Can Reconfiguring Spatial Proximity Between Organizational Members Promote Individual-level Exploration?
Evidence from a natural experiment

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Innovative companies are experimenting with office spaces... why?

**Steve Jobs (Former CEO, Pixar):**

“If a building doesn’t encourage collaboration, you’ll lose a lot of innovation and the magic that’s sparked by serendipity. So we designed the building to make people get out of their offices and mingle in the central atrium with people they might not otherwise see.”

**Mark Zuckerberg (CEO, Facebook):**

“By having an open floor plan where people work close to each other, it facilitates people sharing and communicating about what they are doing, which enables better collaboration, which we think is key to building the best services for our community.”

**Samsung press release:**

“The new US headquarters’ design is intended to foster collaboration between employees, enabling those impromptu, spur-of-the-moment interactions that are the genesis of many great ideas.”

**Increasing spatial proximity between (heterogeneous) organizational members**

**Increased interactions**

**Individual-level Exploration / New Knowledge Creation**
Has it been actually shown by research that spatial proximity leads to more individual-level exploration? Is the relationship obvious?

What do we know?

• Spatial proximity $\rightarrow$ Communication frequency (Allen & Fusfeld, 1975)
  Formation of collaborations (Kabo et al., 2014)
  Collaboration success (Catalini, 2017)
  Mutual support (Chown & Liu, 2015)

Do we have existing direct evidence of “Spatial proximity $\rightarrow$ Exploration”?

• In fact, not yet (Catalini (2017) gets closest but does not actually test the relationship)

Why might the relationship not hold, both theoretically and practically?

• (Assuming increased interactions) Information exchanged could be unrelated to tasks (e.g., casual conversations, gossip, etc.) or be common information
• All collaborations are not meant to produce exploratory outcomes; even if they were, exploration endeavors are often unsuccessful
• Not all individuals may be able to take advantage of even the meaningful interactions to explore (e.g., lack of skills or experience)
• Spatial proximity could increase stress, distraction, and lower job satisfaction and productivity (Becker et al., 1983; Coradi et al, 2015, Oldham & Brass, 1979)
Why is it important to study whether there is a “treatment” effect of increased spatial proximity on individual-level exploration?

- Many organizations are interested in and experimenting with space to facilitate exploration and innovation, but the effects are unclear
- There is little understanding on when and how spatial reconfiguration should be implemented
- The strategic implications are different depending on whether there is treatment vs selection effect of spatial proximity

**Main Research Question:**
- Is there a treatment effect of spatial proximity on individual-level exploration/knowledge creation?
- What is the boundary condition and what are moderators?
How could my research question be answered effectively?

Do I have the right research design?
- Outcome related to individual-level exploration / new knowledge creation
- Random assignment of individuals into different degrees of spatial proximity
- Manipulable moderators

I have:
- Natural experiment
- Organizational setting where individuals make exploitation/exploitation decisions
- Spatial proximity between individuals are reconfigured differently for different individuals (for no reason other than space constraints) due to a HQ relocation event
- Archival data on moderators
Hypotheses
Hypothesis 1

**H1:** Increasing the spatial proximity between previously separated individuals will increase the exploration levels of such individuals.

- Exploration is a learning activity involving the development of new knowledge (March, 1991)
- New knowledge development is facilitated through novel social interactions (Uzzi & Spiro, 2005)
- Spatial proximity increases interaction frequency between individuals (Allen & Fusfeld, 1975)
- Spatial proximity to previously separated peers (sources of new knowledge) increases chances of acquiring novel information useful for exploration
Hypotheses 2 and 3

- Not all individuals benefit from increased spatial proximity to previously separated peers
- One must have the capability to recognize and utilize the new information being acquired (i.e., absorptive capacity) (Cohen & Levinthal, 1991; Obstfeld, 2005)
- The information being acquired due to increased spatial proximity should not have been already acquired through alternative channels (e.g., social ties) (McEvily, Soda, & Tortoriello, 2014)

**H2:** The relationship hypothesized in H1 will be strengthened for individuals with more prior organizational experience.

**H3:** The relationship hypothesized in H1 will be weakened for individuals who had pre-existing social ties to their previously separated peers.
Summary of Model

Spatial Proximity
(between previously separated individuals)

Prior Org. Experience

H1(+)

H2(+)

H3(-)

Pre-existing Social Ties

Exploration / New Knowledge Creation
Empirical Setting, Research Design, and Results
Empirical Setting

- Flash deal e-commerce company (e.g., Groupon)

- 60 sales employees (“MDs”) in 12 teams making daily deal sourcing decisions

<table>
<thead>
<tr>
<th>New Product?</th>
<th>New Supplier?</th>
<th>No</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>No</td>
<td>Re-use of existing knowledge</td>
<td>Refinement of existing knowledge</td>
</tr>
<tr>
<td>Yes</td>
<td>Aided exploration of new knowledge</td>
<td>Exploration of new knowledge</td>
<td></td>
</tr>
</tbody>
</table>
Natural Experiment: Relocation of headquarters

**BEFORE**

Teams A  
Entrance

Teams B

**AFTER**

Treatment Group

Control Group

Teams A  
Entrance
### Empirical Design: Difference-in-Difference (DID) approach

<table>
<thead>
<tr>
<th>DV: Exploratory Search</th>
<th>Post HQ Move</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>Yes</td>
</tr>
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</table>

**Treatment**

<table>
<thead>
<tr>
<th>No</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>Treatment</td>
</tr>
</tbody>
</table>

$\text{Exploratory Search}_{tj} = \beta_0 + \beta_1 \text{Post Headquarters Change}_t$

$+ \beta_2 \text{Treatment}_j + \beta_3 \text{Post Headquarters Change}_t \ast \text{Treatment}_j$

$+ \gamma \text{Controls}_{tj} + \varepsilon_{tj}$
Empirical Design: Difference-in-Difference (DID) approach

Parallel trend assumption

> “Parallel trend assumption” holds
## Sample, Key Variables, Measures, & Econometric Models

<table>
<thead>
<tr>
<th>Variable</th>
<th>Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DV</strong> Exploratory Search</td>
<td>Number of completely new products supplied by new suppliers introduced on focal day</td>
</tr>
<tr>
<td>Post x Treatment (&quot;Main IV&quot;) (H1)</td>
<td>=1 if post change and MD is treated</td>
</tr>
<tr>
<td><strong>IVs</strong> Prior Organizational Experience (H2)</td>
<td>MD’s accumulated deal experience [Above/Below Median Split Sample]</td>
</tr>
<tr>
<td>Pre-existing Social Ties (H3)</td>
<td>=1 if MD had a peer in the same cohort on the opposite side of office before the HQ move [=1/=0 Split Sample]</td>
</tr>
</tbody>
</table>

Individual-level variables: move dummy; MD’s prior organizational experience (accumulated deal experience); MD’s total deals posted on focal day; number of MD’s existing product categories; Number of peers’ existing product categories; MD’s relative performance to peers

Team-level variables: Team size; Team gender diversity; Team education diversity; Team accumulated experience diversity

FEs: Individual & Time Fixed Effects, MD dummy; Day-of-week dummy; Month-of-new-season-start-month (March, June, September, December) dummy

Econometrics Model: DID; Fixed effects Poisson model; Robust standard errors clustered by individual

**Final sample:** Daily panel dataset with 7,195 observations covering 38,435 deals sold by 60 MDs in 12 product teams over 204 days (4 months before/3 months after the HQ change)
## Results (H1-H3; Fixed-effect Poisson model)

<table>
<thead>
<tr>
<th>DV: Exploratory Search</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
<th>Model 4</th>
<th>Model 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Post x Treatment (“Main IV”)</td>
<td>H1</td>
<td>0.342*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Main IV (Above Median Prior Org. Experience Sample)</td>
<td>H2</td>
<td>0.571**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Main IV (Below Median Prior Org. Experience Sample)</td>
<td></td>
<td></td>
<td>0.145</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Main IV (Pre-existing Social Tie Existing Sample)</td>
<td>H3</td>
<td></td>
<td></td>
<td>-0.017</td>
<td>0.737**</td>
</tr>
<tr>
<td>Main IV (No Pre-existing Social Tie Sample)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Post Dummy | -0.162 | -0.256+ | -0.015 | -0.061 | -0.218* |
| Prior Organizational Experience (deal experience) | -0.001** | -0.000+ | -0.001** | -0.000 | -0.001** |
| Total Deals per Day | 0.119** | 0.105** | 0.128** | 0.106** | 0.127** |
| MD’s Relative Performance to Peers | -0.021** | -0.018** | -0.212* | -0.142+ | -0.025** |
| Education Diversity | -1.260** | -0.613* | -2.239** | -0.968+ | -1.798** |
| Individual and Time Fixed Effects | Included | Included | Included | Included | Included |

| Number of Individuals | 60 | 30 | 30 | 25 | 35 |
| Observations | 7,195 | 3,941 | 3,254 | 3,001 | 4,194 |

Robust standard errors clustered by MD are in parentheses. ** p<0.01, * p<0.05, + p<0.1
# Additional Analysis

- Does performance increase after the change?

<table>
<thead>
<tr>
<th>DV: Performance (Deal Sales Revenue in USD)</th>
<th>Explorative Deals</th>
<th>All Deals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Post x Treatment (&quot;Main IV&quot;)</td>
<td>1085.75*</td>
<td>16,510.06**</td>
</tr>
<tr>
<td>Post Dummy</td>
<td>-779.10*</td>
<td>-9,710.56**</td>
</tr>
<tr>
<td>Average Duration of Deals</td>
<td>39.49**</td>
<td>563.58**</td>
</tr>
<tr>
<td>Prior Organizational Experience (deal experience)</td>
<td>-2.19+</td>
<td>-13.05+</td>
</tr>
<tr>
<td>Total Deals per Day</td>
<td>245.23**</td>
<td>7,218.85**</td>
</tr>
<tr>
<td>MD’s Relative Performance to Peers</td>
<td>-32.89*</td>
<td>-447.67**</td>
</tr>
<tr>
<td>Education Diversity</td>
<td>-166.06</td>
<td>22,584.56**</td>
</tr>
<tr>
<td>Individual and Time Fixed Effects</td>
<td>Included</td>
<td>Included</td>
</tr>
<tr>
<td>Number of Individuals</td>
<td>60</td>
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<td>7,195</td>
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Robust standard errors clustered by MD are in parentheses. ** p<0.01, * p<0.05, + p<0.1
Spatial Proximity (between previously separated individuals)

Prior Org. Experience

H1(+)  H2(+)  H3(-)

Pre-existing Social Ties

Exploratory Search / New Knowledge Creation

- Spatial proximity (physical organization design) does seem to have a treatment effect on individual-level exploration
- However, beware of the boundary condition and moderators!
Contributions

- **Individual-level exploration/exploitation literature** (e.g., Gibson and Birkinshaw 2004, Lee and Meyer-Doyle 2017, Mom et al. 2007, 2009, Rogan and Mors 2014)
  - Addition of important evidence that individuals can indeed switch between exploration/exploitation given the right context
  - Sheds light on an organizational context that enables more individual-level exploration

- **Organization design literature** (e.g., Chown and Liu 2015, Dunbar and Starbuck 2006, Pfeffer 1982, Puranam et al. 2014, Van de Ven et al. 2013)
  - Examines understudied organization design variable, i.e., spatial design, which has important organizational behavioral and performance outcomes
  - Provides evidence for a treatment effect of spatial proximity on individual-level exploration, including mechanisms and boundary conditions

- **Microfoundations of strategy literature** (e.g., Barney et al., 2011; Eisenhardt et al., 2010; Felin & Foss, 2005; Helfat & Peteraf, 2015)
  - Provides evidence that interactions at the individual level can lead to better performance and competitive advantage at the organizational level
THANK YOU