Polimetrics

Lecture 1

What we mean by preferences of political actors: an introduction

Overview


NOT SURE IF POLITICAL OPINIONS ARE DISGUSTINGLY UNINFORMED
OR PAINFULLY STUPID
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Overview

1. Why measuring preferences?
2. The notion of distance (and utility) in a one-dimensional policy space world
3. The notion of distance in a multi-dimensional policy world

It all began with…

Can we (**really**) think about politics in a non-spatial way?

Positions, Distance, Movement, Direction…

It all began with…positions!

Most people who talk about politics are likely to talk sooner or later about the “**positions**” of political actors

- ✓ It is difficult if not impossible to have a serious discussion about the substance of real politics without referring to “where” key actors **stand** on substantive matters at issue

It all began with…positions!

Systematic description of individual policy preferences are *therefore* grounded in the notion that a political actor has an **ideal or most-preferred policy** with regard to a particular issue, and that other policy options can be systematically compared to this "**ideal point**" in terms of their "**closeness**" to it

From positions to…distance

The very notion of **position** implies the notion of **distance**

- If you want to describe the positions of two key actors, you need to make sooner or later at least an implicit statement that these positions are either "the same" or "different"
- If they are different, it is difficult not to have some intuitive sense of whether they are somewhat **different or very different**

From positions to…distance

This intuition can become more systematic when describing the positions of **three or more actors**

- Now, it is possible to make substantively meaningful statements such as “Churchill and Roosevelt are closer together on this matter than are Churchill and Stalin”

From positions to distance to…movement

The very notion of **distance** implies the notion of **movement**

- It is very common when discussing about politics to talk about people “**changing**” their positions on some important matter, with the result that they are now “**closer to**” or “**farther away from**” some other person than they were before

From positions to distance to…movement

Once again, this is part of a common language people use when they talk about politics. Indeed, most political debate has to do with some people trying to **change the positions** of others on important matters at issue

From positions to distance to movement to…direction

The very notion of **movement** implies the notion of **direction**

- If my position moves closer to yours on some matter at issue, I have moved “towards” you on that matter
- All **movement is relative**. I can only observe and describe your movement **relative to** some benchmark

From positions to distance to movement to…direction

For example…

From positions to distance to movement to…direction

…it seems to be uncontroversial that the British Labour Party under the leadership of **Tony Blair** moved “towards the center”, and “away” from the more “left-wing” position it had occupied before

And now, under the new leadership of **Jeremy Corbyn**, things are changing once again

So back to our question…

Can we (**really**) think about politics in a non-spatial way?

DIFFICULT indeed!!!

The spatial metaphor

Spatial representations of the structure of political action are no more than a set of conventions that stress the relevance of concepts such as *positions, distance, movement, direction* when dealing with **political interactions and relationships**!!!

Why caring? An example

The capacity to locate for example political parties within a well-defined **common space** allows us to compare **parties** and **party systems** both **cross-nationally** and **over time**

1. It allows us to **compare party positions**, their similarities, their evolutions, as well as to contrast parties according to a variety of characteristics (electoral performance, government role, stability, etc.)
2. It helps us to **compare party systems** in terms of their degree of polarization, the direction of competition, the degree of convergence, etc.

It all began with…

3. It allows us to understand the dynamics, structure and **consequences of party competition**
4. It helps us to understand the working and effectiveness of **representative government**. For example, by comparing parties' positions to the preferences expressed by voters, we can gain a real and measurable sense of the extent to which **these two core components of representative government are mutually congruent**

Dimensions matter!

In an abstract theoretical sense, the structure of policy preferences in any political system can only be described by using a policy space of **very high dimensionality**, spanned by all potential policy dimensions (economic, social, foreign policy, etc.)

In practice, analysts usually confine themselves to policy spaces defined by a small set of "**salient**" policy dimensions

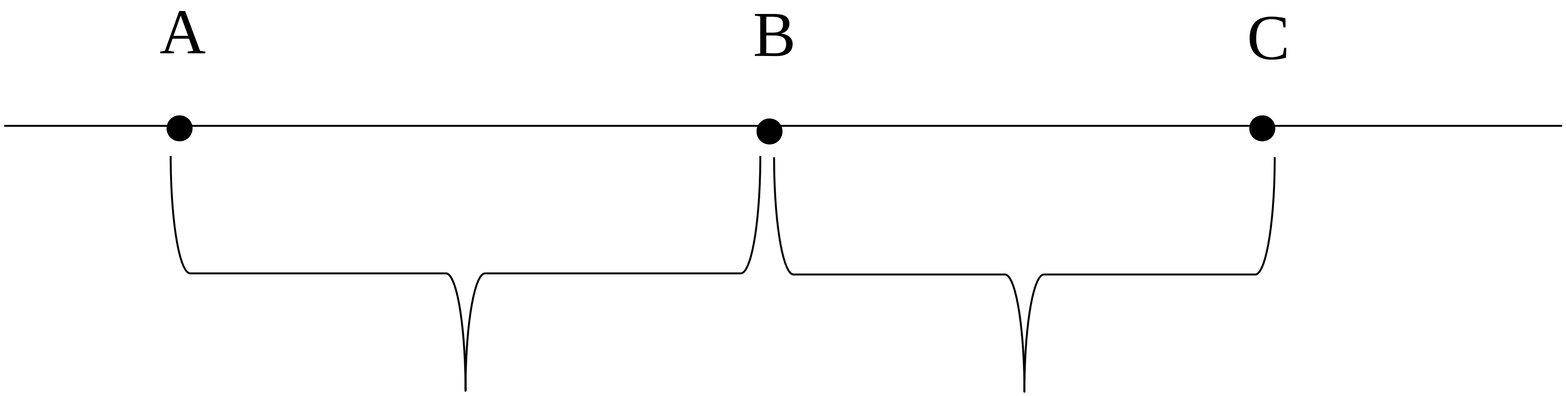
Dimensions matter!

- Typically, the dimensions deemed salient are few (1 or 2): most theorists are apt to fix the dimensionality of the policy space that they use in their analysis **by fiat**
- Yet, the dimensionality of a policy space has a fundamental impact on **theoretical analysis** (as we will see later…)
- Moreover, when we move from 1 to 2 dimensions, also the meaning of "**distance**" becomes more complex. Let's see how…

One dimension? No problem!

The key distinctions between different ways of measuring political similarity and difference collapse when **only one** dimension of difference is considered important

In this case there is only **ONE way** to measure the distance between two points: the **length of the segment dividing them**



One dimension? No problem (almost…)

However, remember…one thing is **distance**, another is the **utility an individual derives** from it

Spatial proximity models conceptualize **individual utility** over a particular alternative as **maximized** when the location of that alternative is **identical** to an individual's ideological ideal point

Utility decreases as the **distance** between the alternative and the individual's ideal point increases

That is, each individual's preference curves are **single-peaked** and **slope downward monotonically** from the point of highest utility

One dimension? No problem (almost…)

Nearly all researches conceptualizes the monotonic utility decrease as **linear or quadratic**

Linear loss implies that as ideological distance increases, utility decreases at a **uniform rate**; a shift from a deviation of 0 units to 1 unit will affect the utility the same as a shift from a deviation of 2 units to 3 units

Linear utility loss (i.e., which is the utility that party *i* derives from choosing a policy point A)?: $U_i = -|x_i - A|$

where U_i is the utility function of party *i*, x_i is the ideological position of such party along for example the Left-Right dimension, and A is the position of the policy point *A* along that same dimension

One dimension? No problem (almost…)

Of course, party *i* always prefers a higher utility to a lower one!

Suppose that $x_i = 5$, A=7, B=1

Which is the utility for party *i* if it chooses A? And what about its utility of it chooses B?

$U_i = -|x_i - A|$= -2

$U_i = -|x_i - B|$= -4

Therefore party A will always prefer A to B

One dimension? No problem (almost…)

Quadratic loss "penalizes" distant alternatives (those beyond 1 unit) at an **increasing rate** by squaring the deviations from one's ideal point

Quadratic utility loss: $U_i = -(x_i - A)^2$

One dimension? No problem (almost…)

Go back to our previous example

Suppose that $x_i = 5$, A=7, B=1

Which is the utility for party *i* if it chooses A? And what about its utility of it chooses B?

$U_i = -(x_i - A)^2$= -4

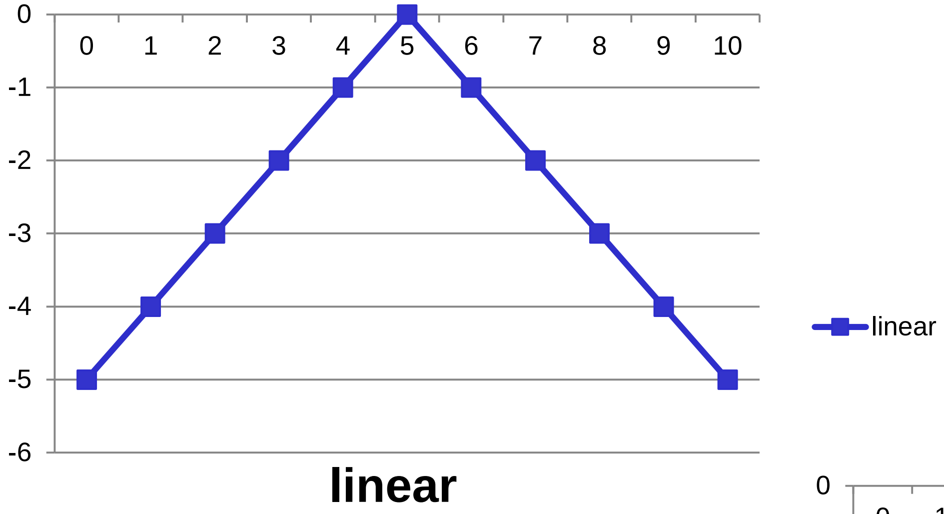
$U_i = -(x_i - B)^2$= -16

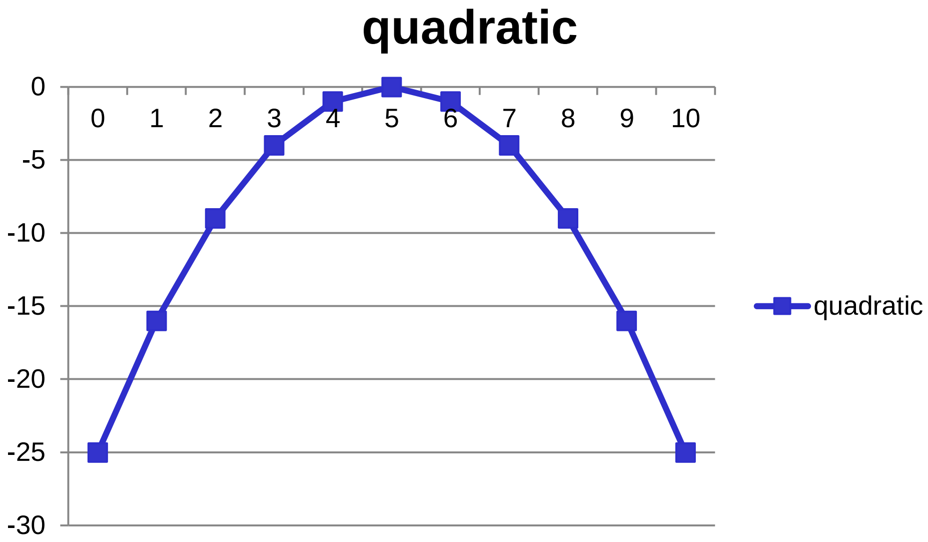
Interpretation: with a quadratic loss function, actors are risk-adverse (i.e., they face increasing marginal losses)

For example, a shift from a deviation of 0 to a deviation of 1 unit will still register as a loss of "1", while a shift from a deviation of 2 units to 3 units will register as a loss of "5" (3^2-2^2=5)

One dimension? No problem (almost…)

Assume x_i = 5 on a 0 to 10 one-dimensional scale





Dimensions matter!

Now, let’s go back to dimensionality…

The bi-dimensionality of the policy space involves the assumptions that are made about how people **trade-off** distance from their ideal point on one dimension against equivalent distances on the other dimensions

Dimensions matter!

This shows up **empirically** as a decision that must be taken over the **metric** to be used when measuring how a given individual perceives the policy distances between two points in a multidimensional policy space: we need to derive an overall indication of the «**policy distance**» between two points in such multidimensional space

Dimensions matter!

Overhelmingly the most common assumption is that distances on different policy dimensions are traded off in a manner that is **directly analogous** to the trading off of distances in physical space

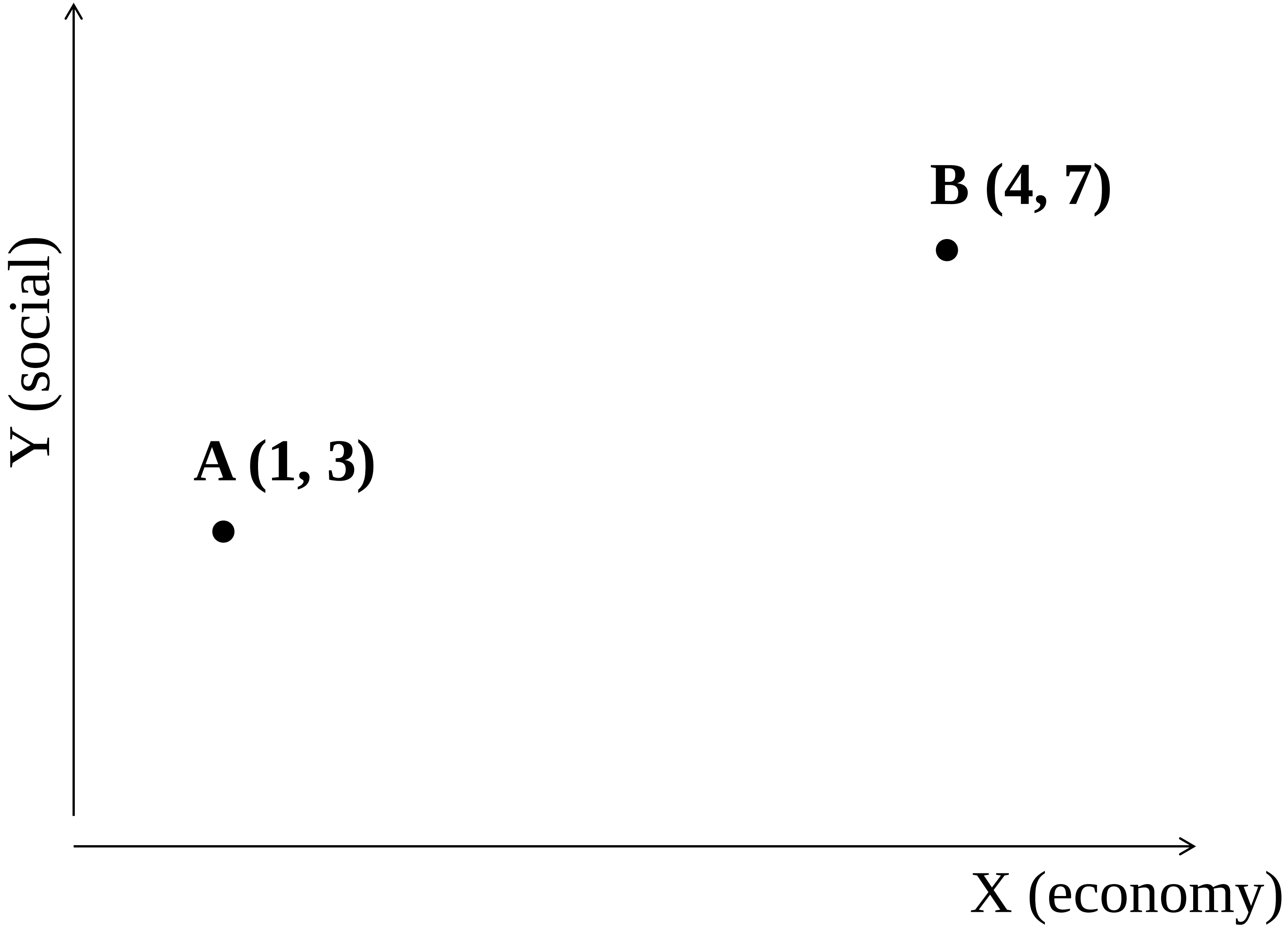
In other words, it is assumed that individuals view the interaction between policy dimensions in **Euclidean terms**

Dimensions matter!

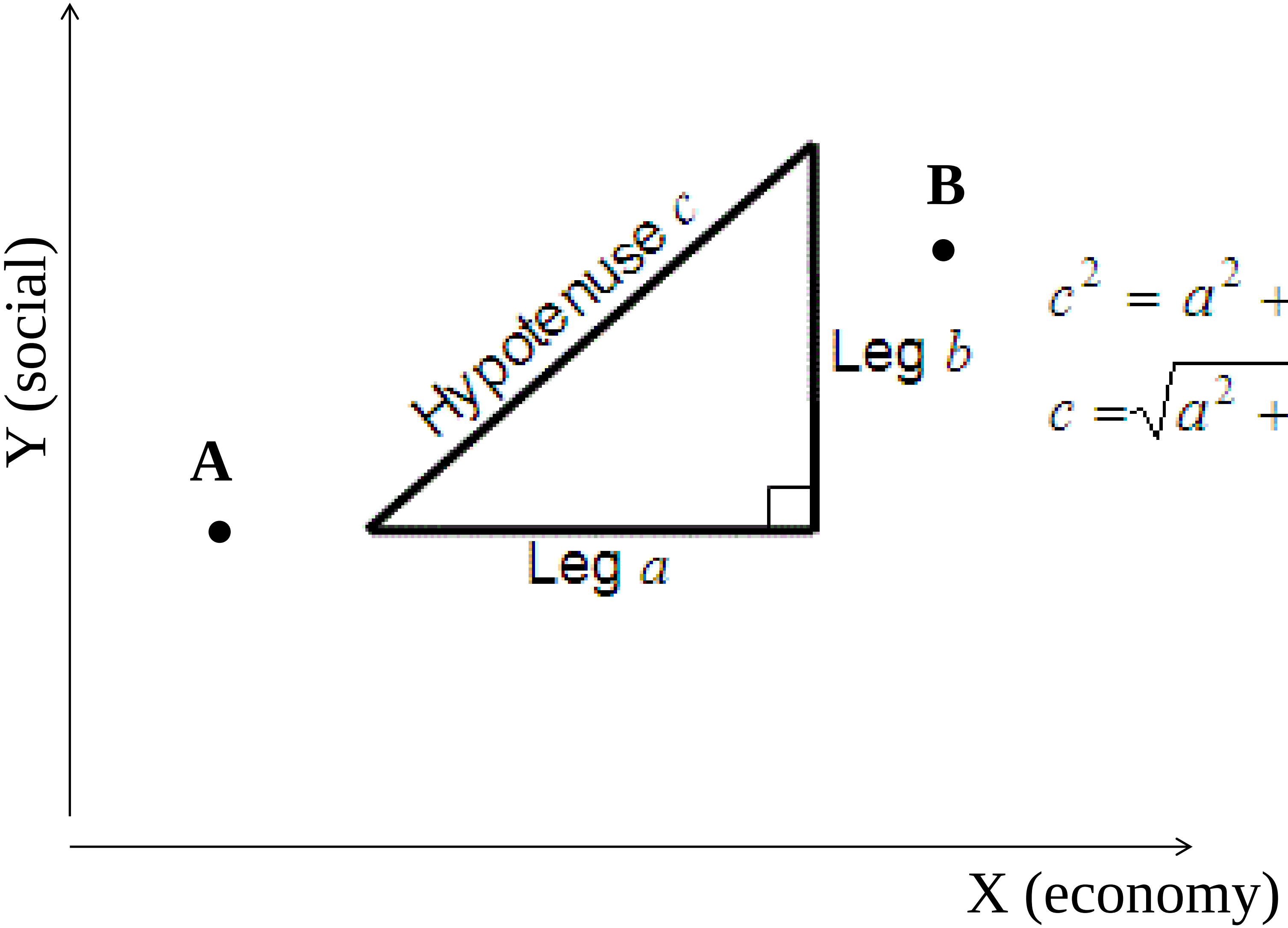
According to **Euclidean distance**, the distance between two points is simply the result of…the **Pythagorean Theorem!!!**

That is…*the square root of the sum of the squares of the distances* between two points on each dimension

Dimensions matter!



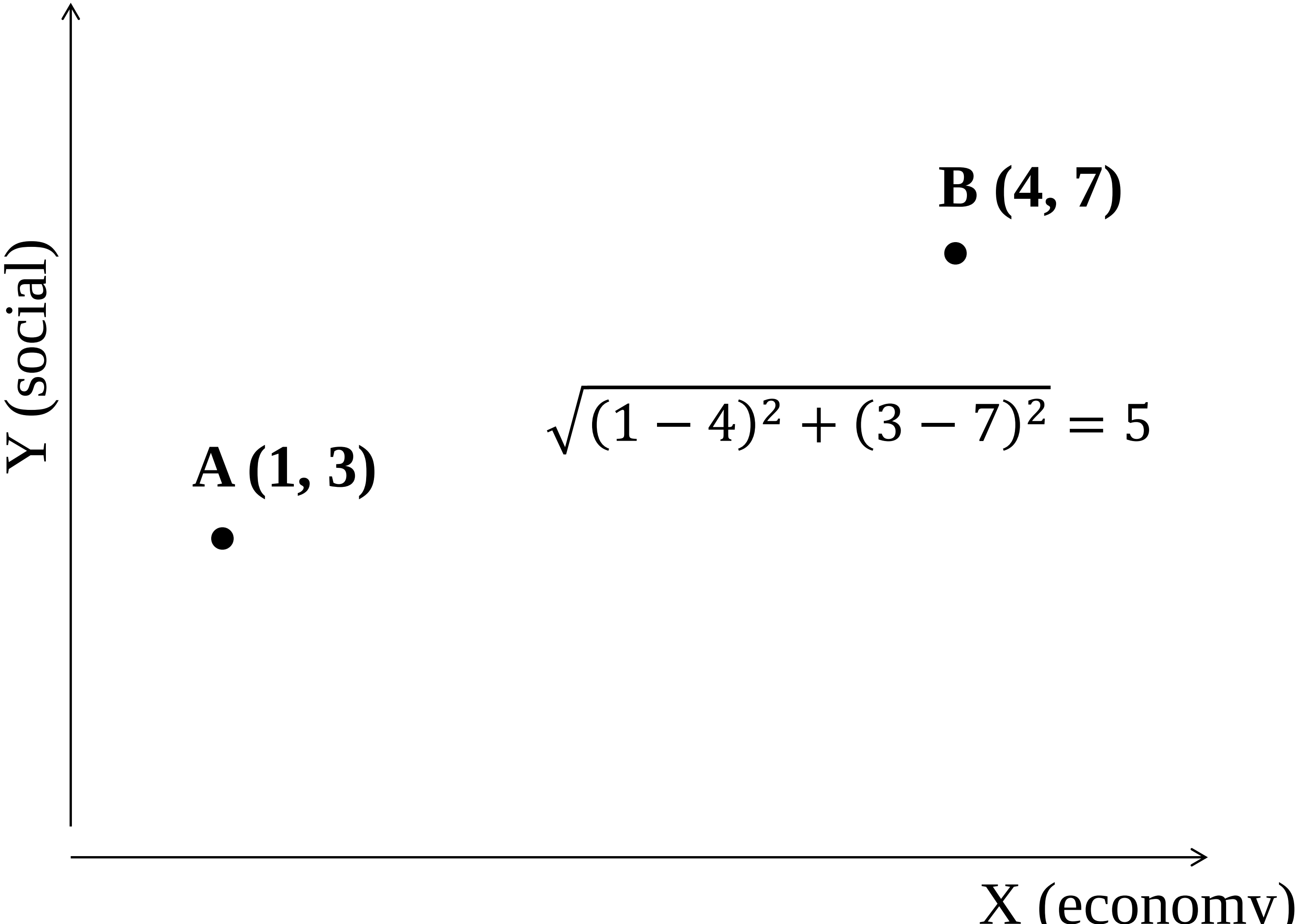
Dimensions matter!



$$c^2 = a^2 + b^2$$

$$c = \sqrt{a^2 + b^2}$$

Dimensions matter!



$$\sqrt{(1-4)^2 + (3-7)^2} = 5$$

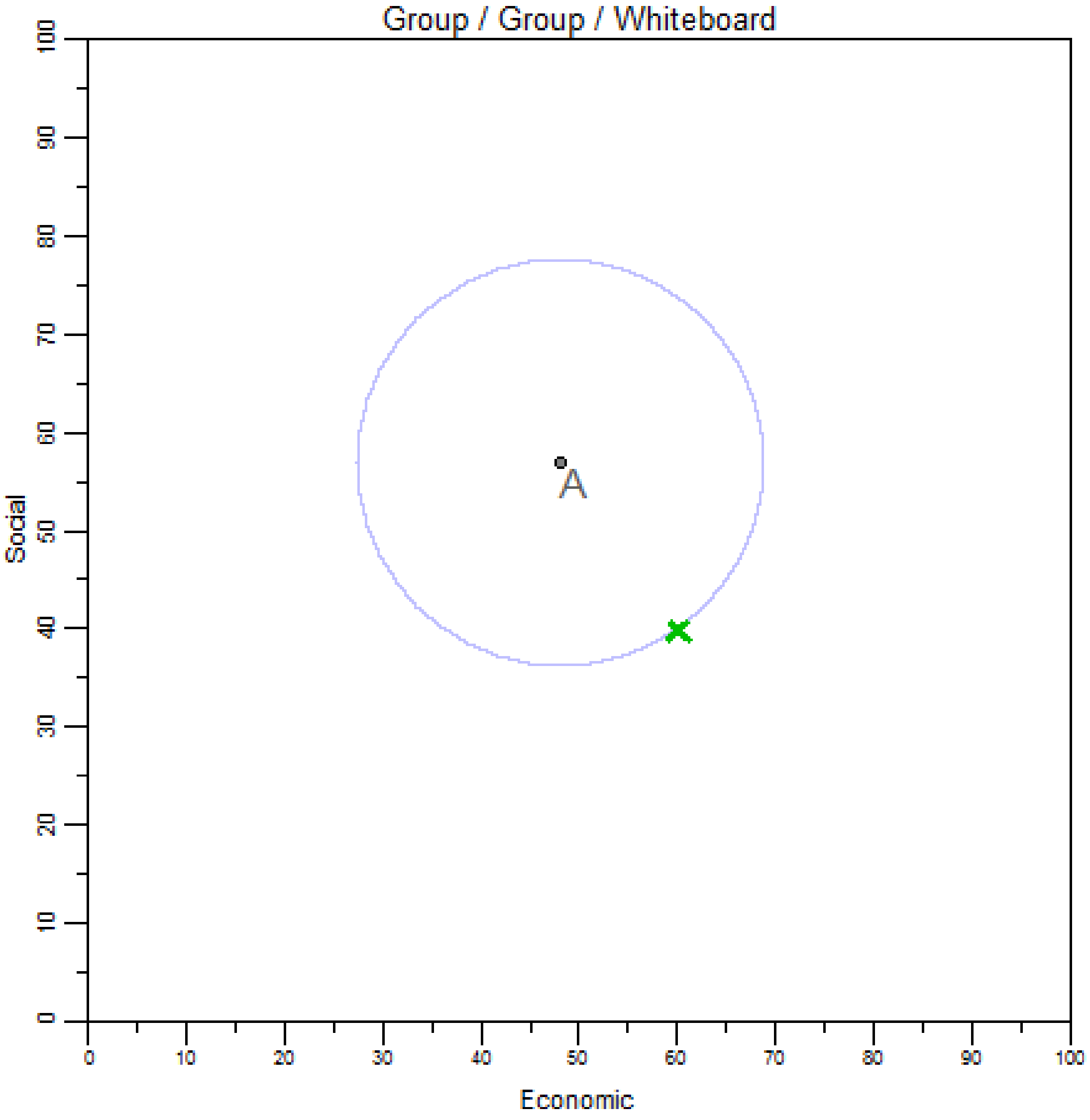
Dimensions matter!

The great advantage of the assumption of Euclidean preferences is that it allows policy space to be described and analysed in terms of a **familiar geometry**

It also allows us to describe how person A feels about policy X in terms of a **circular «indifference curve»** centred on A and passing through X

Everything inside the curve is preferred by A to X

Dimensions matter!



Dimensions matter!

Alternative to Euclidean preferences:

City Block geometry measures the distance between two points in a multidimensional space by simply **adding their distances** apart on each dimension

Why «city-block metric»?

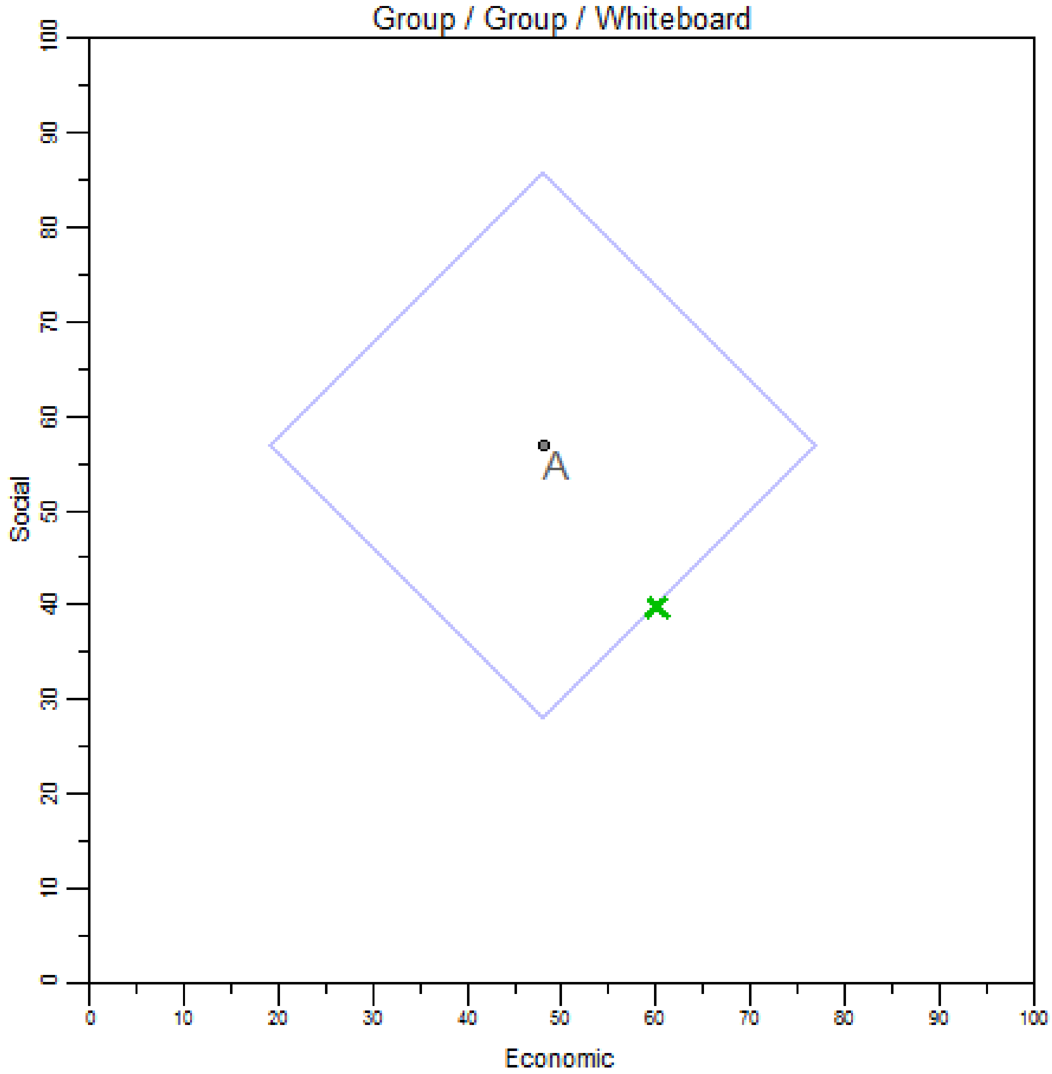
Dimensions matter!

The city-block metric is so-called because the effective distance between two points in a city must be measured in terms of movement that can take place only along the «dimensions» defined by the **alignment of the city blocks**

Since diagonal movement is not possible given city blocks, the Euclidean metric makes misleading estimates of the effective distance beetween two points in a city

The **indifference curve** of an actor in two dimensions is not anymore a circle, but **a square**

Dimensions matter!



Dimensions matter!

A considerable body of empirical psychological research suggests that the **City Block metric** fits human behavior better when the dimensions of difference are “**separable**,” and the **Euclidean metric** when they are “**integral**”

“Separable” dimensions: similarity on one dimension can be assessed quite independently of similarity on the other

“Integral” dimensions: similarity on one dimension <u>cannot be assessed</u> without regard to similarity on the other (e.g., such as allocation decisions with a fixed budget)

Dimensions matter!

Both the Euclidean and the City Block metric are special cases of a more general metric, the **Minkowski metric**, which defines the distance between a pair of points in terms of the distance between the coordinates of these points on salient dimensions

The distance d_{AB} between two points A and B, measured using the Minkowski metric, is

$$d_{AB} = \left(\sum_{i=1,n} |X_{iA} - X_{iB}|^r \right)^{1/r}$$

Where r is the **order of the metric**. In an Euclidean world, r=2. In a city block world, r=1; etc.

Dimensions matter!

The **widespread use of Euclidean spatial representations** by political scientists is a matter of convenience, convention and mathematical tractability

Issue of salience

Up to now we have assumed that actors attach **equal importance** to both dimensions in a multi-dimensional space. Still this should not be always the case. It could happen that for one person, a dimension (such as economy) is **twice as important** as the second one (such as the social one)

Which implications?

Now distances on the economic dimension have **twice as much weight** in calculations of the distance between two points as do distances on the social dimension

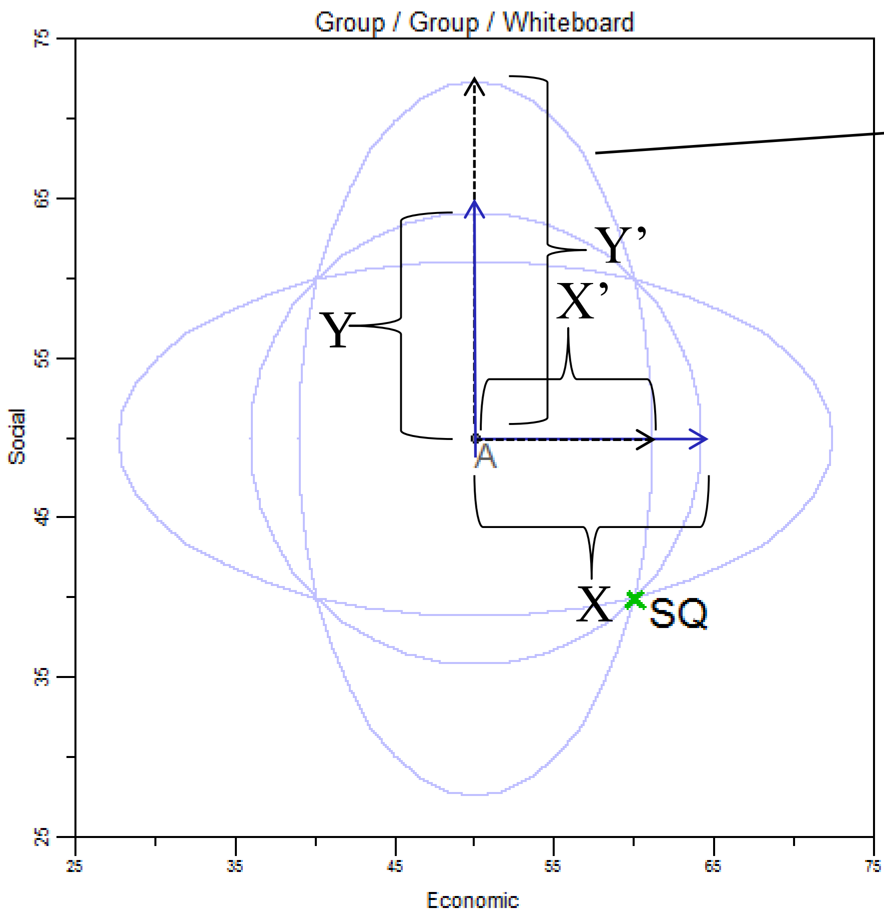
Issue of salience

Therefore, for any individual we need to know both her position on some particular dimension of interest and the **importance** she attaches to this dimension relative to other dimensions of interest

This allows us to capture the **different views** that people may have of the same underlying spatial map

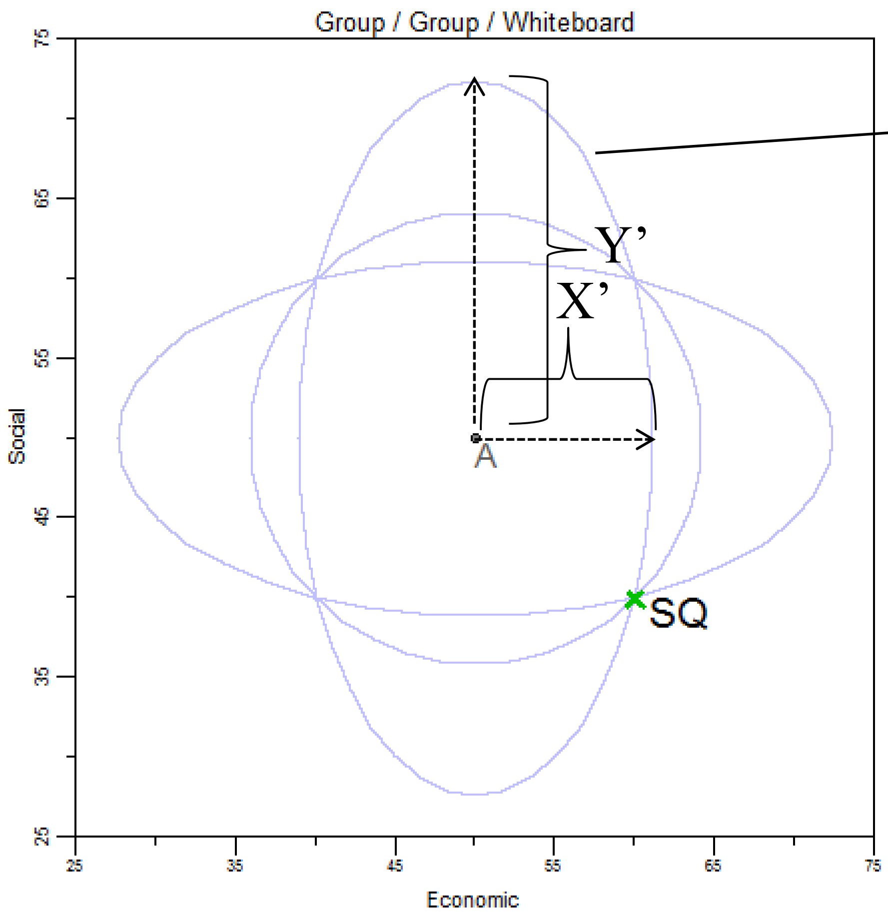
The indifference **curve** of actors now are **elliptic curves**

Issue of salience



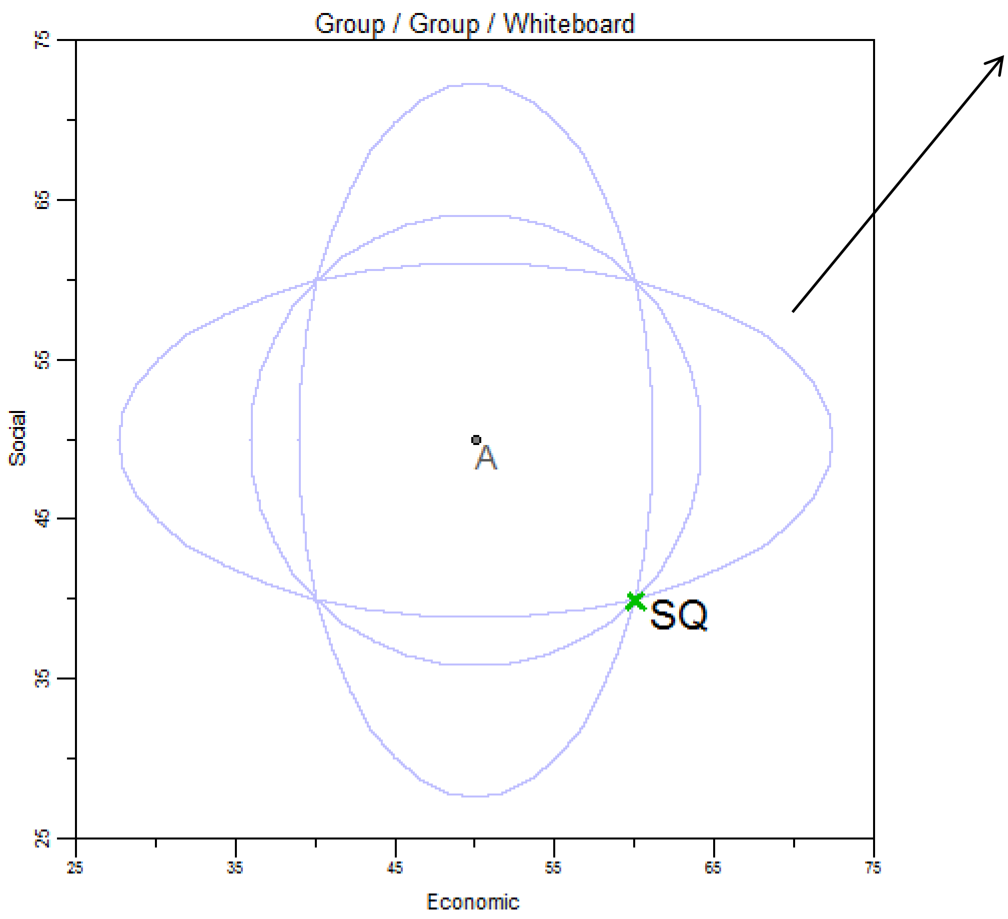
In this case, economic policy is **twice as important** than social policy for actor A (no ellliptic curve: X=Y; elliptic curve: X'<Y' – i.e., Actor A evaluates exactly in the same way the two segments, despite their different lenght!)

Issue of salience



X'<Y' – i.e., Actor A is willing to trade much more on Y' to get in exchange much less of X', cause the latter is more important to her than the former

Issue of salience



In this case, social policy is **twice as important** than economic policy for actor A (no ellliptic curve: X=Y; elliptic curve: X'<Y' – i.e., Actor A evaluates exactly in the same way the two segments, despite their different lenght!)

Space, distance and rationality

Using spatial representations of policy preferences involves making **assumptions** about the **rationality** of those political actors whose views are being modelled

Represening preferences of political actors within a space, implies implicitely that you assume that such actors have **complete and transitive preferences**…that is, they are **rational actors**!

Space, distance and rationality

Assumpion of completeness: the political actor is assumed to make her choices in accordance with a complete preference ordering over the available options (in the space)

Assumption of transitivity: If alternative A is (weakly) preferred to alternative B, and B (weakly) to C, then A is (weakly) preferred to C