

Reciprocal influence of social and semantic patterns in a dynamic blog network

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WITH

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SEPTEMBER 23-24, 2009

A SOCIAL network

Three kinds of links for each blog...

- **citation:** post citation links
- **interaction:** comment links
- **affiliation:** blogroll links

...where contents circulate

- in terms of topics (\mathcal{W})
- in terms of cultural items (\mathcal{U})

Dataset: US blogosphere

- **scope:** 4 months of '08 campaign
- **network:** citations
- **nodes:** 1,066 blogs (RTGI)

versac.net

citation link

» [Bases](#) | [Accueil](#) | [Ouvrez un marché de l'énergie...](#)

29 juin 2007

Mouahaha

Vraiment, c'est payé... Après la dénonciation par Nicolas Sarkozy de la pensée unique de l'esprit de Mai 68, voilà celle qu'on attendait tous, la [pensée unique.com](#) !

NB : réviser, [homme de paille](#).

29 juin 2007 à 10:45 | [Lien permanent](#)

TrackBack

URL TrackBack de cette note:
<http://www.blogger.com/1/trackback/380111984712>

Voici les sites qui parlent de **Mouahaha**:

Commentaires

Vous rigolerez moins, si vous aussi, ON essayait de vous ballonner pour vous empêcher d'écrire tout haut ce que d'autres gigouillent tout bas ! Mais vous préférez vous complaire dans l'échange et la pensée droite-gauchiste qui règne sur l'ensemble des blogs à LEUR solde.

[Noté par Beber](#) | le 29 Juin 2007 à 11:02

Un travail intéressant serait de recenser le nombre de "pensées uniques" concurrentes de l'espace public.

comment link

blogroll link

LES NOTES RÉCENTES

Saplique retribue

Hahaha

On ne t'en base pas

Accus re de

Changement...

Nélie

Vous rachide Ben !

Catilland à vu Loner Change

Dimanche soir : liveblogging avec l'Id

UMA H&C&F en ligne

LES COMMENTAIRES RÉCENTS

genriss Claire sur Saplique à retribue

benf sur Saplique à retribue

Marius sur Saplique à retribue

Timothée sur Hahaha

Timothée sur Saplique à retribue

Félix sur Saplique à retribue

versac sur Saplique à retribue

Vous Traquina sur "Nouveau re de

ET SUR PUBLIUS.FR

Brevet en Europe par la Méditerranée

Les agro-carburants, cause de famine

La BCE paye en dollars

Un mobile de société en misère

Municipales : et l'Europe dans tout ça ?

VERSAC - À PROPOS, CONTACTS

email : versac.1a1@gmail.com

page : [versac.com](#)

|| A propos de versac

PDR INTÉRIEUR

|| 046 mai

ROLL

|| A l'efful de nous

|| A l'heure antérieure

|| W Lambert

|| Bernard Galabré

|| Antipathique

|| Big Bang Blog

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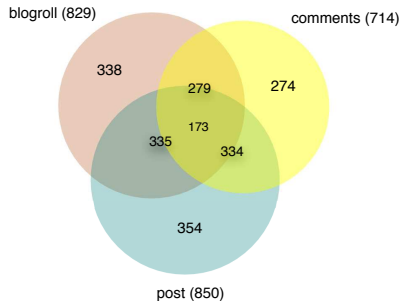
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A socio-SEMANTIC network

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Setting the Record Straight: More from our Canadian Cousins

Written by Robert Justin Lipkin on August 28th, 2009



Listen to some more. Finally, Canadians are fighting the slanderous characterizations of the Canadian health care system by U.S. insurance companies and other ideologues. As stated, medical care is a human right, not an economic product to be evaluated simply in terms of the bottom line. We, Americans, would do well to heed the advice of our northern cousins. But we also need more help from Canada in setting the record straight about its own system and pointing out the systematic attempt on the part of those Americans opposing health insurance reform to distort, obscure, and simply lie about the Canadian system. Click [here](#) for more.

\mathcal{U}

\mathcal{W}

semantic characterization

- “relevant” syntagms
(“health insurance”, “climate change”, “national security”, “super Tuesday”, “human rights”...)
- urls: “www.youtube.com/x1hqwkeac”, etc.

A DYNAMIC socio-semantic network

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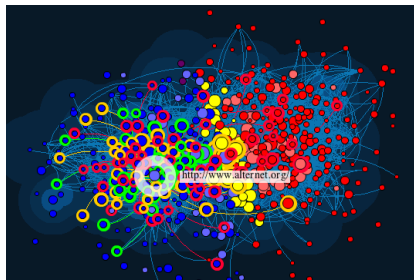
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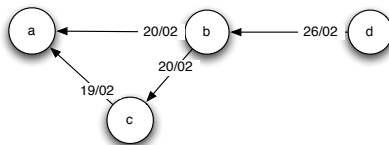
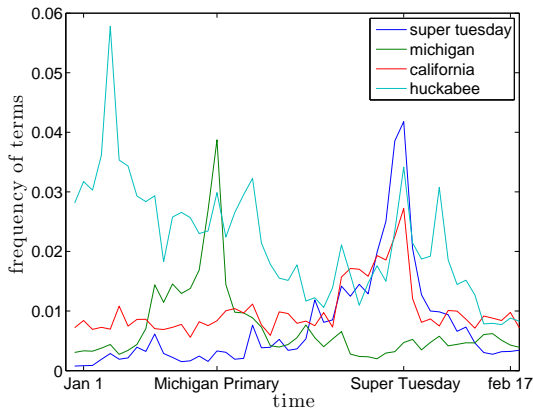
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<http://presidentialwatch08.com/>



Socio-semantic configuration



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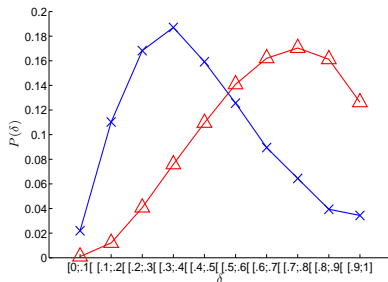
semantic profile of a blog i :

$$\hat{\mathbf{W}}_i(w) := \frac{\mathbf{W}_i(w)}{\sum_{w=1}^{|\mathcal{W}|} \mathbf{W}_i(w)} \cdot \log \frac{|\mathcal{B}|}{|\{j, \mathbf{W}_j(w) > 0\}|}$$

semantic distance

between blogs i and j :

$$\delta(i, j) = 1 - \frac{\hat{\mathbf{W}}_i \cdot \hat{\mathbf{W}}_j}{\|\hat{\mathbf{W}}_i\| \|\hat{\mathbf{W}}_j\|}$$



Semantic distance distributions. *Triangles:* computed over the whole set of possible blog pairs. *Crosses:* distribution computed on linked blogs.

Computing link creation propensity

→ estimate the “propensity of interaction”
...that it is more or less likely for a node (or
a dyad) with property “ m ” to receive a link
...which may be simply estimated by:

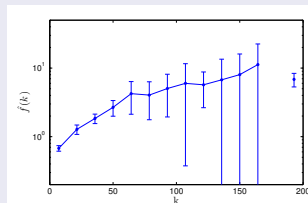
$$\hat{f}(m) = \frac{\nu(m)}{N(m)}$$

- $\nu(m)$ = number of links pointing towards an agent of type m (resp. number of new dyads of type m) during a time period,
- $N(m)$ = number of agents (resp. of dyads) of type m .

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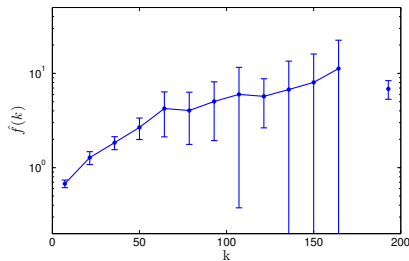
→ increasing, plateauing

topological distance effects

→ strong trend to repetition and local interaction

semantic distance

→ strong trend to homophily



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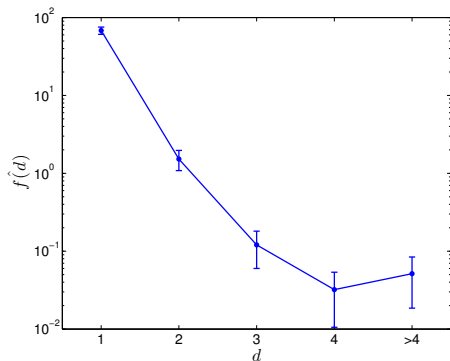
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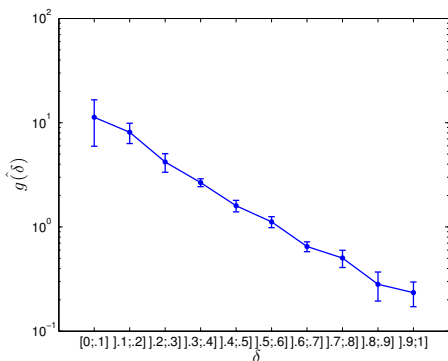
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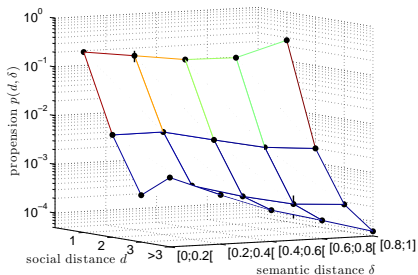
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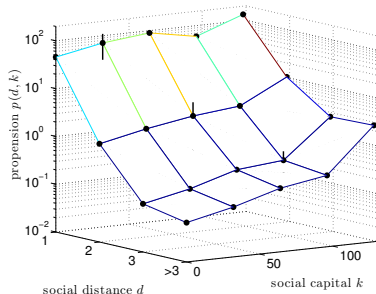
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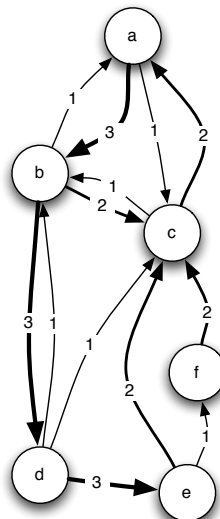
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Information flows: measures on the post network

Dyadic measures:

- raw, weighted network, aggregated on 4 months
- attentional matrix a...
→ and total attention
 $\alpha_a = 5/6$
- detachment matrix



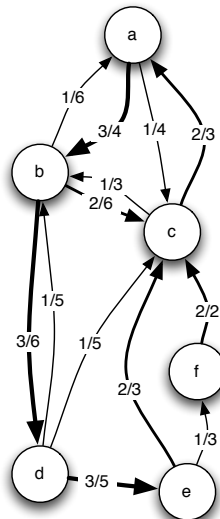
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- quantifying shortcuts



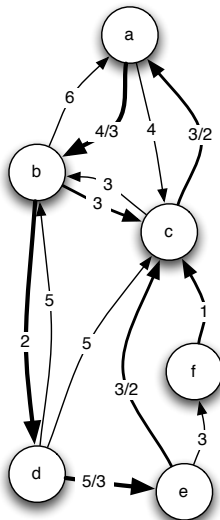
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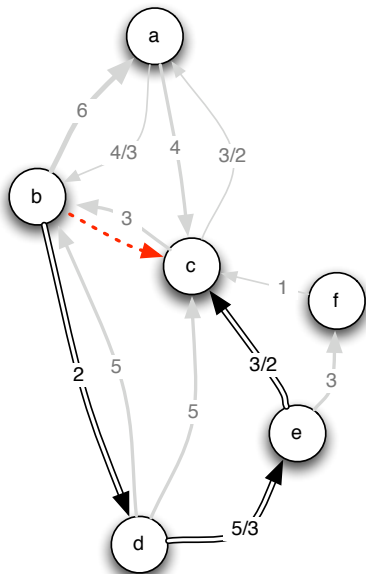
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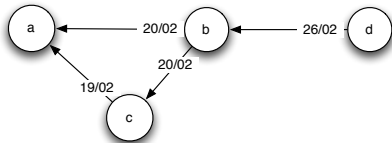
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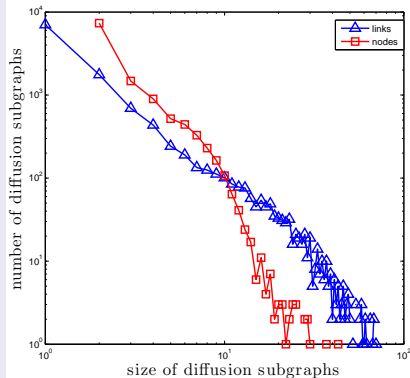


Information cascade



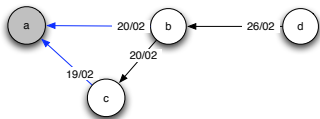
An example of diffusion subgraph, a common “resource” and a set of citation links between blogs

Diffusion subgraphs



⇒ heterogeneous cascade sizes

An ego-centered perspective

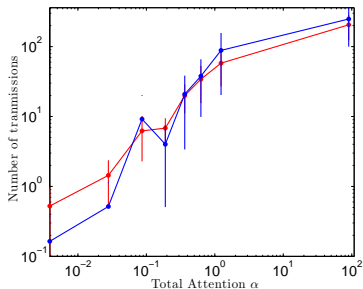


We focus on the total number of "transmissions" generated by blogs with a given total attention α

a bit more "global"...

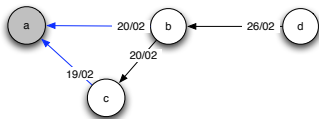
second transmissions: we focus on "later transmissions", i.e. after a first transmission event

role of the *total attention* on the number of *diffusion links*



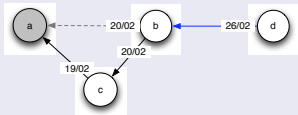
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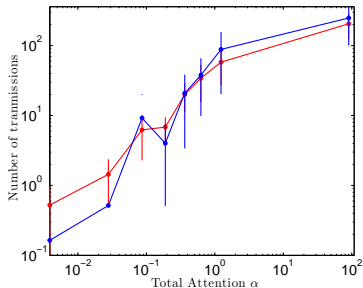
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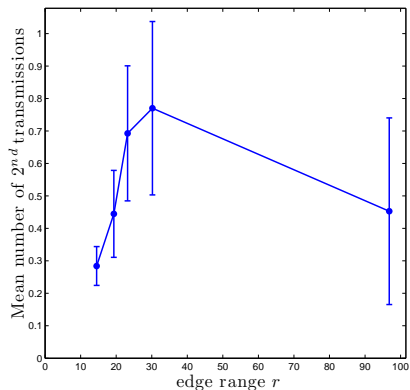
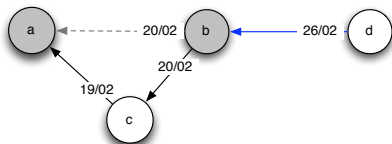


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A more global perspective

→ role of *edge-range* on the number of grand-children

We focus again on transmissions occurring after a first transmission event



An information which has been transmitted through a “*median*” link generates a larger number of grandchildren

Concluding remarks

Co-evolution of content and relationships

- Patterns *not necessarily linked to authority only*
- Patterns *not necessarily ego-centered only*

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Thank you!

- “Socio-semantic dynamics in a blog network”
Jean-Philippe Cointet, Camille Roth, IEEE SocialCom 09
(available as <http://arxiv.org/abs/0909.3080v1>)
- <http://webfluence.csregistry.org>

webfluence

- Contact:

[mail] roth@ehess.fr

[web] <http://camille.roth.free.fr>