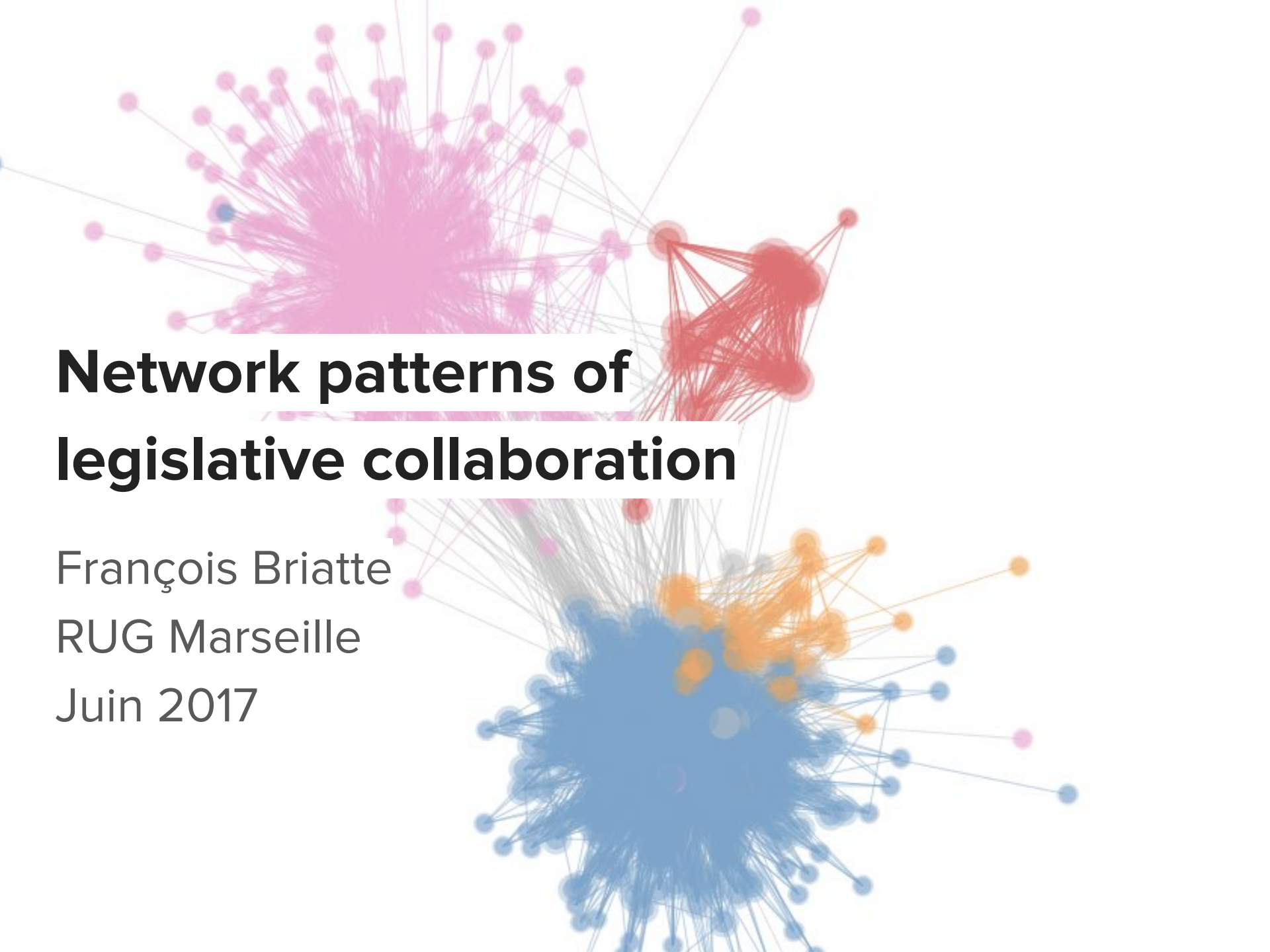


Network patterns of legislative collaboration

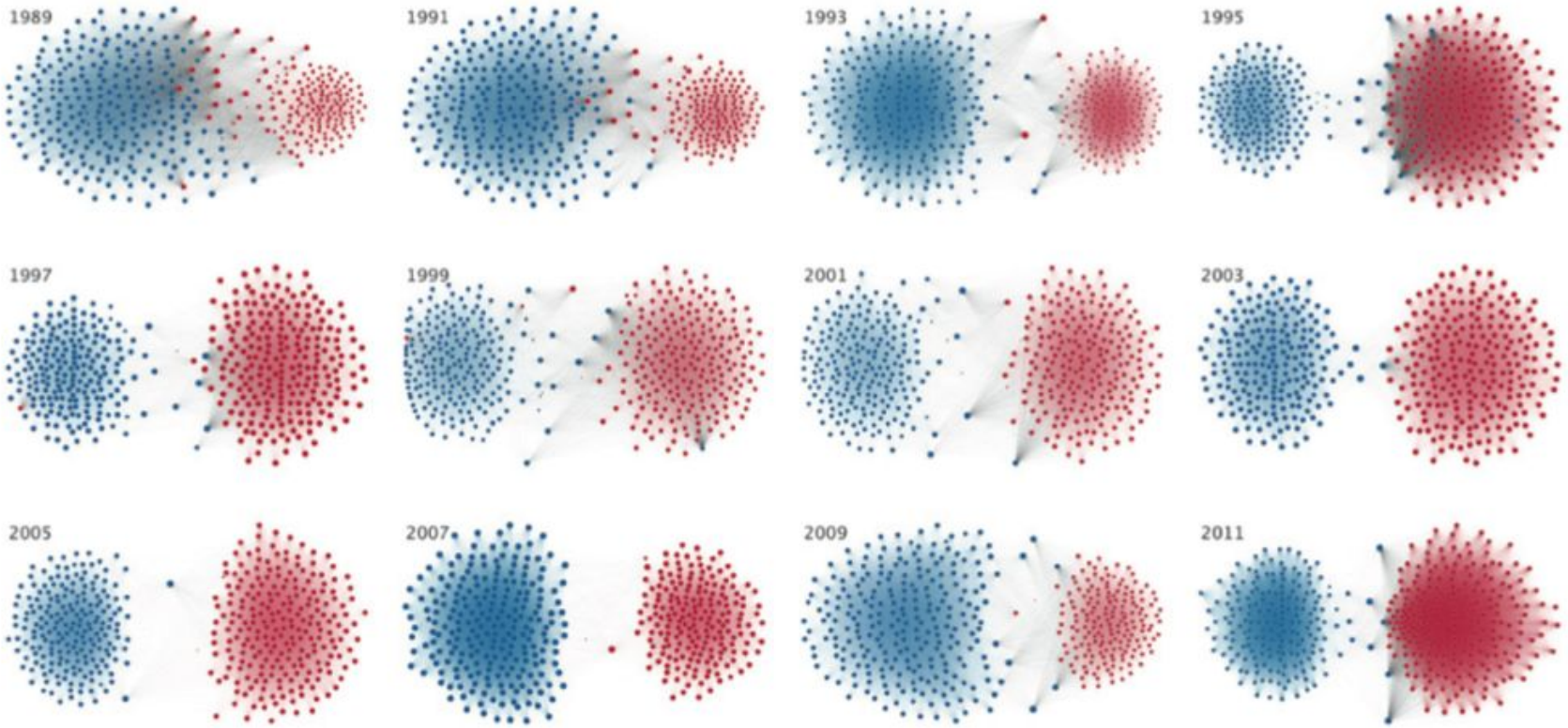
François Briatte
RUG Marseille
Juin 2017

1. **What** Collaboration législative
2. **Why** Fragmentation partisane
3. **How** Aspects techniques

1. What

The Rise of Partisanship and Super-Cooperators in the U.S. House of Representatives

Clio Andris[1]*, David Lee[2,3], Marcus J. Hamilton[4,5], Mauro Martino[6], Christian E. Gunning[7], John Armistead Selden[8]

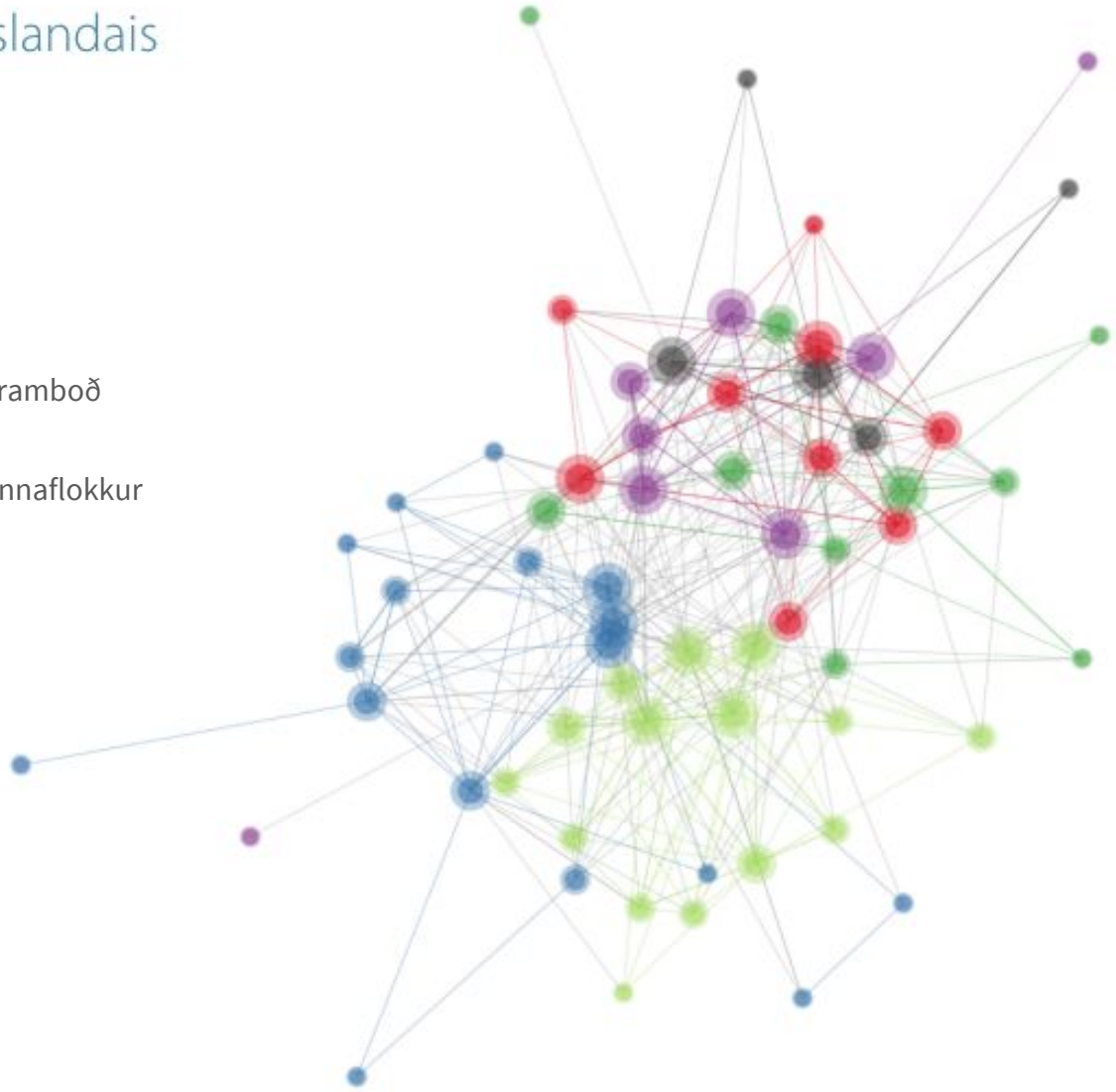


Les pirates en politique

L'ascension d'un parti islandais

par ***Lionel Cordier*** , le 7 octobre

●	VG	Vinstrihreyfingin – grænt framboð
●	P	Píratar
●	SF	Samfylkingin-Jafnaðarmannaflokkur
●	F	Framsóknarflokkurinn
●	BF	Björt framtíð
●	S	Sjálfstæðisflokkurinn



Each network shows bill cosponsorships in the Hungarian Parliament.

All networks are directed graphs drawn with the **Fruchterman-Reingold** force-directed algorithm. The ties connect the first author of each bill to the cosponsors of that bill. The nodes are sized by **unweighted total degree**. When two nodes belong to the same group, any existing tie between them is given the color of that group. There is a **guide to party codes and colors** at the end of this page.

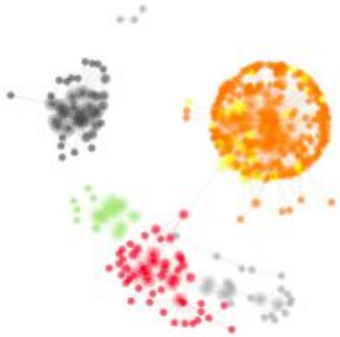
See the **interactive visualization**, or view **other countries**.

1998–2002

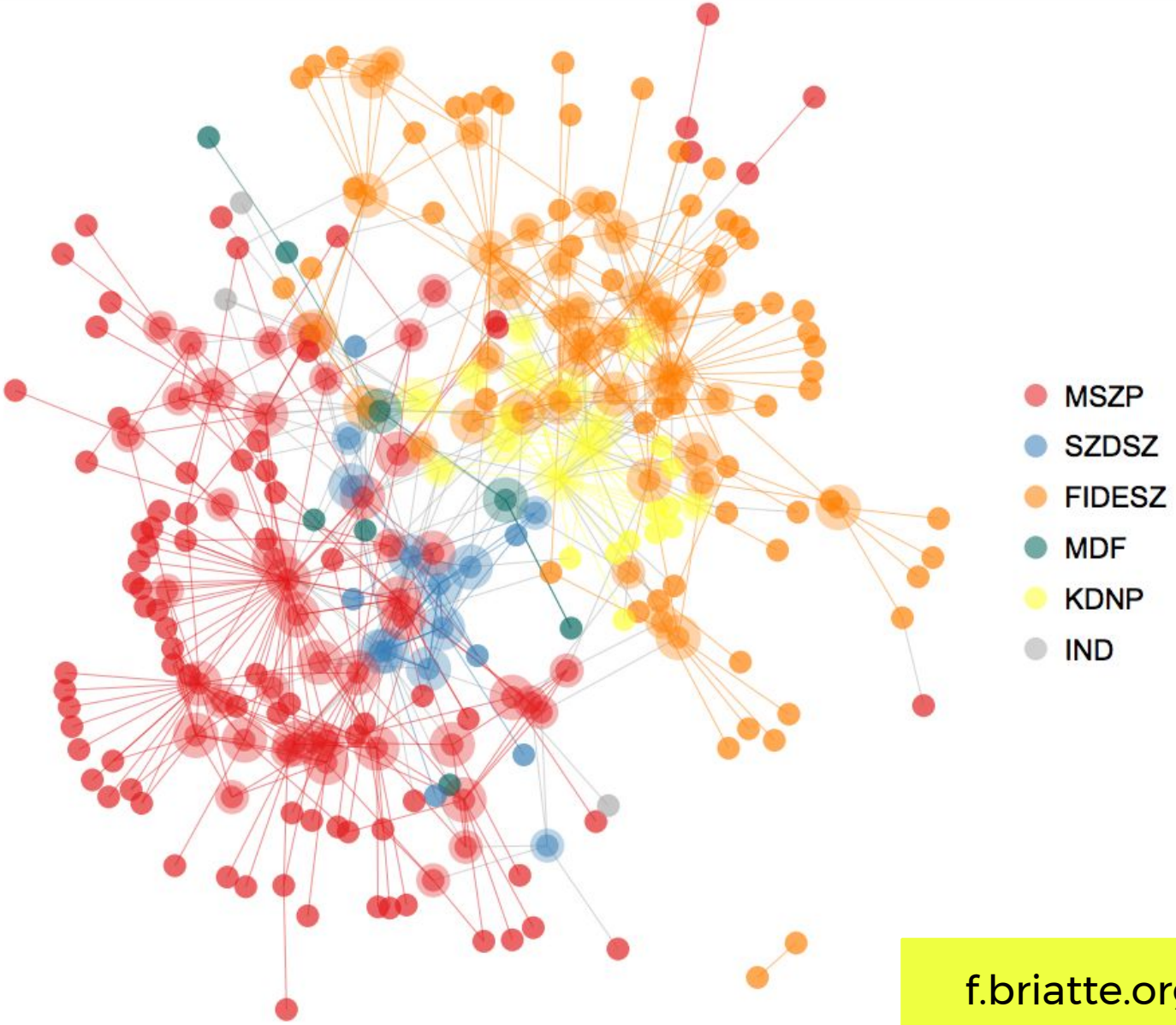
2002–2006

2006–2010

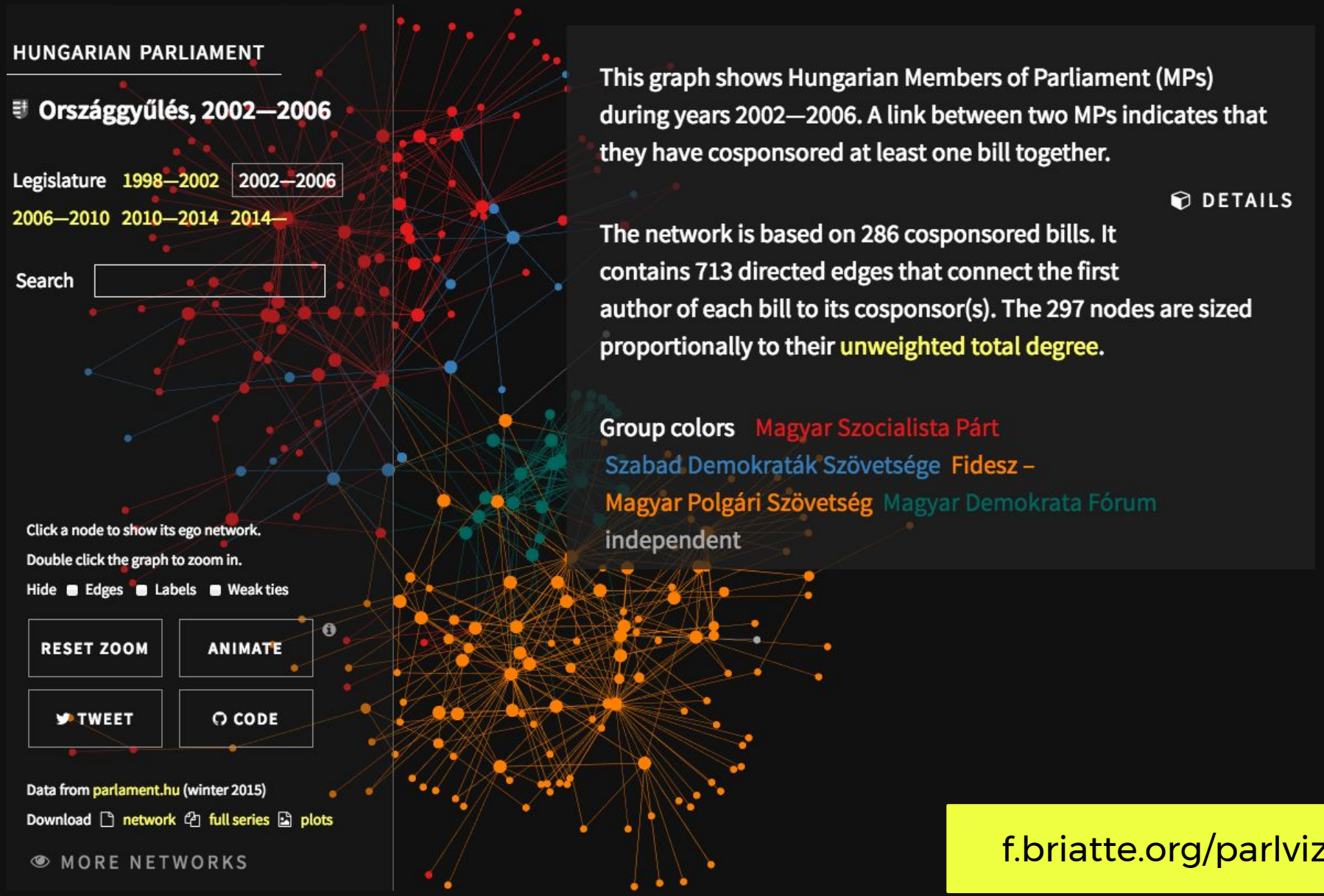
2010–2014



f.briatte.org/parlviz



f.briatte.org/parlviz


HUNGARIAN PARLIAMENT
Országgyűlés, 2002—2006
Legislature 1998—2002 2002—2006
2006—2010 2010—2014 2014—
Search
This graph shows Hungarian Members of Parliament (MPs) during years 2002—2006. A link between two MPs indicates that they have cosponsored at least one bill together.
DETAILS
The network is based on 286 cosponsored bills. It contains 713 directed edges that connect the first author of each bill to its cosponsor(s). The 297 nodes are sized proportionally to their unweighted total degree.
Group colors Magyar Szocialista Párt
Szabad Demokraták Szövetsége Fidesz –
Magyar Polgári Szövetség Magyar Demokrata Fórum
independent
Click a node to show its ego network.
Double click the graph to zoom in.
Hide Edges Labels Weak ties
RESET ZOOM
ANIMATE
TWEET
CODE
Data from parlament.hu (winter 2015)
Download network full series plots
MORE NETWORKS
f.briatte.org/parlviz

Centres d’intérêt

Données

- Collecte de données législatives
- Travail et activité parlementaires

Analyse

- Études législatives
- Analyse de réseaux

2. Why

Pourquoi / 1

Disponibilité des données

- Items législatifs

  Amendements, PPL, résolutions (*motions*), votes…

- Propriétés des items

  Date d’introduction, résultats des votes, mots-clés…

- Attributs des auteurs et (co)signataires

  Age, sexe, parti (groupe parlementaire), carrière…

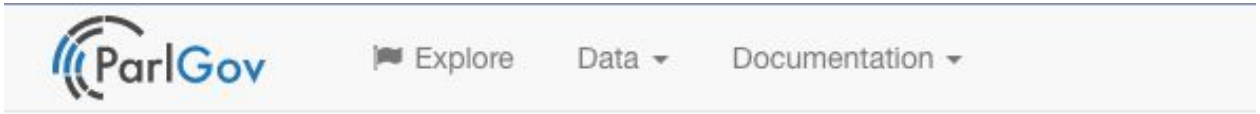
Forum

European Union Politics
14(1) 161–178

DOI: 10.1177/1465116512461189
eup.sagepub.com

The collective action of data collection: A data infrastructure on parties, elections and cabinets

Holger Döring
Universität Bremen, Germany



Pourquoi / 2

Point de départ analytique

- Unités de reference

  Régimes > Chambres > Groupes > Parlementaires

- Mesures classiques

  Productivité · Efficacité (ex. probabilités d'adoption)

- Mesures relationnelles

  Liens entre chambres / entre parlementaires

THE JOURNAL OF LEGISLATIVE STUDIES, 2016
http://dx.doi.org/10.1080/13572334.2016.1163881

Routledge
Taylor & Francis Group

The executive on the battlefield: government amendments and cartel theory in the Chilean Congress

Sergio Toro-Maureira and Nicolás Hurtado

ABSTRACT

This article argues that cartelised coordination inside Chilean congressional committees is important for understanding the success rates of presidential initiatives. By way of an analysis of the amendment process undertaken both in the Chamber and Senate committees in the Chilean Congress during 2006–10, the authors review the approval patterns of legislative amendments. The analysis suggests two chief findings: coordination between government parties and the executive is crucial for the success of amendment; and the opposition's success in generating legal transformations depends on the construction of inter-coalition alliances. It is hoped that the perspective offered here will contribute to the current literature on cartel party theory in Latin America.

KEYWORDS Congress; committees; amendments; Chile; cartel theory

Angle d'approche

Perspective relationnelle

- **Chambres parlementaires**

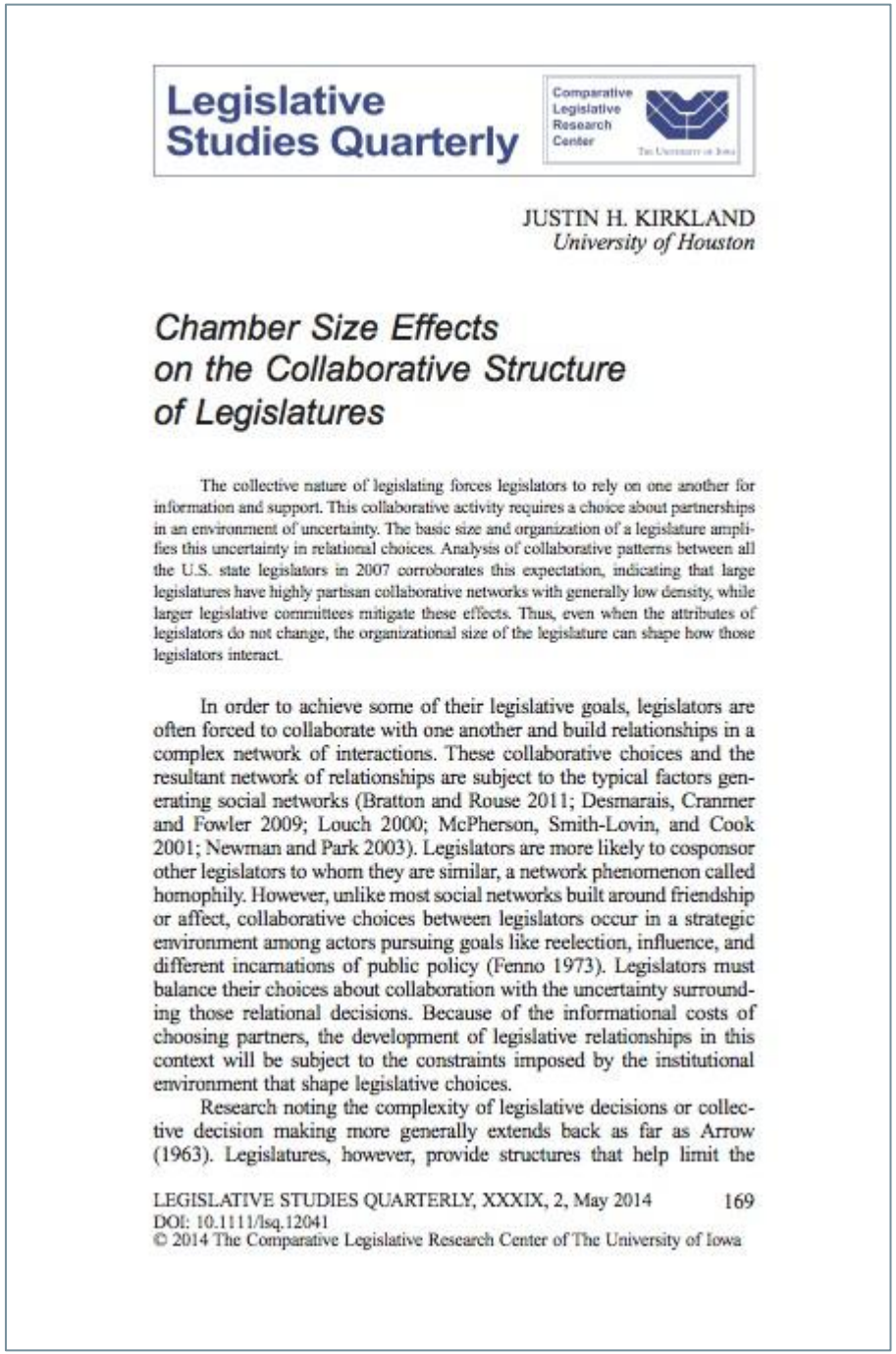
  = structures collaboratives

- **Parliamentary actors**

  as positional players

- **Parliamentary activity**

  as topological information



Legislative Studies Quarterly
Comparative Legislative Research Center

JUSTIN H. KIRKLAND
University of Houston

Chamber Size Effects on the Collaborative Structure of Legislatures

The collective nature of legislating forces legislators to rely on one another for information and support. This collaborative activity requires a choice about partnerships in an environment of uncertainty. The basic size and organization of a legislature amplifies this uncertainty in relational choices. Analysis of collaborative patterns between all the U.S. state legislators in 2007 corroborates this expectation, indicating that large legislatures have highly partisan collaborative networks with generally low density, while larger legislative committees mitigate these effects. Thus, even when the attributes of legislators do not change, the organizational size of the legislature can shape how those legislators interact.

In order to achieve some of their legislative goals, legislators are often forced to collaborate with one another and build relationships in a complex network of interactions. These collaborative choices and the resultant network of relationships are subject to the typical factors generating social networks (Bratton and Rouse 2011; Desmarais, Cranmer and Fowler 2009; Louch 2000; McPherson, Smith-Lovin, and Cook 2001; Newman and Park 2003). Legislators are more likely to cosponsor other legislators to whom they are similar, a network phenomenon called homophily. However, unlike most social networks built around friendship or affect, collaborative choices between legislators occur in a strategic environment among actors pursuing goals like reelection, influence, and different incarnations of public policy (Fenno 1973). Legislators must balance their choices about collaboration with the uncertainty surrounding those relational decisions. Because of the informational costs of choosing partners, the development of legislative relationships in this context will be subject to the constraints imposed by the institutional environment that shape legislative choices.

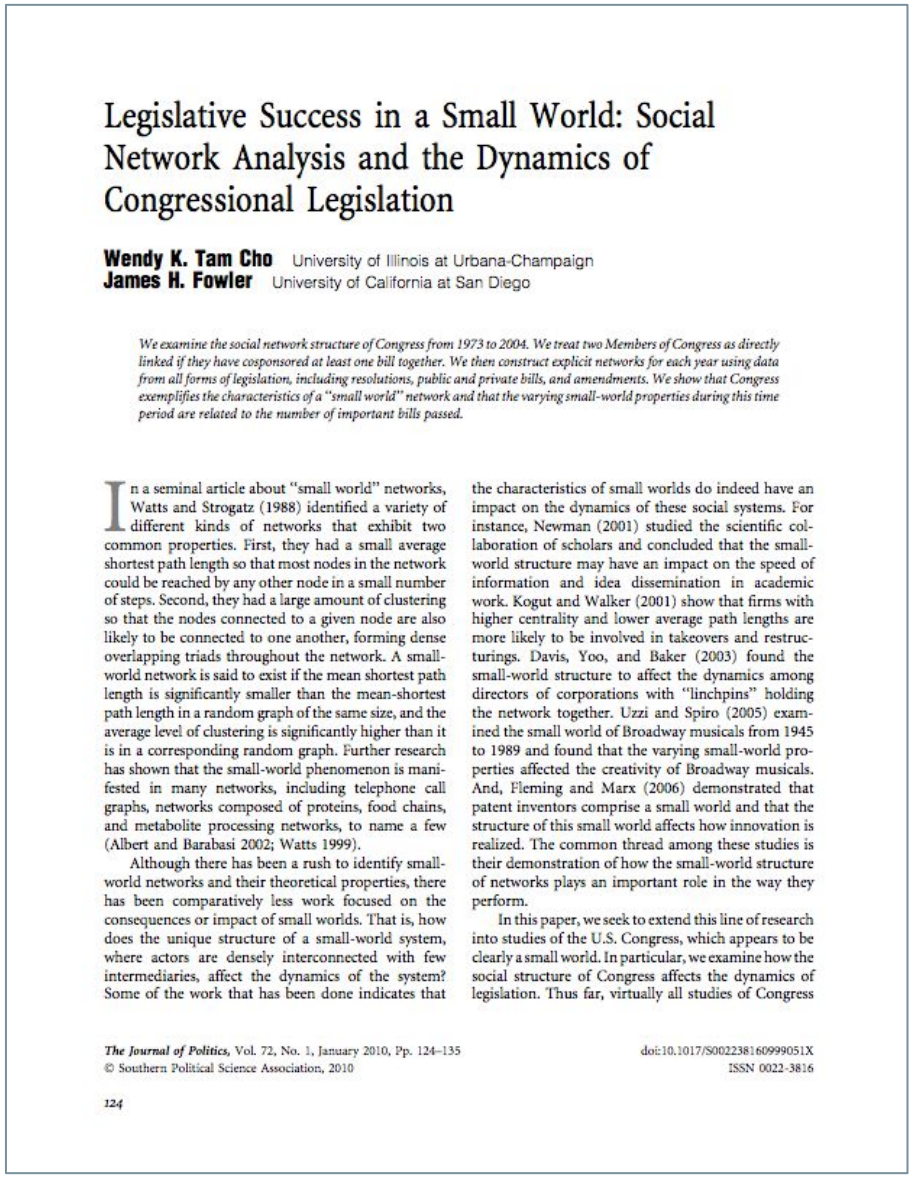
Research noting the complexity of legislative decisions or collective decision making more generally extends back as far as Arrow (1963). Legislatures, however, provide structures that help limit the

DOI: 10.1111/lsq.12041

Angle d'approche

Perspective relationnelle

- Parliamentary chambers as collaborative structures
- **Acteurs parlementaires** = agents positionnels
- Parliamentary activity as topological information



Legislative Success in a Small World: Social Network Analysis and the Dynamics of Congressional Legislation

Wendy K. Tam Cho University of Illinois at Urbana-Champaign
James H. Fowler University of California at San Diego

We examine the social network structure of Congress from 1973 to 2004. We treat two Members of Congress as directly linked if they have cosponsored at least one bill together. We then construct explicit networks for each year using data from all forms of legislation, including resolutions, public and private bills, and amendments. We show that Congress exemplifies the characteristics of a "small world" network and that the varying small-world properties during this time period are related to the number of important bills passed.

In a seminal article about "small world" networks, Watts and Strogatz (1988) identified a variety of different kinds of networks that exhibit two common properties. First, they had a small average shortest path length so that most nodes in the network could be reached by any other node in a small number of steps. Second, they had a large amount of clustering so that the nodes connected to a given node are also likely to be connected to one another, forming dense overlapping triads throughout the network. A small-world network is said to exist if the mean shortest path length is significantly smaller than the mean-shortest path length in a random graph of the same size, and the average level of clustering is significantly higher than it is in a corresponding random graph. Further research has shown that the small-world phenomenon is manifested in many networks, including telephone call graphs, networks composed of proteins, food chains, and metabolite processing networks, to name a few (Albert and Barabasi 2002; Watts 1999).

Although there has been a rush to identify small-world networks and their theoretical properties, there has been comparatively less work focused on the consequences or impact of small worlds. That is, how does the unique structure of a small-world system, where actors are densely interconnected with few intermediaries, affect the dynamics of the system? Some of the work that has been done indicates that the characteristics of small worlds do indeed have an impact on the dynamics of these social systems. For instance, Newman (2001) studied the scientific collaboration of scholars and concluded that the small-world structure may have an impact on the speed of information and idea dissemination in academic work. Kogut and Walker (2001) show that firms with higher centrality and lower average path lengths are more likely to be involved in takeovers and restructurings. Davis, Yoo, and Baker (2003) found the small-world structure to affect the dynamics among directors of corporations with "linchpins" holding the network together. Uzzi and Spiro (2005) examined the small world of Broadway musicals from 1945 to 1989 and found that the varying small-world properties affected the creativity of Broadway musicals. And, Fleming and Marx (2006) demonstrated that patent inventors comprise a small world and that the structure of this small world affects how innovation is realized. The common thread among these studies is their demonstration of how the small-world structure of networks plays an important role in the way they perform.

In this paper, we seek to extend this line of research into studies of the U.S. Congress, which appears to be clearly a small world. In particular, we examine how the social structure of Congress affects the dynamics of legislation. Thus far, virtually all studies of Congress

The Journal of Politics, Vol. 72, No. 1, January 2010, Pp. 124–135
doi:10.1017/S0022381609990051X

ISSN 0022-3816

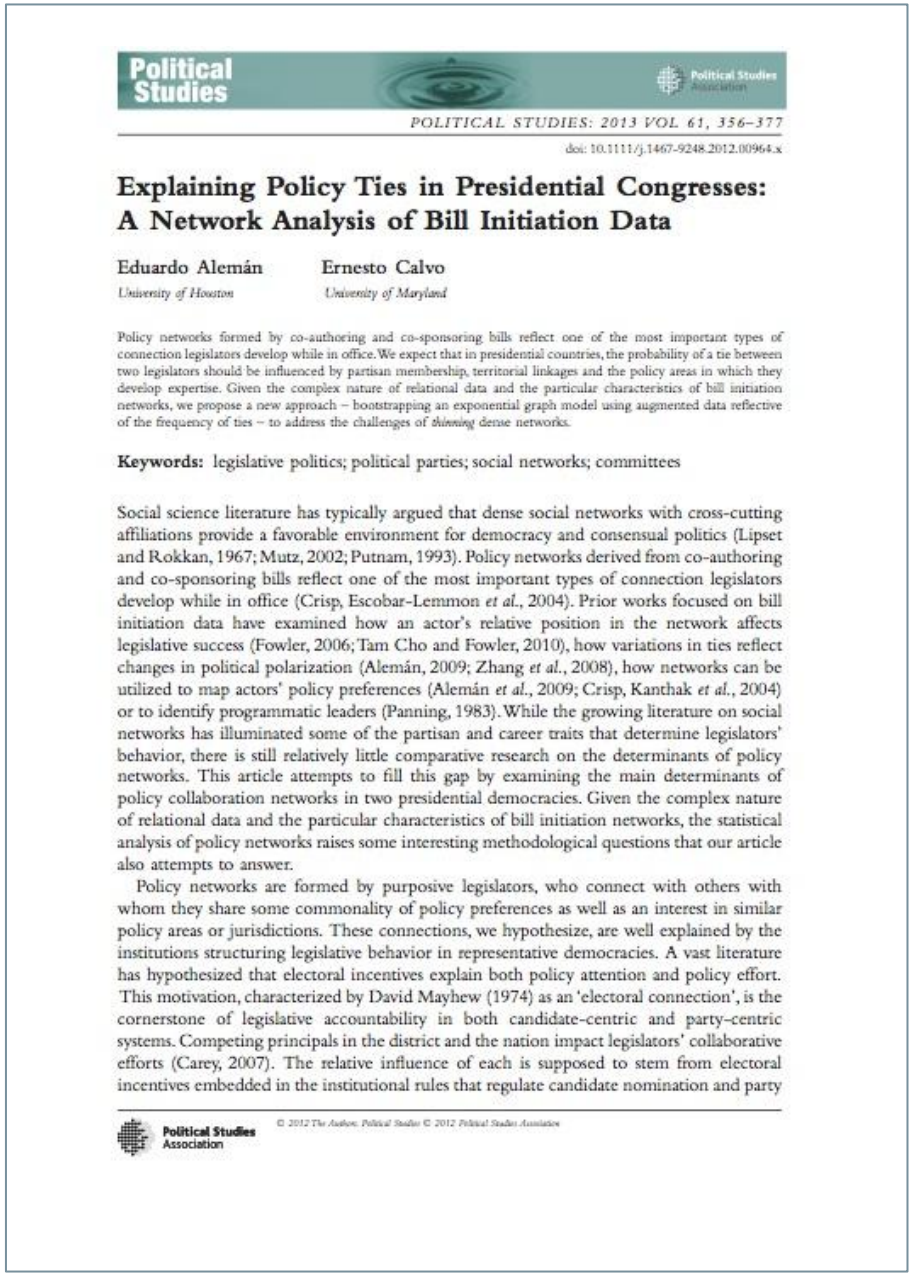
Angle d'approche

Perspective relationnelle

- Parliamentary chambers as collaborative structures
- Parliamentary actors as positional players

- **Activité parlementaire**

  = information topologique



Political Studies

POLITICAL STUDIES: 2013 VOL 61, 356–377

doi: 10.1111/j.1467-9248.2012.00964.x

Explaining Policy Ties in Presidential Congresses: A Network Analysis of Bill Initiation Data

Eduardo Alemán
University of Houston

Ernesto Calvo
University of Maryland

Policy networks formed by co-authoring and co-sponsoring bills reflect one of the most important types of connection legislators develop while in office. We expect that in presidential countries, the probability of a tie between two legislators should be influenced by partisan membership, territorial linkages and the policy areas in which they develop expertise. Given the complex nature of relational data and the particular characteristics of bill initiation networks, we propose a new approach – bootstrapping an exponential graph model using augmented data reflective of the frequency of ties – to address the challenges of *thinning* dense networks.

Keywords: legislative politics; political parties; social networks; committees

Social science literature has typically argued that dense social networks with cross-cutting affiliations provide a favorable environment for democracy and consensual politics (Lipset and Rokkan, 1967; Mutz, 2002; Putnam, 1993). Policy networks derived from co-authoring and co-sponsoring bills reflect one of the most important types of connection legislators develop while in office (Crisp, Escobar-Lemmon *et al.*, 2004). Prior works focused on bill initiation data have examined how an actor's relative position in the network affects legislative success (Fowler, 2006; Tam Cho and Fowler, 2010), how variations in ties reflect changes in political polarization (Alemán, 2009; Zhang *et al.*, 2008), how networks can be utilized to map actors' policy preferences (Alemán *et al.*, 2009; Crisp, Kanthak *et al.*, 2004) or to identify programmatic leaders (Panning, 1983). While the growing literature on social networks has illuminated some of the partisan and career traits that determine legislators' behavior, there is still relatively little comparative research on the determinants of policy networks. This article attempts to fill this gap by examining the main determinants of policy collaboration networks in two presidential democracies. Given the complex nature of relational data and the particular characteristics of bill initiation networks, the statistical analysis of policy networks raises some interesting methodological questions that our article also attempts to answer.

Policy networks are formed by purposive legislators, who connect with others with whom they share some commonality of policy preferences as well as an interest in similar policy areas or jurisdictions. These connections, we hypothesize, are well explained by the institutions structuring legislative behavior in representative democracies. A vast literature has hypothesized that electoral incentives explain both policy attention and policy effort. This motivation, characterized by David Mayhew (1974) as an 'electoral connection', is the cornerstone of legislative accountability in both candidate-centric and party-centric systems. Competing principals in the district and the nation impact legislators' collaborative efforts (Carey, 2007). The relative influence of each is supposed to stem from electoral incentives embedded in the institutional rules that regulate candidate nomination and party

3. How

Contraintes

Approche comparée

Données récoltées sur plusieurs pays / chambres

Échantillon : **33 pays européens**

Côté code et données

Aussi peu de collecte manuelle que possible,
Avec seulement des sources publiques

Langage choisi : **R**

Échantillonnage

Parlements nationaux

Chambres hautes et basses

Parlementaire nationaux ou fédéraux

ex. **Suisse** : Conseil National, Conseil des États

Propositions de loi

Légalement contraignantes en cas d'adoption

(Co)signatures nominatives et individuelles

≠ ex. **France** : signature du groupe parlementaire au complet

Network patterns of legislative collaboration in twenty parliaments

Region	Country	Chamber	Period	Years	Legislatures
East	Bulgaria	Unicameral	2005–2015	11	4
	Czech Republic	Lower	1996–2015	20	6
		Upper	1996–2015	20	6
	Estonia	Unicameral	2007–2015	9	3
	Hungary	Unicameral	1998–2015	18	5
	Lithuania	Unicameral	1992–2015	24	6
	Romania	Lower	1996–2015	20	5
		Upper	1996–2015	20	5
	Slovakia	Unicameral	1998–2015	18	5
West	Austria	Lower chamber only	1994–2015	22	7
	Belgium	Lower	1991–2015	25	7
		Upper	1995–2014	20	5
	France	Lower	1986–2015	25*	6
		Upper	1986–2015	30	7
	Ireland	Lower	1997–2015	19	4
		Upper	1997–2015	19	4
	Italy	Lower	1983–2015	33	9
		Upper	1996–2015	20	5
	Portugal	Unicameral	1991–2015	25	7
	Switzerland	Lower	1995–2015	21	5
		Upper	1995–2015	21	5
North	Denmark	Unicameral	2001–2015	15	5
	Finland	Unicameral	1999–2014	16	4
	Iceland	Unicameral	1995–2015	21	6
	Norway	Unicameral	1985–2015	31	8
	Sweden	Unicameral	1988–2015	28	8
Asia	Israel	Unicameral	2009–2015	7	3

*Missing legislature 10 (1993–1997) of the French lower chamber.

TODO

inputs manuels

données tronquées

scraper inopérant

Méthodes

Scraping

Données sur les **PPL**,

et sur les **signataires**

(données brutes sur Zenodo)

Dumps non automatisés – il faudrait réécrire les scrapers en Python ou en Ruby pour les faire tourner avec Morph.io

Réseaux

Extraction de **variables standardisées**

Construction des **réseaux de cosignature**

GitHub

Standardisation limitée – certains attributs des signataires et/ou des PPL sont difficiles à comparer d'un pays à l'autre

althing @ b84d007	Iceland: scraper 2015 update
assembleia @ 4196d58	Portugal: bugfixes
belparl @ cb9d7a1	Belgium: avoid missing file failure
bgparl @ 1f99775	Bulgaria: bugfixes
eduskunta @ a8e666c	fix %e% indexation issue
folketinget @ dabac85	Denmark: minor bug
knesset @ 1b56ac7	Israel: bugfix
nationalrat @ a729e0e	Austria: more data, cleaner code
nrsr @ 76c84b2	compatibility with rvest 0.3.0 (further updates)
oireachtas @ 691f811	Ireland: bugfix
orszaggyules @ 2026aab	Hungary: December 2015 update
parlament @ e8dac0c	Poland: bugfix
parlamento @ 9adf9ac	Italy: final party details
parlamentul @ ecc97a5	Romania: minor fixes
parlement @ 8b27eb4	France: bugfixes
riigikogu @ 85fe2a7	Estonia: fixes to sponsors data
riksdag @ 83e3762	Sweden: bugfixes
seimas @ c026249	Lithuania: final details
stortinget @ e970986	Norway: scraper 2015 update
swparl @ cadc9ff	Switzerland: bugfixes
.gitmodules	add Estonia: submodule and repo init
HOWTO.md	HOWTO: additional package dependency
README.md	README: typo in links to Korea
parlnet.csv	bugfix in Italy 1996 measures

github.com/briatte/parlnet

1. un submodule par pays

— code de réplication

— objets réseaux

— codebook et notes

2. documentation supplémentaire

— mesures réseaux

— liens vers les articles

— lien vers les données brutes

Scraping.R

- **Téléchargement**
  - `utils::download.file`
  - `httr::GET`
  - `psql # interfacé avec dplyr via RPostgreSQL`
- **Parsing**
  - `rvest::read_html # xml2::read_html`
  - `rvest::read_xml  # xml2::read_xml`
  - `jsonlite::fromJSON`
  - `XML # remplacé par xml2 + rvest`

Networks.R

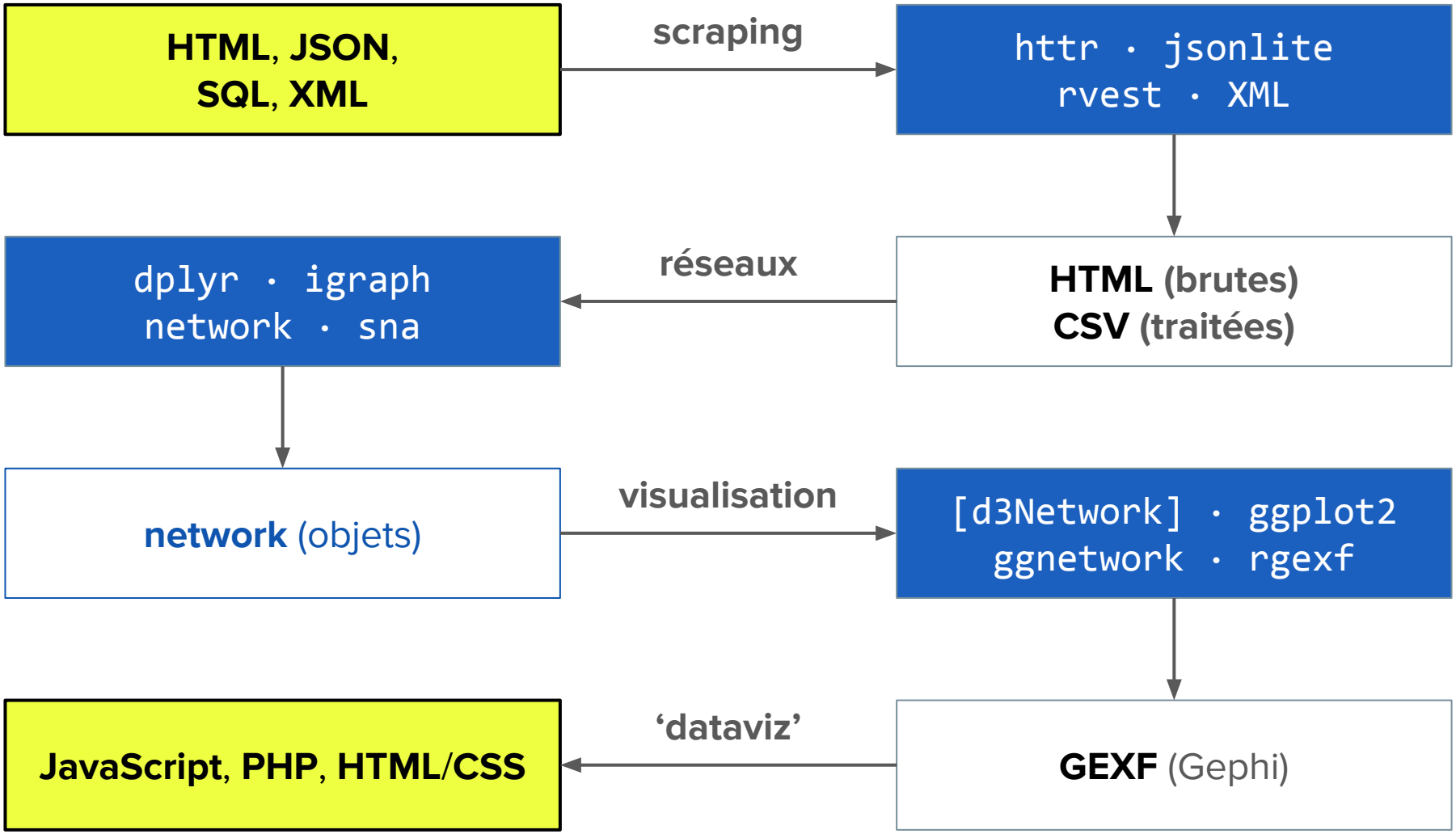
- **Construction**
  - `base::expand.grid` # création des liens (dirigés)
  - `base::aggregate` # pondération des liens
  - `network::network` # objets de classe ‘network’
- **Attributes**
  - `sna::degree` # centralité
  - `tnet::degree_w` # centralité pondérée
  - `igraph::modularity` # modularité

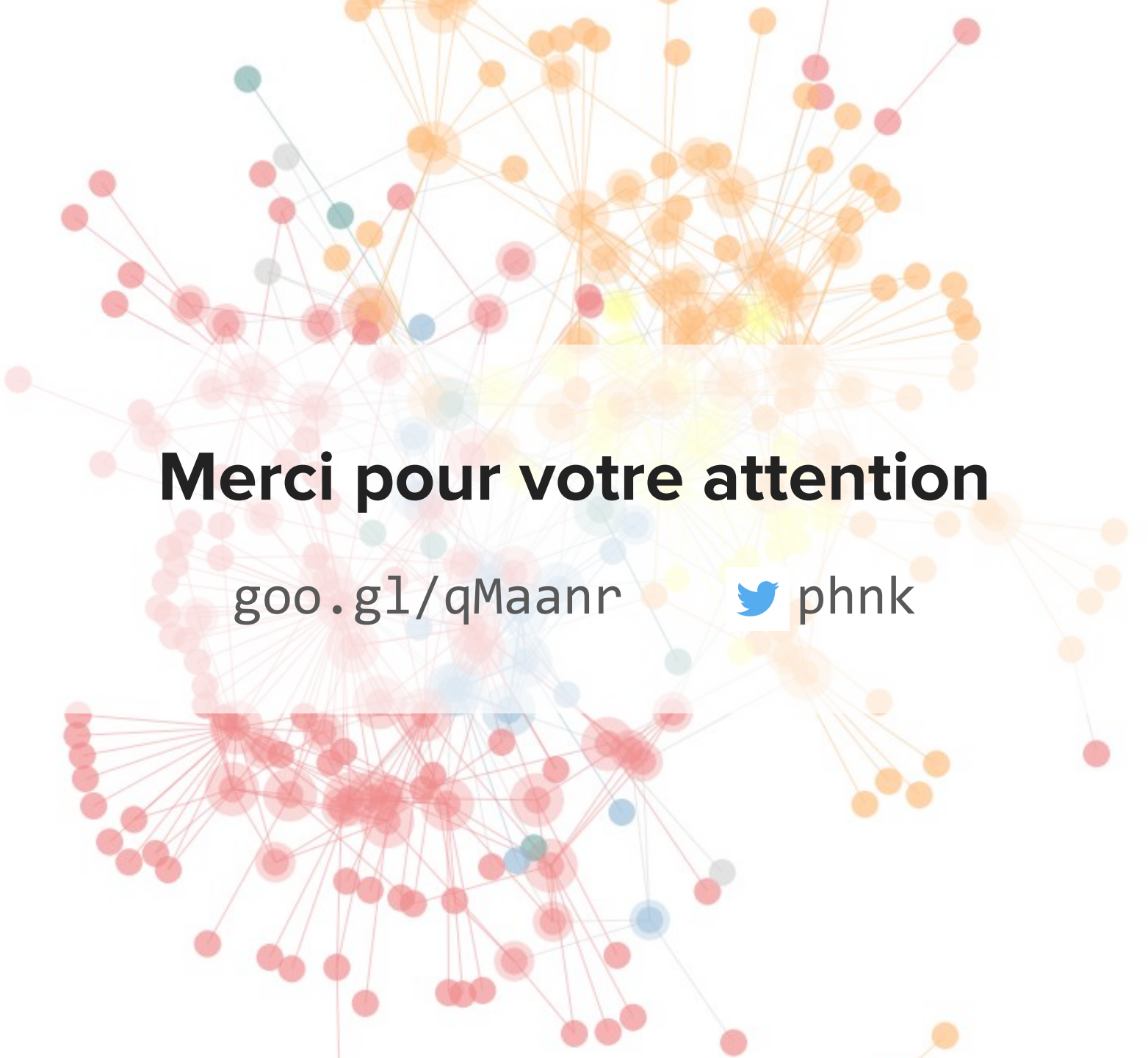
Visualisation.R

- **Statique**
  - **Syntaxes propres:** `igraph`, `network`, `sna`
  - **ggplot2:** `geomnet`, `ggraph`, `ggnet`, `ggnetwork`

    `# cf. github.com/sctyner/ggnet-paper`
- **Interactive**
  - **R + d3.js:** `networkD3`, `ndtv`
  - **Gephi:** `GEXF` format `# exporté via rgexf`
  - **JavaScript + PHP:** `Sigma` `# lit le GEXF`

Workflow


HTML, JSON,
SQL, XML
scraping
httr · jsonlite
rvest · XML
HTML (brutes)
CSV (traitées)
réseaux
dplyr · igraph
network · sna
network (objets)
visualisation
[d3Network] · ggplot2
ggnetwork · rgexf
GEXF (Gephi)
'dataviz'
JavaScript, PHP, HTML/CSS



Merci pour votre attention

goo.gl/qMaanr

phnk

Annexes: Articles

1. Sur le même sujet
2. Autres projets

Sur le même sujet

Network Patterns of Legislative Collaboration in Twenty European Parliaments (*Network Science*, 2016)

Party Polarization and Bill Cosponsorship in European Parliaments (Sciences Po Quanti, 2016)

Les réseaux de cosignatures législatives de quinze parlements européens (*Le réseau. Usages d'une notion polysémique en SHS*, 2017)

Autres projets

Recovering the French Party Space from Twitter Data
(avec Ewen Gallic, 2015–)

Religion et violence dans les « unes » de *Charlie Hebdo*.
Une perspective relationnelle
(avec Gaël Villeneuve, 2015–)

Les revues de sociologie de la plateforme Cairn.info.
Propriétés relationnelles d'un sous-espace éditorial
(*Sociologie*, en cours de publication)

Annexe:
Extraits de code

1. Téléchargement des données
2. Construction des réseaux

```r
root = "http://www.althingi.is"
bills = "data/bills.csv"
sponsors = "data/sponsors.csv"

if (!file.exists(bills)) {

  b = data_frame()
  for (i in 145:119) { # accepts down to 20 (1907)

    cat(sprintf("%3.0f", i))

    f = paste0("raw/bill-lists/bills-", i, ".html")

    if (!file.exists(f))
      download.file(paste0(root, "/thingstorf/thingmalalistar-eftir-thingum/lagafrumvorp/?lthing=", i), f,
                    quiet = TRUE, mode = "wb")

    h = read_html(f) %>% html_nodes("#t_malalisti")

    n = html_nodes(h, "td:nth-child(1)") %>% html_text

    if (!length(n)) {

      cat(": no bills\n")

    } else {

      b = rbind(b, data_frame(
        session = i,
        ref = n,
        date = html_nodes(h, "td:nth-child(2)") %>% html_text,
        title = html_nodes(h, "td:nth-child(3)") %>% html_text,
        url = html_nodes(h, "td:nth-child(3) a") %>% html_attr("href"),
        author = html_nodes(h, "td:nth-child(4)") %>% html_text,
        authors = html_nodes(h, "td:nth-child(4) a") %>% html_attr("href")
      ))

      cat(":", sprintf("%5.0f", nrow(b)), "total bills\n")

    }

  }

  b$author = str_clean(b$author)
  b$date = as.Date(strptime(b$date, "%d.%m.%Y"))
  b$n_au = NA

  write.csv(b, bills, row.names = FALSE)

}
```

1. download raw HTML files

to back them up later

2. parse HTML and get variables

using CSSSelect or XPath

3. save to intermediary CSV file

to save time on re-run

```r
edges = lapply(unique(data$authors), function(d) {

  w = au$name[ au$authors == d ] # sponsor list is ordered

  d = expand.grid(i = w, j = w[1], stringsAsFactors = FALSE)

  return(data.frame(d, w = length(w) - 1, stringsAsFactors = FALSE)) # number
      of cosponsors

}) %>% bind_rows

# ============================================================================
# EDGE WEIGHTS
# ============================================================================

# first author self-loops, with counts of cosponsors
self = subset(edges, i == j)

# count number of bills per first author
n_au = table(self$j)

# remove self-loops from directed edge list
edges = subset(edges, i != j)

# count number of bills cosponsored per sponsor
n_co = table(edges$i)

# identify directed ties
edges$ij = apply(edges[, 1:2 ], 1, paste0, collapse = "///")

# raw edge counts
raw = table(edges$ij)

# Newman-Fowler weights (weighted quantity of bills cosponsored)
edges = aggregate(w ~ ij, function(x) sum(1 / x), data = edges)

# expand to edge list
edges = data_frame(i = gsub("(.*)///(.*)", "\\1", edges$ij),
                   j = gsub("(.*)///(.*)", "\\2", edges$ij),
                   raw = as.vector(raw[ edges$ij ]), # raw edge counts
                   nfw = edges$w)

# Gross-Shalizi weights (weighted propensity to cosponsor)
edges = merge(edges, aggregate(w ~ j, function(x) sum(1 / x), data = self))
edges$gsw = edges$nfw / edges$w

# sanity check
stopifnot(edges$gsw <= 1)
```

1. buid directed edge list

(possibly redundant)

2. compute edge weights

(see paper appendix)

3. verify edge weights

(non-redundant)