Communities on the Web: Mechanisms Underlying the Emergence of Online Discussion Networks

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2 Discussion Topics and Network Types

Width is measured as max # comments at any layer of the network, total # of comments, and total # of unique users.
*Depth* is measured as # of layers in the network, the h-index of comments, and the h-index of users.

These six variables were used in a principal component analysis. PC1 is formed by the six variables (highly correlated); PC2 differentiates between *width* and *depth* variables. Grey areas are confidence intervals according to a boostrap test (n=10000).
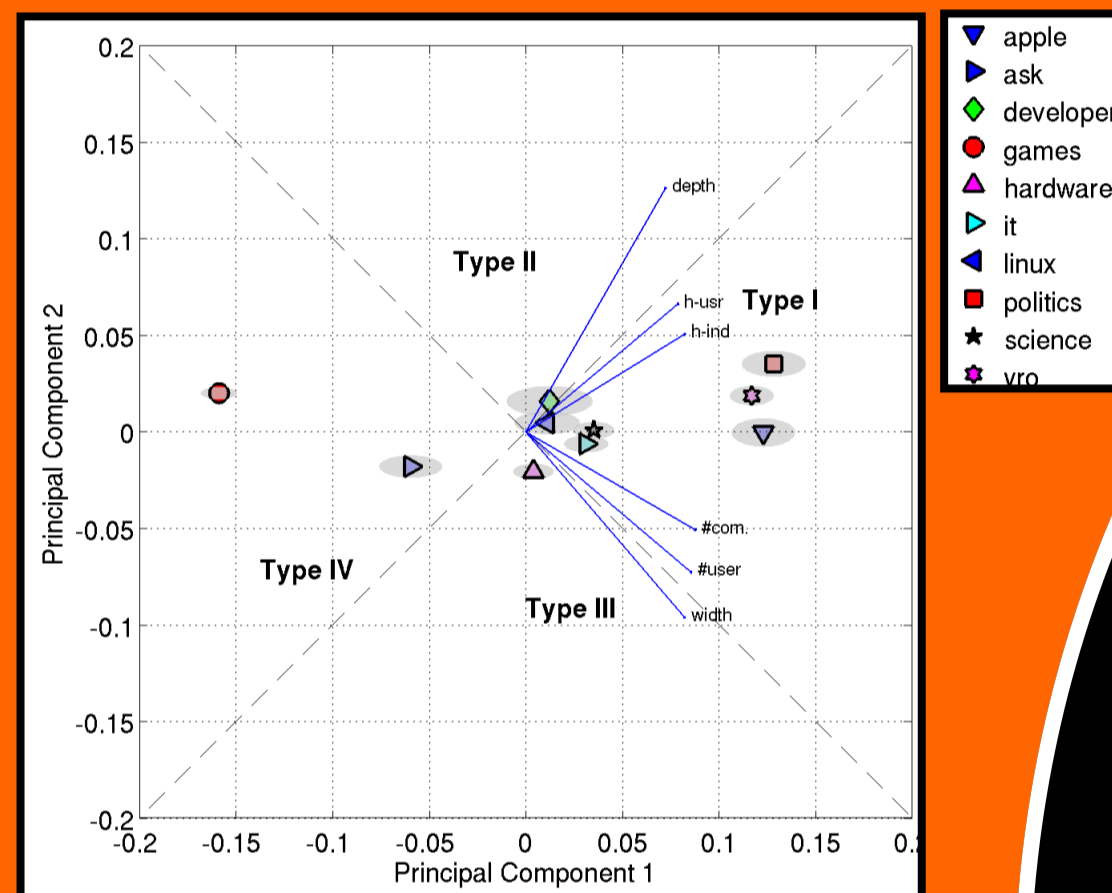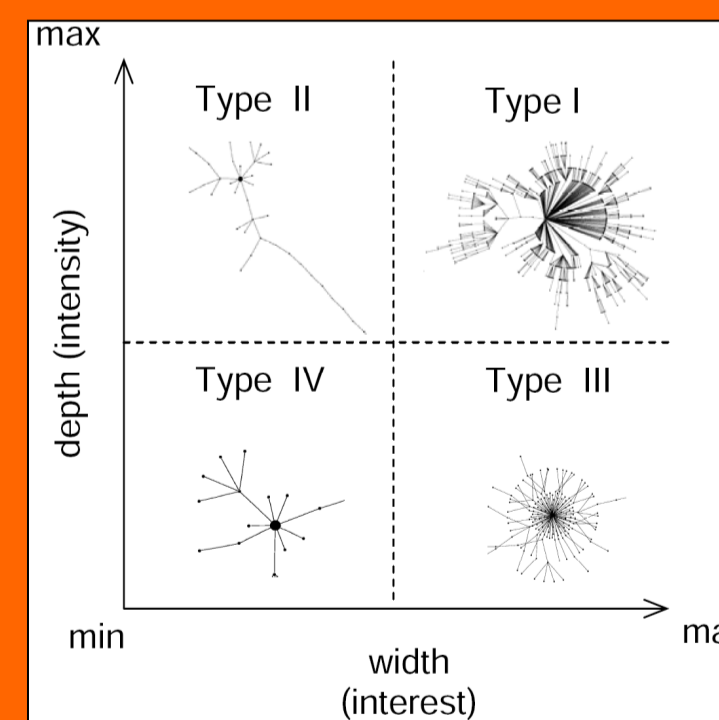

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From discussion threads...
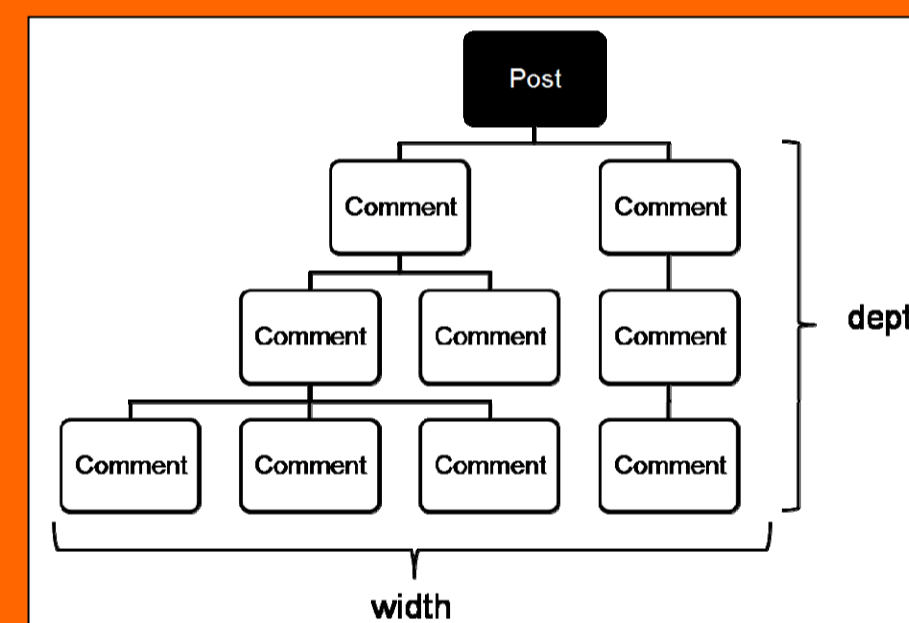
Data: discussion threads in Slashdot for the period August 2005 to September 2006.
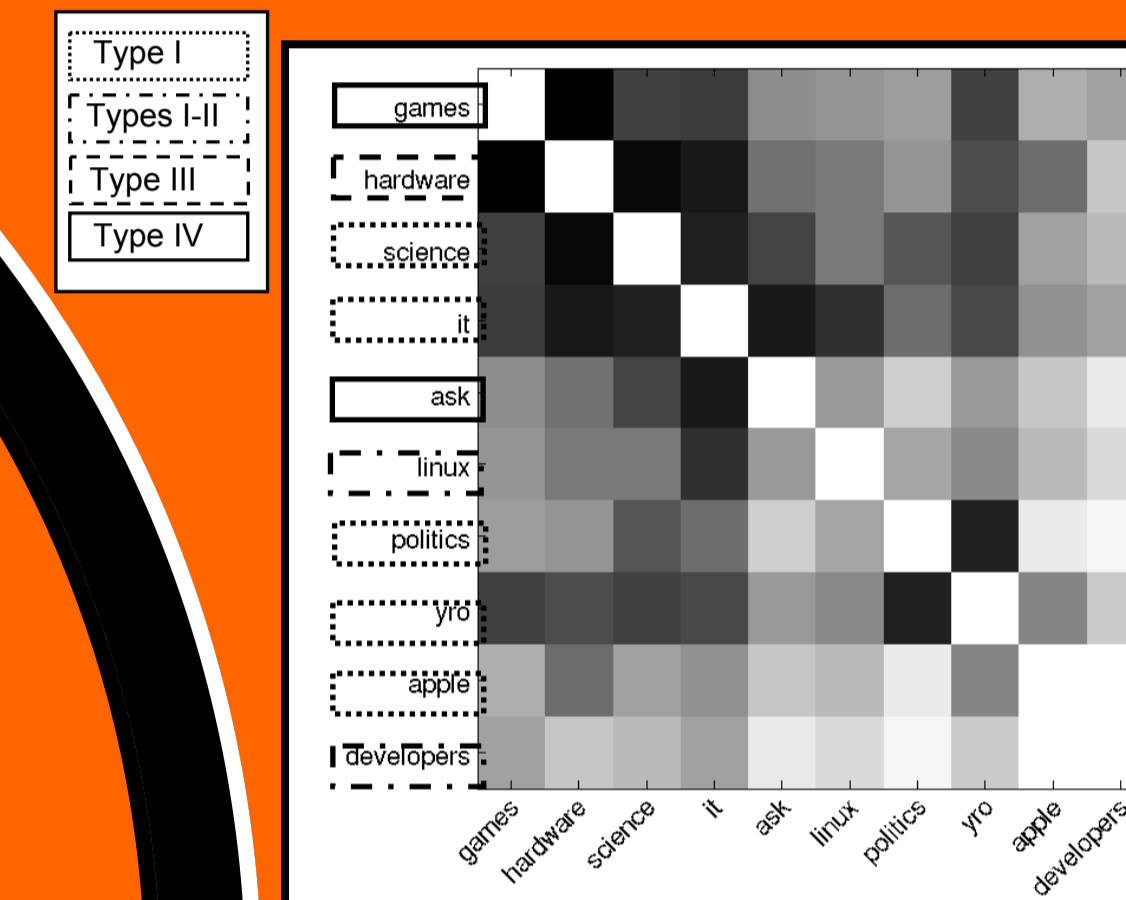
Threads: 10,016
Comments: 2,075,085
Discussants: 93,636

... to network types

3 Overlapping of Users

One possible mechanism for the emergence of different networks is the self-selection of users in some categories. We used the cosine distance between categories to measure the overlapping of users.

The darker the grey in the cells, the larger the overlap of users between categories (diagonal not included).

The figure shows that there is not clear clustering of categories mapping onto the four types of networks.

Users do not specialise; they engage in different forms of behaviour depending on the topic of the discussion.

4 Time Patterns

Networks of type IV (i.e. politics, apple) tend to last longer than other types of networks, but the final distribution is greatly affected by a minority of posts (last 10% quantile).

Focusing on the *subset of users participating in all categories*, we find that they consistently change their reaction times depending on the topic of the discussion.

The categories "apple", "politics" and "your rights online" (networks of type I) generate discussions with faster dynamics, that is, with shorter time spans between the first and the last comment sent by the same user.

5 Summary & Future Research

- Structural differences are not generated by a the self-selection of users but

- Users invest time in discussions differentially, depending on the topic

Future research will analyse the evolution of discussion networks over time, individual interaction patterns of single users via their local ego-networks , and the content of messages

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