Characterizing organizational micro-cultures

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What are organizational micro-cultures?

• Groups of people within an organization who have a strong and differentiated culture and identity from the larger organizational culture

• In a change management context, people in these groups are:
  – Likely to have/possess core capabilities of the organization that have granted them some autonomy
  – Unlikely to be persuaded by messaging aimed at the whole organization
  – More likely to leave if their group is disturbed
  – More likely to leave en masse if core actors in the group are removed
Review of Three Tenants of Constructuralism

- Interaction leads to knowledge acquisition
- Homophilly: Individuals tend to interact with others who are similar to them
- Social Relativity: Individuals tend to evaluate and determine their actions on the basis of their own characteristics and their perceived similarity to others

Adapted from “Group Stability: A Socio-Cognitive Approach” (Carley 1990), pg 6
My context: A large multi-national experiencing a merger

Time 1, 6588 Individuals in the core network

Time 2, 7373 Individuals in the core network
Language choices as a proxy for organizational culture

“shared symbols and patterns of meaning transmitted from person to person within societies, regions, or countries”

“organization members reveal them (values and assumptions) in their work conversations with others”

More radically:

“an organization is social phenomenon created by human symbolic expression”

All quotes drawn from the Sage Handbook of Organization Studies, Third Edition
Corpora Comparison: Calculating a difference score between two corpora in five easy steps

1. Calculate the normalized odds ratio

\[
\text{odds}(t, AG) = \left( 1 - \frac{1}{\left( \frac{|t_A|}{|T_A|} / \frac{|t_G|}{|T_G|} \right)^{1/2}} \right)^{1/2}
\]

2. Only count cases where the distinction is large, like 65/35

\[
fOdds(t, AG, c) = \begin{cases} 
\text{abs}(\text{odds}(t, AG)) & \text{if odds}(t, AG) > c, \\
0 & \text{otherwise}
\end{cases}
\]

3. Discount the frequency of terms in the corpora by a prior

\[
\text{freq}(t, AGP, c) = \begin{cases} 
\text{fOdds}(t, AG, c) & \text{if } \text{fOdds}(t, AG, c) > 0, \\
\max(\text{fOdds}(t, AP, 0)) & \text{if } \text{fOdds}(t, AG, c) < 0
\end{cases}
\]

4. Calculate a score for each term

\[
s(t, AGP, c) = fOdds(t, AG, c) \cdot \text{freq}(t, AGP, c)
\]

5. Sum the absolute score values for all terms

\[
Score(T, AGP, c) = \sum_t \text{abs}(s(t, AGP, c))
\]
## Lite Docking: TF-IDF vs Corpora Comparison

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>TF-IDF</th>
<th>Corpora Comparison</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scores “stop words” low</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Identifies valuable words</td>
<td>Yes (“most substantive terms”)</td>
<td>Yes (“most distinctive terms”)</td>
</tr>
<tr>
<td>Uses term document count to contextualize term counts</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Uses another corpus to contextualize term counts</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Identifies both positive and negative relationship of tokens to a given corpus</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Robust to high variance in document size</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Robust to high variance in individual corpus size</td>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>
Building a statistical model to predict difference scores
Building a statistical model to predict difference scores
Building a statistical model to predict difference scores

Actual Values

Prediction based on Structure Not Great
Building a statistical model to predict difference scores

**Actual Values**

- **Prediction based on Structure**
  - Not Great

- **Prediction based on Behavior**
  - Overestimates
Building a statistical model to predict difference scores

- Prediction based on Structure: Not Great
- Prediction based on Behavior: Overestimates
- Structure and Behavior: Nice
Building a statistical model to predict difference scores

We can generate a normalized prediction if we take into account structure AND behavior.
Using scores as network tie strengths

Time-2 Core Louvain Language Clusters

Cluster-2
Example tokens from Cluster 2

“Most Likely to be a token from Cluster-2”
- supervisor
- services
- representative
- center
- im
- lol
- doors
- requests
- unblocked
- logistics

“Least Likely to be a token from Cluster-2”
- management
- hall
- ...
- global
- tpna
- phr
- international
- delayed
- controller
- discussion
Relating formal and informal social network structures to language structures

<table>
<thead>
<tr>
<th>Grouping-1</th>
<th>Grouping-2</th>
<th>Time-1</th>
<th>Time-2</th>
<th>Delta</th>
</tr>
</thead>
<tbody>
<tr>
<td>Language Louvain</td>
<td>Legacy</td>
<td>0.1754</td>
<td>0.6140</td>
<td>+ 0.4386</td>
</tr>
<tr>
<td>Language Louvain</td>
<td>Functional Group</td>
<td>0.1479</td>
<td>0.5827</td>
<td>+ 0.4348</td>
</tr>
<tr>
<td>Language Louvain</td>
<td>Structural Louvain</td>
<td>0.0112</td>
<td>0.0011</td>
<td>- 0.0101</td>
</tr>
</tbody>
</table>
Summary

- Organizational Micro-Cultures are important to understand if you want to enact change successfully in an organization.
- Examining not only the behavior but also the text can reveal a great deal about these micro-cultures.
- Constructuralism helps us think about and understand organizational behavior.
- Corpora Comparison is an alternative to TF-IDF with some attractive properties, but not in ORA.
- You can compare grouping agreement with an Adjusted Rand Score to better understand how your groups change in relation to each other over time.
Questions