

# **Usage-Based Cognitive Models. Synonymy as an operationalisation of conceptual structure**



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# **Idealised Cognitive Models** vs. **Usage-Based Cognitive Models**

Wierzbicka (1985)

Linguistic Relativity - **Lexical semantic structure indicative of conceptual structure**

Lakoff (1987)

ICM - Conceptual structure is **categorised and shared by speakers.**

Generalisations can be made by an **“idealised” grammar of cultural logic** – the Idealised Cognitive Models

**BUT**

1. No way of falsifying claims about the categories of conceptual structure
2. No way of knowing who or in what situations speakers draw on

Geeraerts & al. (1994)

**Patterns of lexical usage** represent onomasiological structure of speech communities

Usage-Based Cognitive Models

Onomasiological structure indicative of **context sensitive Cognitive Models**

# Case Study

## 19C & 20C American LIBERTY - FREEDOM

1250 examples  
625 exx of *liberty*  
625 exx of *freedom*

100 exx from 19C News (10 per decade)  
100 exx from 19C Fiction (10 per decade)  
160 exx 1920 – 2000 Popular magazines (10 per decade)  
200 exx from 20C Fiction (10 per decade)  
200 exx from 20C News (10 per decade)  
500 exx from *TIME Magazine*, 1920 – 2010 (10 per decade)

Work in Progress  
will be extended to other lexemes, e.g.: *opportunity, independence*

## Usage-Feature Analysis (Behavioural profile)

Lexeme – *liberty, freedom*

Time – 1800s, 1810s ... 90s, 2000s

Syntax – *for* NP, *of* NP, *to* NP, NP *for*, NP *from*

Argument – Subject, Object

Experiencer – Nation, Society, Individual

Head Verb – large range of verbs. Most common: *fight, want, give, need, keep, enjoy, value, have...*

Figurativity – Literal, Metaphoric

Agentivity – LIBERTY-FREEDOM is the Agent or the Patient

Source domain – MANIPULATABLE OBJECT (*give, take, have, hand, find*), VALUABLE OBJECT (*win, struggle for, fight for, keep, earn*), BUILDING (*construct, build, support, lay foundations*), IDEAL, PLACE

Thematic Topic of Discourse – Economics, Law, Society...

# Examples

## Experiencer

- a. Society - ... continue their lives and occupations free from molestation, discrimination or persecution, with full freedom of religion
- b. Individual - Then it occurred to us that we could buy their freedom
- c. Nation - ... forced Ireland to look to republicanism as the savior of its ancient liberty

## Metaphor

### a. MANIPULATABLE OBJECT

do not rush madly for any specific destination for this will not bring the freedom absolutely essential for complete recovery

### b. VALUABLE OBJECT

rulers in London, Paris and the Hague saw subject peoples demand and win their freedom

### c. BUILDING

exchange and consumption of goods, which are the material foundations of the liberty and welfare of all peoples;

## Lexical Structure of Cognitive Model

Both lexemes share all syntactic patterns, metaphors, and other semantic usage features.

Grammatically, metaphorically, and semantically the two lexemes are very close synonyms.

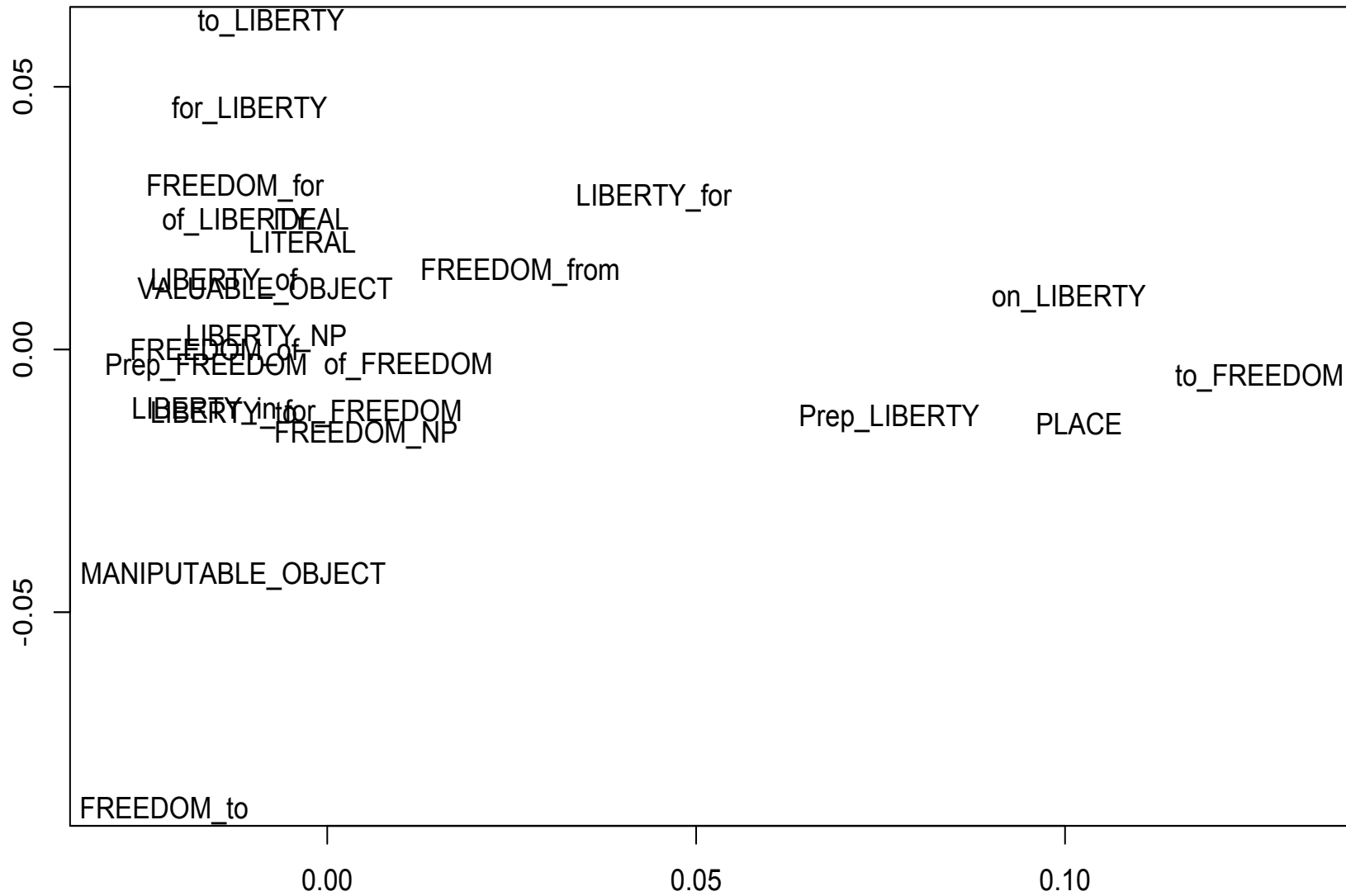
no lexical semantic tendencies

some metaphoric tendencies

but

statistically significant and predictive differences only in syntax

# Metaphor, Lexeme-Syntax



## Lexeme and Lexical Semantics

### Logistic Regression: liberty vs. freedom – semantic factors

	Estimate	Std. Error	z value	Pr(> z )	
source_domain_LITERAL	-0.22454	0.36363	-0.618	0.53690	
source_domain_MANIP_OBJECT	-0.98425	0.36888	-2.668	0.00763	**
source_domain_MET_MISC	-0.50830	0.53214	-0.955	0.33948	
source_domain_PLACE	-1.23910	0.55316	-2.240	0.02509	*
source_domain_VALUABLE_OBJECT	-0.68277	0.36707	-1.860	0.06288	.
Theme_Law	0.45283	0.90413	0.501	0.61648	
Theme_Society	0.67662	0.73468	0.921	0.35706	
Experiencer_Nation	-1.10285	0.37738	-2.922	0.00347	**
Experiencer_Society	-0.02659	0.29993	-0.089	0.92935	
AGENTIVITY_Non_Agent	-2.73839	1.08443	-2.525	0.01156	*

**C - 0.677**

**R2 - 0.137**

### Same model with syntax

Syntax_NP	-1.07039	0.44277	-2.417	0.01563	*
Syntax_NPfor	-1.62770	0.76388	-2.131	0.03310	*
...					
Syntax_NPof	-2.55774	0.55192	-4.634	3.58e-06	***
Syntax_NPto	-2.08973	0.64986	-3.216	0.00130	**

**C - 0.806**

**R2 - 0.362**

## **Extralinguistic Dimensions of a Cognitive Model**

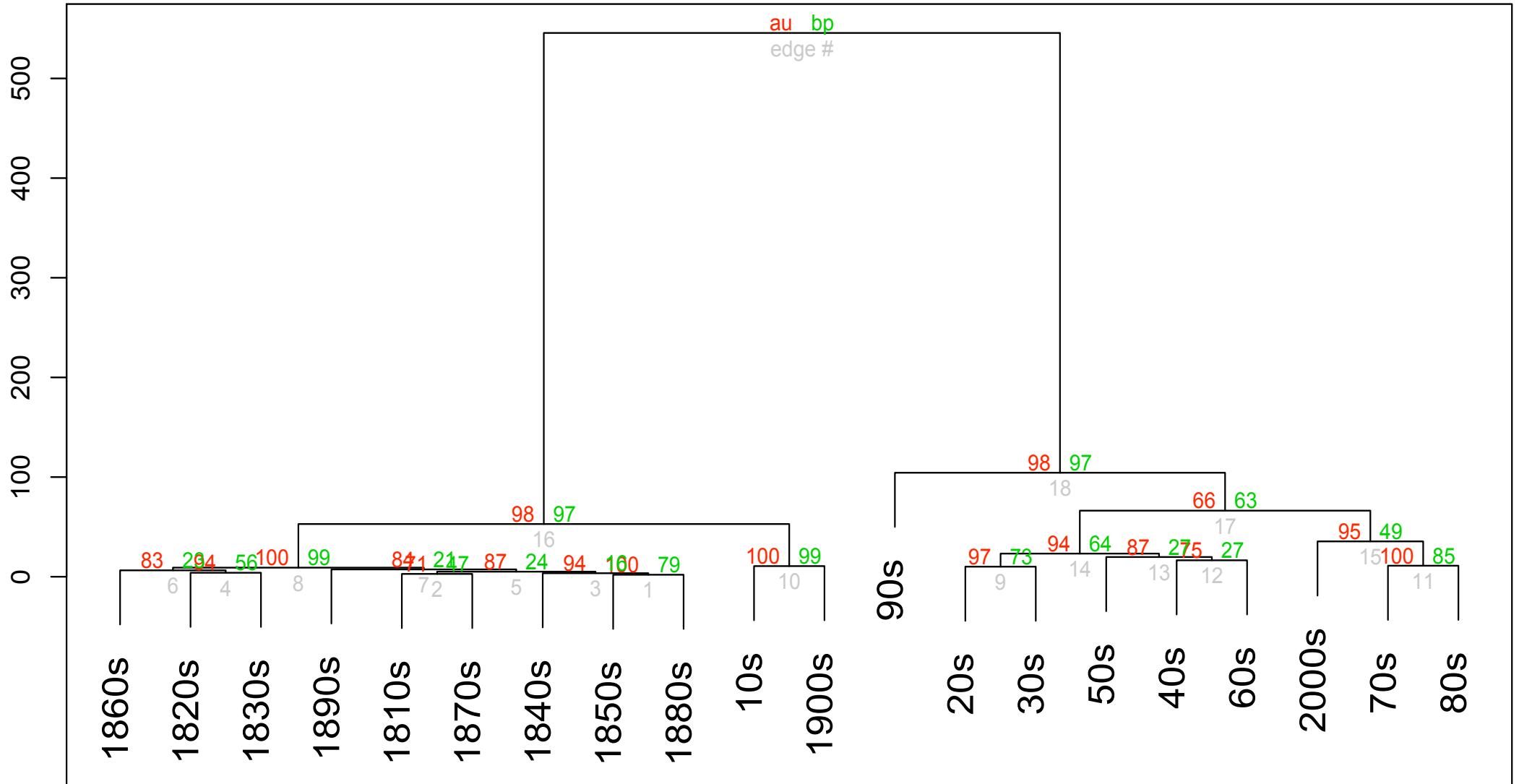
Is the lack of clear lexical semantic patterns because there is no internal structure to the Cognitive Model?

Perhaps conceptualisation of LIBERTY - FREEDOM changes over time or from context to context

This is the kind of structure is very difficult to ascertain in a non-usage-based approach.

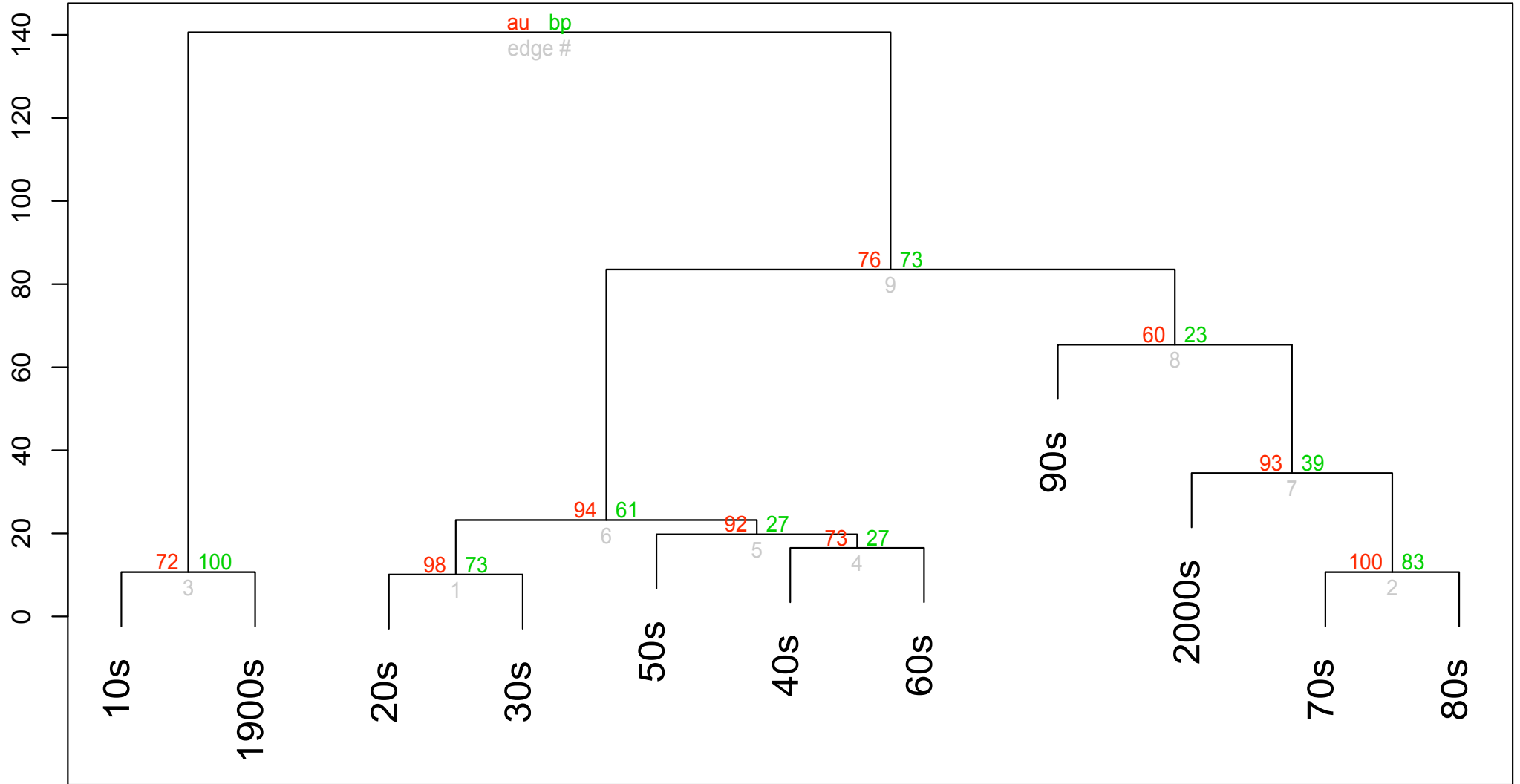
# Diachronic Liberty-Freedom Clustered by Metaphor and Experiencer

Bootstrapped HCA, dist. Matrix Euclidean, cluster method: ward



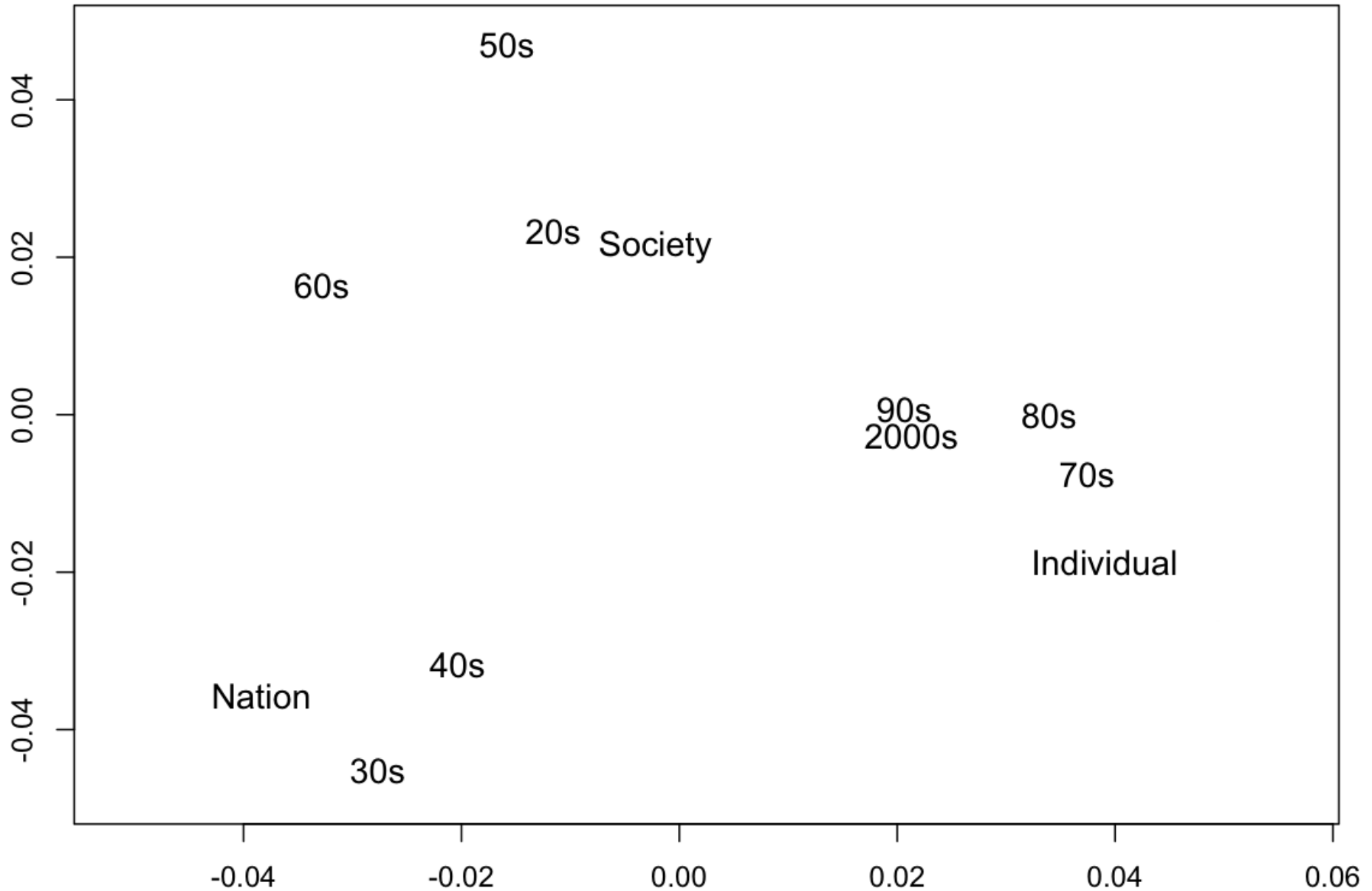
# Diachronic LIBERTY-FREEDOM Clustered by Metaphor and Experienter

Bootstrapped HCA, dist. Matrix Euclidean, cluster method: ward



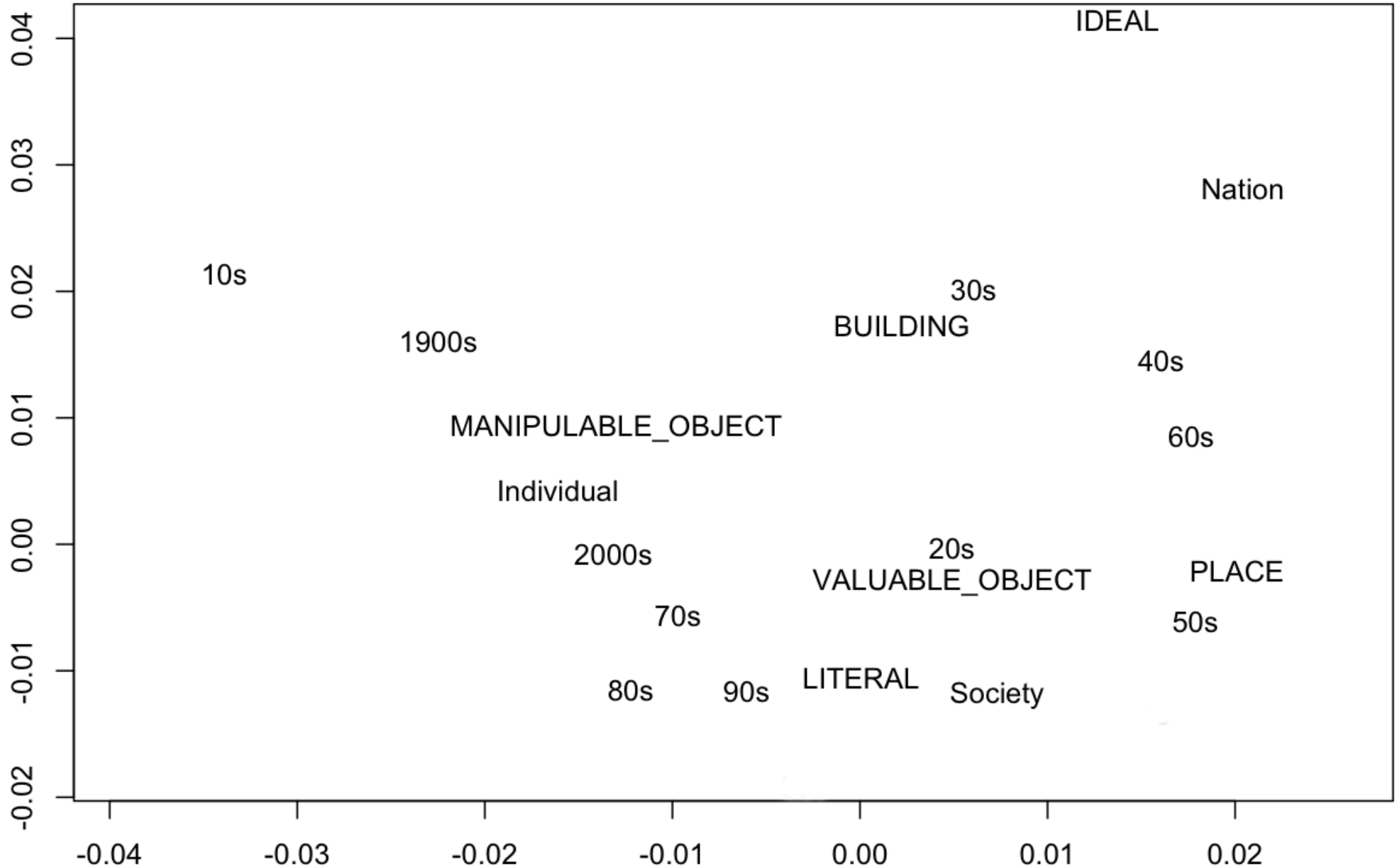
# Diachronic LIBERTY – FREEDOM and Experienter

Binomial Correspondence Analysis, dist. Matrix Euclidean, method: average



# Diachronic LIBERTY – FREEDOM, Metaphor, Experienter

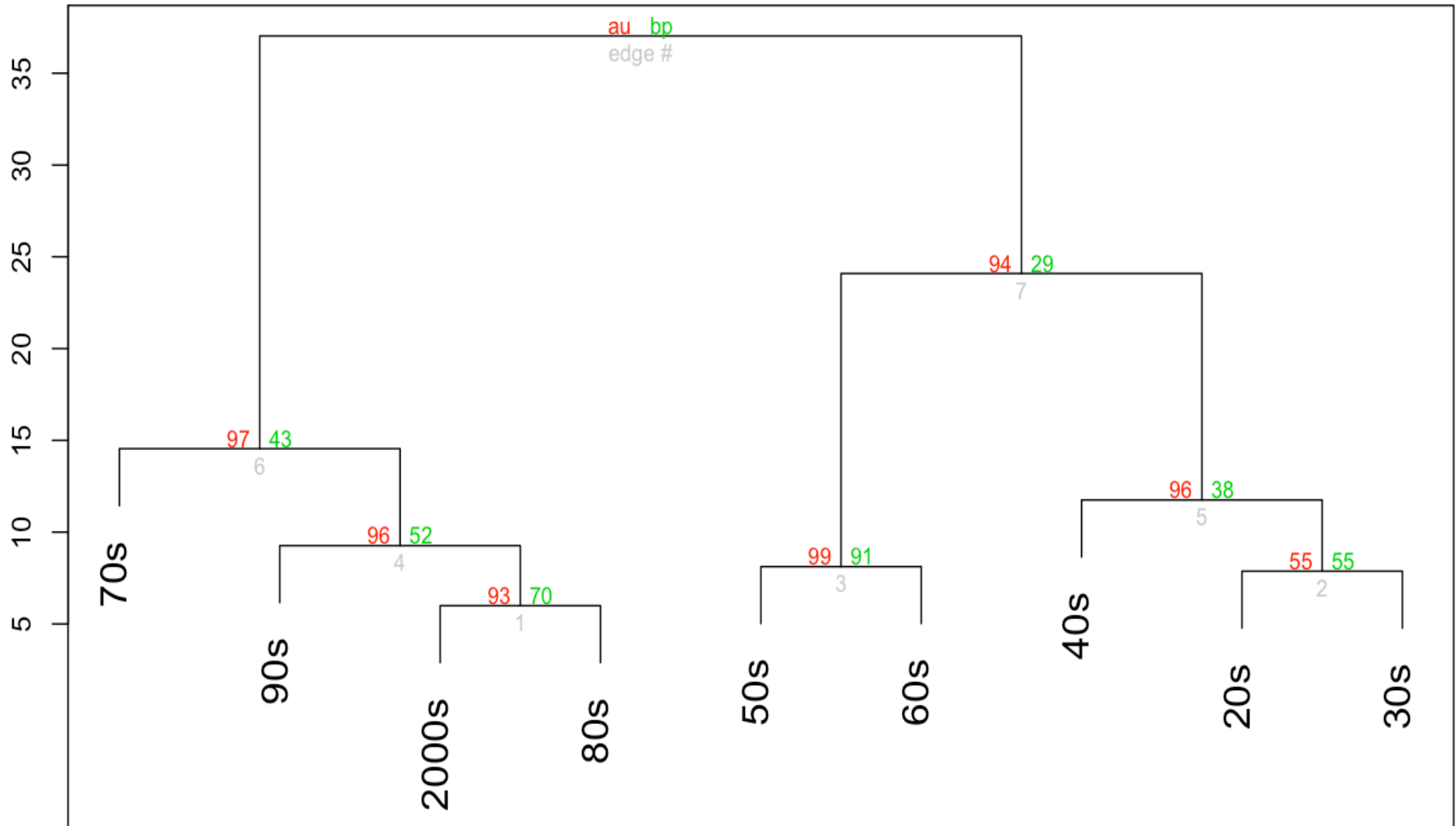
Binomial Correspondence Analysis, dist. Matrix Euclidean, method: average



## **Diachronic *Liberty***

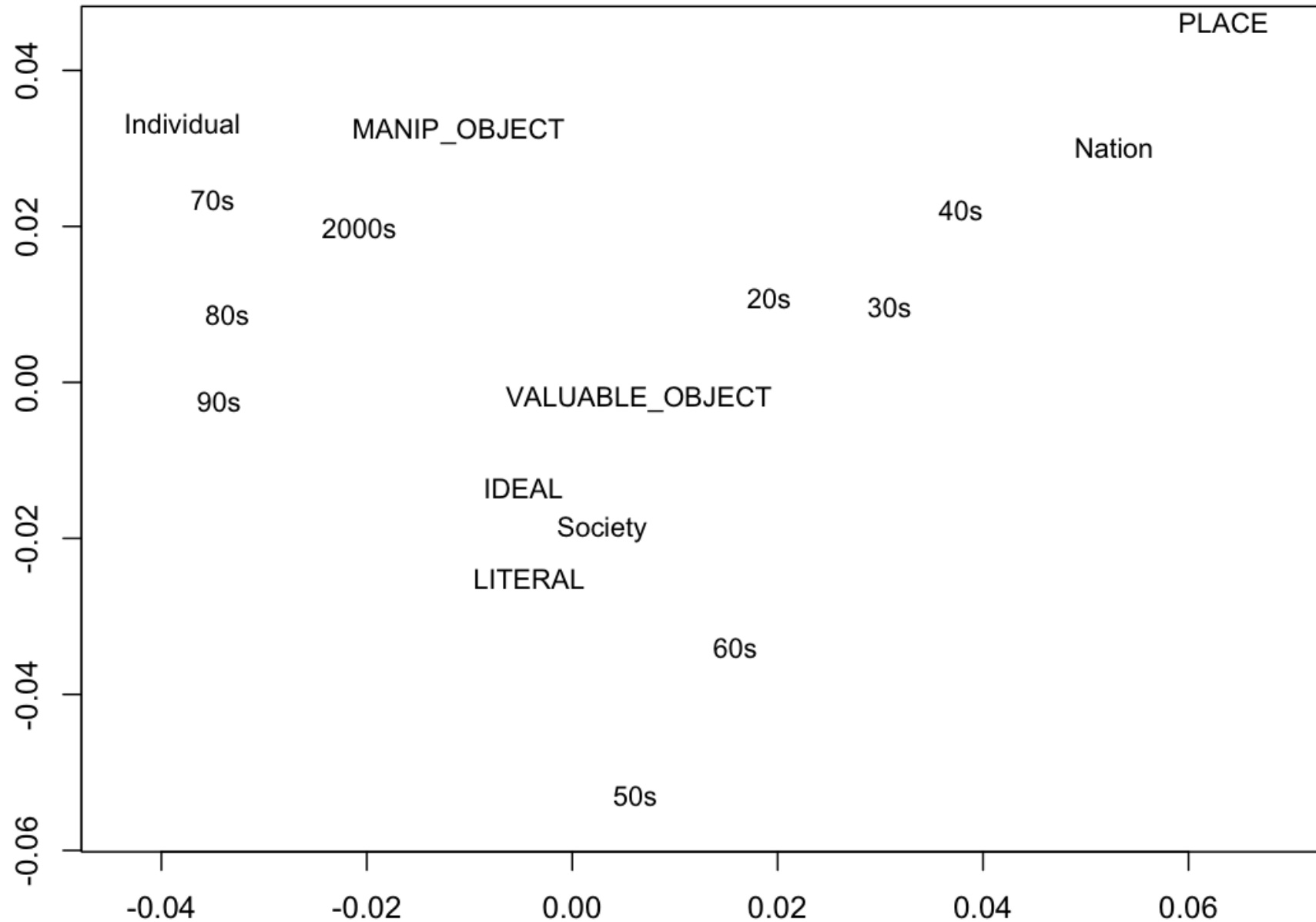
# *Liberty* Cluster Analysis Experiencer, Metaphor, Agentivity

Dist - Euclidean, Method - Ward, bootstrapped for significance scores



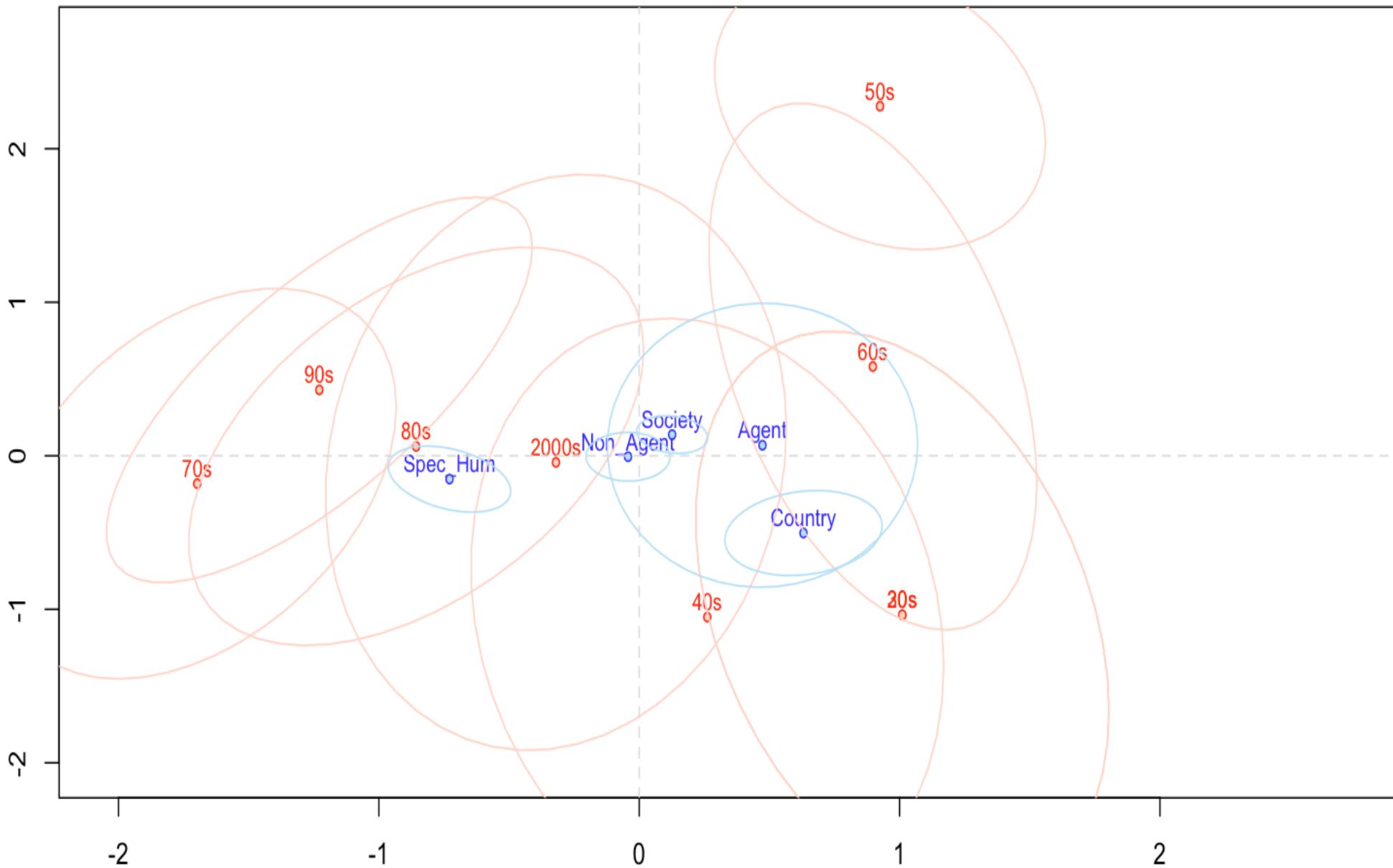
# *Liberty Time, Metaphor, Experienter*

Binomial Correspondence Analysis, dist. Matrix Euclidean, method: average



# *Liberty Agentivity and Experencer*

Joint Correspondence Analysis, Confidence Intervals - Chi-squared, method: 1dim 1 - centroid



# Results for Diachronic Structure of Cognitive Model

## **Metaphoric structure of FREEDOM-LIBERTY**

20C - FREEDOM-LIBERTY is a VALUABLE OBJECT

Fin de siècle - MANIPULABLE OBJECT

The Wars (20s, 30s, 40s) – FREEDOM-LIBERTY is a PLACE

Baby-Boomers (50s, 60s) – no predominant metaphoric conceptualisation

Late Capitalism (80s, 90s, 2000s) – FREEDOM-LIBERTY is a MANIPULABLE OBJECT

## **Non-Metaphoric structure of FREEDOM-LIBERTY**

The Wars (20, 30s, 40s) FREEDOM-LIBERTY of “nation” is at stake

Baby Boomers (50s, 60s) FREEDOM-LIBERTY of “society” is at stake

Late Capitalist period (70, 80s, 90s, 2000s) FREEDOM-LIBERTY of “individual” is at stake

## ***Liberty profiling of LIBERTY-FREEDOM –***

Mirrors concept as a whole, save the shift from war period to social revolution appears later

The Wars (20s, 30s, 40s) – FREEDOM-LIBERTY is a PLACE, nation is experiencer

Baby-Boomers (50s, 60s) – no predominant metaphoric conceptualisation, society is  
experiencer

# Usage-Based Cognitive Models

It is possible to make generalisations about conceptual structure through the corpus-driven study of lexical semantics

This method gives us information about the social structure of these concepts

The future application of confirmatory statistics will also permit the falsification of proposed conceptual structures

## **Contact**

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