An ethno-computational approach to friendship in SNS

Antonio A. Casilli\textsuperscript{1} Paola Tubaro\textsuperscript{2}

\textsuperscript{1}Ecole des Hautes Etudes en Sciences Sociales, Paris
\textsuperscript{2}The Business School, University of Greenwich, London

2 July 2010
Outline

1. Introduction
2. Approach
3. Model
4. Findings
5. Final remarks
Motivation and background

- Studying online subcultures;
- Self-presentation, emergence of shared cultural patterns through SNS;
- Building social capital online (of bonding and bridging types);
- A general ethno-computational methodology;
  - SNA;
  - ABM;
  - Ethnographies;
- Opens the way to questions of social legitimation of styles and cultural traits.
Online presence, culture, and friendship formation

- Online presence through “traces” that reflect cultural traits and styles;
- Not only a matter of individual preferences and tastes;
- Inter-personal and collective dimension: interaction and feedback from others (friends) to legitimate and maintain these traces.
A general analytical framework

Ethnographic study

- Insight from preliminary qualitative study* is that online network formation may depend upon:
  - Privacy settings, i.e. visibility of contents to others;
  - Self-display, i.e. personal and cultural traits exhibited.

  and that traits may change with network composition.

- The model aims to problematize and enrich these results:
  - conducting thought experiments;
  - replicating and generalizing in simulated, larger networks.

- Qualitatively-informed model: insight into behavior and motivations of actors.

---

We focus on the impact of:
- tendency to conformism vs. dissonance in cultural traits;
- preference for “bonding” vs. “bridging” in tie formation;
- possibility to limit incoming ties through privacy protection.

We measure impact through:
- number and size of components;
- homogeneity of traits within and between components;
- evolution of privacy settings over time.
Model Interface
Structure of the model: initialization

- At initialization, each actor is endowed with:
  - a vector (several dimensions) of traits;
  - a privacy setting (visible/invisible).

- Actors can be:
  - isolates;
  - connected;

- If connected:
  - they share most traits with their contacts;
  - but may differ on one dimension;
  - this depends on the “Dissonance” parameter.
Structure of the model: a typical step

At each step, an actor is randomly selected and makes two choices:

- relational: form or delete a tie, or no change;
- behavioral: adjust cultural traits to better fit with group.

Choices depend on two parameters:

- Bonding Propensity: whether tie formation/deletion is local or global;
- Dissonance: extent to which an actor’s traits conform to group.
Three possible configurations

Figure: Three stable configurations: (1) Giant Component, (2) Hegemony and Resistance, (3) Little Boxes
Effects of varying parameters

Figure: Number and size of components with different Dissonance and Bonding Propensity
When privacy protection is not allowed

Figure: Number and size of components, varying Dissonance and Bonding Propensity, no privacy protection
Explain the effects of parameters

- With lower propensity to bonding (=greater openness to bridging), only one or few components emerge;
- This effect is stronger with higher Dissonance;
- With higher propensity to bonding, many small communities emerge;
- In this case, differences in Dissonance have little impact;
- With no privacy protection, these effects are slightly amplified, because more ties can be formed.
### Evolution of average privacy

<table>
<thead>
<tr>
<th>DP</th>
<th>D = 0.01</th>
<th>D = 0.03</th>
<th>D = 0.04</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.20</td>
<td><img src="image1.png" alt="Graph" /></td>
<td><img src="image2.png" alt="Graph" /></td>
<td><img src="image3.png" alt="Graph" /></td>
</tr>
<tr>
<td>0.50</td>
<td><img src="image4.png" alt="Graph" /></td>
<td><img src="image5.png" alt="Graph" /></td>
<td><img src="image6.png" alt="Graph" /></td>
</tr>
<tr>
<td>0.70</td>
<td><img src="image7.png" alt="Graph" /></td>
<td><img src="image8.png" alt="Graph" /></td>
<td><img src="image9.png" alt="Graph" /></td>
</tr>
</tbody>
</table>

**Figure:** Average privacy over time, varying Dissonance and Bonding Propensity
Explain changes in privacy over time

- Agents restrict access only when a giant component appears;
- This is the only case in which average privacy increases;
- Otherwise, average privacy diminishes until there are no more isolates, then is stable.
Final remarks

- Personal styles and tactics of online presence give rise to different sociability structures;
- Linkages between micro behavior (motivations, cognition, individual action) and macrolevel patterns (number and size of clusters, density, etc.)
- Further openings for future reflection:
  - Importance of cultural dissonance and inter-individual variations* vs. Bourdieu’s *distinction*.
  - Complexify traditional dichotomy between hegemony and sub-cultures.

Final remarks on the methodology

- Agent-based models:
  - complement analyses based on small qualitative fieldwork;
  - enable cross-validation and generalization of findings;
  - are tools for empirically-informed theory generation.

- This method is particularly useful with subcultures, sensitive and hidden populations.

- More applications are needed to establish its generality and reliability.
Thank you!

Find this presentation on:
http://www.bodyspacesociety.eu
http://paolatubaro.wordpress.com

Contact information:
antonio.casilli@ehess.fr
p.tubaro@greenwich.ac.uk