

Physical Collocation and Work-Related Interactions in Hierarchical Organizations

Ramon Lecuona
Jonathon Cummings

Duke University

Setting: 9 month field-study

- Multinational (12 countries)
- Multi-product
- Founded 1989
- Publicly traded (1 billion market cap)
- 2,500 employees, ~150 in HQ (7 hierarchical levels, 25+ departments)

Setting: Quasi-experiment

New building

Old building



- Naturally occurring (move was going to take place whether there was a study or not)
- Similar external environment (across the street, same commute, parking)
- Similar internal environment (elevator ride from ground floor -- 17th and 18th floor vs. 19th floor)

Research Question:

How does physical collocation affect the interactions between the employees of an organization?

Vast literature on micro-geography ...

- Festinger et al. (1950) – Student housing
- Allen (1977) – Corporate labs
- Van den Bulte and Moenaert (1998) – Marketing and R&D
- Kavo et al. (2014) – University research center
- Catalini (2017) – University lab**
- Others: Sacerdote (2000)** , Hasan et al. (2017)**
- +100 newspaper articles, managerial journals, trade pubs.

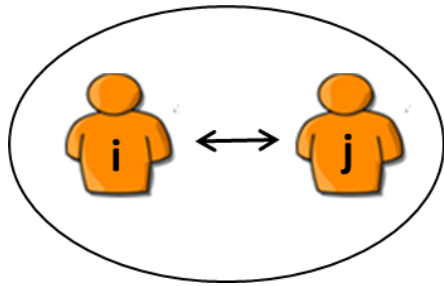
** Random assignment of individuals to their physical location

Why do we need another paper?

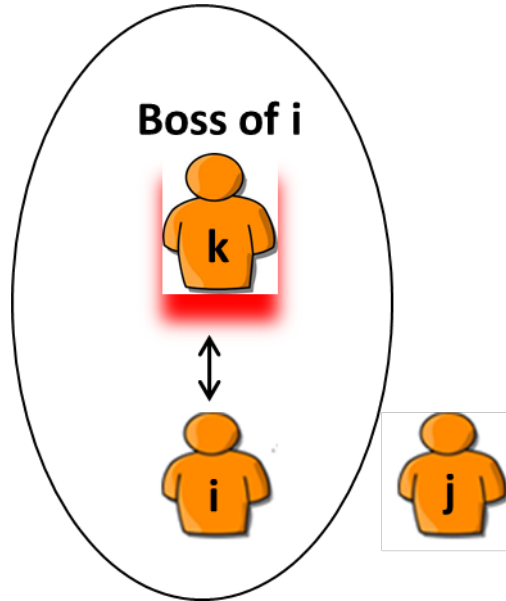
- 'Dyadic' perspective of collocation
- What about 'organizational' distance?

Three cases:

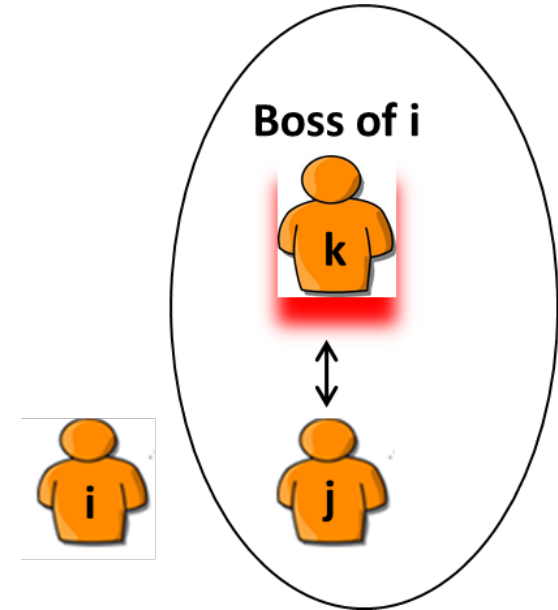
i and *j* are collocated



i and boss of *i* (*k*) are collocated



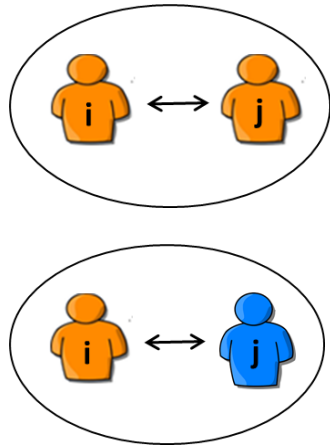
boss of *i* (*k*) and *j* are collocated



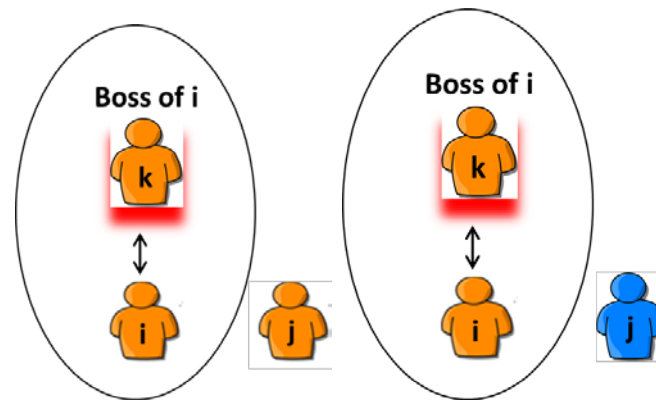
Frequency of work-related interactions between *i* and *j*

Three cases:

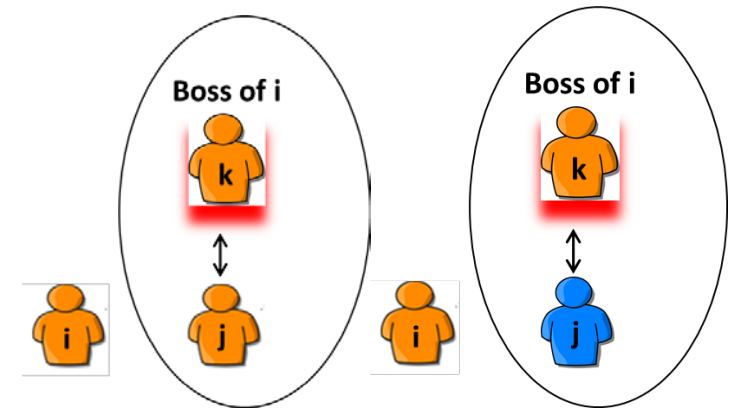
i and *j* are collocated



i and boss of *i* (*k*) are collocated

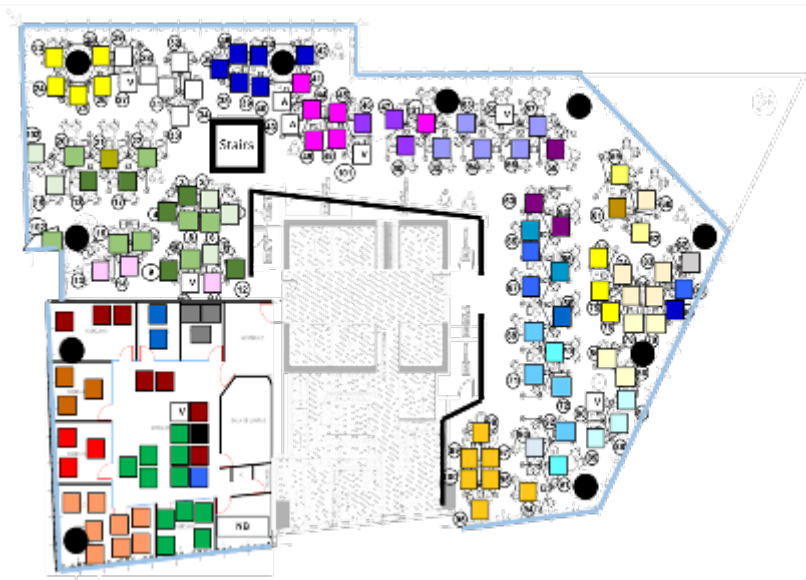


boss of *i* (*k*) and *j* are collocated

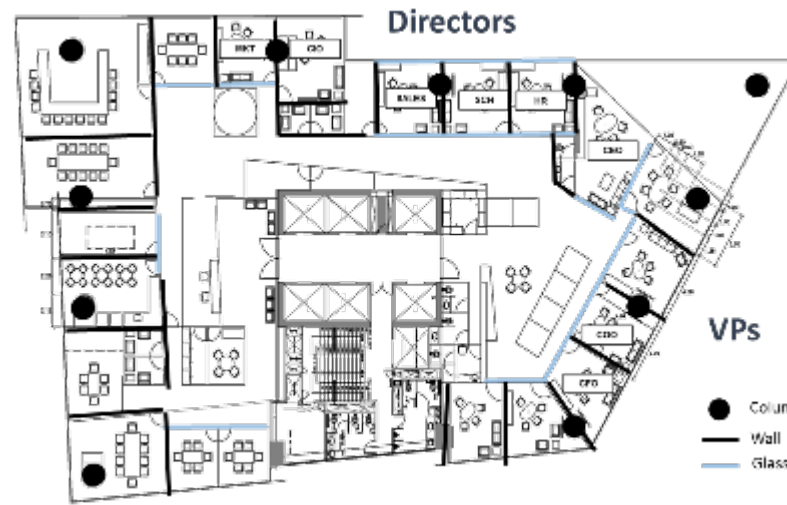


Frequency of work-related interactions between *i* and *j*

Setting: Quasi-experiment



17th Floor

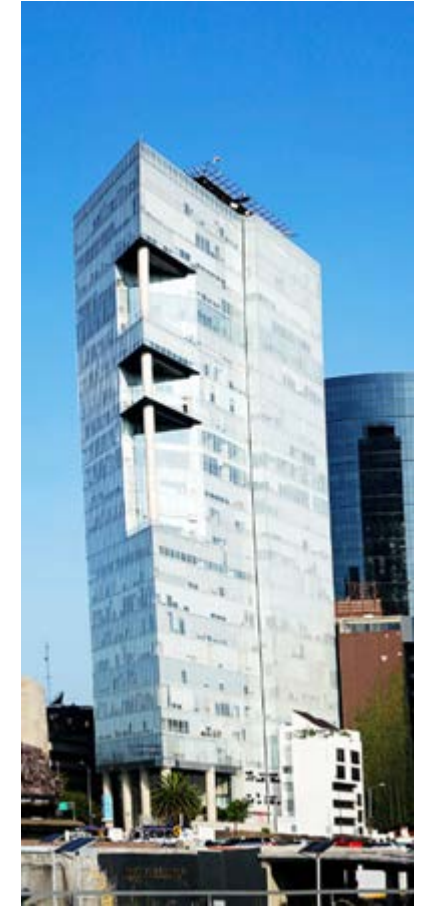


18th Floor



- Top executives (*levels 1, 2, and 3*) in 18th floor
- Middle-managers (*levels 4, 5, 6, and 7*) in 17th floor, seated by departmental group

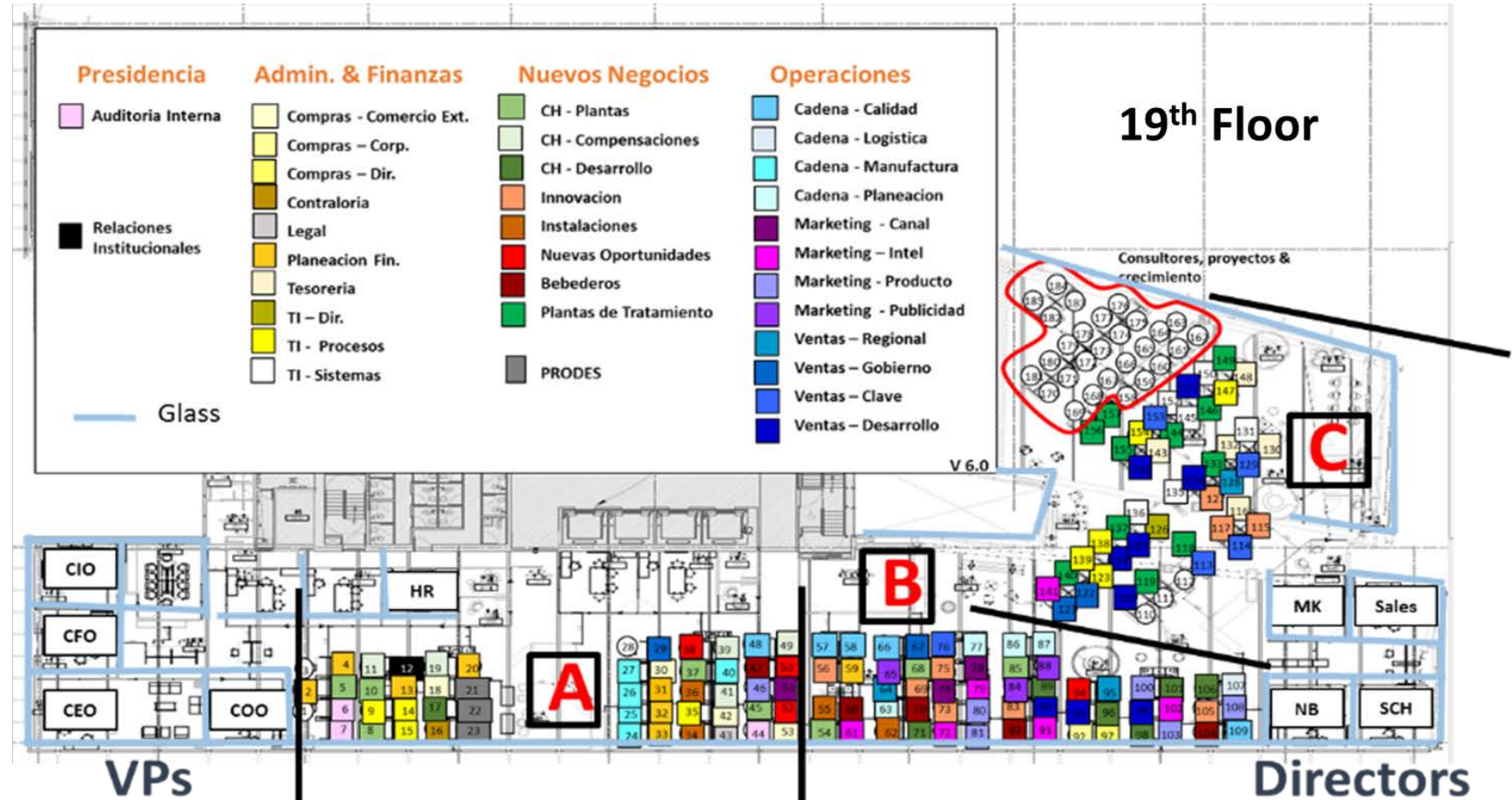
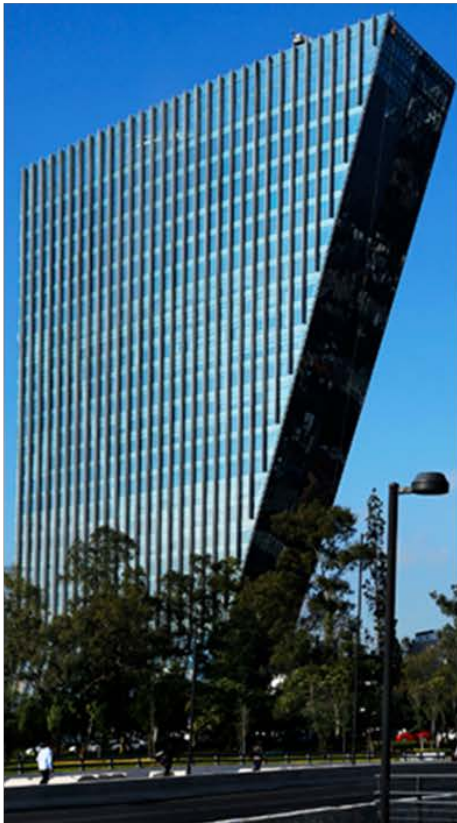
Old building



Setting: Quasi-experiment

Interdependence survey: 'to what extent do you depend on j to do your work' (1 – 5, always – never)

New building

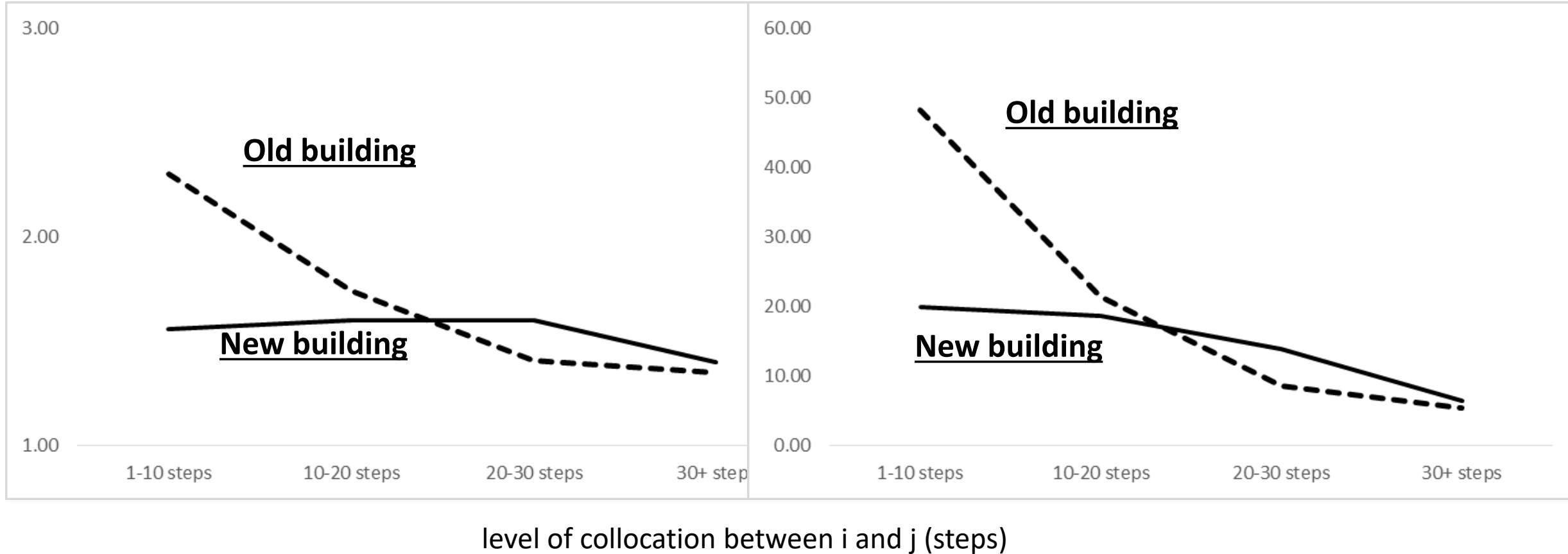


- Levels 1–3 in offices with glass walls, rest in open plan
- Employees (levels 4-7) randomly assigned into 3 equally sized clusters (A,B,C) based on structural interdependence
- Seats randomly assigned within clusters

Manipulation check: Endogeneity behind the 'Allen Curve'

Strength of work interdependencies between i and j

% of employees within 'x' steps of i who are from the same functional department

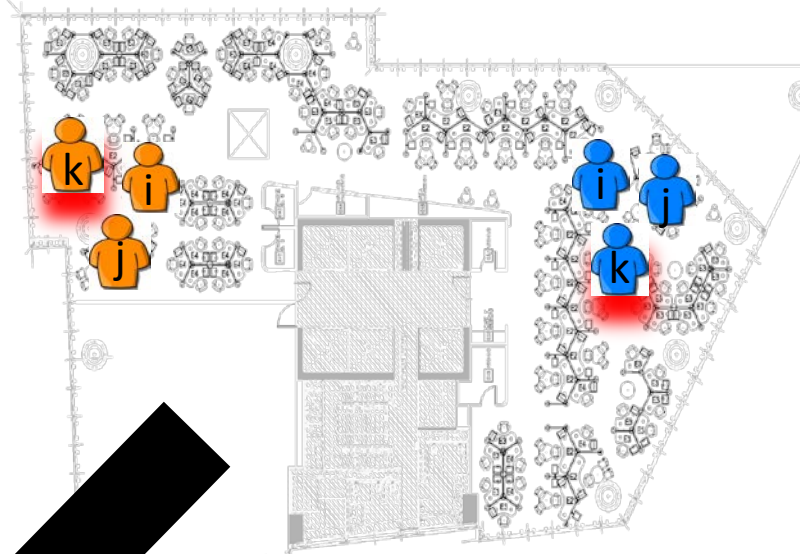


- (a) Variation in distance between 'i' and 'j'
- (b) Variation in distance between 'i' and 'k'
- (c) Variation in distance between 'j' and 'k'

New building



17th Floor



19th Floor



Frequency of work-related interactions between i and j:

Network survey ('i' -> 'j' 3 months after move)

'How often do you sustain planned work-related interactions with j (such as scheduled meetings)?'

'How often do you sustain casual work-related interactions with j (such as hallway conversations)?'

[1=never, 2=monthly, 3=bi-weekly, 4=weekly, 5=daily]



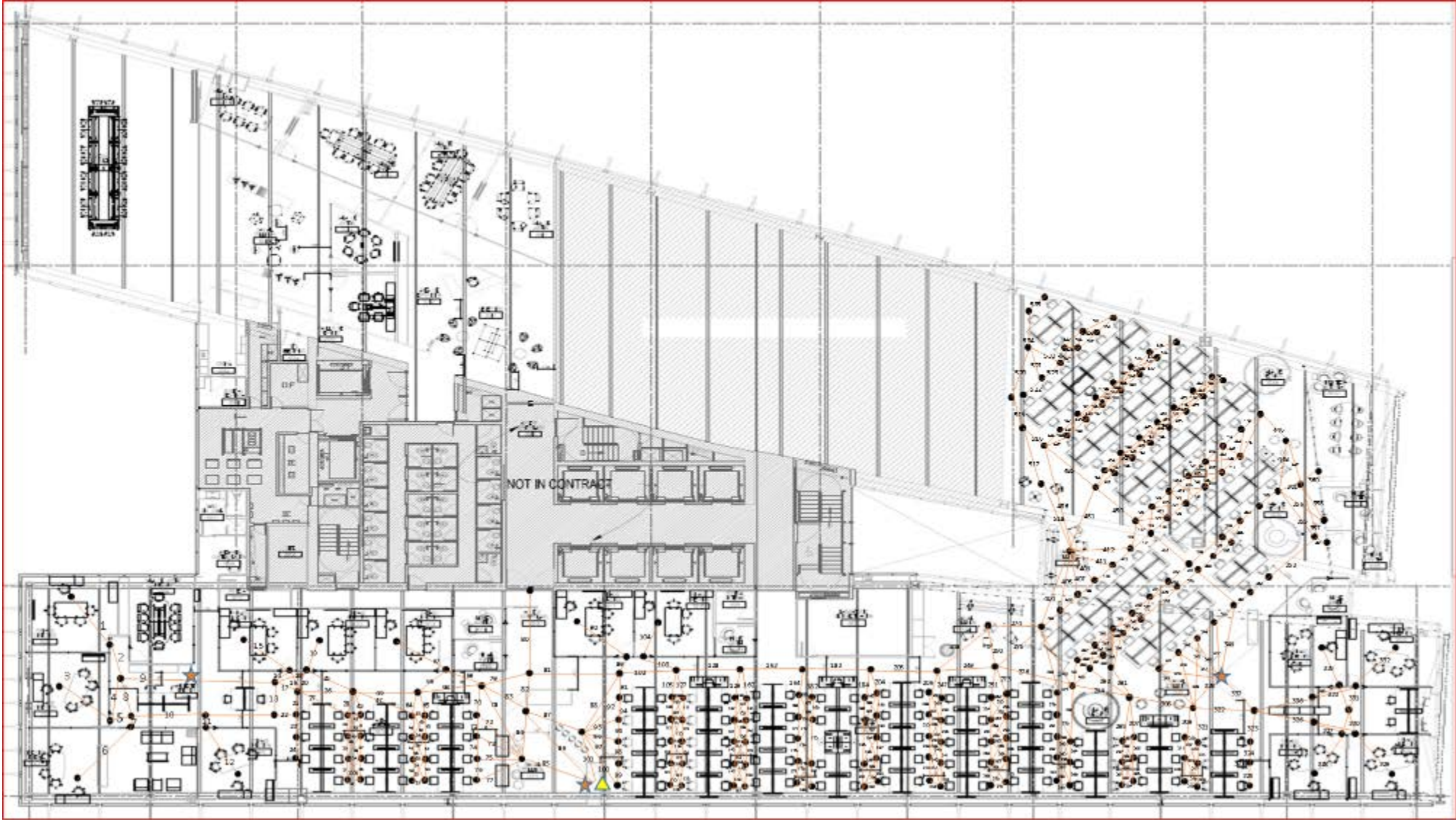
2 'corporate anthropologists'
observed managers and teams

{
N = 138*
Dyads = 18,960
Response rate = 100%
Average response time = 37 mins.
}

* N = 111 completed the pre-move and post-move survey (14,099 dyads)

Level of collocation (L_n of steps between i and $j * -1$)

- Mapped/walked walking paths from all seats to all seats



(Allen, 1977; Conrath, 1973; Festinger, Schachter, & Back, 1950; Monge et al., 1985)

Case 1 - Frequency of work related interactions between i and j when: i and j are collocated

'Awareness'

(e.g. Kavo et al. 2014)



High Awareness: i can see j 's face with little effort and overhear her conversations with others without losing meaning

Mid Awareness: i can see j 's face clearly with some effort and overhear portions of her conversations with others

Low Awareness: i cannot see j 's face or overhear her conversations with others

Two coders sat in every seat to determine the level of awareness of i with respect to j

Formal work relationships

Departmental group (i and j are member of same functional area)

- Organizational charts

Reporting relationships (i is boss of j, j is boss of i, and i and j have same boss)

- Organizational charts



(March and Simon, 1958; Thompson, 1967; Galbraith, 1977)

Controls – Homophily

Whether i and j share a similar background characteristic (i → j, j → i)

- HR data
- LinkedIn bios

Same Gender

- Whether i and j are both men (65% of sample) or are both women

Same Age

- Whether i and j are in same 5 yr age window to capture similar world-views

Same Tenure

- Whether i and j are in same 5 yr hire window to capture similar company experience

(McPherson et al., 2001; Kleinbaum, Stewart, Tushman, 2013; Reagans, 2011)

Findings:

Finding 1: Greater levels of collocation between i and j , more frequent work-related interactions between i and j

Finding 2: The positive effects predicted by H1a are greater when i and j are from different departments

Finding 3: Greater levels of collocation between i and k , less frequent work-related interactions between i and j

Finding 4: The negative effects predicted by H2a are greater when i and j are from different departments

Finding 5: Greater levels of collocation between k and j , more frequent work-related interactions between i and j

Finding 6: The positive effects predicted by H3a are greater when i and j are from different departments

Summary:

- Physical proximity can increase *awareness* of what nearby employees are working on, encourage *socialization* with nearby employees and the subsequent development of work relationships, and create *opportunities* for spontaneous communication with nearby employees
- The impact of physical proximity on work-related interactions is shaped by structural interdependence in the organization – employees in different departments have relatively more to gain from proximity (because there are not other forces bringing them together)
- Work-related interactions between employees are influenced, in part, by the presence of a hierarchical superior (it can be negative when boss of ‘i’ is collocated with ‘i’, and it can be positive when boss of ‘i’ is collocated with ‘j’)