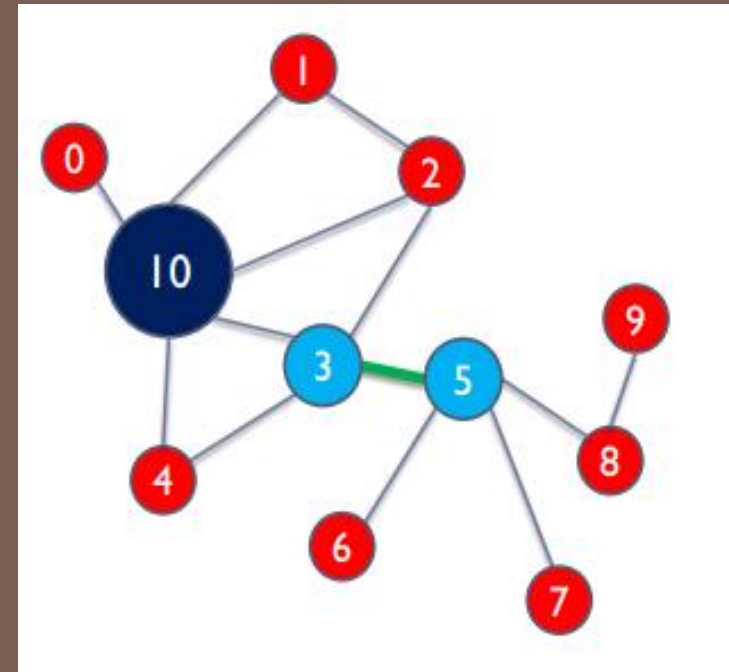


NEW MEDIA TOOLS FOR COMMUNICATION, RESEARCH, AND ANALYSIS

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Agenda



- Network analysis in the organizational context
- Open development data



I. Network analysis in the organizational context

An introduction to Social Network Analysis (SNA)

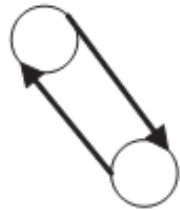
- **SNA is not just a methodology; it is a unique perspective on how society functions.**
- **When and why to use SNA?**
 - Whenever you are studying a social network, either offline or online, or when you wish to understand how to improve the **effectiveness** of the network
 - When you want to visualize your data so as to uncover **patterns in relationships or interactions**
 - When you want to follow the paths that information (or basically anything) **follows** in social networks
 -

Basic network concepts

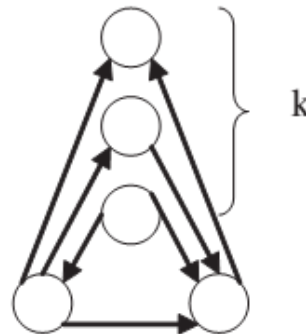
- ◆ Nodes and edges – define your network

- ◆ Density

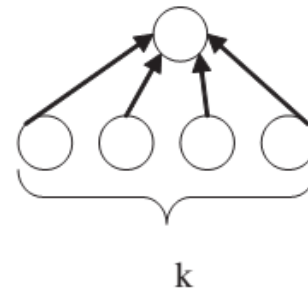
- ◆ Reciprocity



- ◆ Transitivity



- ◆ Centralization

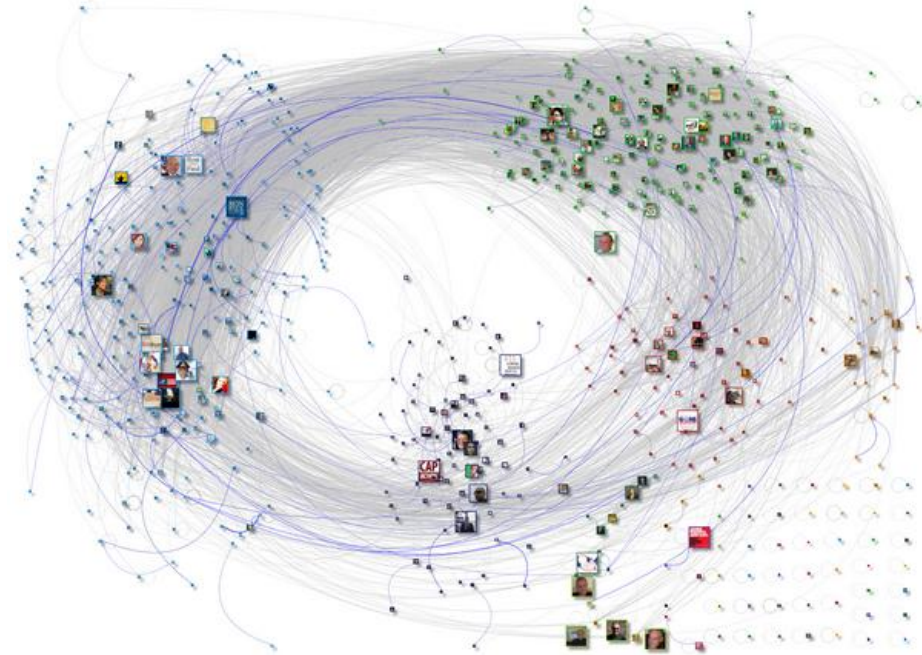
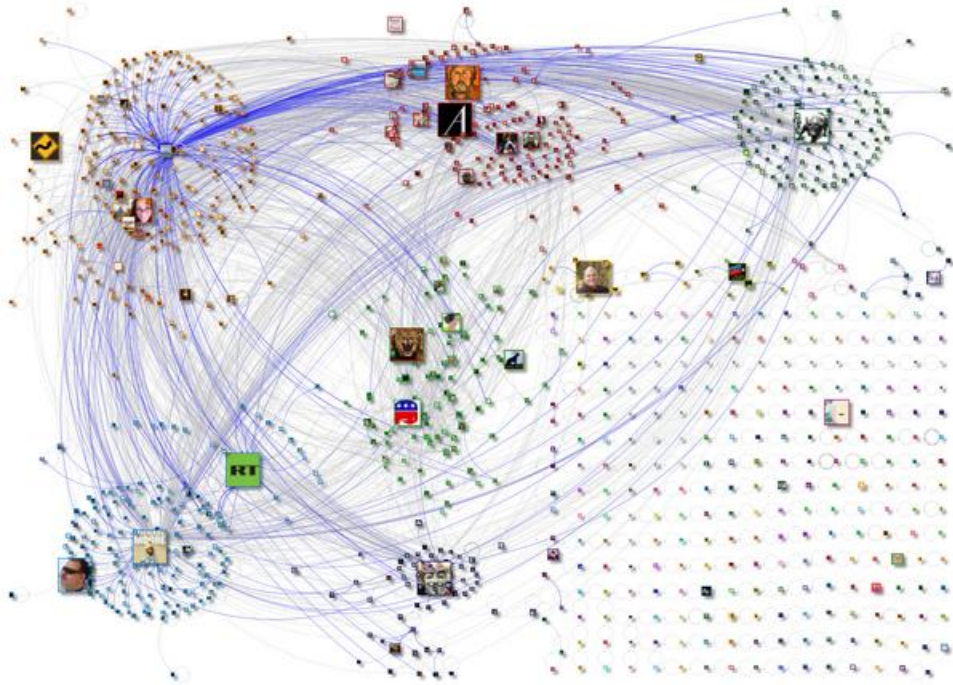


Occupy Wall Street Movement Twitter Network

30 minutes, Nov 2011

Tea Party Twitter Network

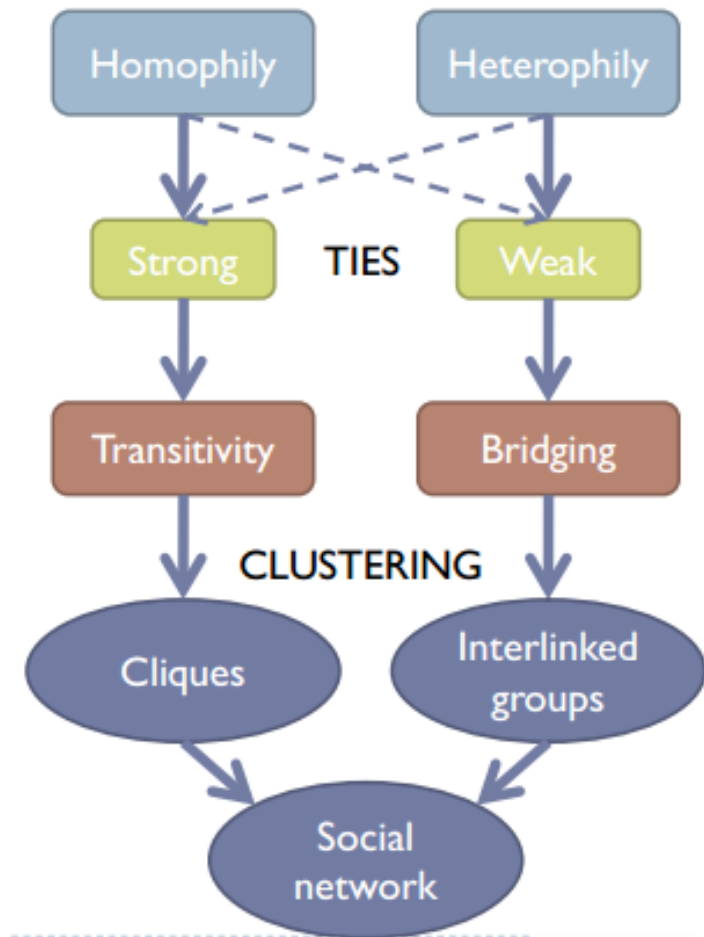
3 hours, Nov 15, 2011



[Newscientist](#), 2011; Image: [Marc Smith](#) of the [Social Media Research Foundation](#))

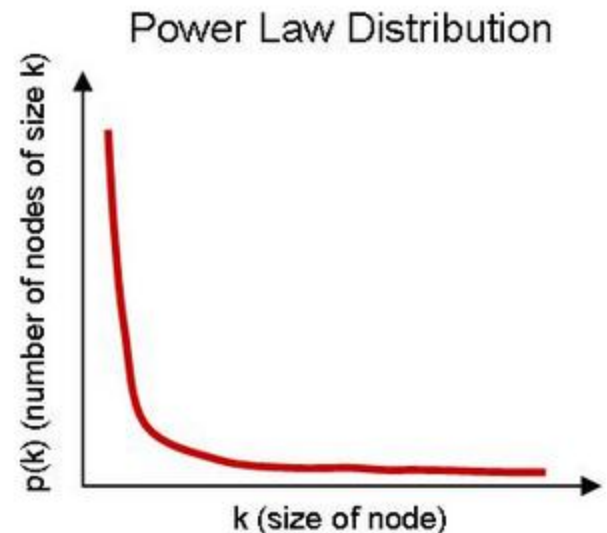
Network logics – who connects with whom?

- ◆ **Homophily** (McPherson, *et al.*, 2001)
 - birds of a feather flock together
 - Organizational attributes : organizational type, geolocation, org size, etc.



Network logics – who connects with whom?

- ◆ **Preferential attachment/Strategic selection** (Barabási, 2002; Powell, *et al.*, 2005)
 - Rich become richer
 - Examples:
 - organizations that are **more influential** will be more likely to be connected with other orgs.
 - Organizations that are **more sufficient in resources** will be more likely to be connected with other orgs.

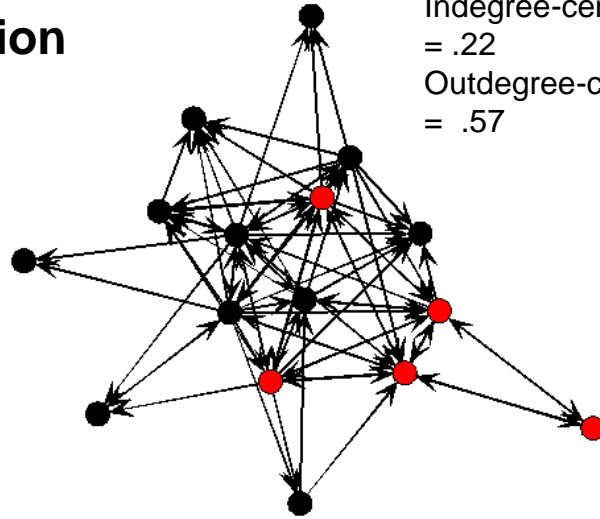


Case study

- **An initiative designed to reduce cancer disparities among Pacific Islanders in Southern California**
- **Encourages collaborative and equitable involvement of all partners to achieve mutual benefits - community-based participatory research**
- **Three types of organizations involved:**
 - ▣ Community-based organizations
 - ▣ National organizations
 - ▣ Academic institutes
- **Network analysis for project evaluation**

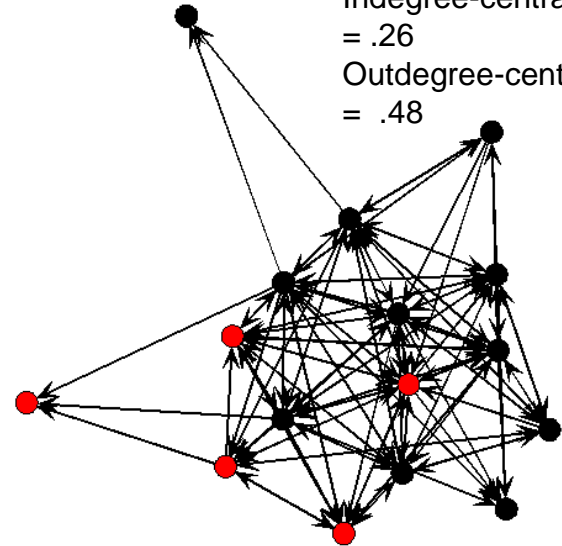
Time1

Communication network



Density = .44
 Indegree-centralization = .22
 Outdegree-centralization = .57

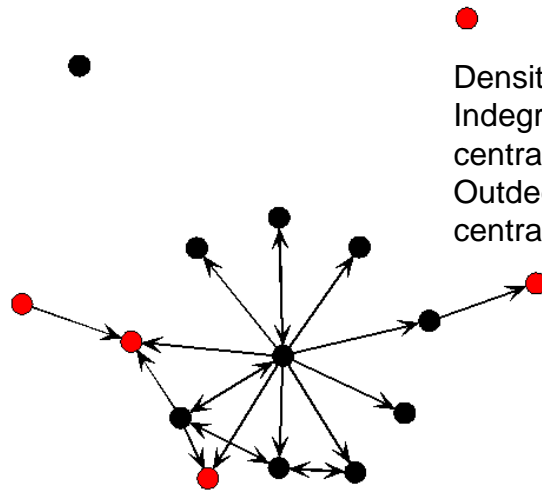
Time2



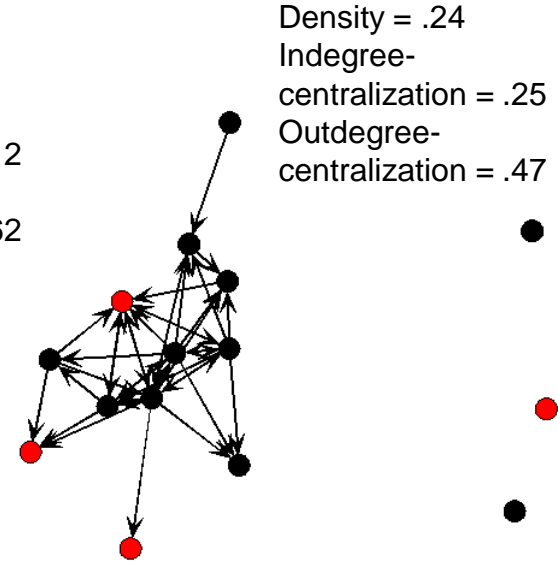
Density = .60
 Indegree-centralization = .26
 Outdegree-centralization = .48

Formal agreement network

- University
- Community-based Organization



Density = .11
 Indegree-centralization = .12
 Outdegree-centralization = .62



Density = .24
 Indegree-centralization = .25
 Outdegree-centralization = .47

Communication network

Model	1	2	3	4	5	6
Network structures						
Rate parameter	14.38*	15.25*	9.28*	15.34*	12.76*	14.98*
Density	-1.04*	-1.59*	-3.26	-1.47*	-1.45	-1.46*
Reciprocity (H1)	0.98	1.03	3.46	0.85	0.72	1.10
Transitive triplets (H2)	0.12*	0.15*	0.11	.14*	0.15*	0.12*
Nodal attributes						
Org type homophily (H3)		0.67*	1.60	.66*	0.76*	.59*
Resource sufficient alter (H4)			3.23			
Resource sufficiency change			9.92			
Org influence alter (H5)				.32		
Org influence change				.90		
Perceived CBPR impact on community alter (RQ)					.56	
Change of perceived CBPR impact on community					.96	
Perceived CBPR impact on org (RQ)						0.41
Change of perceived CBPR impact on org						1.74

* p < .05
 ** p < .01
 *** p < .001

Formal agreement network

Model	1	2	3	4	5	6
Network structures						
Rate parameter	5.03*	5.43	3.04*	4.81*	3.94*	4.16*
Density	-2.12*	-2.08*	-5.39	-2.08	-2.58	-2.78
Reciprocity (H1)	0.54	.63	1.47	0.49	0.65	0.73
Transitive triplets (H2)	1.47	1.25	2.92	1.10	1.45	1.51
Nodal attributes						
Org type homophily (H3)		.17	0.45	0.27	0.29	0.37
Resource sufficient alter (H4)			4.87			
Resource sufficiency change			8.12			
Org influence alter (H5)				0.55		
Org influence change				1.16		
Perceived CBPR impact on community, alter (RQ)					1.99	
Change of perceived CBPR impact on community					0.99	
Perceived CBPR impact on org, alter (RQ)						1.79
Change of perceived CBPR impact on org						1.68

* p < .05
 ** p < .01
 *** p < .001

Summary of the WINCART analysis

- Strong evidence of **homophily in communication networks**, but not in formal agreement networks
- No evidence of strategic selection
- **Partner's partner** matters for networking
- Future work will directly look at how communication network influences the formation of formal agreement network

II. Open Data on development

1. World Bank

- **World Development Indicators**

<http://data.worldbank.org/data-catalog/world-development-indicators>

- **Data Visualizer**

Financial inclusion and poverty

<http://data.worldbank.org/products/data-visualization-tools>

- **e-Atlas of Global Development**

<http://www.app.collinsindicate.com/worldbankatlas-global/en-us>

Open Data on development

2. CIDA (Canadian International Development Agency)

<http://www.acdi-cida.gc.ca/data>

3. Guardian

<http://www.guardian.co.uk/world-government-data>

4. Gapminder <http://www.gapminder.org/data/>

[Visualization by Hans Rosling:](#)

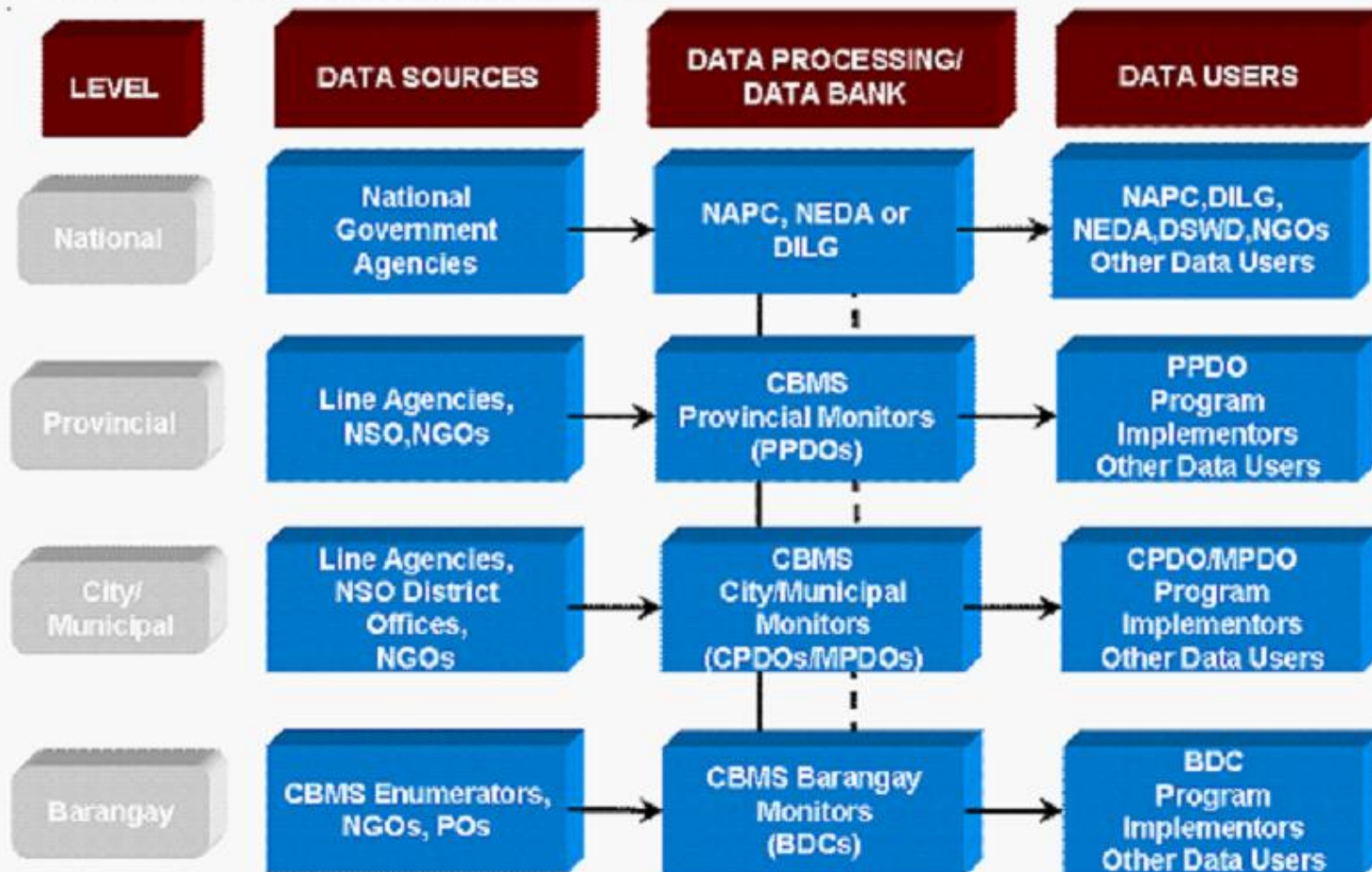
200 Countries, 200 Years, 4 Minutes

Case study: CBMS

- **Community-based monitoring system:** An initiative in collecting indigenous development data
- the lack of appropriate local information about the poor hinders development planning and programs, and constrains efforts to monitor change
- Started in the early 1990s, in the Philippines
- “CBMS implementation is itself a poverty-reduction policy.” (Asselin, 2009)

Evidence-based policy planning

Figure 1. CBMS flow of information



“an organized way of collecting ongoing or recurring information at the local level to be used by local governments, national government agencies, NGOs, and civil society **for planning, budgeting, and implementing** local development programs, as well as for **monitoring and evaluating** their performance” (Reye & Due, 2009: 14)

AFRICA



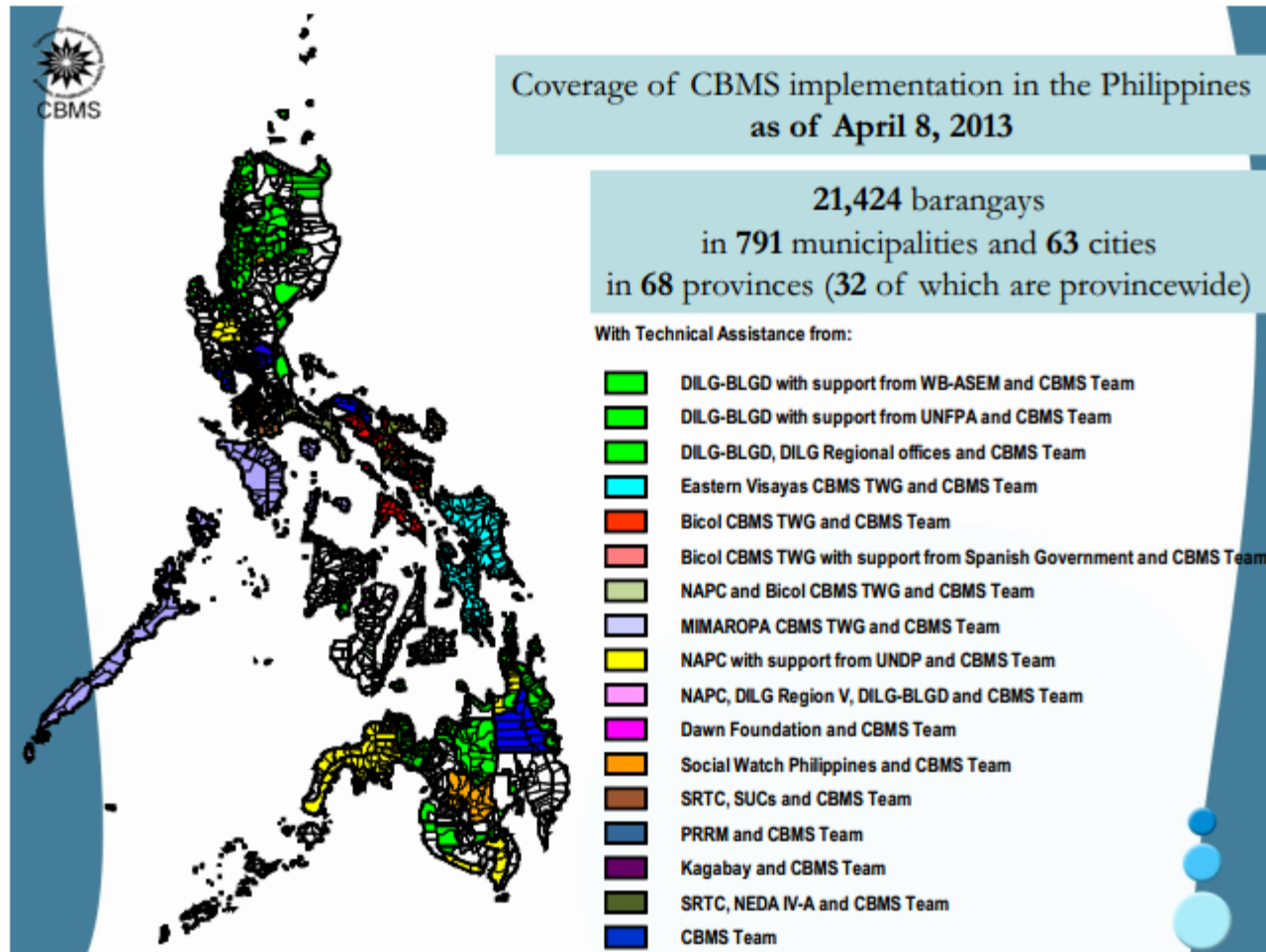
ASIA



SOUTH AMERICA



Mapping poverty



Work in progress

- Social network analysis of CBMS teams in 19 countries
- Social network survey will be disseminated to the local community to measure social capital, civil engagement, and human capability indicators.



Thank you!

SNA of OWS data

□ The OWS hashtag network

category	Example hashtags
economy	#opcashback, #opcashback, #moveyourmoney, #bankofamerica #euro
event	#generalstrike, #keystonexl, #oostrike
geolocation	#oakland, #tulsa, #sf, #denver, #seattle
identity	#anonymous, #99percent, #wethepeople, #wearethe99percent, #weareone, #teamester
media outlet	#msnbc, #reuters, #foxnews, #reddit
Civic organization	#rootstrikers, #wikileaks, #omnius, #theburbs
public figure	#glennbeck, #scottolsen, #gwbush, #obama2012
theme	##freedomwaves, #democracy#policebrutality, #revolution, #jobs, #connecttheleft,
time	#nov2, #s21, #oct6, #jan25, #n2
other	#quote, #everywhere, #winning, #video

Table 1: Summary of the top 505 frequently used hashtags on November 2, 2011

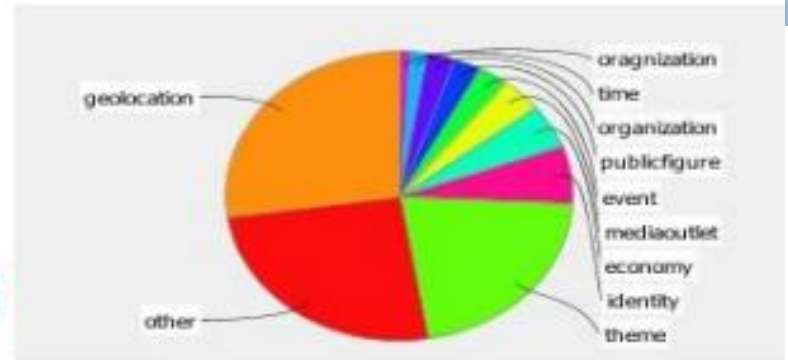
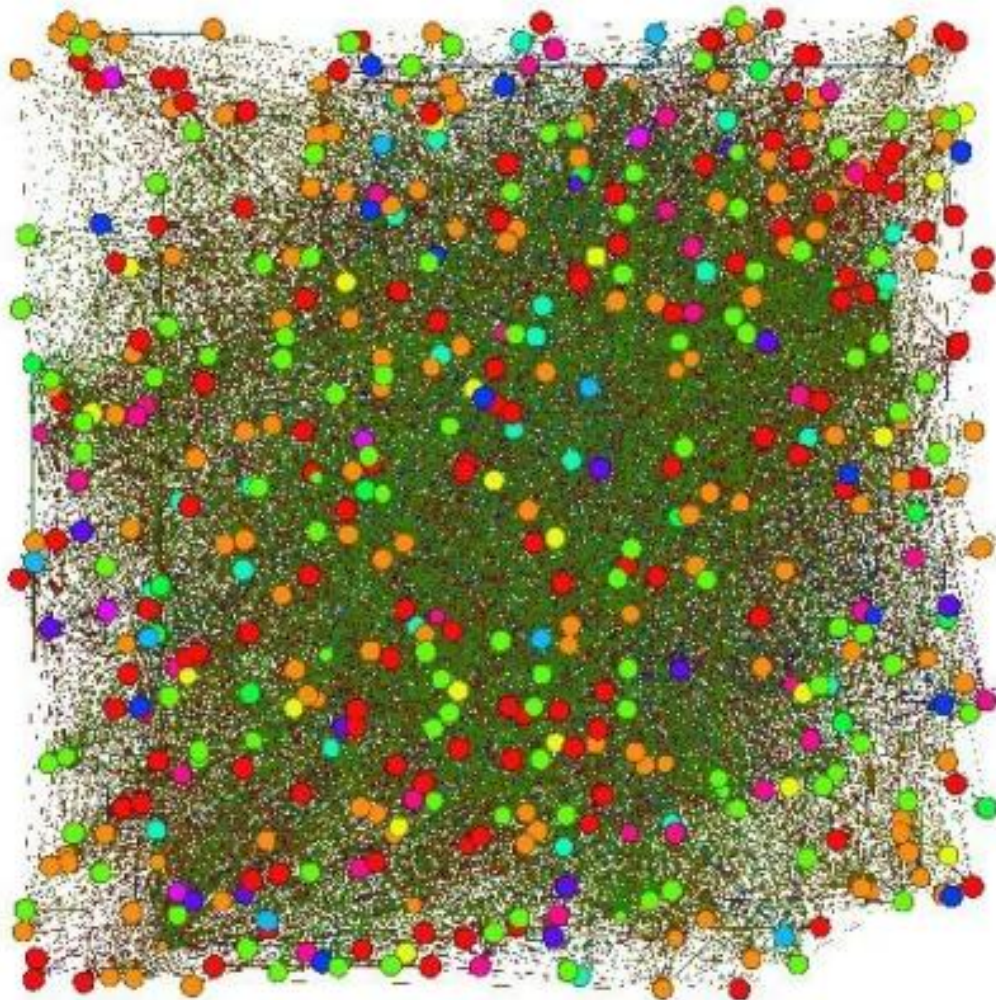
Hashtag category	Number of unique hashtags	average frequency
media outlet	20	65.45
economy specific	25	97.24
public figure	13	118.31
time	8	125.63
identity claim	32	166.81
organization	18	185.83
theme	109	248.41
geolocation	138	339.34
event	14	600.14
other	128	61.08

Hashtag genre predicting co-occurrence

Table3: Summary of the ERGM on hashtag co-occurrence[↵]

Parameter [↵]	Estimates [↵]	SE [↵]
Edges [↵]	-2.71*** [↵]	.05 [↵]
Frequency similarity [↵]	.00 *** [↵]	.00 [↵]
Type homophily [↵]	.02 [↵]	.19 [↵]
Event [↵]	-.38*** [↵]	1e-04 [↵]
Geolocation [↵]	.08** [↵]	.03 [↵]
Identity claim [↵]	-.23*** [↵]	.04 [↵]
Media outlet [↵]	-.57*** [↵]	.04 [↵]
Civic organization [↵]	-.06 [↵]	.08 [↵]
Public figure [↵]	.13** [↵]	.04 [↵]
Theme [↵]	.07*** [↵]	.03 [↵]
Time [↵]	.10 [↵]	.08 [↵]
other [↵]	.04 [↵]	.03 [↵]

Note: ***, $p < .001$; **, $p < .05$; *, $p < .01$.[↵]



Main findings

- **Event, geolocation, and theme hashtags** were among the most frequently used.
- The hashtag co-occurrence network is relatively **dense and centralized** (density = .08; centralization = .74).
- **Geolocation, public figure, and theme hashtags** were more likely to be used in combination with other hashtags than in a random co-occurrence network.
- **Event, identity, and media outlet hashtags** were more likely to be used alone in tweeting than in a random co-occurrence network.