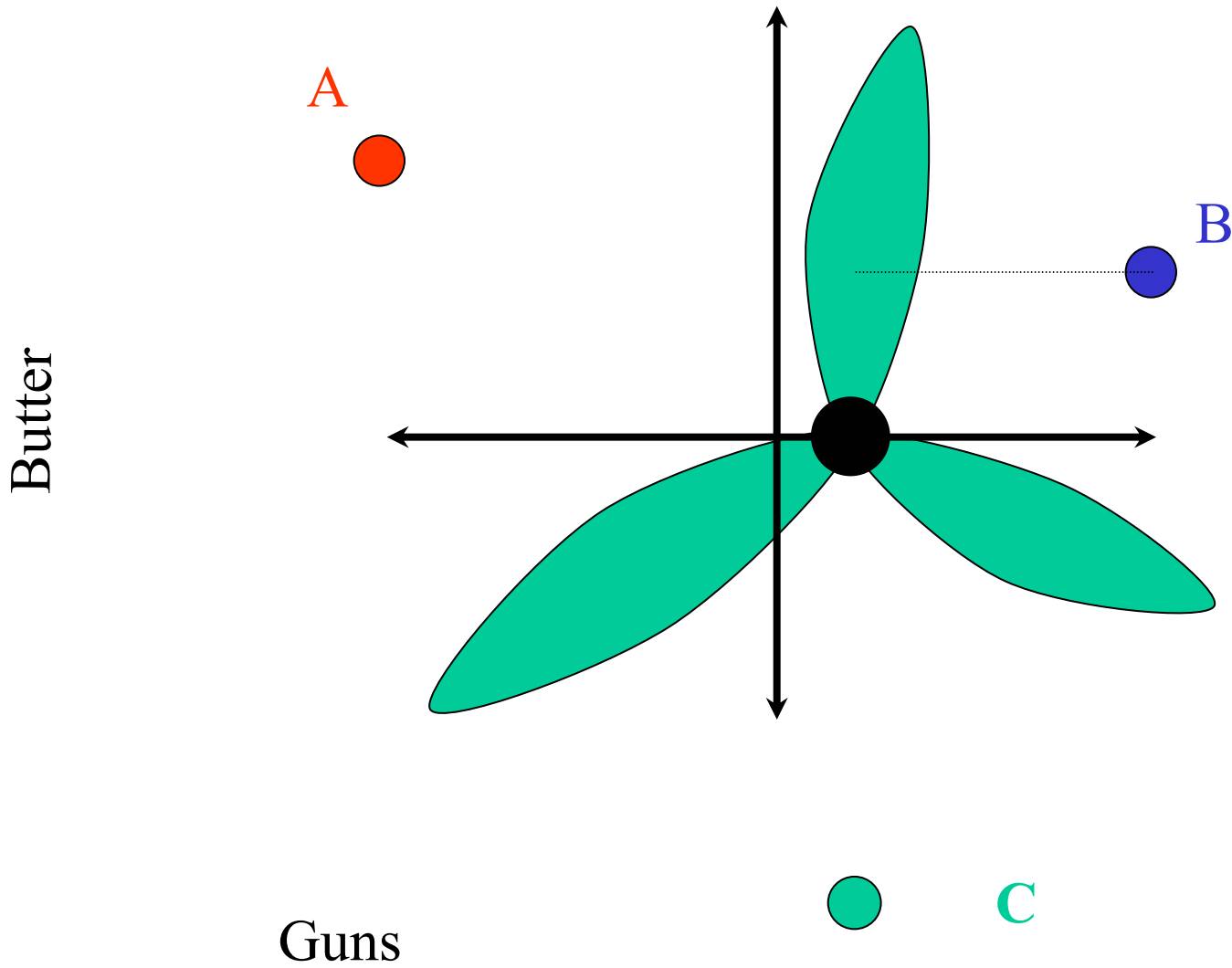


# Germaneness

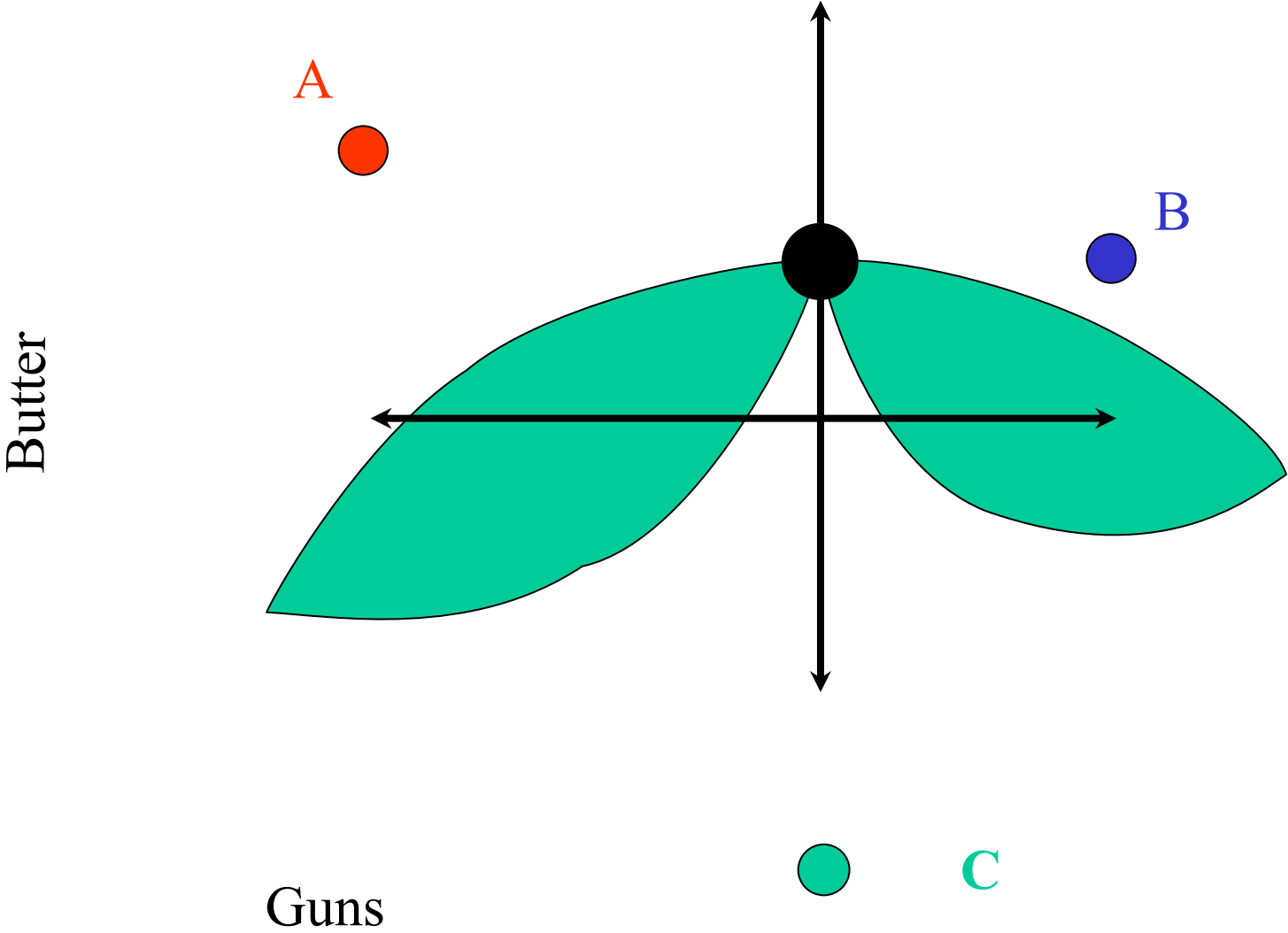
Butter



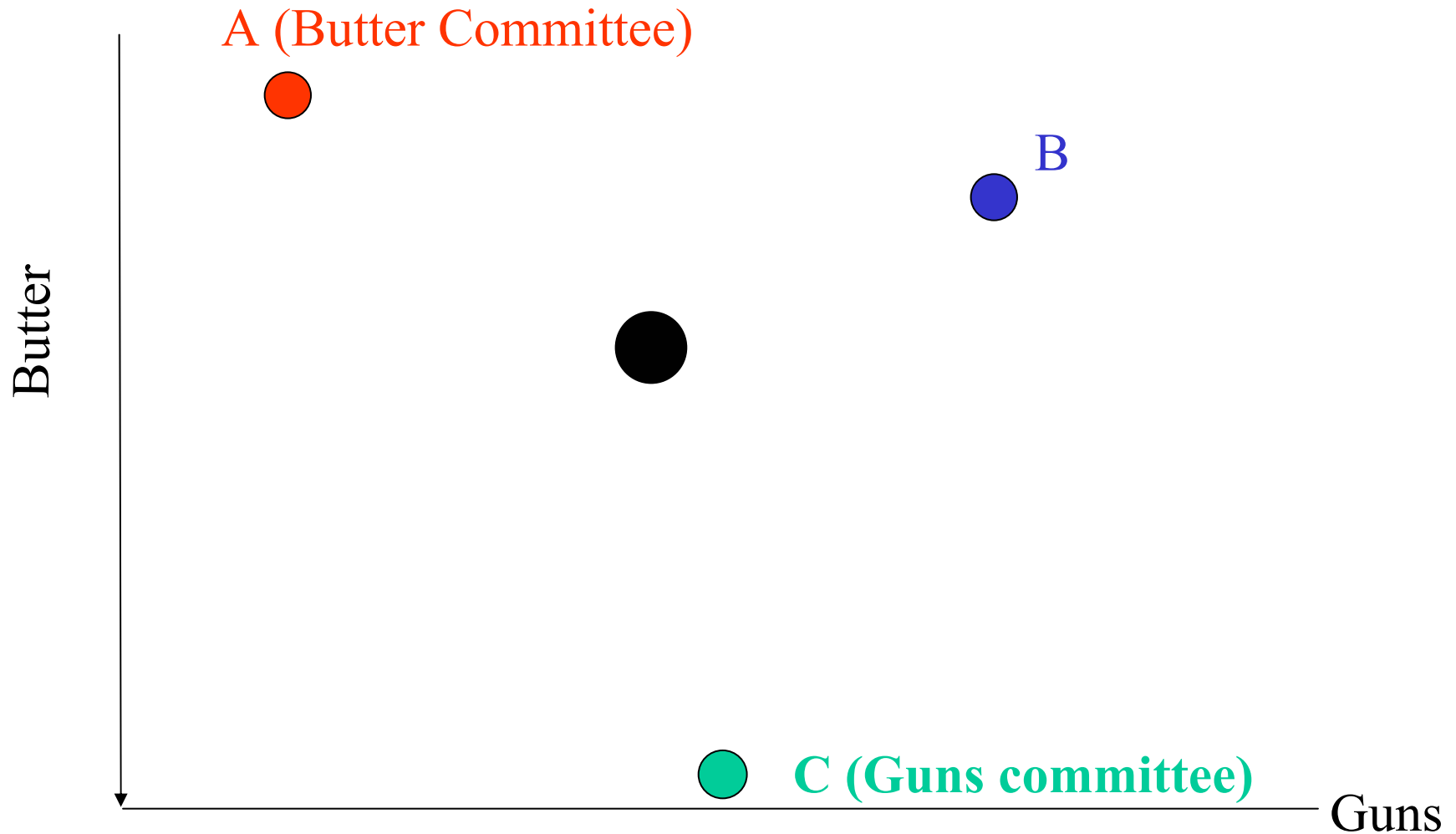
# Germaneness



# Germaneness



# Committees (and subcommittees) reduce policy dimensionality



# Stability-inducing powers of leaders and committees

- Committees reduce dimensionality
- Committees and leaders have agenda-setting powers

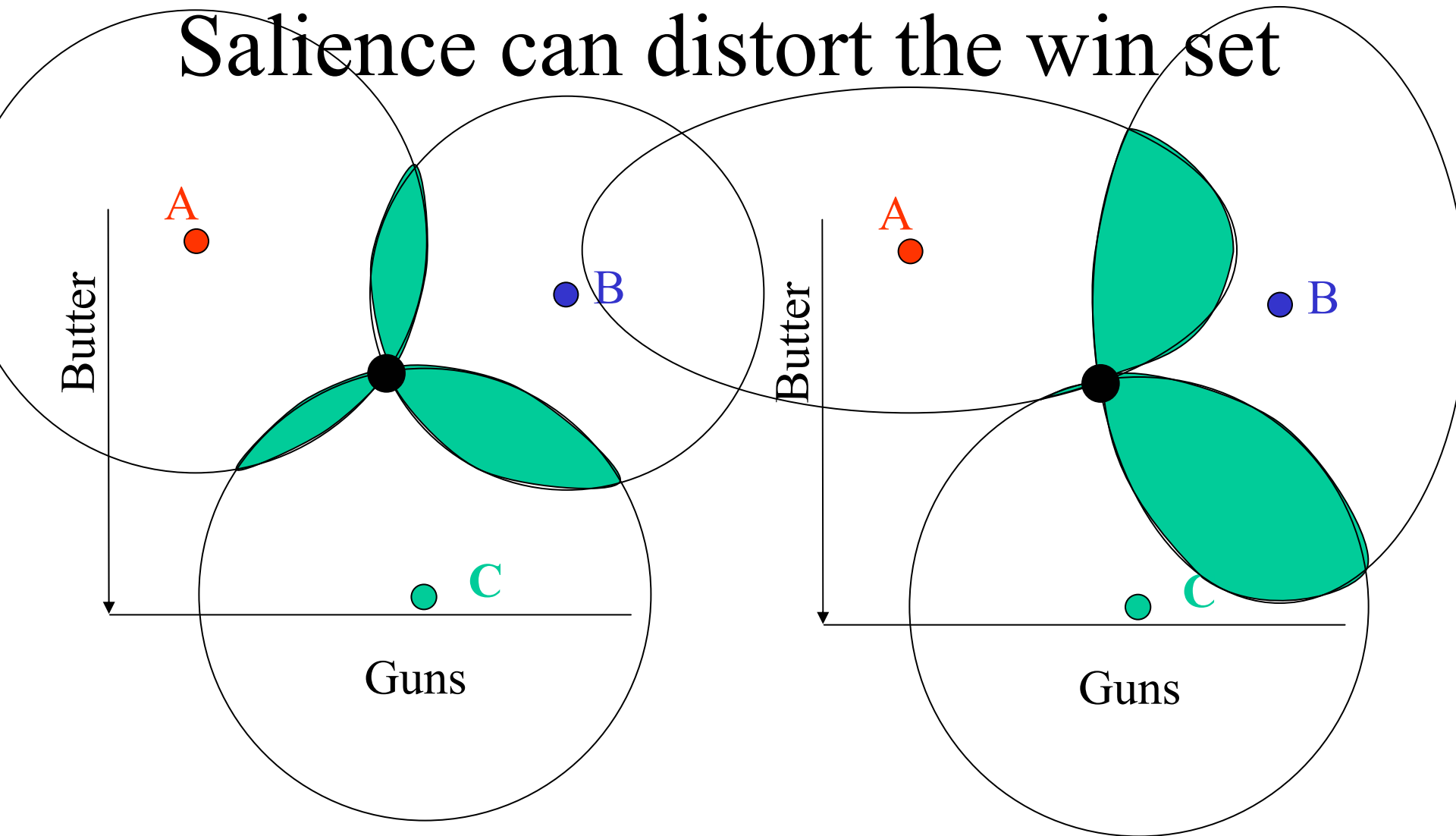
# Examples of Multidimensionality in Action

- Informal decisionmaking
- Riker's "heresthetics"
  - Heresthetics: the strategic introduction of "extraneous" issues

# Unresolved Issues

- Salience
- Sophistication

# Saliience can distort the win set



# Sophisticated Voting

- The strategy of preferring one alternative at time  $t$  even through the immediate alternative is better, in order to prevent an *even worse* outcome in the future

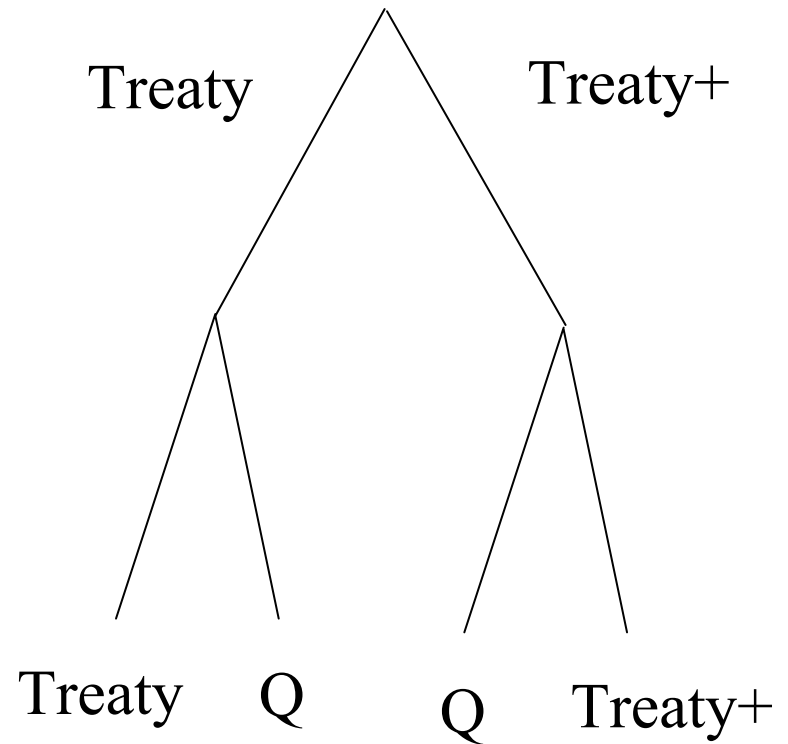
# Sophisticated Voting Example

<b>Democrats</b>	<b>Hawkish R</b>	<b>Dovish R</b>
Treaty+	No treaty	Treaty
Treaty	Treaty +	No treaty
No treaty	Treaty	Treaty +

Note that a majority prefers ratification of an unadorned treaty to rejection

# Agenda

- Add “proviso” to treaty
- If the proviso passes, pair the treaty with the proviso against the status quo (rejection)
- If the proviso fails, pair the treaty against rejection



# Outcome

- The proviso passes
- The amended treaty fails, *even though a majority would have favored the original treaty over the status quo*
- How to save ourselves? Sophistication