

Privacy + association: selecting work venues, with space + time not fixed

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Perspectives on modal choice

Conceptual + empirical

Mathematical + predictive

Cultural perspectives

Key transformations

Demographic change

Fiscal crisis

Equalising gender norms

Growth of knowledge work

Ubiquitous technology

Globalisation of work activity + culture

Cultural shift: individual autonomy

Implications

Change in social structure + organisation

Reconfigured social pyramid:

Increased longevity

Delayed entry to work

New challenges:

Work-life alignment

Productivity

Wellbeing

Parallel change in work modes

Experimentation + variety

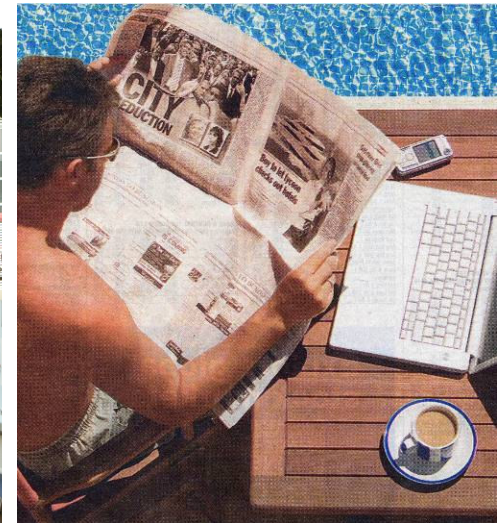
Portfolios of assignments

e-business impact on
culture of work:

Portability

Informality

Dissolution of fixity
- time, place + tenure



More footloose knowledge work

Many people now work remotely to varying degrees

Workplace utilisation audits routinely show just 40-60% of workers at their workspace

Some of these work at home for some / all the time

Sophisticated 'warriors' move with their laptops

Result

Increased blurring between work, family + leisure

Shaped by social structure + individual choice

How choice of work venue plays out

Uncoupling time + space can promote harmony between work, family + personal domains

So why is people's work activity not more dispersed?

If you can work anywhere, why come to the office?

Third influence: CRE

Corporate Real Estate recognition that:

Underused workspace

= wasted expenditure on space + utilities

Unnecessary travel to work

= negative environmental impact

Plus view that the workplace is primarily for:

Knowledge exchange

Interactive - not individual - work

Current forces in workplace provision

New ideology:

1. Spaces planned for interaction result in interaction
2. Interaction = collaboration
3. Collaboration adds value

New agency:

1. Interior settings to support varied work modalities
2. 'Change management' to promote their uptake / use

Manifestation: the new workplace



Why workers choose the workplace

Home / other remote venues are restricted / not conducive

Competing claims on space at home

Impromptu + face-to-face collaboration is valued

Workplace sociability is important

Workplace in competition with:

Appeal of home / personal domains

Facilitating interface between work / family / other commitments

Inconvenience / cost / environmental impact of travel

Sustainable real estate strategies

To facilitate:

Productive work

Responsible resource use

Sustainable living

And relevant workspace + settings:

Efficient quanta of space

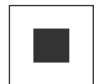
Effective design + management

How can we inform this?

Empirical evaluation

Predictive modelling

MODELLING PRIVACY AND ASSOCIATION



The Martin Centre for Architectural and Urban Studies

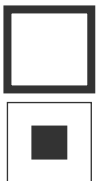
Simulation studies of changing workstyles and lifestyles



F L Wright, Johnson Wax
administration building,
1936-39



'Office of the Future'
Andrew Chadwick, 1982



Simulation 1: activity-space choices

Each individual has an agenda involving:

activities

places

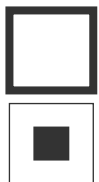
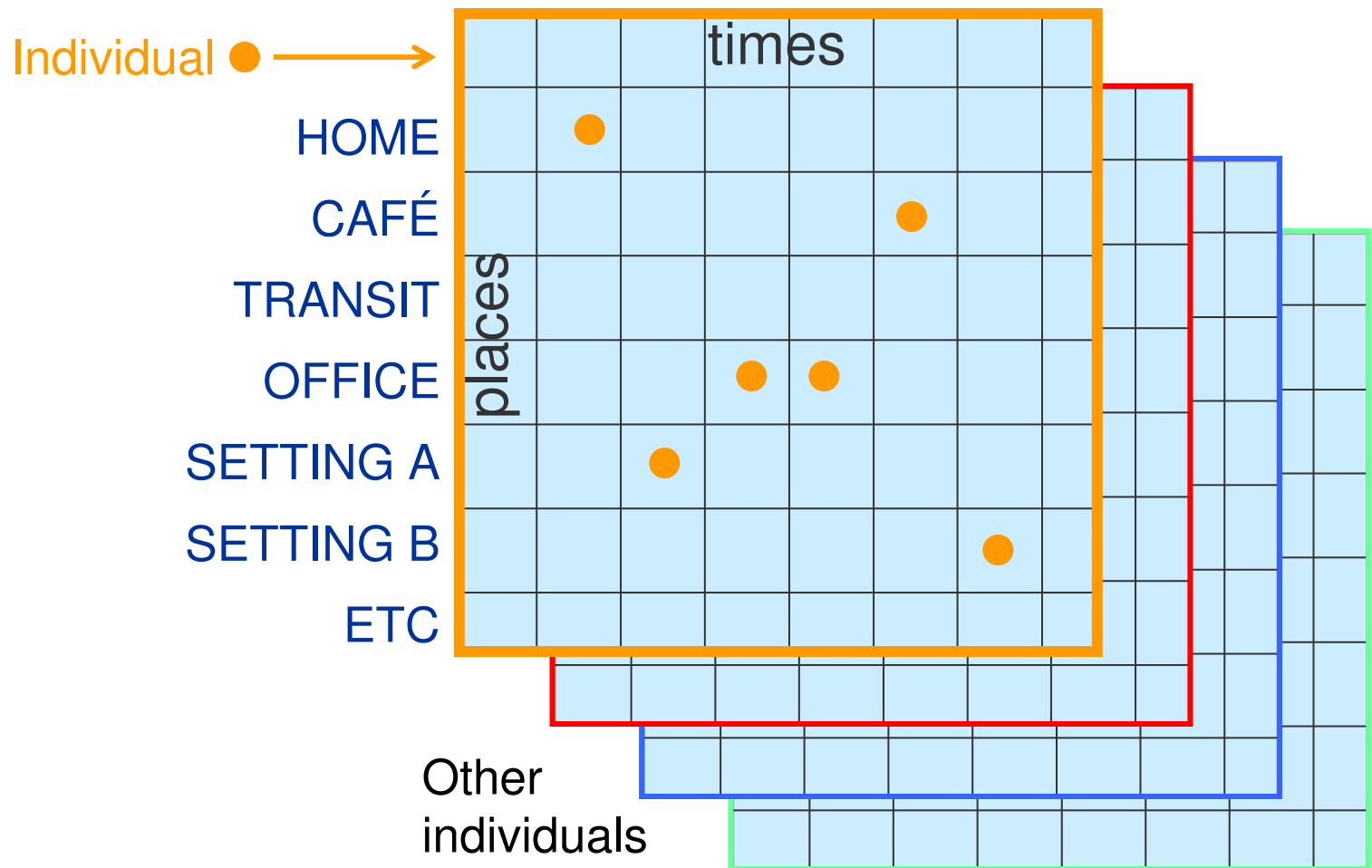
times

preferences



1. Space-time alternatives and decisions

Each individual chooses when and where to carry out activities, subject to personal constraints and preferences



Spaces: evaluation

Spaces scored for **two distinct aspects** – ‘work’ and ‘rest of life’

	work	rest of life
HOME	2.5	5
CAFÉ	1.5	1
TRANSIT	1	0.5
OFFICE	5	1.5
SETTING A	3	2
SETTING B	2.5	2.5

arbitrary scale, 5 = good



Space-times: evaluation

The factors are combined with the work-life index weighting

Weekday **morning** – weight 80% in favour of work

	work	rest of life	index weight	score
HOME	2.5	5	0.8	3
CAFÉ	1.5	1	0.8	1.4
TRANSIT	1	0.5	0.8	0.9
OFFICE	5	1.5	0.8	4.3
SETTING A	3	2	0.8	2.8
SETTING B	2.5	2.5	0.8	2.5



Space-times: evaluation

The factors are combined with the work-life index weighting

Weekday **morning** – weight 80% in favour of work

	work	rest of life	index weight	score
HOME	2.5	5	0.8	3
CAFÉ	1.5	1	0.8	1.4
TRANSIT	1	0.5	0.8	0.9
OFFICE	5	1.5	0.8	4.3
SETTING A	3	2	0.8	2.8
SETTING B	2.5	2.5	0.8	2.5

The highest-scoring location
at that time is chosen



Space-times: evaluation

The factors are combined with the work-life index weighting

Evening – weight 20% in favour of work

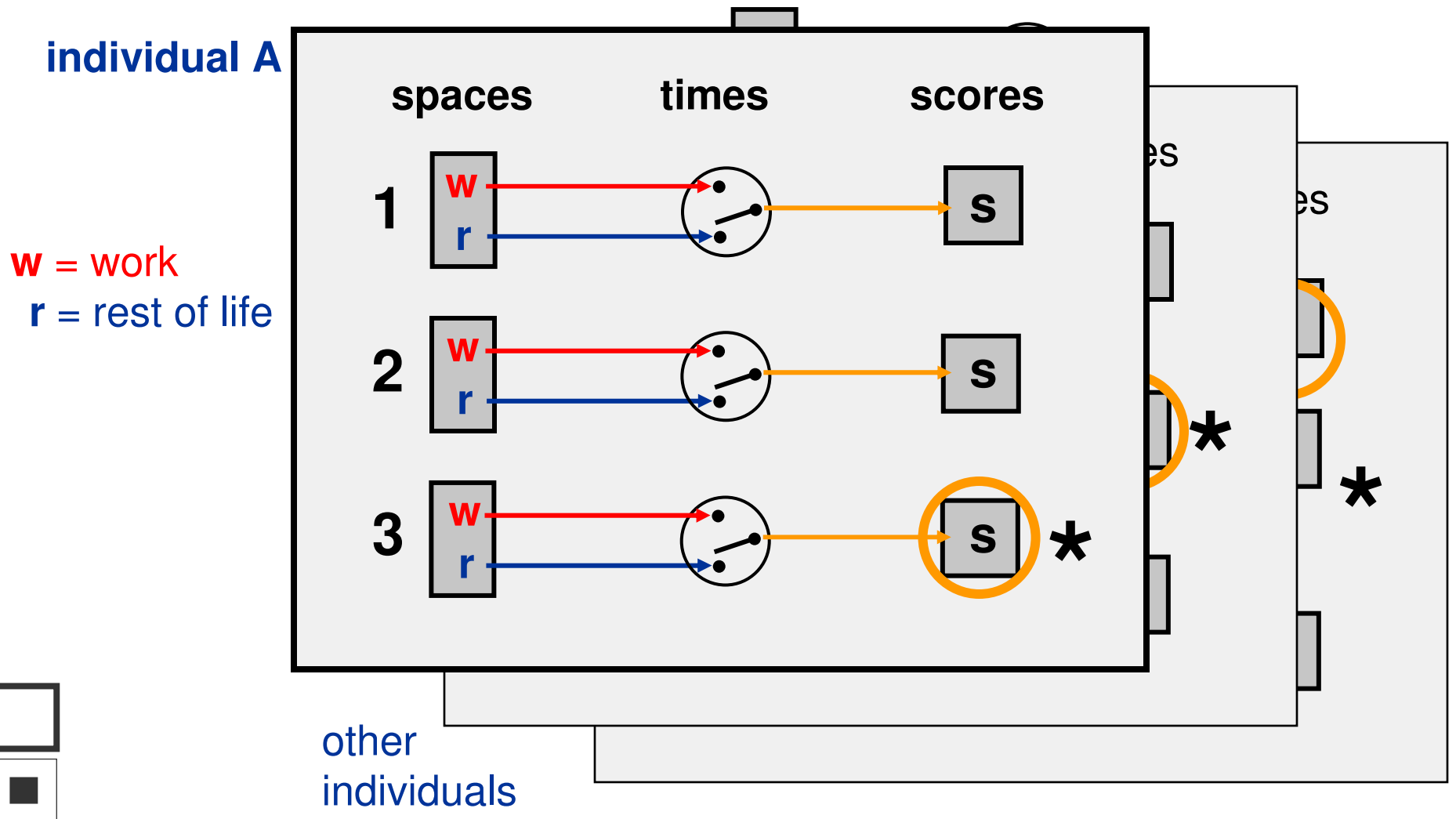
	work	rest of life	index weight	score
HOME	2.5	5	0.2	4.5
CAFÉ	1.5	1	0.2	1.1
TRANSIT	1	0.5	0.2	0.6
OFFICE	5	1.5	0.2	2.2
SETTING A	3	2	0.2	2.2
SETTING B	2.5	2.5	0.2	2.5

The highest-scoring location
at that time is chosen



Model of decision-making

Each individual compares alternative spaces and times, and arrives at space-time decisions



Mathematical simulation of multiple agents

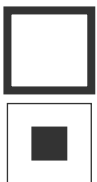
- Combined attractiveness score s_{ijt} for the alternative spaces, using work-life index weighting value c_{it} for the time period t :

$$s_{ijt} = W_{ij} \times C_{it} + r_{rj} \times (1 - C_{it})$$

- Choose the most attractive alternative in each time period
- Working time budget of 10 time-periods in a week

	Mon					Tue					Wed					Thu					Fri				
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
HW	0	0	0	0	0	0	HW	OP	0	0	HW	0	OP	OP	0	0	0	OP	OP	0	0	OP	OP	0	0
0	0	OP	0	0	0	0	OP	OP	0	0	HW	OP	OP	0	0	OP	0	OP	0	0	OP	0	OP	0	0
0	OP	OP	OP	0	0	HW	0	OP	0	0	0	0	OP	0	0	0	OP	HW	0	0	0	OP	0	HW	0
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0	OP	OP	HW	0	0	0	0	HW	0	0	0	OP	0	OP	0	0	OP	HW	0	0	0	OP	OP	0	0
0	0	OP	0	0	0	0	OP	OP	0	0	0	HW	OP	0	0	0	OP	OP	0	0	0	HW	OP	0	HW
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0	OP	HW	0	0	0	HW	0	OP	0	0	0	HW	OP	0	0	0	0	OP	0	OP	0	OP	OP	0	0
0	OP	OP	0	0	0	0	0	OP	0	0	0	OP	OP	OP	0	0	OP	0	0	0	0	OP	OP	HW	0
0	HW	OP	HW	0	0	0	OP	OP	HW	0	0	0	HW	0	0	0	OP	0	0	0	0	HW	OP	0	0
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0	OP	OP	HW	0	0	0	0	HW	0	0	HW	OP	OP	0	0	0	OP	0	0	0	OP	OP	0	0	0
0	OP	HW	0	0	0	0	0	OP	0	0	0	0	OP	0	OP	OP	OP	OP	OP	0	0	HW	0	0	0

Each line is the diary on one agent – OP = office work, HW = home work



Calibration: work-life index

‘Reference’ values from census data,
plus simulated individual variation from the
reference

- 5 time periods in a day
- 5 days in a week

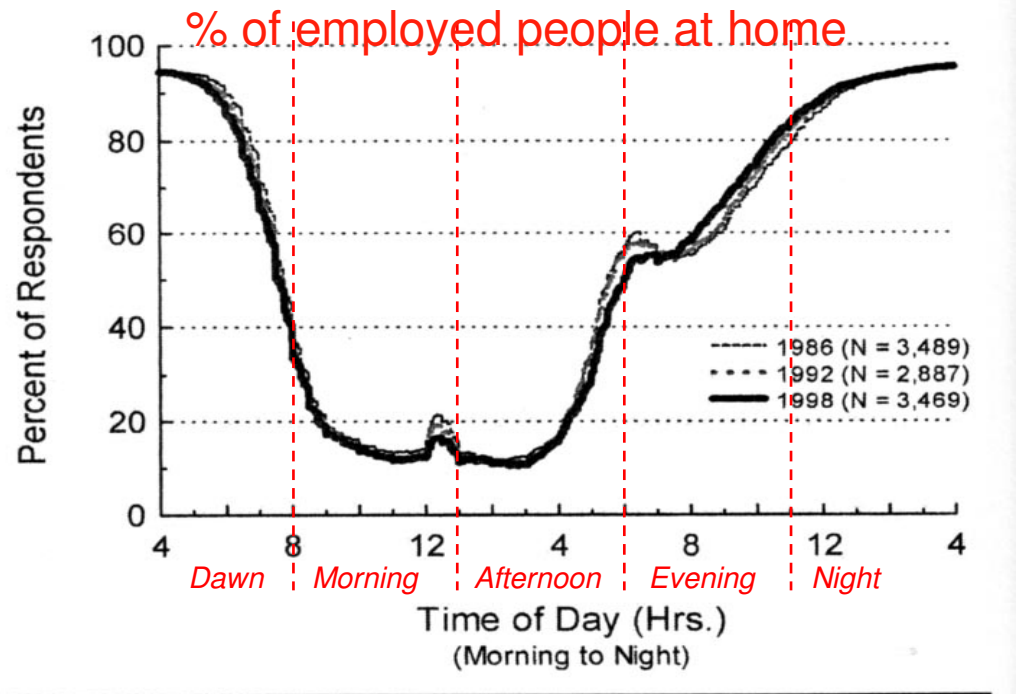
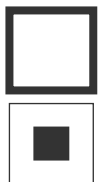


Figure 3-5. Percentages of Non-home-based Workers at Home on a Working Weekday by Minutes through the Day (Canada: 1986, 1992, and 1998)

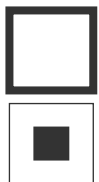
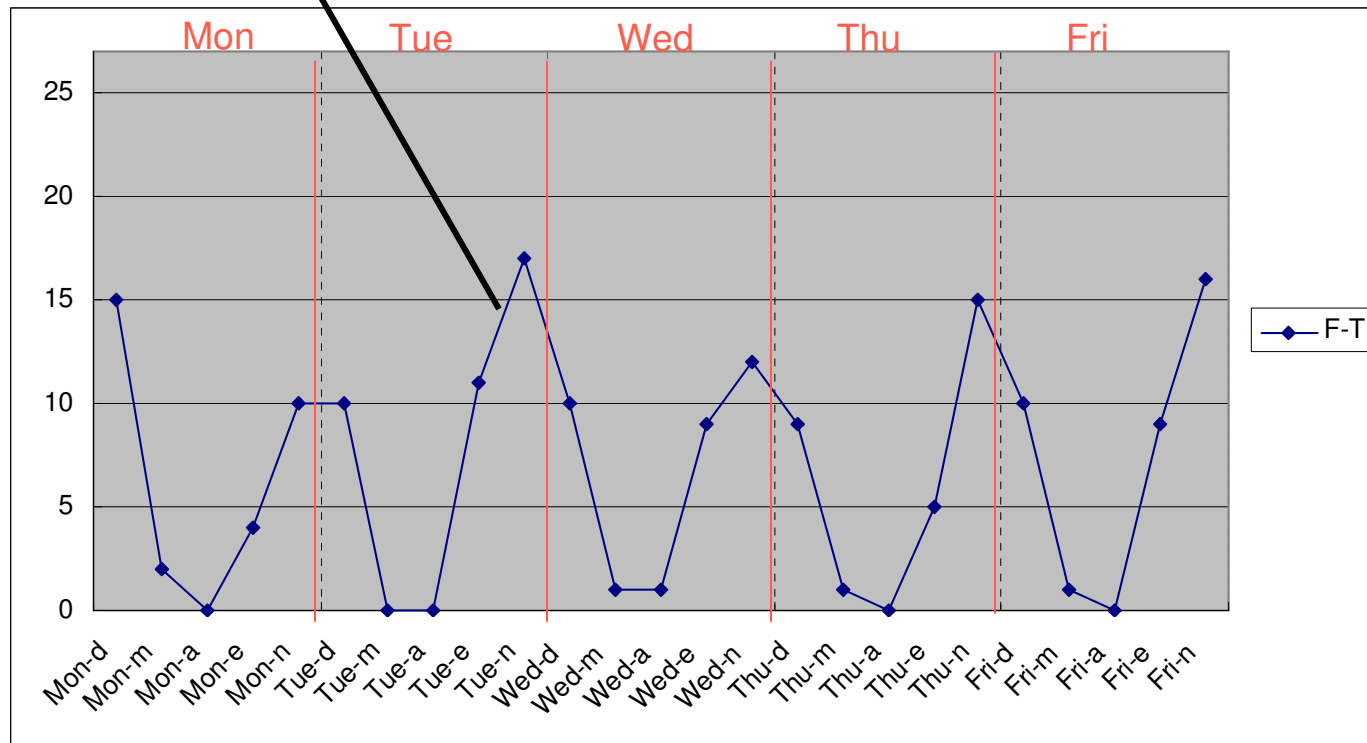


Observed data about the time use of
employed people in Canada in 1992,
reported by Michelson (2005)

Scenario experiments

Home-based work in traditional and modern workstyles / lifestyles

Traditional – night-time peaks



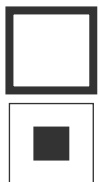
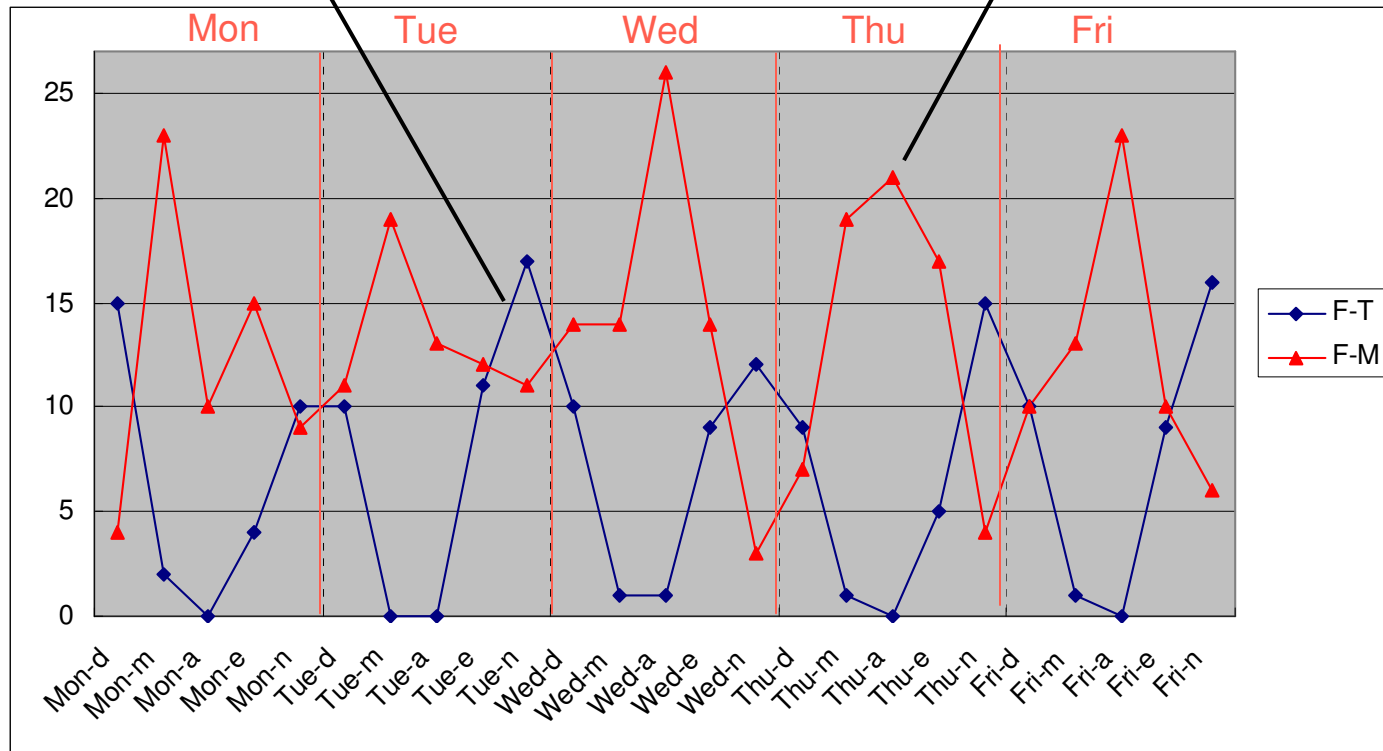
Fawcett & Song (2009) 'Modelling the use of space and time in the knowledge economy' *Building Research & Information*

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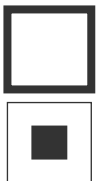
Modern – day-time peaks



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Simulation 2: workplace interaction

The new convention – informality and interaction

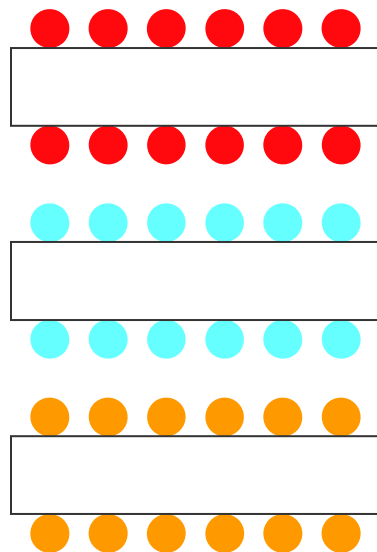


Encounters within the workplace

– divergent objectives

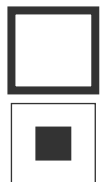
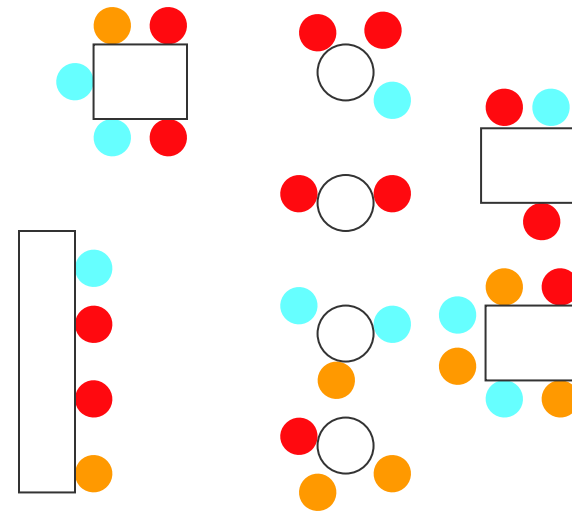
Employees – seek friendship groups

Preference for habitual and stable groups



Management – seek productive encounters

Preference for mixed and changeable groups



Simulation model of encounters

– definitions

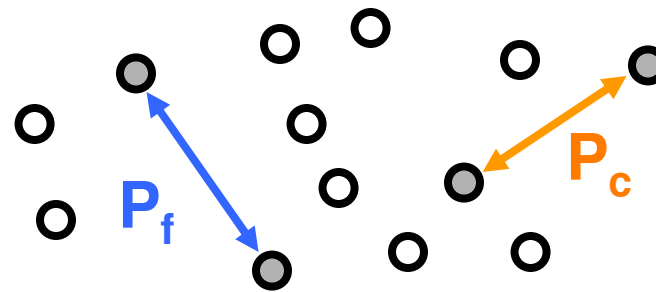
Friendship potential: probability of social encounter if two people meet

$$P_f = 0.4$$

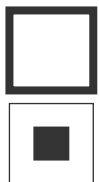
Collaboration potential: probability of productive encounter if two people meet

$$P_c = 0.05$$

– *assume random and independent distribution*
(ie. no link between friendship and collaboration)



potentials between every pair of individuals in the population



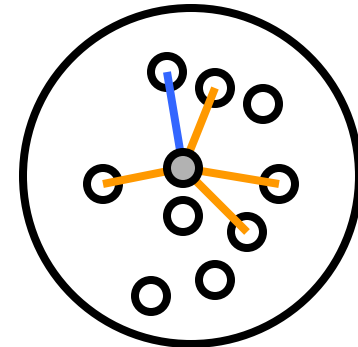
Simulation model of encounters

– sequence of group-formations

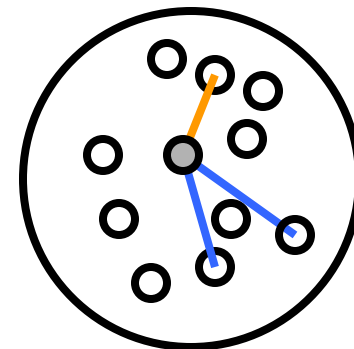
Initial assignment to groups is random

Subsequent group choice is weighted
by experience on previous encounters
– *routine or novelty seeking*

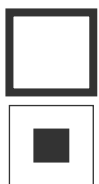
Sequence of 100 group-formations



4 friendship encounters –
likely to return to this group

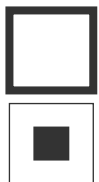
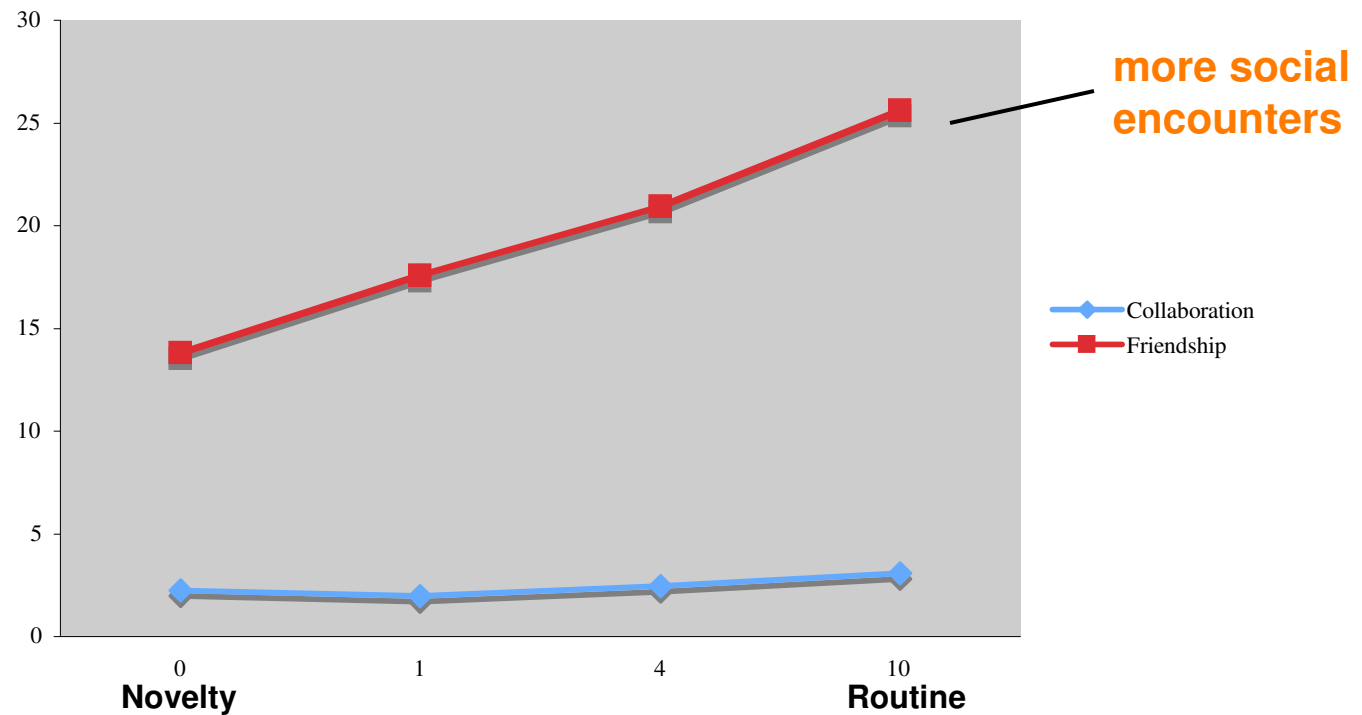


1 friendship encounter –
less likely to return to this group



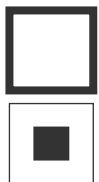
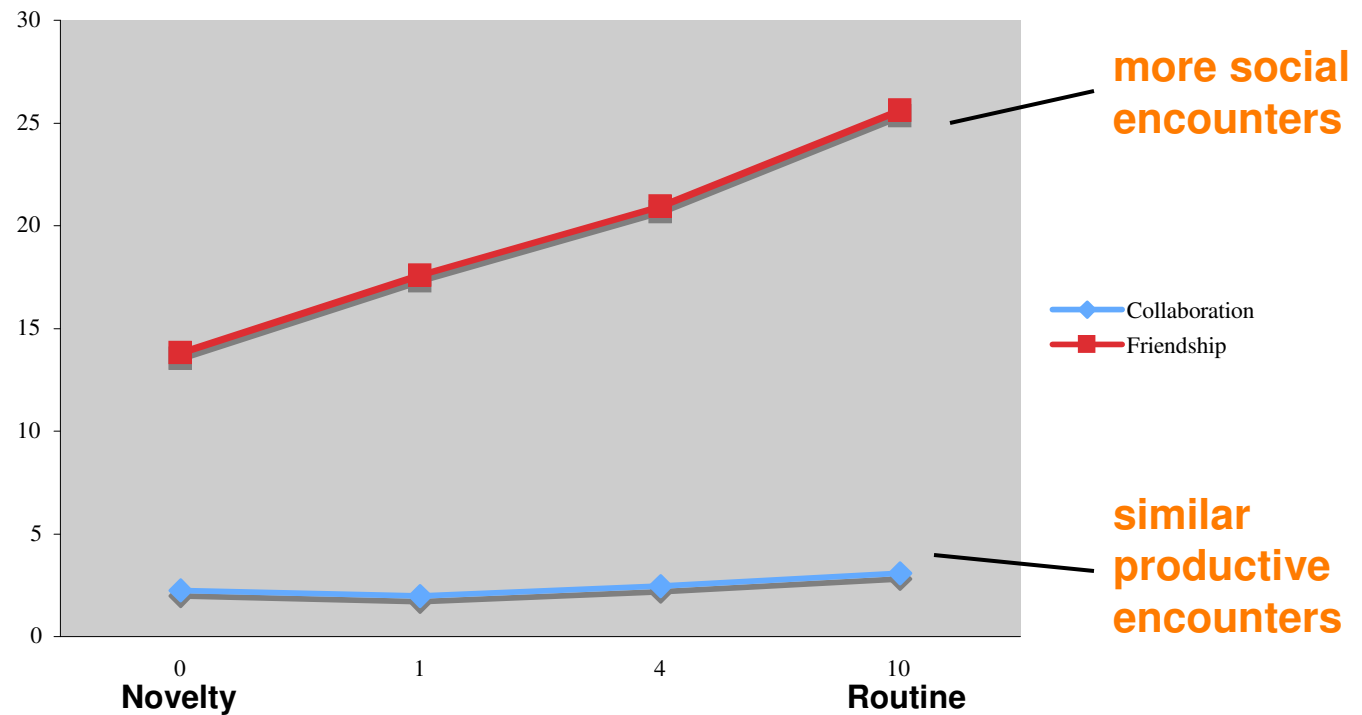
Simulation findings *[preliminary]*

Comparison of simulations with
novelty- or routine-seeking:
no evidence of trade-off



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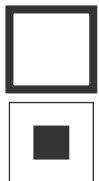


Empirical research

Reality

Complexity / multi-variate

Observation

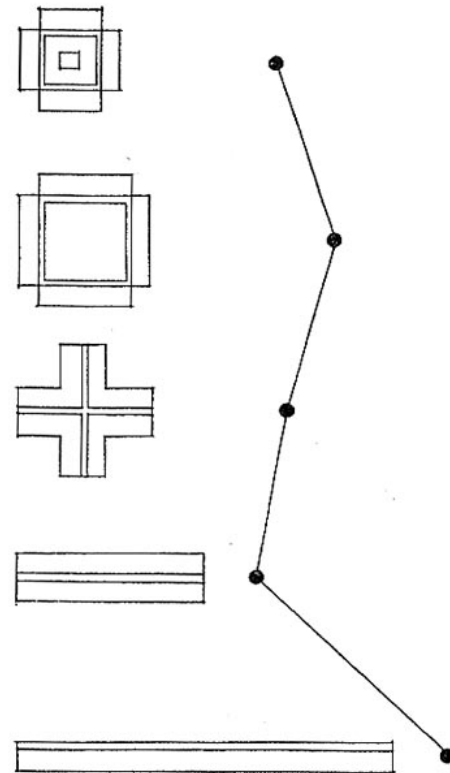


Simulation

Abstraction

Simplicity / precision

Experimentation



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