



Using Organisational Networks to inform the design of a New HQ

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Outline

- Intention
- Background
- Theory
- Study goals
- Results
- Questions



Intentions for today

- Present paper focuses on the use of SNA approaches in support of decision making about placing people in a new Military HQ
- Only intended to be an overview of methods used and illustrative analyses; focus on approach taken rather than detailed disclosure of results.
- Intend to deliver breadth rather than depth
- For further details on findings please contact authors.



Background

- Aim was to inform the decision making process exploring physical layout and organisational structure for a “New HQ”
- This “New HQ” would arise from collocation of 5 separated HQ, these 5 HQ
 - Have common responsibilities
 - Work together collaboratively (to some unquantified extent)
 - Specialise in different domains
- At the time, the HQ were geographically separated.



Project rationale

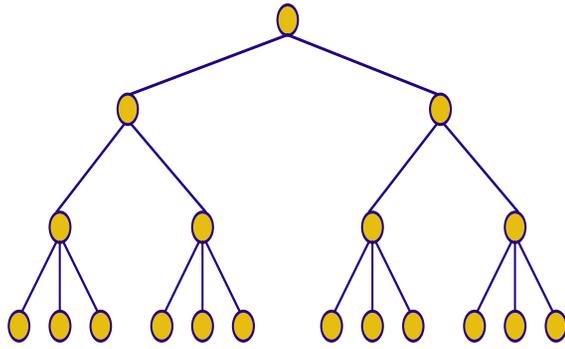
- At the time of this study
 - Predominant paradigm for physical placement within new HQ was “organisational method of grouping”
 - Staff clustered according to a reporting hierarchy
- But the New HQ is an information processing organisation
- Communication patterns are critical to support.
 - Thus maybe “best” means of placing people is based on:
 - minimising strain on communication and,
 - maximising facilitation of important communication
- Proximity and placement should be linked to the nature and effects of communication between different people rather than based on administrative and reporting affiliations.



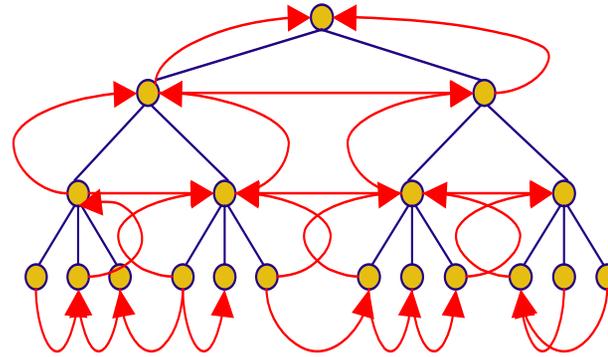
Does distance matter?

- Does new IT *remove* the importance of proximity between people as a factor in performance?
 - NO!
- Different communication media best suited for different forms of communication.
 - Communication media should be matched to richness of information which is to be exchanged.
 - Idea mirrored in concepts of explicit vs tacit knowledge
- Proximity – key determinant of information/knowledge transfer within an organisation. Increasing proximity can lead to :
 - Increased chance of serendipitous information gathering, decreased turn around time and greater ability to maintain interactions with a greater number of others leading to denser information flow
 - Also affective benefits...better trust, personal attachment etc

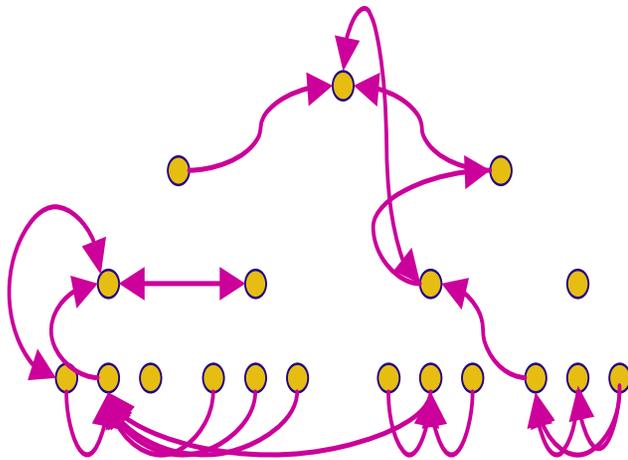
Network view of organisations: What links matter?



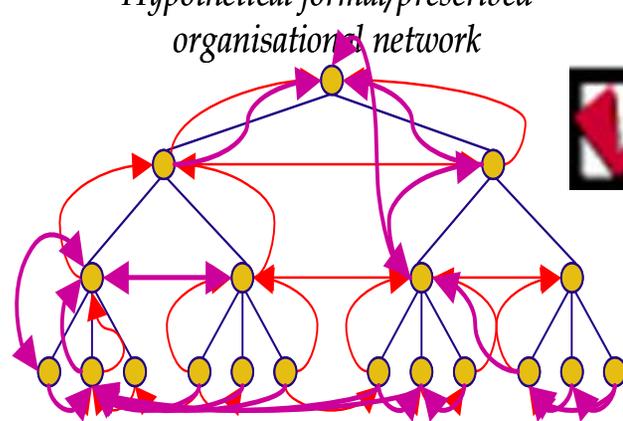
Hypothetical reporting network



Hypothetical formal/prescribed organisational network



Hypothetical informal network structure



Hypothetical Multiplex Network



Social/Organisational Network Analysis

- ONA approaches come to the fore in organisational systems which are characterised by
 - unstable environments,
 - complex and unpredictable problems,
 - predominance of “knowledge” work rather than manual labour,
 - focus on decisions rather than products as the primary output.
- All characteristic of operational level Military HQ



Collocation and Synergy

- Genesis for study came from project paper, two fold focus for collocation
 - Enhanced organisational structures
 - Enabling of administrative and operational effectiveness
 - Noted that collocation had risk of diminishing existing synergies (between collocating and non-collocating staff).
- Abstract goal therefore:
 - Describe and explore patterns of information/knowledge exchange within and between HQ in order to inform decisions regarding physical placement of HQ elements.
- In order to:
 1. Avoid damage to existing networks during transition
 2. Identify ways of placing people that reduce strain due to distance



Study Goals

- This study aimed to map the network of work links within and across the five HQ in order to address:
 - current level of strain on the organisational networks between HQ and expected benefits of relocation
 - heuristics to guide the placement of personnel in the New HQ so that strain would generally be reduced.
 - importance and strength of connections between functional groups in the entire enterprise
 - specific individual level links and people that would be at risk under any proposed allocation of personnel for the New HQ.



Data Collection

- Self report data collected using electronic survey application
- Data collection occurred over 6 week period
- Targeted 360 positions (out of over 1000 positions in the “New HQ”) that were considered representative of entire enterprise.
- Just under 80% of targeted population were actually surveyed

Summary of respondent population

Source	Proportion of collective HQ population accounted for by each HQ	Percentage of HQ population sampled*	Percentage of desired sample population actually interviewed
HQ-A	20.32%	50.0%	78.4%
HQ-B	23.40%	24.6%	67.8%
HQ-C	20.05%	42.6%	78.1%
HQ-D	28.88%	32.9%	80.5%
HQ-E	7.35%	52.7%	80.6%
Total	100%	37.7%	77.3%

* Figure calculated on the basis of complete contact lists supplied by HQ personnel.



Data Collected: Network Name generator

- Reliance network:
 - “Think about all the significant people whom you interact with to do your job. This should include people you *need* to interact with, as well as people who it is *useful* to interact with”.
 - “Please include all significant ongoing formal and informal interactions involving”.
 - Supervision, working together on a common task, information exchange, advice
 - “Do not include interactions that do not have a direct impact on your work output (For example cleaners you regularly see, or people who work in the canteen etc.)”
 - **“...list all the people that you interact with where this interaction contributes to you achieving your goals/objectives”.**



Data Collected: Network Name interpreters

- For each tie
 - Internal vs External
 - Reporting? (Yes/No)
 - Importance? (5 point ordinal)
 - Frequency? (7 point ordinal)
 - Distance:
 - Current distance (7 point ordinal)
 - Distance effects
 - Usefulness and need for floor/site (4 items; 5 point ordinal)
 - Least distance (7 point ordinal)



Approaches to analysis

- Network implications can be explored by two main thrusts of analysis
 - Descriptive/exploratory analyses
 - Examination of characteristics of network and potential implications for placement of personnel,
 - Can include direction, strength, range, centrality,
 - Performed at various levels of abstraction
 - Risk
 - At individual level risk analyses can be performed to identify strain (people or links) due to distance or spanning physical boundaries
 - Boundary spanning strain is characterised by positions/people that are more connected to more distant areas than to the local environment
 - of relevance with both the population of the areas on site as well as interactions between collocating and non-collocating staff



Analysis

- Data collected at individual level but analysed at various levels of abstraction:
 - Different levels of analyses provide different insights (what is best for the individual is not always best for the organisation or vice versa).
- Levels of analysis included
 - Enterprise (or the collective five HQ)
 - Organisation or individual HQ level
 - Functional group level
 - Individual level



Example Enterprise Level Questions

- What is the extent of interactions between the enterprise and the external environment.
- What does an 'average' person's network look like?
- To what extent to do traditional measures of strength (i.e. Importance and Frequency) allow us to predict Desired Closeness between individuals.



Enterprise Level: Overview

- Of the 9158 links generated by the 283 respondents
 - 80% of links were to HQ personnel and 20% were to external organisations.
- As an enterprise the collective HQ were strongly embedded within a wider network of information sharing and collaboration.
- Concluded:
 - *Links to external agencies need to be considered in the move to the “New HQ”.*
- Relation of traditional measures to desired closeness?



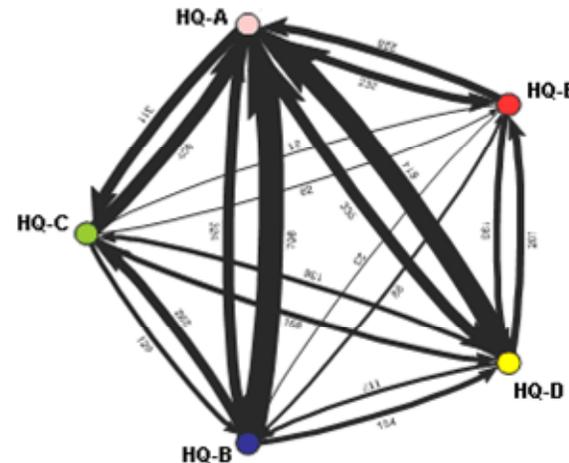
Example Organisational Level Questions

- Focus was on each individual HQ:
- What were the networks of interaction between HQ?
- To what extent were cross HQ links strained?
- Were there any grouping patterns of more central/peripheral HQs?
- What were some heuristics that could guide placement of people, or even construction/evaluation of the physical space?



Organisational Level: Org to Org linkages

- One of the key findings was that there were significant “cross HQ” interactions.
 - Approx 25% of all links within the enterprise were between different HQ
 - Figure shows the network of links between the 5 HQ (the thickness of the line represents the total number of links)
 - HQ-A acts as a hub or gatekeeper
 - Two sets of (partial ?) triadic relationships also evident
- About half of the “cross HQ” interactions were currently strained by distance – suggests strong case for collocation.
 - Argument becomes stronger from a network perspective when secondary effects considered.



The network of ‘cross HQ’ links

- Study demonstrated that *the collocation had potential to reduced strain on existing relations and facilitate additional beneficial interactions*, noting that there was potential for new strains to be developed between collocating and non collocating staff.

Organisational Level: Placement Heuristics



- Second goal of study was to develop general heuristics to inform development of population options for “New HQ”.
- Median value of Desired Closeness Score (a five item scale assessing the effects of proximity on the network link) assessed for group by group ties.

Corresponding ultrametric distance categories of the median Desired Closeness scores of 'within' and 'cross HQ' links.

		Target Headquarter				
		HQ-C	HQ-A	HQ-E	HQ-D	HQ-B
Source Headquarter	HQ-C	SF	SW/SB	SS	SS	SS
	HQ-A	SS	SF	SW/SB	SS	SW/SB
	HQ-E	SS	SW/SB	SF	SS	SW/SB
	HQ-D	DS	SW/SB	SS	SF	SS
	HQ-B	SS	SW/SB	SS	SS	SF

- Distance does matter*
- People were more connected to other people in their own HQ. Within a HQ people were more likely to be connected to people in their own branch. This suggests support for initially grouping people based on existing organisational structures.
- Staff from all HQ wanted to be on the same floor as other staff from the same HQ (Green cells)
- Staff from all HQ wanted to be in the same building as HQ-A (Light blue cells)
- Staff from all HQ wanted to be on the same site as other HQ (Orange cells)
- One exception was HQ-D and HQ-C (Purple cell)

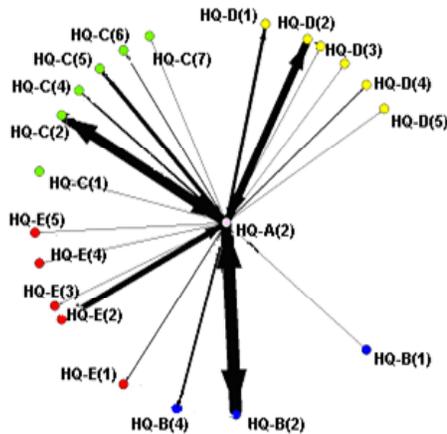


Functional Group Level Questions

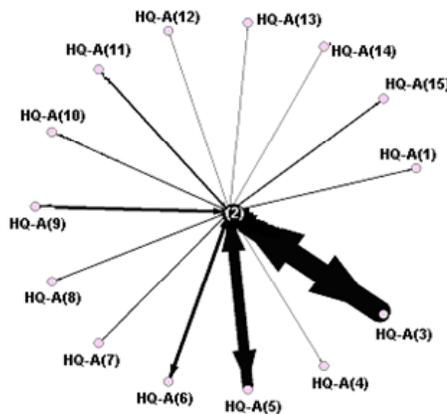
- Focus was on smaller groupings of personnel and positions representing functional groups (such as finance, legal,)
- What were the networks of interaction between each functional group (within and between HQ) ?
- What were the individual level ‘egonets’ for functional groups:
 - Who did they need and who needed them?
 - What were the closeness requirements between the groups?



Functional level: local group affiliations



HQ-A Branch 2 Network Map ('cross HQ')



HQ-A Branch 2 Network Map ('within HQ' network)

- Third goal of study was to examine connections at functional group level and identify implications of these affiliations on populations options for the “New HQ”.
 - Networks “within HQ” were very dense with majority of functional groups being linked to majority of their peer groups
 - Networks “across HQ” showed functional groups linking to complementary functional groups in other HQ.
- Highlights harnessing of expertise across the enterprise, supports concept of collocation
- **Study showed that determining population options for the “New HQ” should not be based just on minimising the internal strain of each HQ (i.e how does each HQ organise themselves) but needs to focus also on how the respective HQ should be physically organised to support each other (i.e minimise “Cross HQ” strain).**



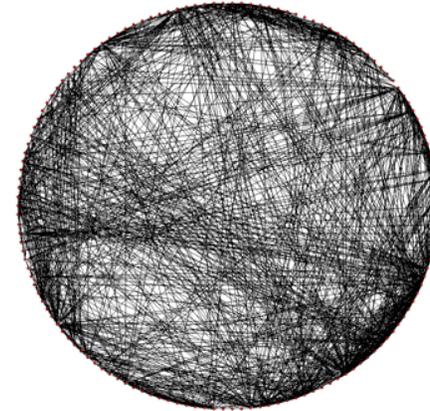
Individual Level Questions

- Focus was on individual people, positions and links.
- At this level detailed risk analyses of placement options can be conducted
- Using respondent data, together with proposed placement options, analyses could identify both strained *links* and *strained* people.
 - Strained links are defined as those in which two people are further apart than they should be
 - Strained people are those who shoulder a relatively higher degree of strain than others in the network (either absolutely or proportionally)

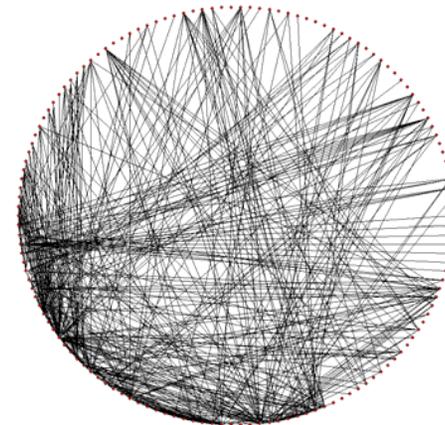


Individual level: links and personnel at risk

- Fourth goal of study identify risks under proposed allocation of personnel to geographical positions within the “New HQ”.
- Figures to the right show:
 1. links between all personnel in the collective HQ enterprise
 2. links strained by distance if people were assigned as planned
- 1. Shows there is strain but how do we make further sense of this?



Individual links between HQ



Individual links strained by distance across the HQ according to placement projections in late 2003



Summary

- This study has developed a methodology for gaining insights into making and evaluating decisions regarding placement of people within the “New HQ”.
- Results provide empirical support for the relocation project (although note that results presented only a fraction of output - intended as a overview only).
 - External contacts indicate need to consider enterprise within a larger context
 - Substantial cross HQ links and interdependencies
 - Functionally based cross HQ collaboration
 - Tendency for intra HQ clustering
 - One HQ most central for cross HQ links
 - Distance matters
 - Importance and frequency not the best predictors
 - Current strain on existing links
 - Bringing together in collocated HQ can reduce strain
 - Potential for strain due to existing plans for placement.
 - Identified methods for anticipating, and addressing/reducing problems due to strain
- Greatest value will come if repeated closer to the instantiation date of the “New HQ” (as well as post transition) as well as informing the development of transition plans to the “New HQ”.



Caveats and limitations

- Data not collected from every member of the organisational population (very difficult to achieve)
- The study provided a single snapshot – not necessarily an image of the way it is all the time or the way it should be.
 - While some patterns will remain consistent network will be subject to change
 - Changes in tasks, environment and personalities will cause some degree of variation in the interaction patterns.
 - Since study commenced there were significant organisational changes within the enterprise that impact on the ongoing validity of this data
 - The act of collocating may also lead to changes in network patterns.
- Current network structure is the “status quo” – no attempt has been made to identify ways to *improve* the network structure.
- Network only examined human-human links and deliberately ignored dependencies on common resources as a basis for proximity. In future work should explore these relationships.



Concluding comments

- Current information age promises faster more efficient communication media
 - Humans are seen as decision making agents in a vast network of flowing knowledge enabled by technology
 - In this perfect world distance 'should' not matter.
- But: organisational awareness is not supported by technology alone:
 - Not all knowledge is explicit, and successful transfer of tacit knowledge needs humans to interact as they are the medium by which this form of knowledge is transferred.
 - For this to occur effectively – a degree of face to face contact is required.
 - Face to face also has other benefits not realisable by foreseeable technology.
- *Distance does matter!*
- Network view can help recognise and reconcile differences between individual perspectives and more holistic system level perspectives.

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Questions

