

# Network Analysis of Marriages Among German-Speaking Royal Families Between 1600 and 1899

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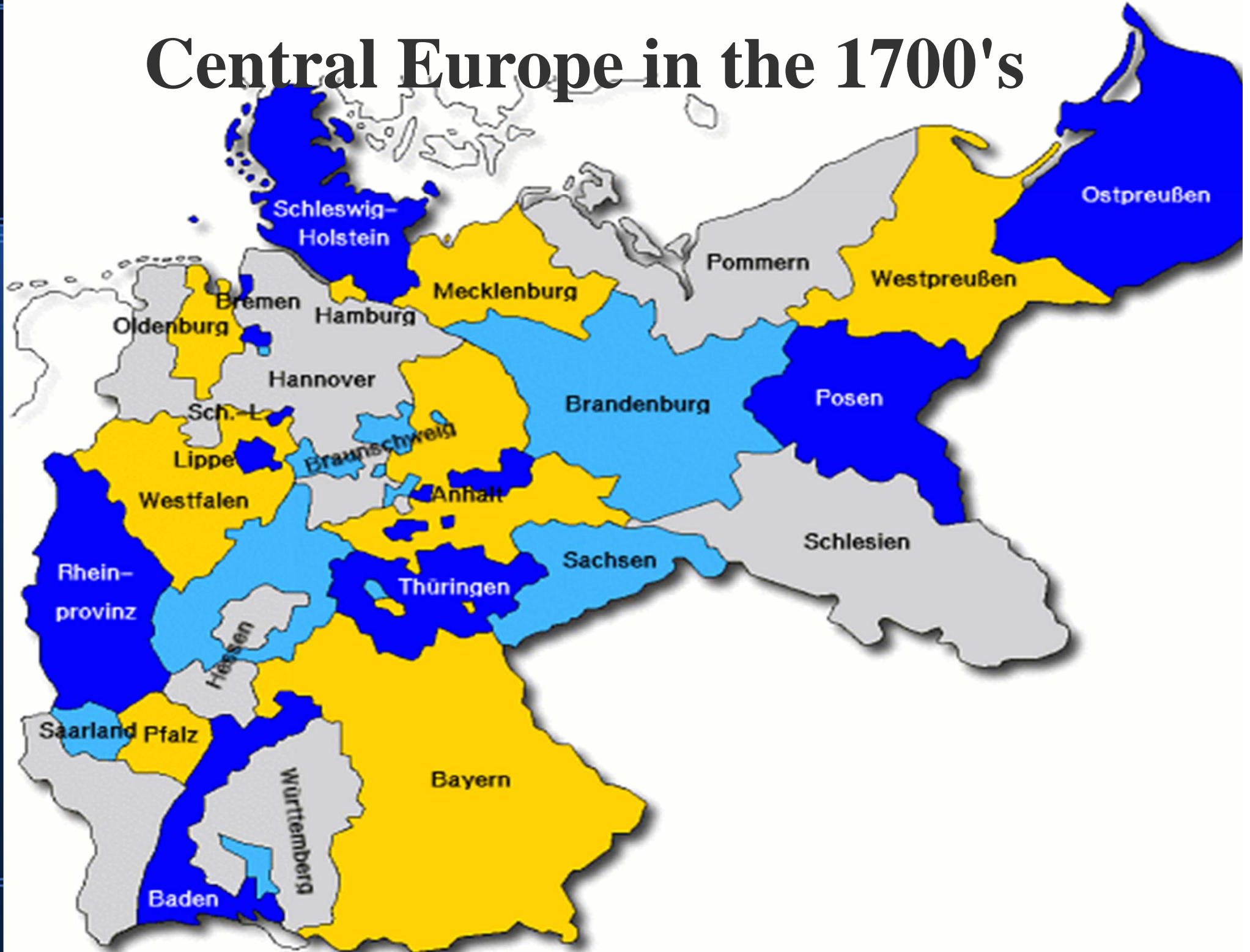
Austria

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# Central Europe in the 1700's



# Background & Overview

- Social Significance of “Marriage” and “Royal Families.”
- Power Inequalities / Homophily (Endogamy  $\Leftrightarrow$  Exogamy)
- “Marriage” = Identity; Social Security; Business Contract;  
Announcement of Achievement / Arrival
- “Marriage” = Highlight of Career; Centerpiece of Life
- “Marriage” = Weapons of War / Peace.
- *EXAMPLES: President Nicholas Sarkozy; Napoleon Bonaparte; President Barrack Obama (Anti-Miscegenation Laws); King Edward VIII; Former Secretary of State Condoleezza Rice; Monica Lewinsky; Indian Caste System; Irish Travellers; Inter-Racial Marriages in the US; Gay Marriage; Protestant/Catholic Marriages.*

# Background & Overview

- “Marry-Up” Theory (From *Cosmopolitan* Magazine)
  - *Ceteris paribus*, a Woman Will Try to Raise Her Status through Marriage.
- Bipartite Relationship / Origin of Agency
- Hypotheses → Data & Methods → Parameters → Results → Conclusions

# Data & Methods

- Isenburg-Stammfuln (*Isenburg Genealogy Archive Table*).
- From 1600 to 1899 in Twelve 25-Year Waves (*300 Years*).
- “Units of Analysis” = German-Speaking Royal Families from:
  - Austro-Hungarian Empire, Bavaria, Denmark, England, France, Italy, Poland, Prussia, Russia, Sicily, Spain, Sweden, *etc.* ( $N = 50$ ).
- “High Status” = Electoral Families (*der Kurfürst [D]*):
  - *Rhein, Böhmen, Brandenburg, Saxon, Saxon-Brandenburg, and Saxon-Lauenburg.*

# Hypotheses

## *Wilko-Pierce Theorem*

( ~ “Marry-Up” Theory / Social Capital Theory)

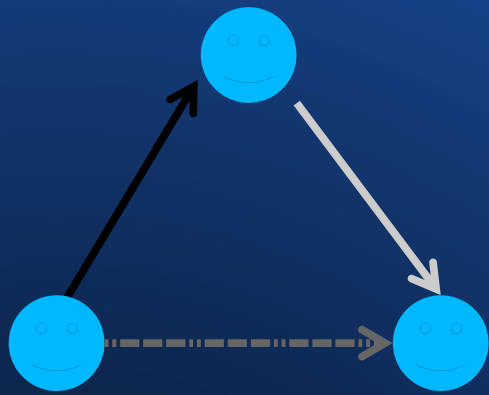
**H<sub>1</sub>** : Higher Status Families Prefer Endogamy.

**H<sub>2</sub>** : Men from Higher Status Families REMARRY with Women from Lower Status Families.

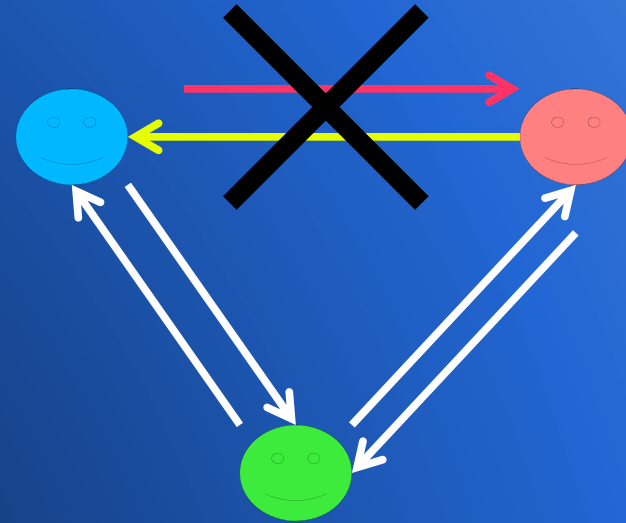
**H<sub>3</sub>** : All Marriages Are Arranged.



# Royal Marriages



Transitive Triplets



Shadchen Triad



Families



Propositions

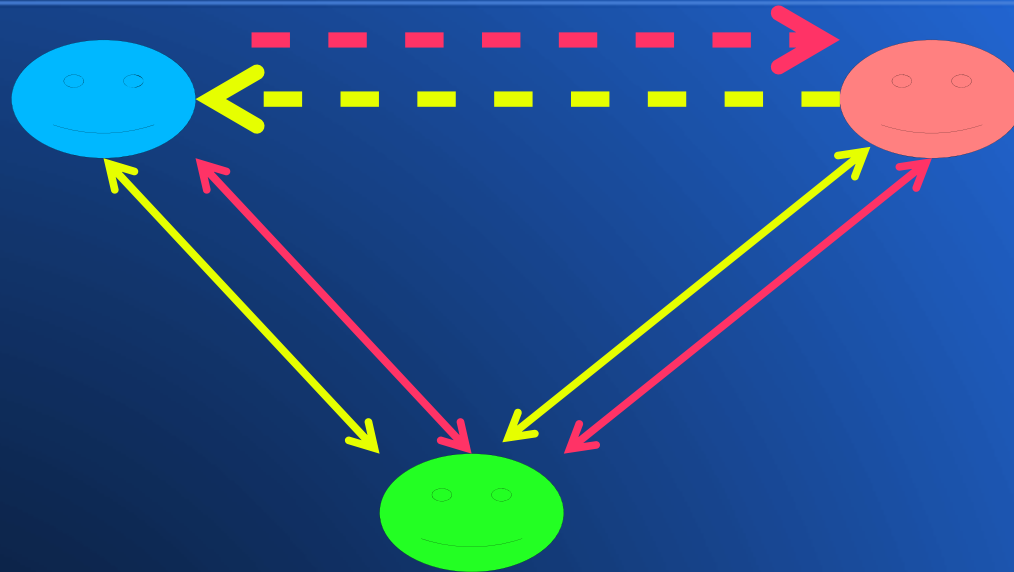


Initial Proposition



Reciprocal Acceptance

# Royal Marriages



“Shadchen” Triad Model  
(~ Three-Cycle)



Families



Initial Proposition

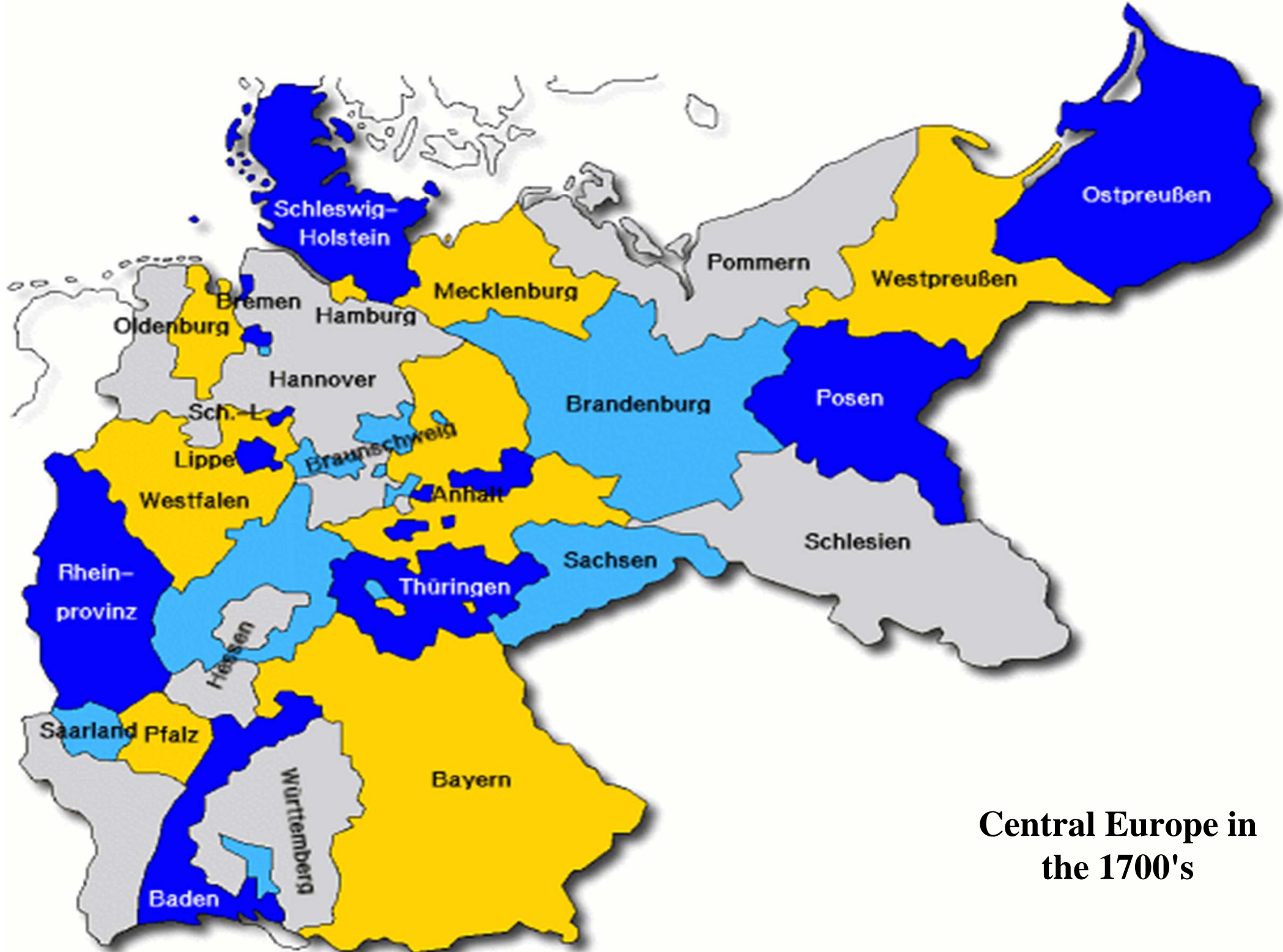


Reciprocal Acceptance



# Parameters

- Unit of Analysis = 134 *German-Speaking Royal Families*
- Unilateral Initiative and Reciprocal Confirmation
- Parameter 1 = *Reciprocity*
- Parameter 2 = *Transitivity*
- Parameter 3 = *Cyclicity*
- Control Variable 1 = *Propinquity*
- Control Variable 2 = *Religion*
- Control Variable 3 = *Gender*



**Central Europe in  
the 1700's**

# Results

( $N = 134$ )

\* -  $p < 0.05$   
\*\* -  $p < 0.01$   
\*\*\* -  $p < 0.001$

Time 1 2 3 4 5

Density

Avg. Degree

No. of Ties

Missing %

Average Degree =

# Results

( $N = 134$ )

\* -  $p < 0.05$   
\*\* -  $p < 0.01$   
\*\*\* -  $p < 0.001$

ie Changes Between Subsequent Observations

0 => 0

0=>1

1=>2

2=>3

3=>4

4=>5

=>2

=>3

=>4

=>5

Actions:

Down

Up

Constant Missing Steps:

Down

Up

Periods

1 => 2

2 => 3

# Results

## Baseline Model

( $N = 134$ )

\* -  $p < 0.05$   
\*\* -  $p < 0.01$   
\*\*\* -  $p < 0.001$

Jaccard Index

Out-Degree 0.876	-0.000	()	-
Reciprocity 0.876	-0.000	()	-
Transitive Triplets 0.876	-0.000	()	-
3-Cycles 0.876	0.000	()	**
In-Degree Accumulation ( <i>Sqrt</i> ) 0.876	-0.000	()	**
Out-Degree Popularity ( <i>Sqrt</i> ) 0.876	-0.000	()	**
Out-Degree Activity ( <i>Sqrt</i> ) 0.876	-0.000	()	**

	Estimate	SE	
In-Degree=Out-Degree Correlation 0.876	-0.000	()	**

# Results

Restricted Model

( $N = 134$ )

\* -  $p < 0.05$   
\*\* -  $p < 0.01$   
\*\*\* -  $p < 0.001$

- Restricted Model

# Results

Full Model

( $N = 134$ )

\* -  $p < 0.05$   
\*\* -  $p < 0.01$   
\*\*\* -  $p < 0.001$

## RATE PARAMETERS

Period 1

Period 2

Period 3

## STRUCTURAL EFFECTS

Out-Degree (*Density*)

Transive Triplets

Popularity In-Degree (*Sqrt*)

## RECIPROCITY

3-Cycles

Popularity Out-Degree (*Sqrt*)

Assortativity In-Degree (*Sqrt*) to Out-Degree (*Sqrt*)

## DYADIC CO-VARIATE EFFECTS

Relation to Formal Hierarchical Higher Status

Relation from Formal Hierarchical Higher Status

Relation between Members of Same Status



# Conclusions

- $H_1$  is supported. (*Higher Status Families Prefer Endogamy.*)
- $H_2$  is supported.
  - (*Men from Higher Status Families Remarry with Women from Lower Status Families.*)
- $H_3$  is also supported. (*All Marriages Are Arranged.*)

*Wilko-Pierce Theorem*

*Wij Danken*

*U*

*Voor Uw*

*Aandacht!*

# Questions & Answers

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