

# Characterizing the geographical organization of the International Institute of Intellectual Cooperation via network cartography

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CS<sup>3</sup> meeting – Santander  
Thursday, May 4<sup>th</sup> 2023



Universitat Oberta  
de Catalunya



Directed by LEWIS MILESTONE • A CARL LAEMMLE Jr Production • Story by ERICH MARIA REMARQUE  
Adaptation and Dialogue by MAXWELL ANDERSON and GEORGE ABBOTT

A UNIVERSAL PICTURE

- <https://www.imdb.com/title/tt0020629/>



# Victory Democracy Peace

*Make them secure by a*

# LEAGUE OF NATIONS

 **christmas** this year dawns on a world groping from war toward peace. The world hopes and prays that peace may be established on justice and safety founded against future aggression. ¶ The army of occupation that sleeps till the Judgement Day in the graves of France will have fought and died in vain unless such a PEACE is framed. ¶ Our Soldiers and Sailors, returning from VICTORY, will have fought and suffered in vain if that VICTORY is not made secure. ¶ All the peoples of the free nations will have given in vain billions of their wealth and millions of their own flesh and blood if DEMOCRACY is not established forever.

These things which the whole world longs for can be done by a Peace Table, or a LEAGUE OF NATIONS. President Wilson is in France for the express purpose of guiding it forward in heart and soul, and is urging his countrymen that a League must be established and that the United States must join.

A LEAGUE OF NATIONS is necessary to do the things that one nation can accomplish alone. Victory

and Peace have brought a multitude of new problems—  
**The New Nations:**  
We propose to carry out of the Old World a dozen or more Republics based upon the principle of Self-determination. Can we make the world safe for Democracy if we create these new nations and then leave them to shift for themselves? A LEAGUE OF NATIONS will be needed to guide and protect them.

**German Colonies:**  
Germany has proved her unfitness for colonial rule. To return her colonies is unthinkable. They must become the wards of all the free peoples, banded together in a LEAGUE OF NATIONS.

**Economic Questions:**  
Access to the sea and access to raw materials are two of the international questions that can be handled only by a LEAGUE OF NATIONS.

*Interpretation of the Peace Treaty:*  
Without a Supreme Court to interpret its provisions and a national police power to enforce them, the Constitution of the United States would long ago have

The only practical way

These things which the whole world longs for can be gained only by the creation, right at the Peace Table, of a LEAGUE OF NATIONS. President Wilson has only declared for such a League and it is France who express the purpose of gaining its formation. Ex-President Taft believes in it. The League must be established and that the United States

第十一章

#### Victory Program

**T**HIS was more happenin' than hell, but at the same time it was a real good time. The boys had all kinds of a way to go. They were all different. Some of them wanted to go to college, some wanted to go into business, and some wanted to go into the military. But they all had one thing in common: they wanted to be successful. And so they should have formed a League of Free Men and played that the majority of each year would be spent in the pursuit of their goals. This would have been a great idea, but it never did. In the end, they all became disengaged.

The League, which was at promoting the ideals of hard work, personal responsibility, and a sense of teamwork, did not last long. It was disbanded after only a few months. The members moved on to other things, and through friendship, which was both natural and organic, they were able to stay connected. However, during this period of time, many of them found themselves in difficult situations, and as a result, they were unable to stay engaged in the League's mission.

This is a movement in the United States called the "League of Free Men". It was created by a group of young men who wanted to stand up against the corruption of the government and the power of big business. They believed that if they worked together, they could make a difference. They also believed that if they worked together, they could succeed. And so they did. They formed a League of Free Men and played that the majority of each year would be spent in the pursuit of their goals. This would have been a great idea, but it never did. In the end, they all became disengaged.

A "League of Free Men" is a group of people who share a common goal: to promote the ideals of hard work, personal responsibility, and a sense of teamwork. They believe that if they work together, they can achieve success. They also believe that if they work together, they can change the world. They are a group of individuals who are dedicated to making a difference. They are a group of individuals who are committed to making a better world. They are a group of individuals who are willing to work together to实现他们的目标。

It should ensure peace by eliminating causes of dissension, by building confidence among nations, by uniting all the peoples of the world in a common cause, and by all its members as a standing defense against any nation that seeks to upset the peace of the world.

both economically and from the point of view of security, should be an aim that they pursue.

For the purpose it is necessary to systematize the function of monetary policy, as follows:

1. For the duration of peaceable relations, an independent central bank should be given the authority to assess the needs of the public to the necessary permission to be made for enhancing the

The main object of the difference should be the creation of a reserve which can be used for the compensation of any damages that may occur. The rules of international law should be observed.

A committee for any measure should be presented by a scientific organization; this organization will be made immediately by each of the countries concerned.

Your Christmas  
Wish you all a happy Christmas and a happy New Year. We hope to meet you again in 1946.

For questions that are not available in their *Charters* or *Constitutions* as well as for other information concerning the protection of the public, and for assistance in the preparation, and delivery of petitions by the members of the League, the members of the League shall be held harmless.

For the protection of the members of the League for the one and only object of common interest, the protection

of every platform for discussion and endorsement by your Church, Club, Lodge, and every other organization. It has been approved by thousands of leading Americans

**I DON'T DO ANYTHING.**

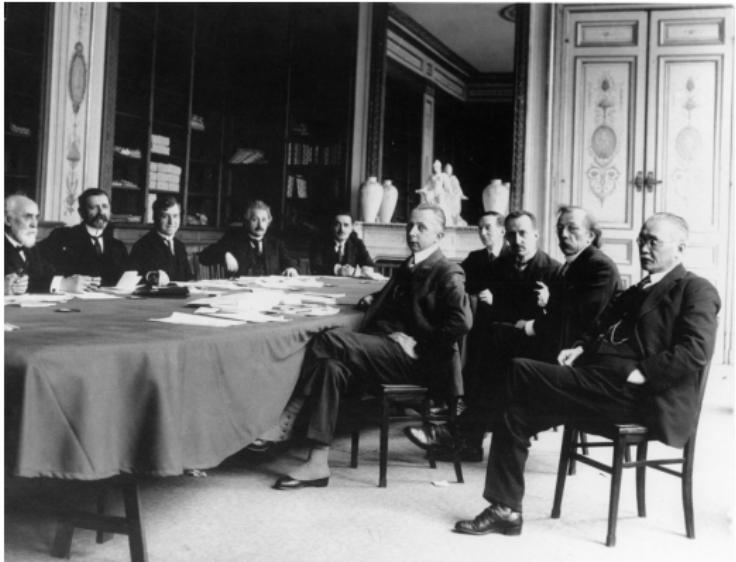
**League to Enforce Peace**  
Budd Terminal Sales Building, 150 PF, 47th Street, New York  
WILLIAM H. TAFT, President ALVIN H. PARKER, Vice-President  
A. LAWRENCE LOWELL, Chairman Economic Committee

## **International Committee on Intellectual Cooperation (ICIC)**

- Founded in 1922.
  - Based in Geneva.
  - Advisory organization of the League of Nations.
- 
- <https://unesco.libguides.com/IICI>

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## International Institute of Intellectual Cooperation (IIIC)

- Founded in 1926.
  - Based in Paris.
  - Created to support the work ICIC as an **executive branch**.
  - Ancestor of UNESCO.
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***Characterize the IIIC's geographical organization and, challenge the mainstream view on international cultural cooperation***



# Data

# The data: UNESCO's archives

The screenshot shows the UNESCO Archives Atom Catalogue interface. At the top, there is a logo for the United Nations Educational, Scientific and Cultural Organization (UNESCO) featuring a classical building icon. The title "UNESCO Archives Atom Catalogue" is displayed, along with the motto "Building peace in the minds of men and women". Navigation options include "Browse", "Search UNESCO Archives" with a search bar, and "Log in". On the left, there is a sidebar with a "Quick search" input field and a "Search hierarchy" button. The main content area displays a hierarchical list of records under "Archive Group AG 1 - International Institute of Intellectual Co-operation". The first item is "[Archive Group] AG 1 - International Institute of Intellectual Co-operation, 1921-1954", which is expanded to show its sub-components: "[Fonds] IICI - International Institute of Intellectual Co-operation fonds, 1921-1954" and "[Series] IICI Correspondence Files, 1923-1949". This series is further expanded to show subseries: "[Subseries] A - Correspondance relative aux Commissions nationales, Délégués d'Etats et Affaires générales de la Di...", "[Subseries] B - Correspondance relative aux relations diverses entre pays, 1925-1946", "[Subseries] C - Correspondance relative aux questions des relations universitaires, début de la Conférence permanente des Universités, 1923-1946", "[Subseries] D - Correspondance relative aux questions scientifiques, Bibliothèques et Congrès bibliothécaires, Bibliog...", and "[Subseries] DD - Correspondance de la Section des Sciences historiques et sociales, 1924-1940". A link "See also" is visible at the bottom of this list. A button "Other languages available" is located below the hierarchy list.

<https://atom.archives.unesco.org/iiic>

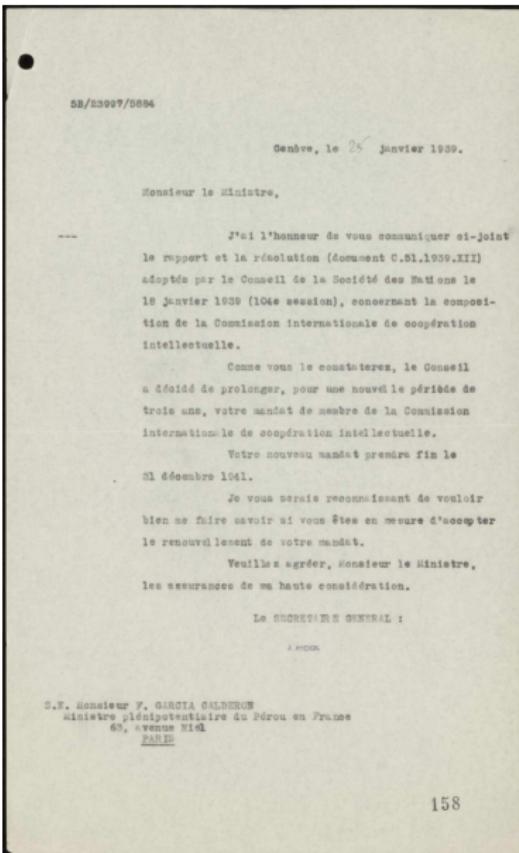
# The data: UNESCO's archives

## Subseries A - Correspondance relative aux Commissions nationales, Délégués d'Etats et Affaires générales de la Direction

- [Archive Group] AG 1 - International Institute of Intellectual Co-operation, 1921-1954
- [Fonds] IICI - International Institute of Intellectual Co-operation fonds, 1921-1954
  - [Series] IICI Correspondence Files, 1923-1949
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      - [Subseries] B - Correspondance relative aux relations diverses entre pays, 1925-1946
      - [Subseries] C - Correspondance relative aux questions des relations universitaires, début de la Conférence permane...
      - [Subseries] D - Correspondance relative aux questions scientifiques, Bibliothèques et Congrès bibliothécaires, Bibliog...
      - [Subseries] DD - Correspondance de la Section des Sciences historiques et sociales, 1924-1940

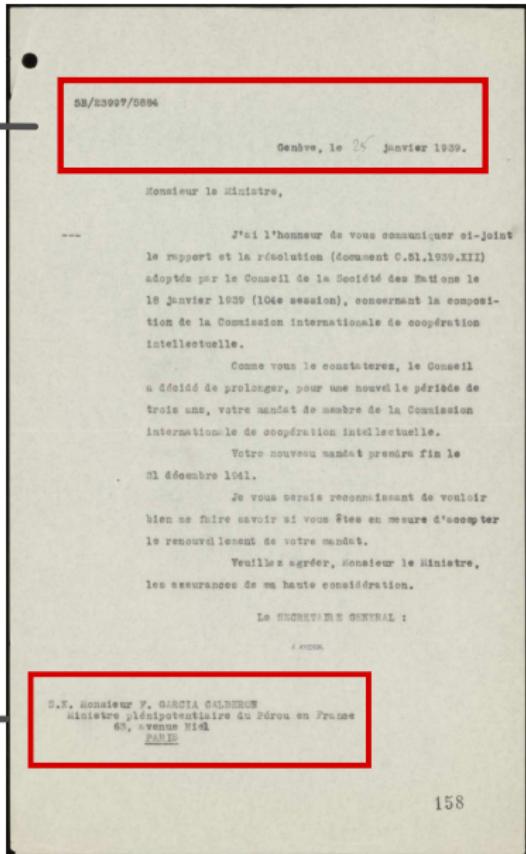
<https://atom.archives.unesco.org/iiic>

# The data: UNESCO's archives



# The data: UNESCO's archives

Origin  
Country  
(Switzerland)



Destination  
Country  
(France)



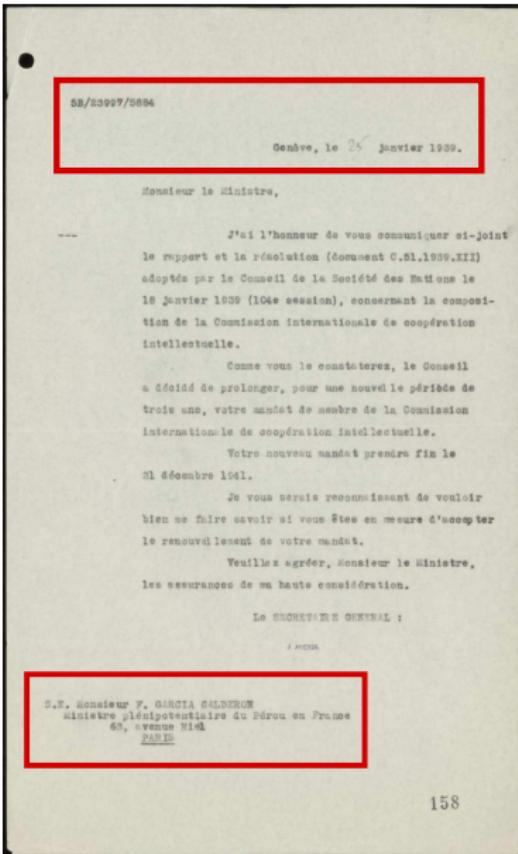
# The data: UNESCO's archives

Switzerland

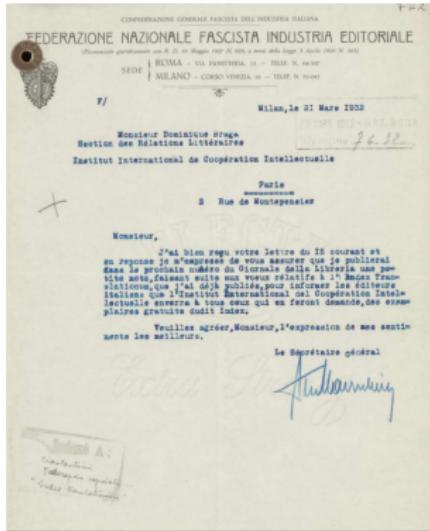


$$w_{ij} = 1$$

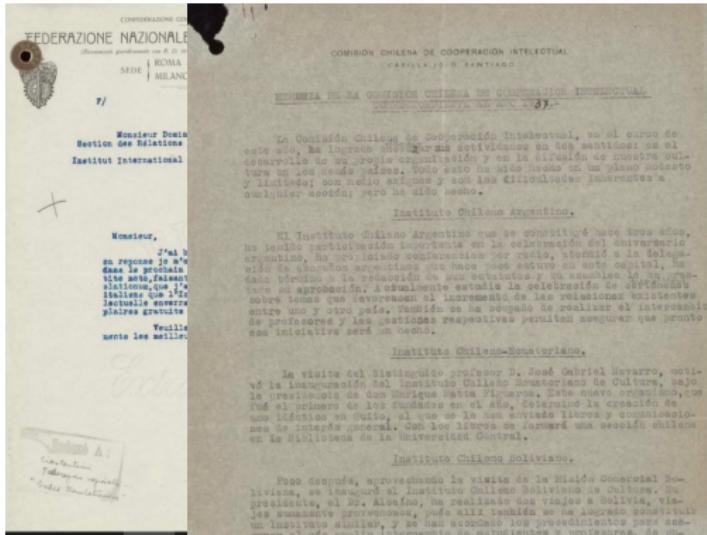
France



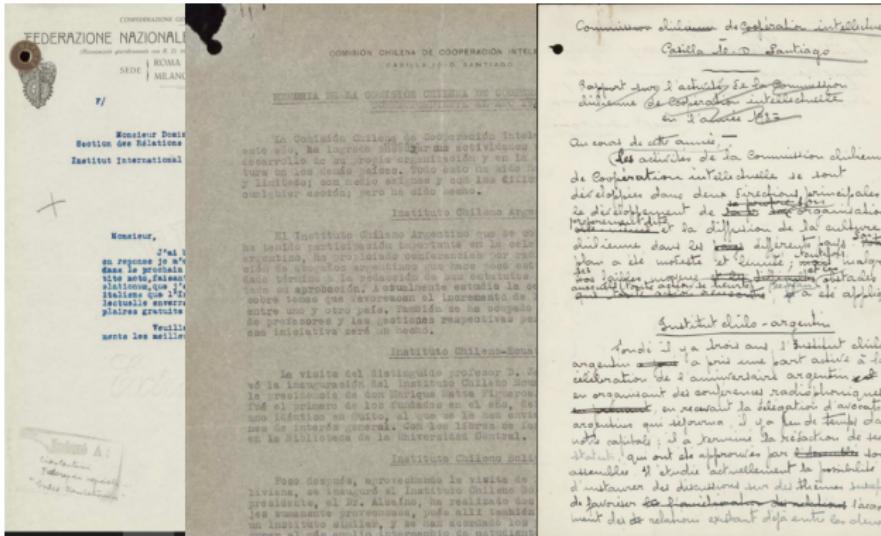
# The data: UNESCO's archives



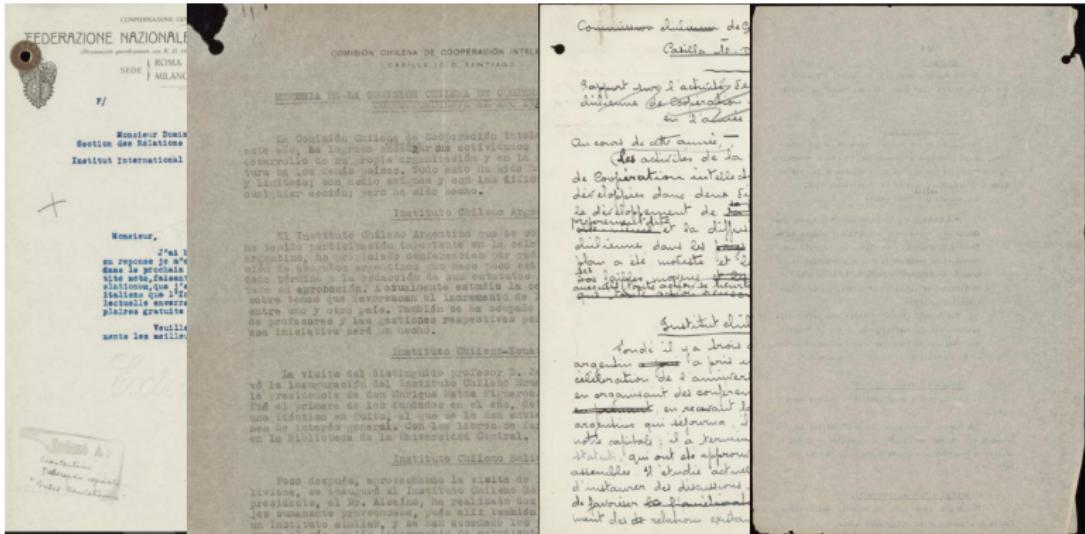
# The data: UNESCO's archives



# The data: UNESCO's archives



# The data: UNESCO's archives



## The data: UNESCO's archives

**FEDERAZIONE NAZIONALE**  
Consorzio garantiscono su R. D. n.  
SEDE | ROMA | MILANO

71

## Management

J'ai  
en réponse je m'  
dans le prochain  
tite moto, faisan  
stationnement, que j'  
italiens que l'  
lectuelle enverra  
plaires gratuites

Veuillez  
meilleures

COMISIÓN CHILENA DE COOPERACIÓN INTELECTUAL  
CABILLO 20-D. SANTIAGO

Commission d'histoires de  
Castille. —

Rapport sur l'activité de  
l'Institut de Coopération

Qui sont de cette manière,

les activités de la  
de Coopération intellec-  
tuelles dans deux fai-  
tes le développement de  
programmation  
dans laquelle  
différents  
discussions dans les  
formes a été modeste et l'é-  
tat des choses n'ont pas  
eu avec l'opposition de tout

Great Lakes

Tondi il y a trois ans  
anglois ~~qui~~ a pris la  
celebration de 2 anniversaires  
en organisant des conferences  
~~et~~ en recevant les  
academiques qui etaient a  
nos colloques ; il a terminé  
l'etude qui ont été approuvées  
ensemble et étudie actuellement  
d'instaurer des discussions  
de favoriser les deux universités  
et de faire une grande amitié entre

七

**Brésil** M.R. Montarregas, Adéquage du Brésil  
appelle de l'Excellence internationale de  
Coopération Intellectuelle,  
6 rue de Bassac,  
Carréres-sur-Seine 91 840

#### A Future Consultation

S.S. M. S.H.K. Ferroughi, Envoyé extraordinaire et Ministre plénier  
persan, délégué généralement de la  
Perse auprès de la S.D.F.  
19e Avenue de Champs, Gauthier.

WICHITA CITY DIRECT

Sir Frank Smith directeur honoraire du Bureau des Universités de l'Empire britannique.

M. Paul Langewin

www.3dprintables.com

NOTE DES QUESTIONS SCIENTIFIQUES

## The data: UNESCO's archives



# The data: UNESCO's archives



## Note 1

Of the 12,230 letters available in Folder A, we consider only 4,265 (*i.e.* 35% of the whole corpus).

## Note 2

We have analyzed also documents from Folder F (results not shown).

## Network cartography in a nutshell

## Network cartography in a nutshell

- A technique to **assign roles to nodes** by studying their connectivity pattern.

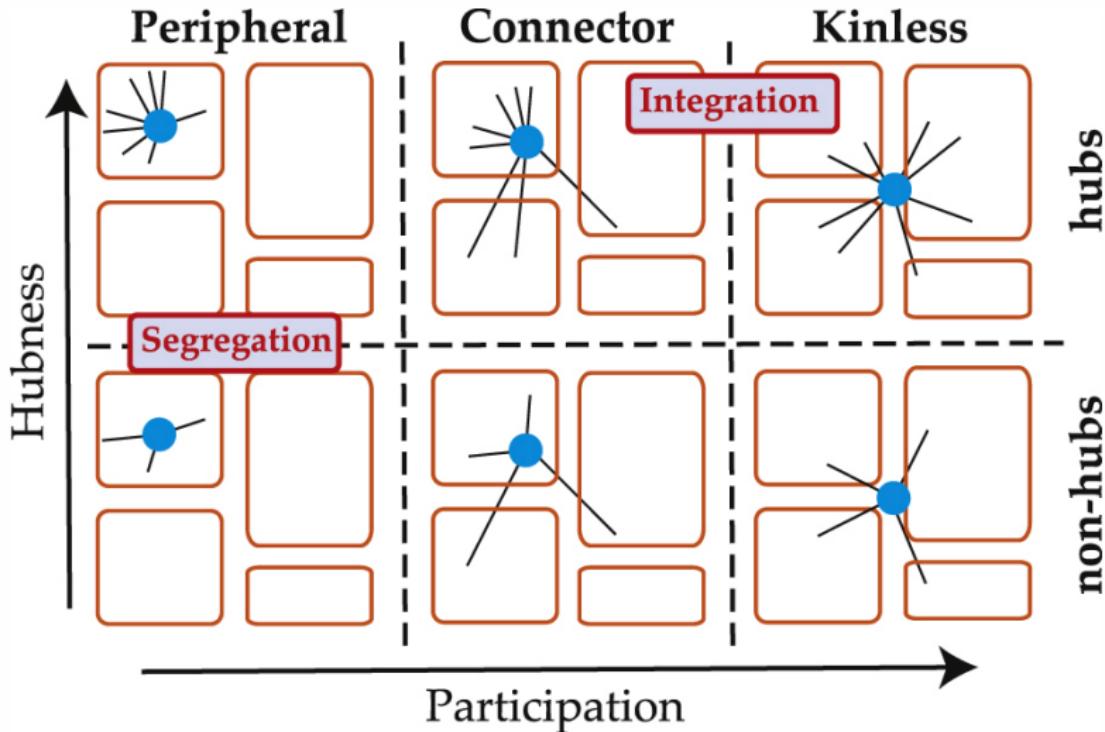
- R. Guimerá, and L. A. N. Amaral, “*Functional cartography of complex metabolic networks*”. Nature, **433**, 895, (2005). DOI:10.1038/nature03288

## Network cartography in a nutshell

- A technique to **assign roles to nodes** by studying their connectivity pattern.
- **It requires a partition of the network into groups** (i.e. the results **depend** on the partitioning criteria).

- R. Guimerá, and L. A. N. Amaral, “*Functional cartography of complex metabolic networks*”. Nature, **433**, 895, (2005). DOI:10.1038/nature03288

## Network cartography in a nutshell



- F. Klimm, et al. "Individual node's contribution to the mesoscale of complex networks". New Journal of Physics, **16**, 125006, (2014). DOI:10.1088/1367-2630/16/12/125006

# Results

## Characteristics of the network

**Nodes:** Countries  
**Edge weight:** # of letters exchanged

	Folder A
$N$	66
$E$	294
$\rho$	0.14
$\langle k \rangle$	8.91
$\langle C \rangle$	0.52
$\langle l \rangle$	2.16
$N_c$	1
$S$	1.00
$N_{\text{isol}}$	0
$N_{\text{comms}}$	6
$N_{\text{sl}}$	53

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## Community (group) structure

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$$Q = \frac{1}{2E} \sum_{i,j=1}^N \left[ a_{i,j} - \frac{k_i k_j}{2E} \right] \delta(g(i), g(j)) .$$

- M. E. J. Newman, “*Modularity and community structure in networks.*” Proc. Natl. Acad. Sci. USA, **103**, 8577, (2006). DOI: [10.1073/pnas.0601602103](https://doi.org/10.1073/pnas.0601602103)
- V. A. Traag, *et al.* “*From Louvain to Leiden: guaranteeing well-connected communities*”. Sci. Rep., **9**, 5233, (2019). DOI:[10.1038/s41598-019-41695-z](https://doi.org/10.1038/s41598-019-41695-z)

## Community (group) structure

	$N_{\text{comms}}$	$Q$
Folder A	6	0.053

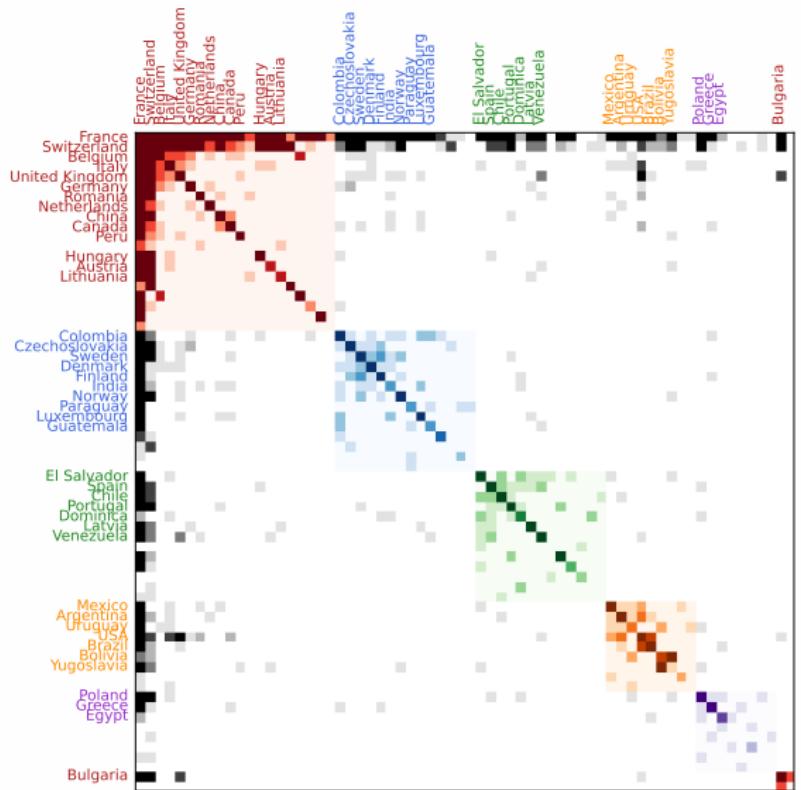
## Community (group) structure

	$N_{\text{comms}}$	$Q$
Folder A	6	0.053

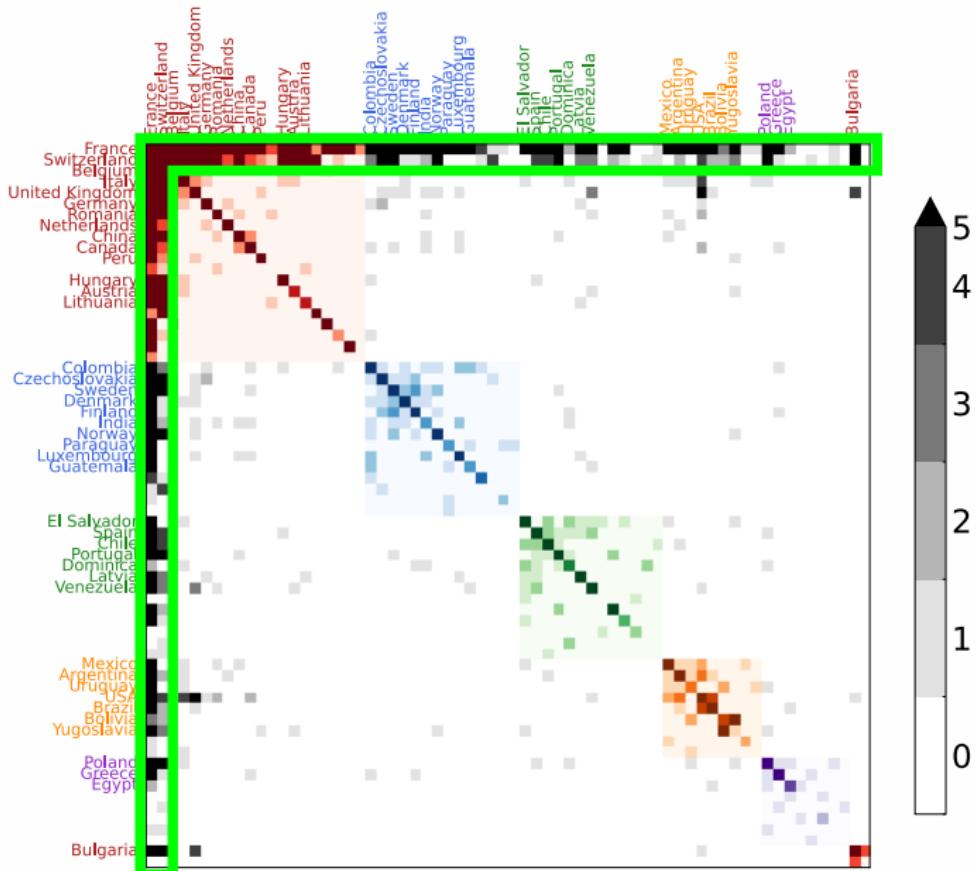
The network **does not** have a community structure!

# Community (group) structure

$$Q = 0.053$$

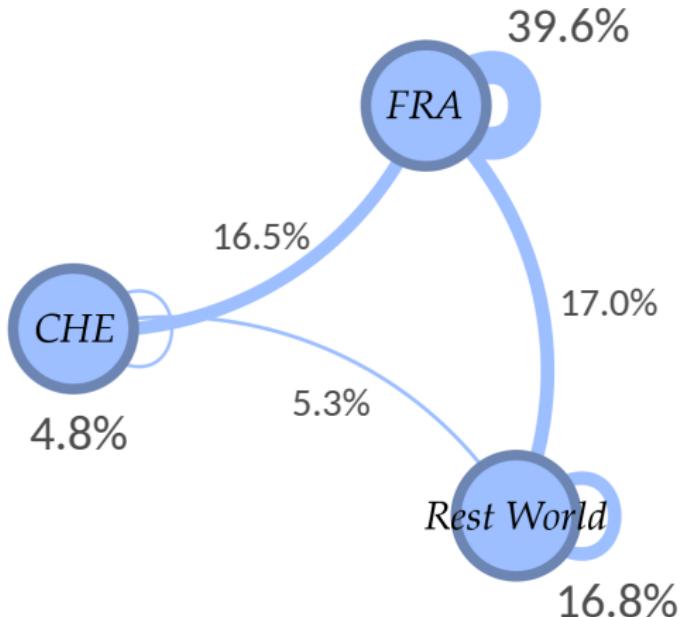


# Community (group) structure



## Solving the modularity's conundrum

It gets clear that France and Switzerland act as **broadcasters** and behave differently from the rest of the countries!



## Solving the modularity's conundrum

Was there intellectual cooperation  
**beyond** that with (and between)  
France and Switzerland?

## Solving the modularity's conundrum

	$N_{\text{comms}}$	$Q$
Folder A	6	0.053
Folder A*	12	0.444

## Solving the modularity's conundrum

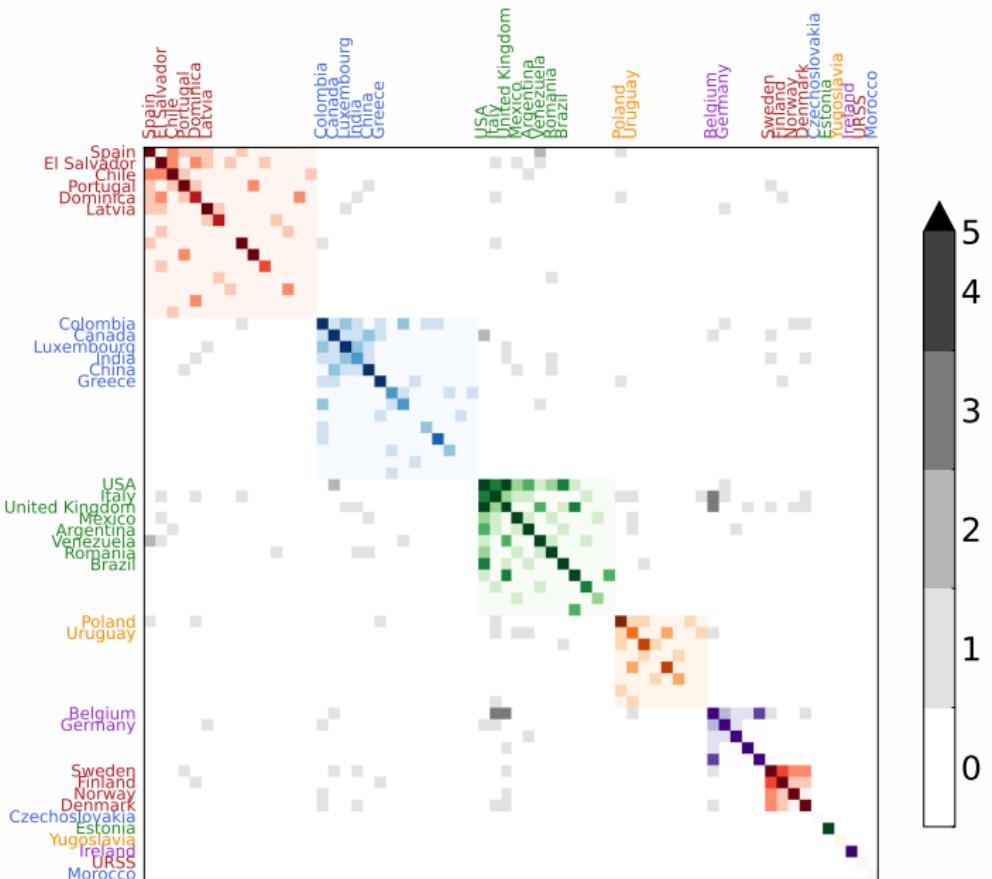
	$N_{\text{comms}}$	$Q$	Folder A	Folder A $\star$
Folder A	6	0.053	66	64
Folder A $\star$	12	0.444	294	177
			$\rho$	0.14
			$\langle k \rangle$	0.09
			$\langle C \rangle$	8.91
			$\langle l \rangle$	5.53
			$N_c$	0.52
			$S$	0.14
			$N_{\text{isol}}$	2.16
			$N_{\text{comms}}$	3.12
			$N_{\text{sl}}$	1
				7
				1.00
				0.91
				0
				6
				6
				12
				53
				49

## Solving the modularity's conundrum

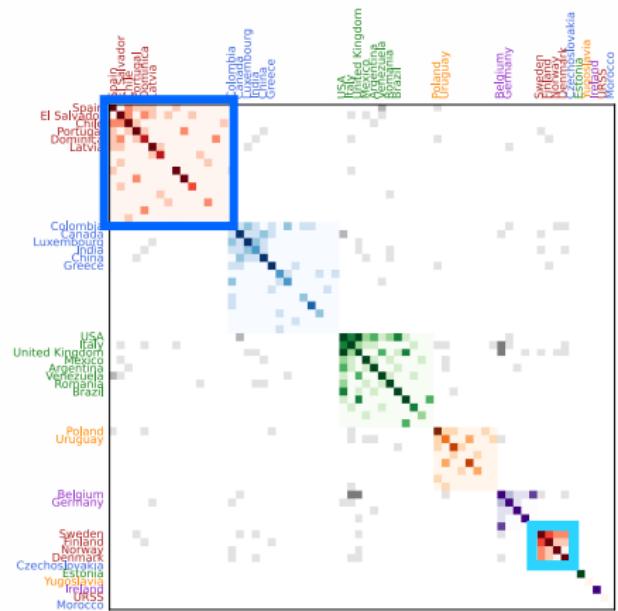
	$N_{\text{comms}}$	$Q$
Folder A	6	0.053
Folder A $^*$	12	0.444

	Folder A	Folder A $^*$
$N$	66	64
$E$	294	177
$\rho$	0.14	0.09
$\langle k \rangle$	8.91	5.53
$\langle C \rangle$	0.52	0.14
$\langle l \rangle$	2.16	3.12
$N_c$	1	7
$S$	1.00	0.91
$N_{\text{isol}}$	0	6
$N_{\text{comms}}$	6	12
$N_{\text{sl}}$	53	49

# Solving the modularity's conundrum

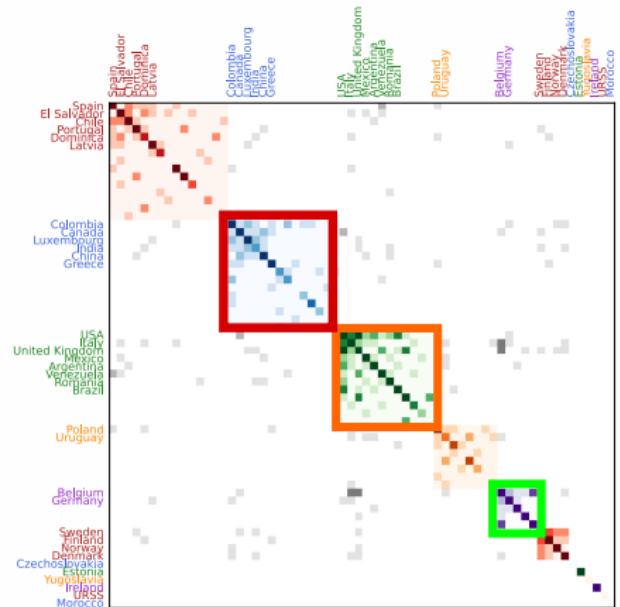


# Solving the modularity's conundrum



- C1** Spain, Portugal, Hungary, Lithuania, Latvia, Chile, El Salvador, Dominican Republic, Dominica, Iran, Palestine, Lebanon, South Africa, Japan, and Thailand.
- C2** Canada, Luxembourg, Monaco, Greece, Albania, Turkey, Colombia, Paraguay, Guatemala, Panama, Costa Rica, China, India, and Liberia.
- C3** Italy, United Kingdom, United States of America, Austria, Bulgaria, Romania, Mexico, Argentina, Brazil, Venezuela, Haiti, and Jordan.
- C4** Poland, Uruguay, Bolivia, Nicaragua, Ecuador, Egypt, Australia, and Iceland.
- C5** Belgium, Germany, Netherlands, Peru, and Cuba.
- C6** Sweden, Norway, Denmark, and Finland.
- C7** Czechoslovakia.
- C8** Estonia.
- C9** Yugoslavia.
- C10-11-12** Ireland | URSS | Morocco.

# Solving the modularity's conundrum



C1 **Spain, Portugal, Hungary, Latvia, Lithuania, Chile, El Salvador, Dominican Republic, Dominica, Iran, Palestine, Lebanon, South Africa, Japan, and Thailand.**

C2 **Canada, Luxembourg, Monaco, Greece, Albania, Turkey, Colombia, Paraguay, Guatemala, Panama, Costa Rica, China, India, and Liberia.**

C3 **Italy, United Kingdom, United States of America, Austria, Bulgaria, Romania, Mexico, Argentina, Brazil, Venezuela, Haiti, and Jordan.**

C4 **Poland, Uruguay, Bolivia, Nicaragua, Ecuador, Egypt, Australia, and Iceland.**

C5 **Belgium, Germany, Netherlands, Peru, and Cuba.**

C6 **Sweden, Norway, Denmark, and Finland.**

C7 **Czechoslovakia.**

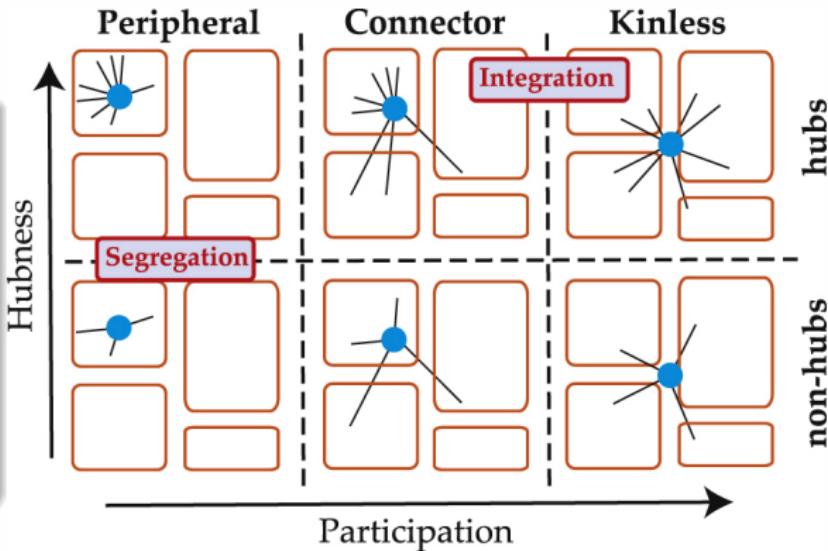
C8–12 **Estonia | Yugoslavia | Ireland | URSS | Morocco**

# Cartography

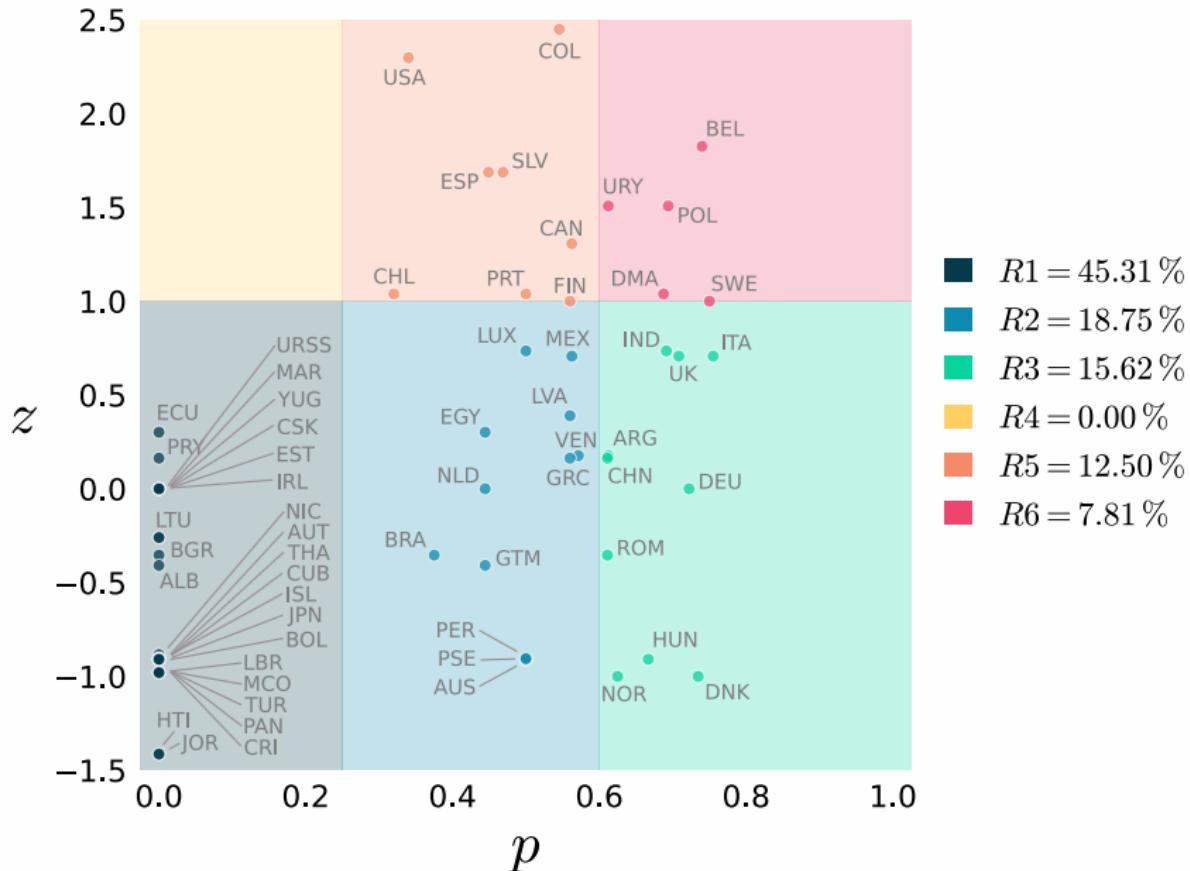
# Cartography

## Definitions

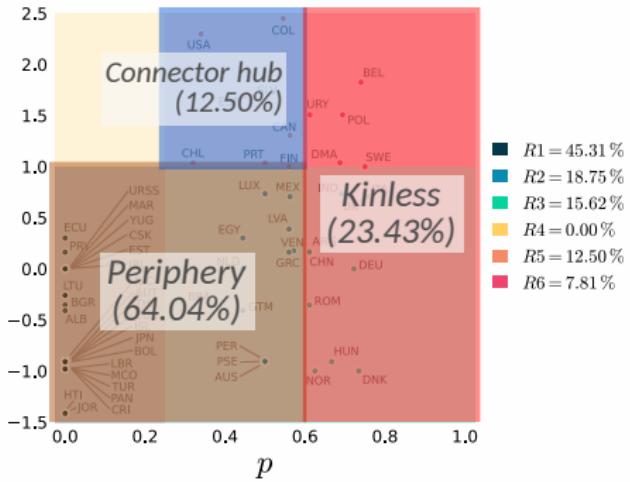
- R1 Peripheral non-hub.
- R2 Connector non-hub.
- R3 Kinless non-hub.
- R4 Peripheral hub.
- R5 Connector hub.
- R6 Kinless hub.



# Cartography



# Cartography



R6

**Belgium, Poland, Sweden, Uruguay,**  
and Dominica.

R5

**Spain, Portugal, United States of America,**  
Canada, Chile, **Colombia, El Salvador,**  
and Finland.

R4

R3

**Italy, Germany, United Kingdom, Norway,**  
Denmark, Hungary, Romania, Argentina,  
China, and India.

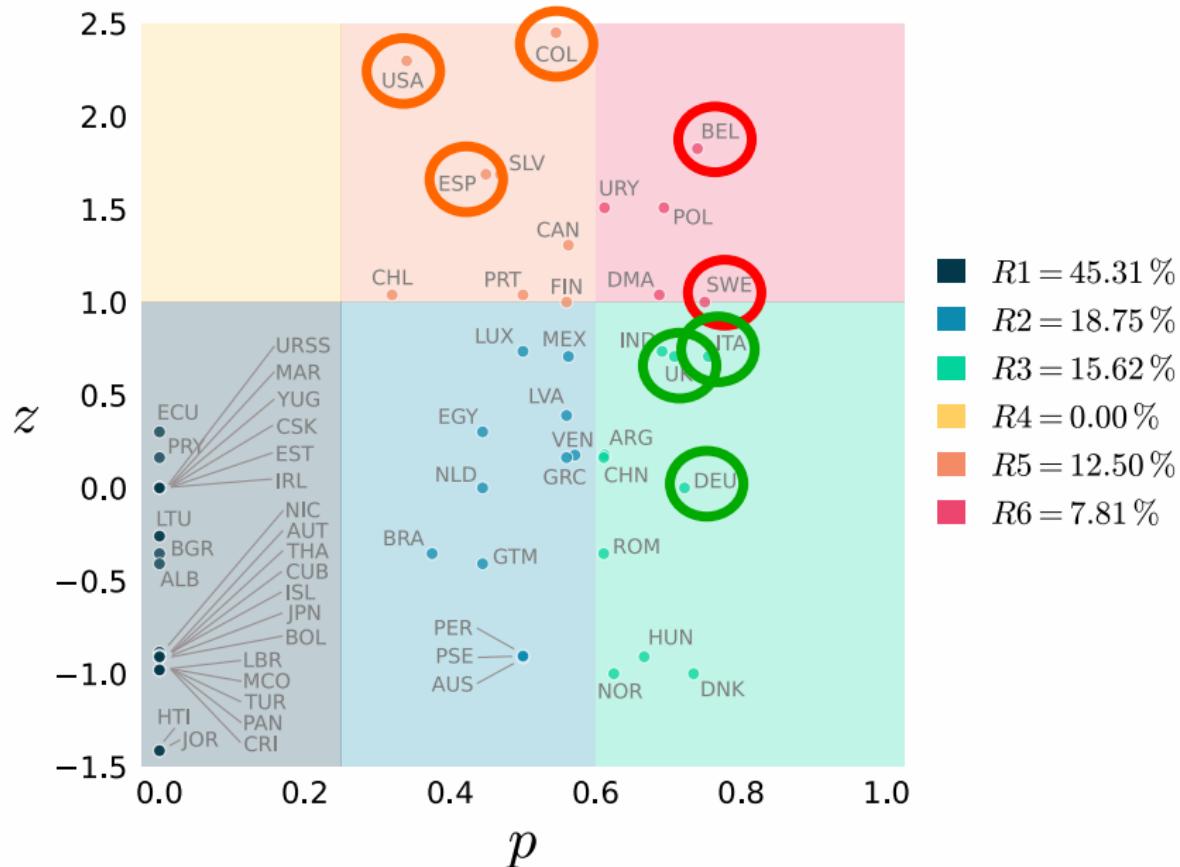
R2

Latvia, Netherlands, Luxembourg, Greece,  
Mexico, Brazil, Peru, Venezuela,  
Guatemala, Egypt, Palestine, and Australia.

R1

Estonia, Lithuania, Austria, Czechoslovakia,  
Yugoslavia, Albania, Bulgaria, Monaco,  
Ireland, Iceland, Paraguay, Cuba,  
Bolivia, Nicaragua, Costa Rica, Ecuador,  
Haiti, Dominican Republic, Panama, Iran,  
Turkey, URSS, Morocco, Jordan, Lebanon,  
South Africa, Liberia, Japan, and Thailand.

# Cartography



# Cartography

	R1	R2	R3	R5	R6
Africa	3	1			
Oceania		1			
Asia	7	1	2		
Europe	11	4	7	3	3
North America	5	2		3	1
South America	3	3	1	2	1

# Cartography

	R1	R2	R3	R5	R6
Africa	3	1			
Oceania		1			
Asia	7	1	2		
Europe	11	4	7	3	3
North America	5	2		3	1
South America	3	3	1	2	1

# Cartography

Africa	3	1			
Oceania		1			
Asia	7	1	2		
Europe	11	4	7	3	3
North America	5	2		3	1
South America	3	3	1	2	1
	R1	R2	R3	R5	R6

# Cartography

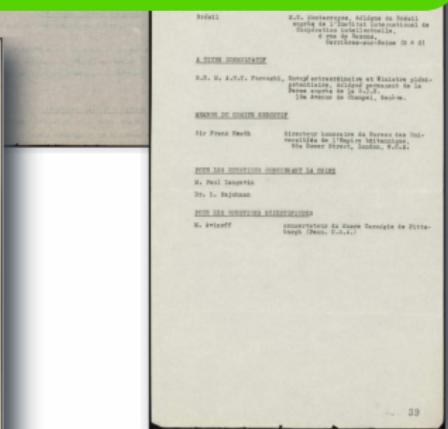
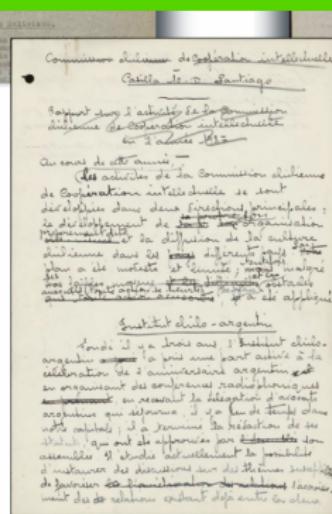
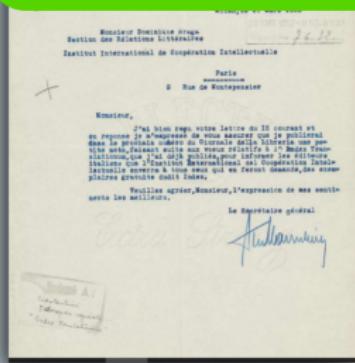
	R1	R2	R3	R5	R6
Africa	3	1			
Oceania		1			
Asia	7	1	2		
Europe	11	4	7	3	3
North America	5	2		3	1
South America	3	3	1	2	1

# Conclusions

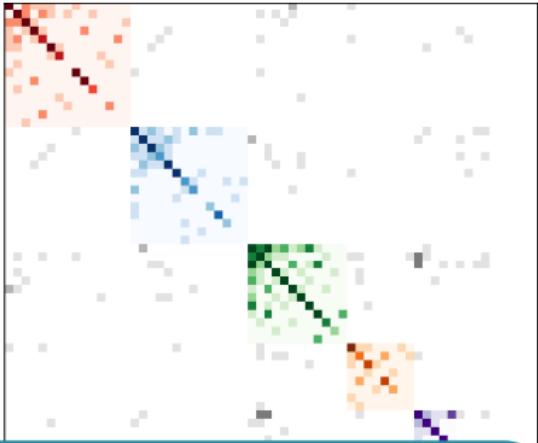
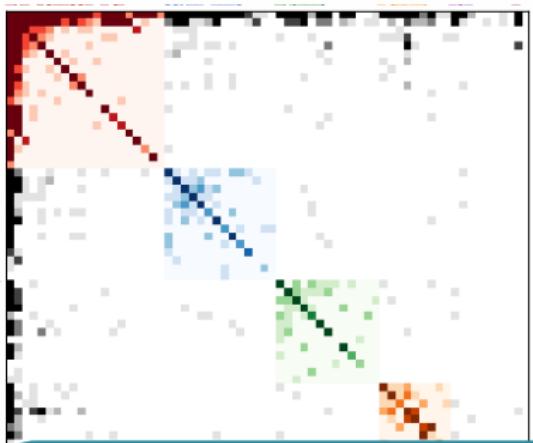
# Take Home Messages



We have used methods of complexity science to analyze non digital records and extract information relevant (not only) for historians

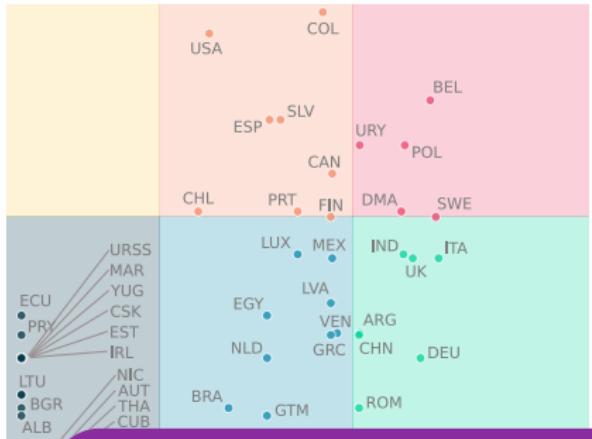


## Take Home Messages



The analysis of the network *without broadcasters* highlights the *presence of a non-trivial structure* denoting the existence of intellectual cooperation **beyond** that with France and Switzerland

# Take Home Messages



Africa	3	1
Oceania		1
Asia	7	1
Europe	11	4
North America	5	2
	3	3
		1

The use of network cartography allows to interpret the relationships between countries, challenging the mainstream vision about the Eurocentric organization of the IIIC

# Acknowledgements

Javier  
Borge Holthoefer



Diana  
Roig Sanz



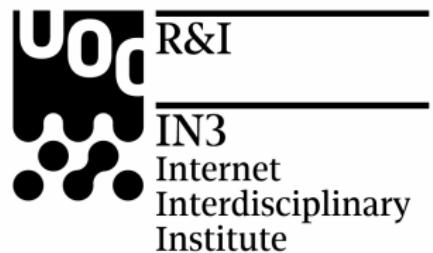
Albert  
Solé Ribalta



Elisabet  
Carbó Catalan



Rubén  
Rodríguez Casañ



# Acknowledgements



European Research Council  
Established by the European Commission

ERC-2018-STG  
ID: 803860



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# Extra content

## Alternative grouping

### Question

Can we consider **other types** of groupings?

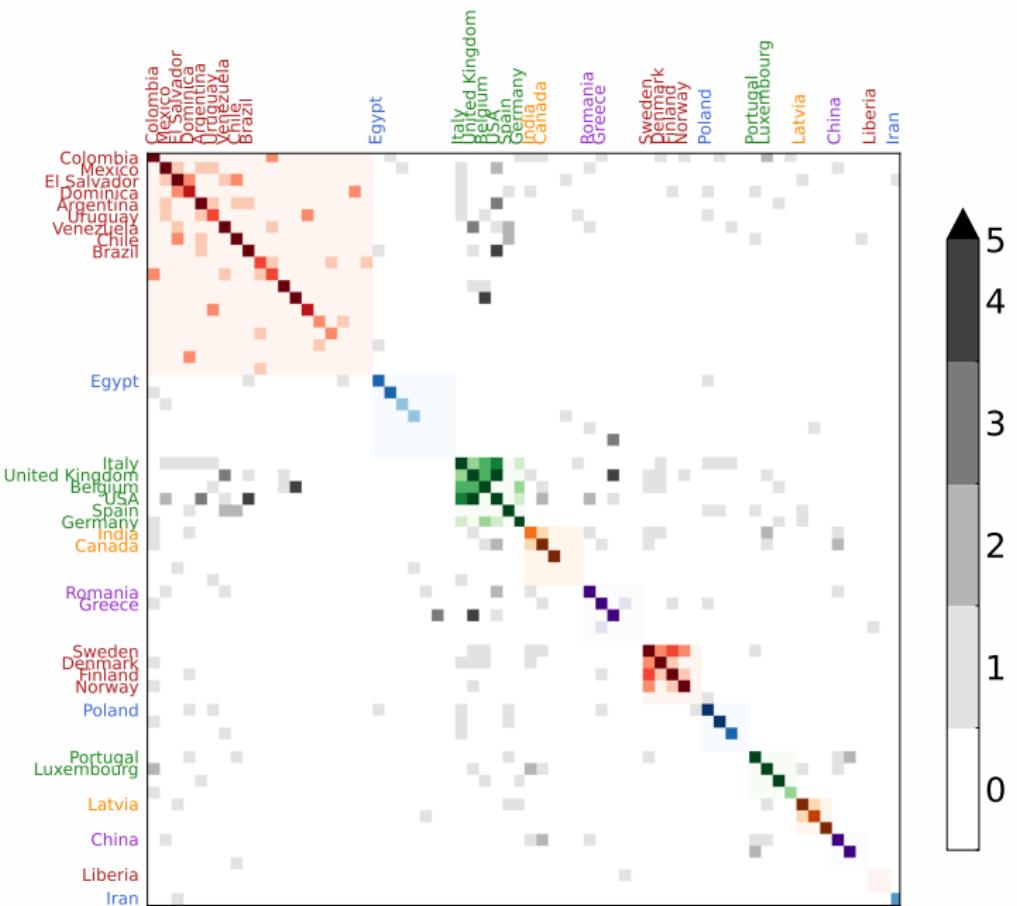
## Alternative grouping



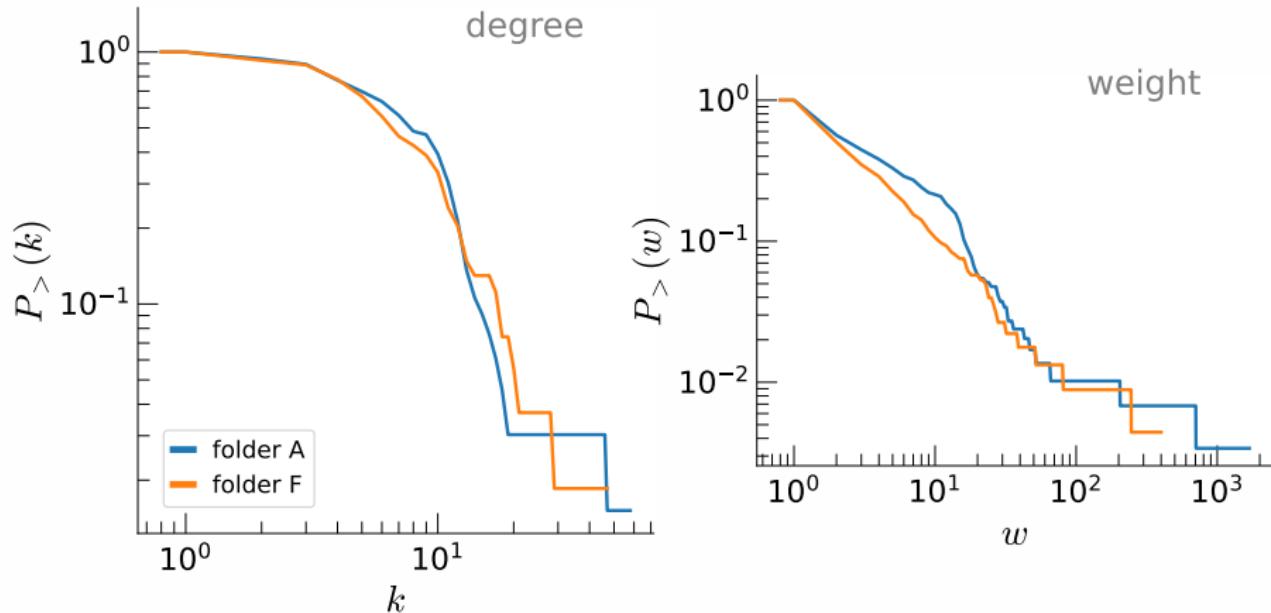
# Historical grouping

Group's name	Countries
Big players in IIIC	France, United Kingdom, Switzerland, Germany, Italy, Belgium, Spain, and United States of America
EU small countries	Luxembourg, The Netherlands, Portugal, and Monaco
EU central countries	Austria, Czechia, Hungary, and Poland
EU eastern countries	Albania, Bulgaria, Greece, Yugoslavia, and Romania
Baltic countries	Estonia, Latvia, and Lithuania
Nordic countries	Denmark, Finland, Norway, Iceland, and Sweden
Latin countries	Argentina, Bolivia, Brazil, Colombia, Costa Rica, Cuba, Chile, Dominican Republic, Ecuador, Dominica, Guatemala, Honduras, Mexico, Nicaragua, Panama, Peru, Paraguay, El Salvador, Uruguay, and Venezuela
UK's Dominions	Australia, Canada, India, South Africa, and Ireland
Colonies	Egypt, Benin, French Guiana, Haiti, Turkey, Lebanon, Jordan, Morocco, and Palestine
Eastern countries	China, Japan, Cambodia, and Thailand
Middle East	Iran
Other countries	Liberia and URSS

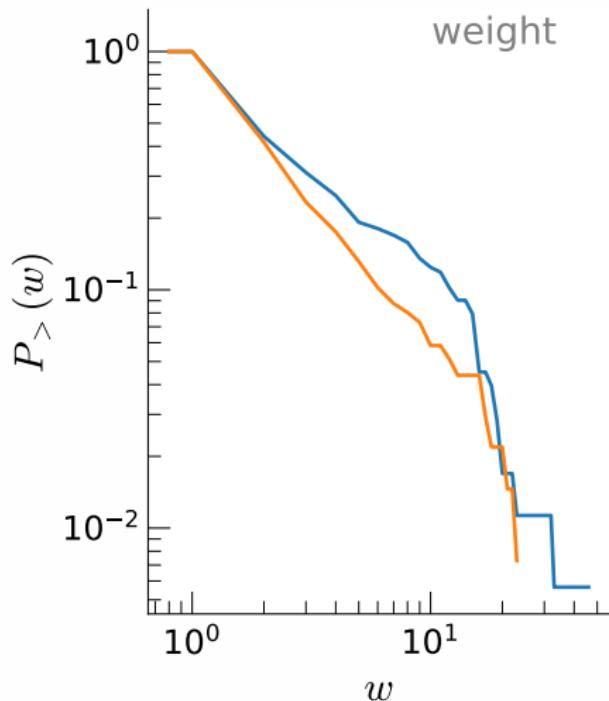
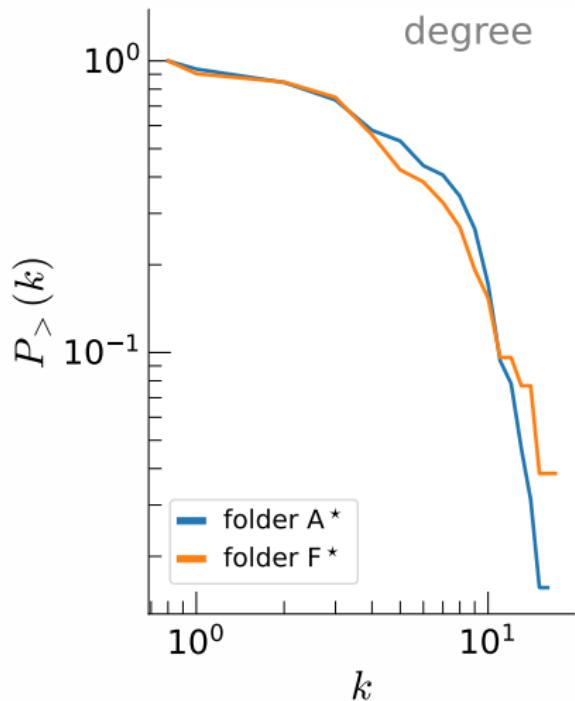
# Historical grouping



## Cumulative degree and weight distributions



## Cumulative degree and weight distributions

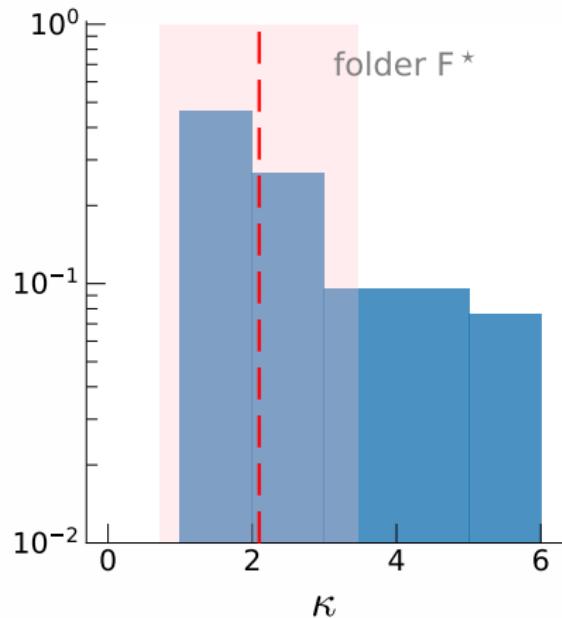
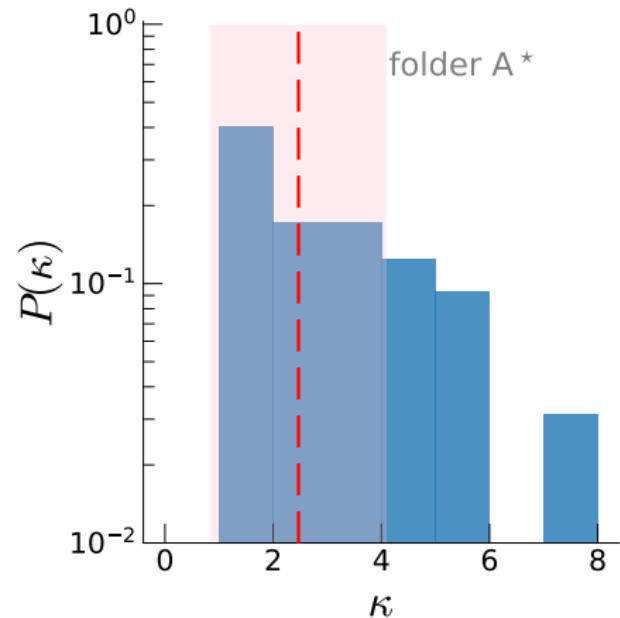


## Distribution of within module degree $\kappa$

$\kappa_i$  The degree of node  $i$  within its own community/module (we consider also isolated nodes).

$$\kappa_i = \sum_j a_{ij} \delta_{c_i, c_j}$$

## Distribution of within module degree $\kappa$

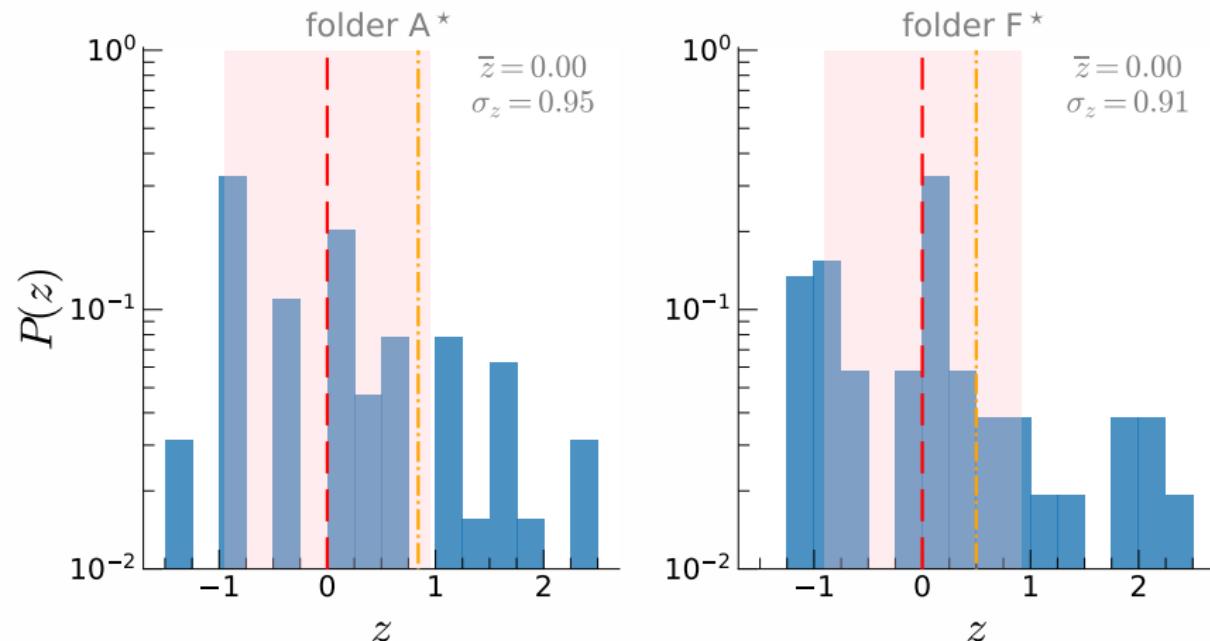


# Distribution of $\kappa$ 's $z$ -score

## $z$ -score

$$z_i = \frac{\kappa_i - \overline{\kappa}_{c_i}}{\sigma_{\kappa_{c_i}}}$$

# Distribution of $\kappa$ 's $z$ -score



## Note

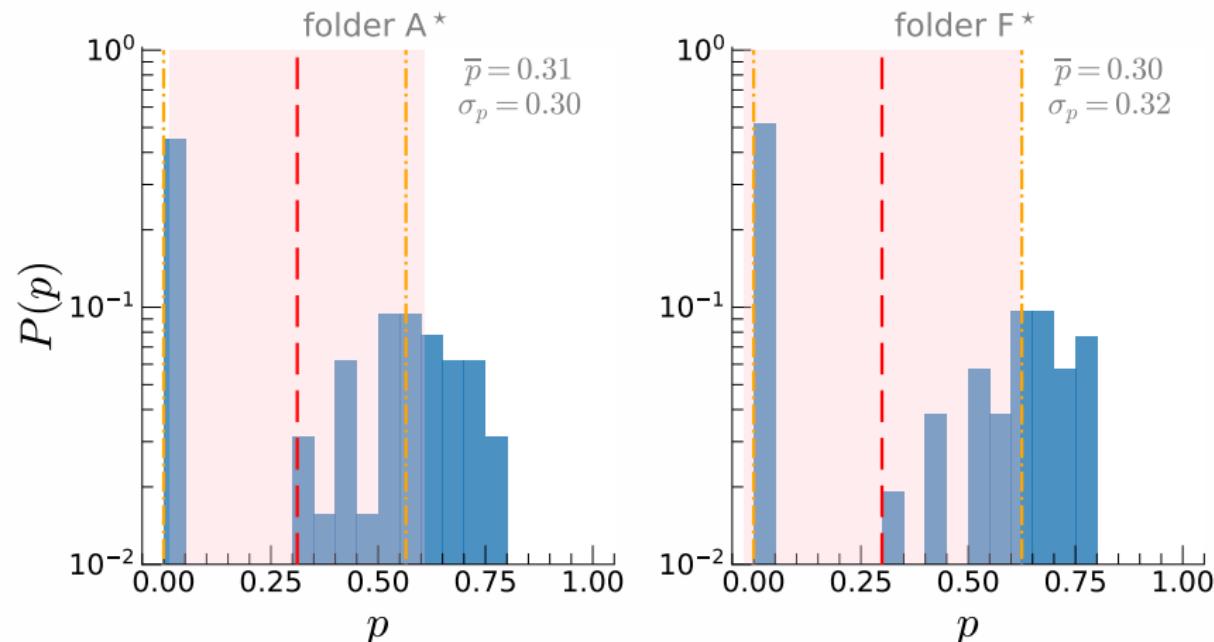
The orange line denotes the 80-th percentile of the distribution

## Distribution of participation coefficient $p$

Participation coefficient,  $p$

$$p_i = 1 - \sum_j^{N_c} \left( \frac{\kappa_i(c_j)}{k_i} \right)^2$$

# Distribution of participation coefficient $p$



## Note

The orange lines denote the 25-th and 75-th percentiles of the distribution

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