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Relation Formation by Medium Properties: A Multiagent Simulation

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Agenda

1. Research Questions, Findings and Backgrounds
2. Model development
3. Simulation experience
4. Discussion
5. Future works

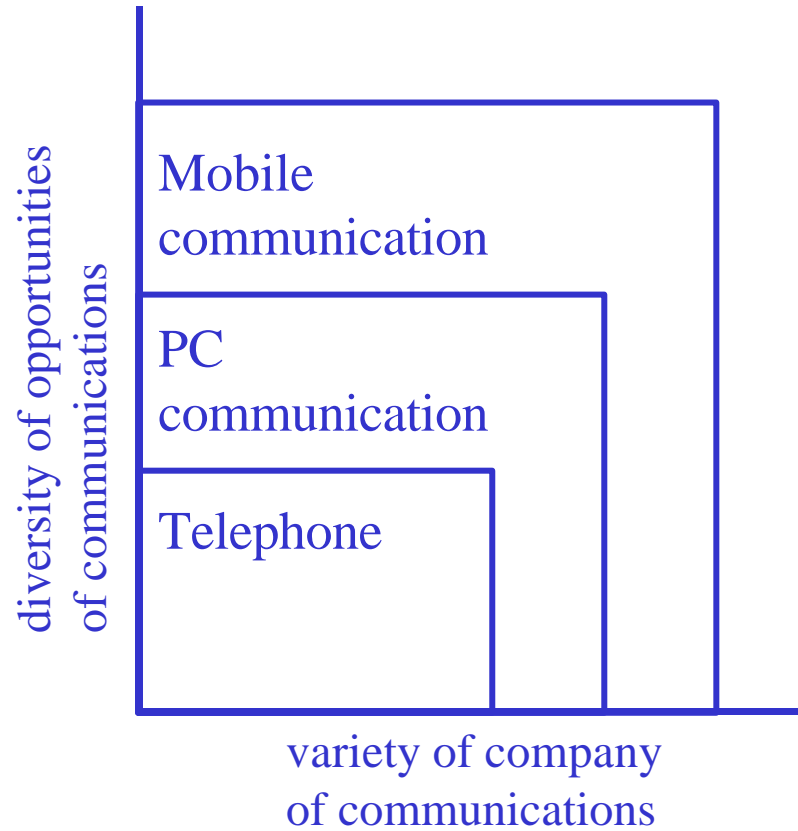
Research Questions

What impact does Mobile communication have in relation formation?

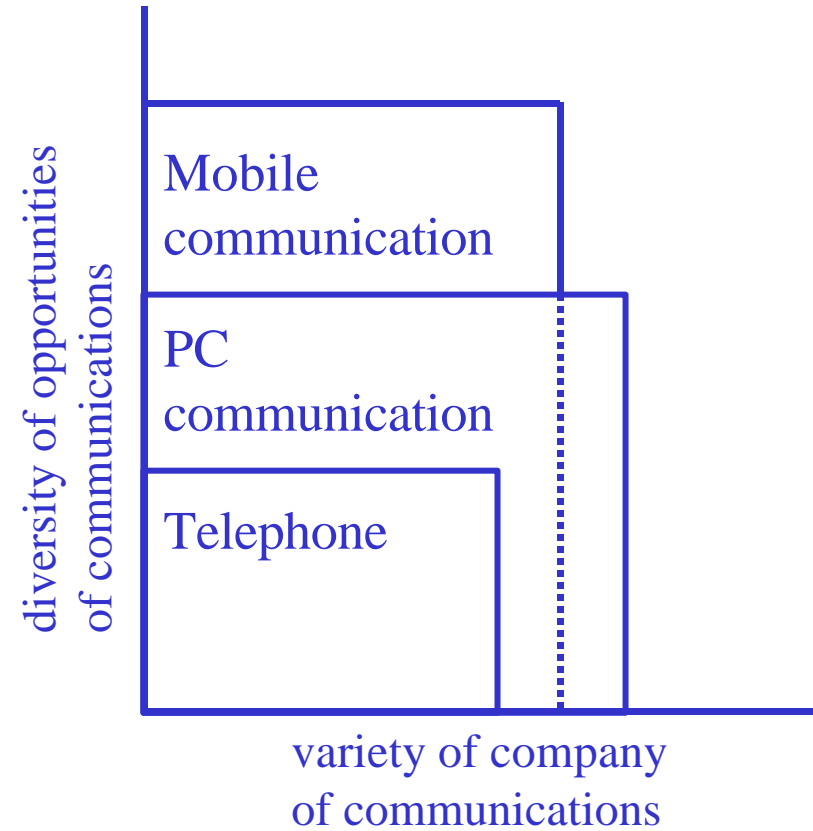
- The flexibility of communication increases by Mobile
 - overcoming geographical ,time, and opportunity restriction
- It is possible that extensive communication
- There is argument that a friend relation becomes shallow and extensive

Has friendship relation extended by new communication tools?

Findings



Intuitive Understanding



Our Result

Background

Development of Media and Overcoming restrictions

Media	Overcoming of restrictions	cause of communication
Telephone	Geographical	Acquaintance and Subjects
E-mail by PC	Time	Subjects or Common interest
Mobile Communication	opportunity	Trifle



Background of relation formation

Simple Contact Effect (Ikegami, Endo,1998)

Propinquity Model (Festinger et al.,1950)

Relation

Communications to whom they meet frequently

similar thoughts, ideas, and objective (Ikegami, Endo,1998)

Similarity Model (Byrne,1965)

Genre

Communications to whom they have similar interests

Topics that everyone knows at the time

e.g. result of the World Cup games, topics of election and etc.

Topics

Communication by the subject shared among society now

Communication Media (1/2)

Telephone

Share Relation : One does not communicate to whom they do not know
Share either Genre or Topics :

PC-mail

Share two, among Relation, Genre, and Topics
e.g. Genre and Topics are communications in the community which shares interest

Mobile Communication

Share one, among Relation, Genre, and Topics
e.g. "hello message" which can communicate only relation
"i-mode chat" which can communicate only topics

Communication Media (2/2)

The communication formation conditions by the property of media

	Relation	Genre	Topics
Telephone	Indispensable	Either one	
PC - mail	Two Either		
Mobile	Any one		

	Dependency of relation formation process
Telephone	early relation
PC - mail	early relation and an interested genre of Agents
Mobile	diffused from an early relation

Mobile media as anytime, anywhere and anyone

Communication Model

Internal model of Agents

Name (ID)

Genre

- > It depends on Interest of Agent
- > It always exists during a simulation

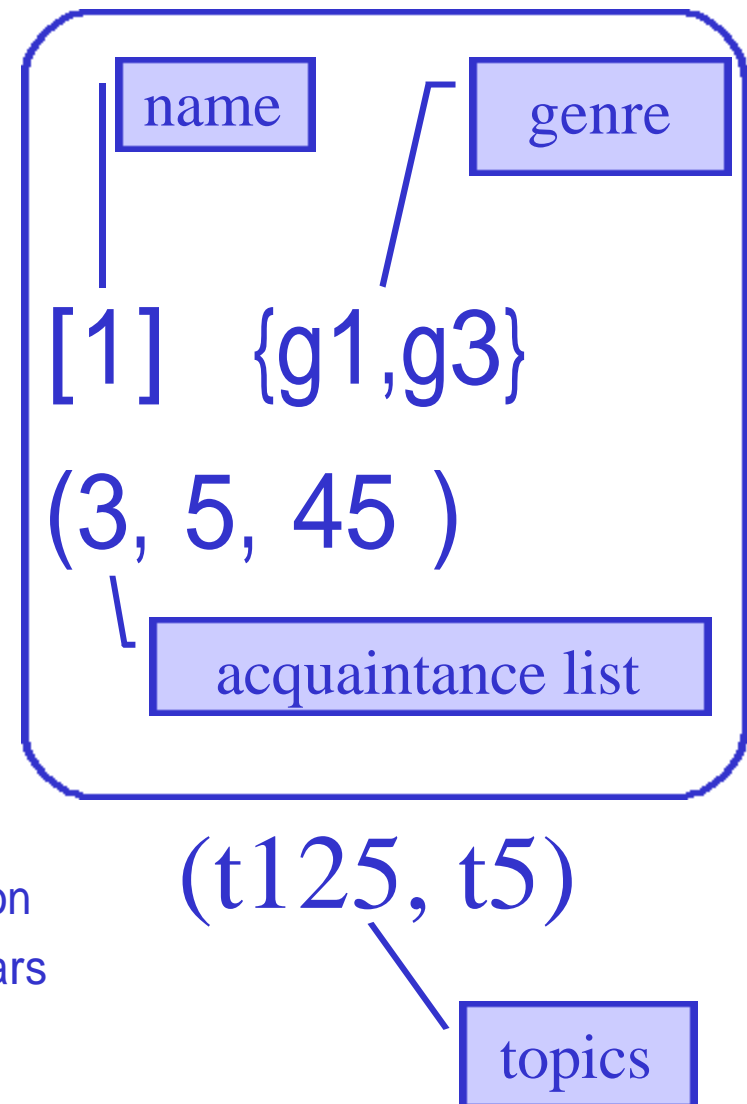
Acquaintance list

- > A list of IDs of the Agents whom the Agent knows

Shared among society

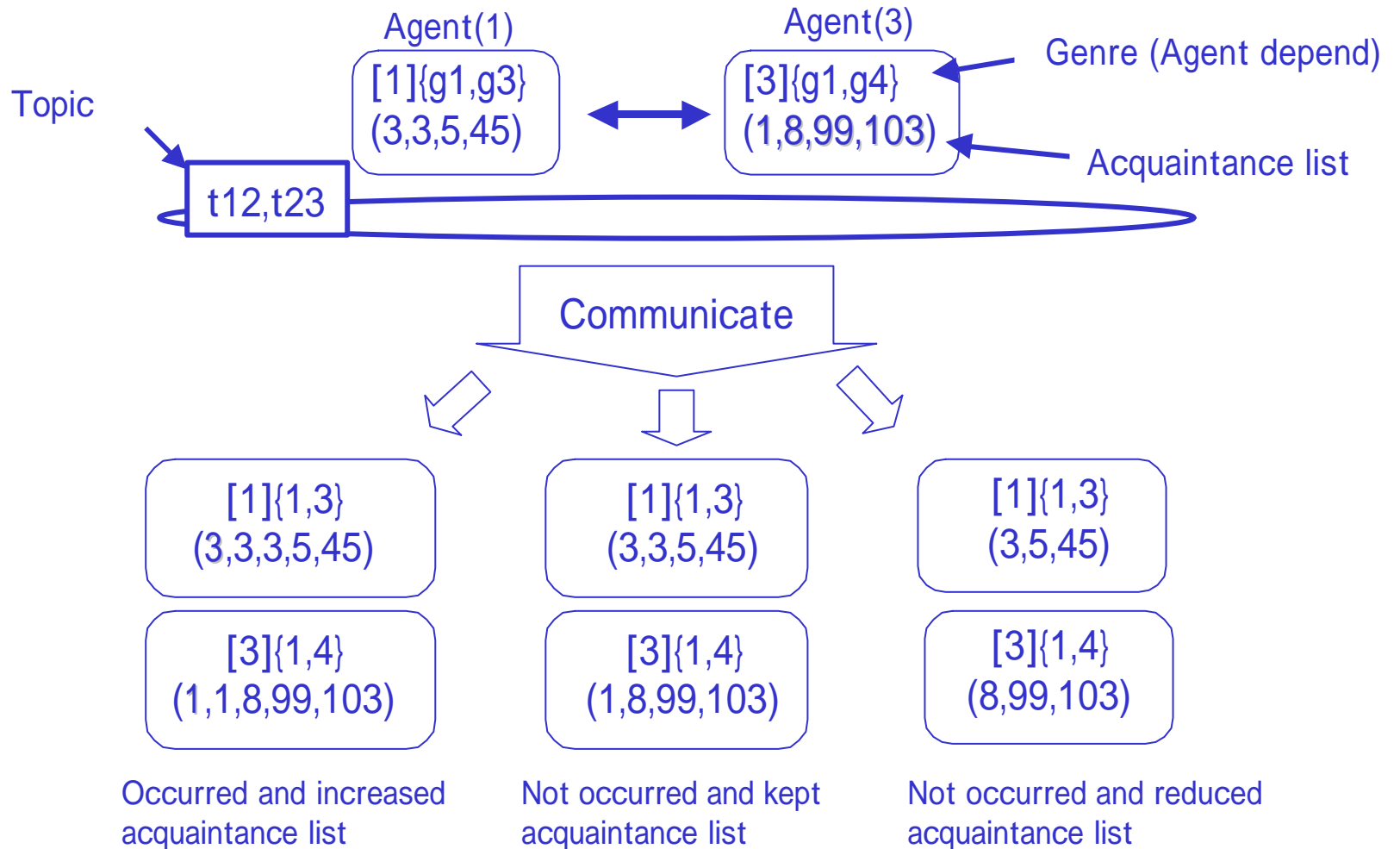
Topics

- It is shared among whole society
- It appears at random during a simulation
- It exists in short period and it disappears



Description of Communication Process

Change of property of Agent through communication process



Conditions of Simulation

- Conditions of Simulation -

Communication Media	Telephone, Mobile, PC
Agent Numbers	20, 50, 100, 200, 500
Genre Numbers	5, 10, 20, 50
Topic Numbers	20, 50, 100, 200, 500,100
Simulation Time	500

Observation Indexes

Verification of simulation

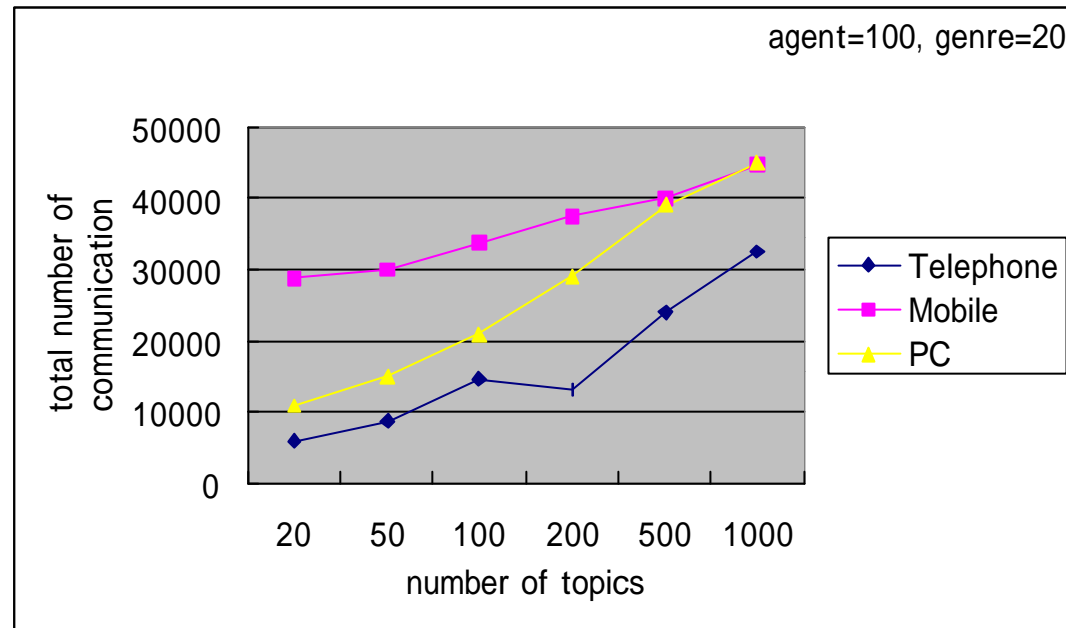
Can model explain the character of actual media?

Total number of communication
(Agent, Genre and Topic dependency)

Observation of emergence from agent interactions

Relation Fixation between media (PC and Mobile)
Topic Sensitivity in PC communication

Verification (1/3) : Topic change



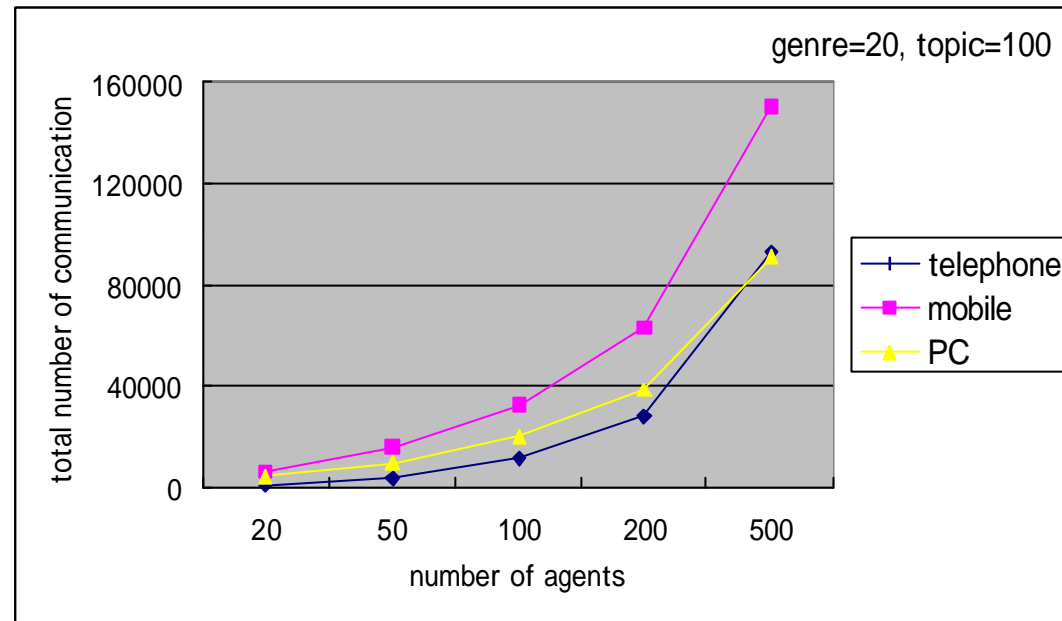
Horizontal axis : Number of topics

Vertical axis : Total number of communication

High communication society (in an Enterprise)

PC communication is used for real time communication

Verification (2/3) : Agent change

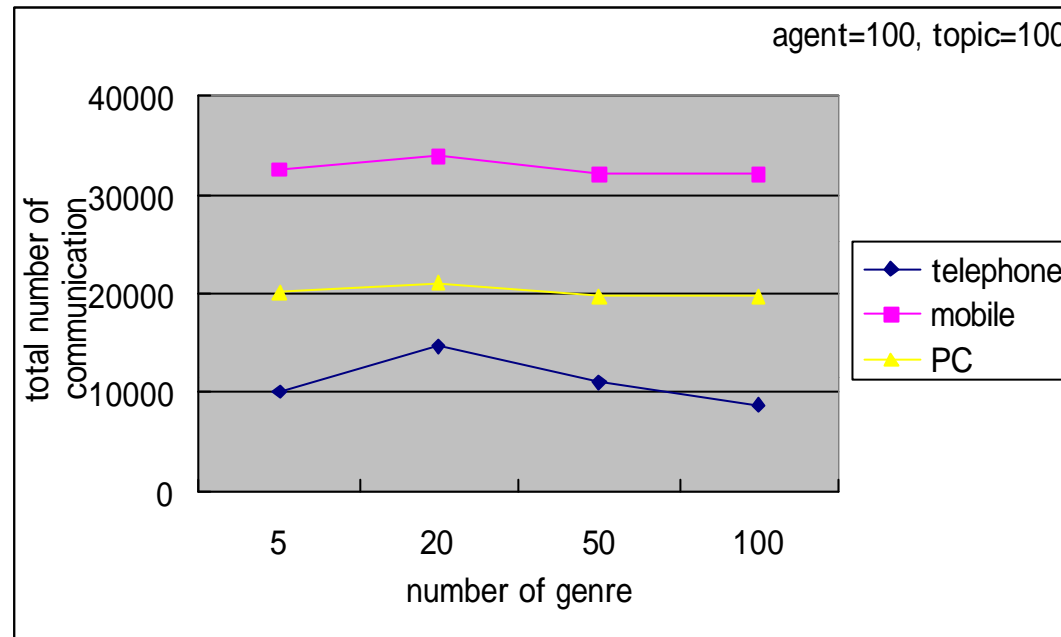


Horizontal axis : Number of agents

Vertical axis : Total number of communication

Mobile media are strongly influenced of network effect.
Rapid diffusion in comparison with other media

Verification (3/3) : Genre change



Horizontal axis : Number of genre

Vertical axis : Total number of communication

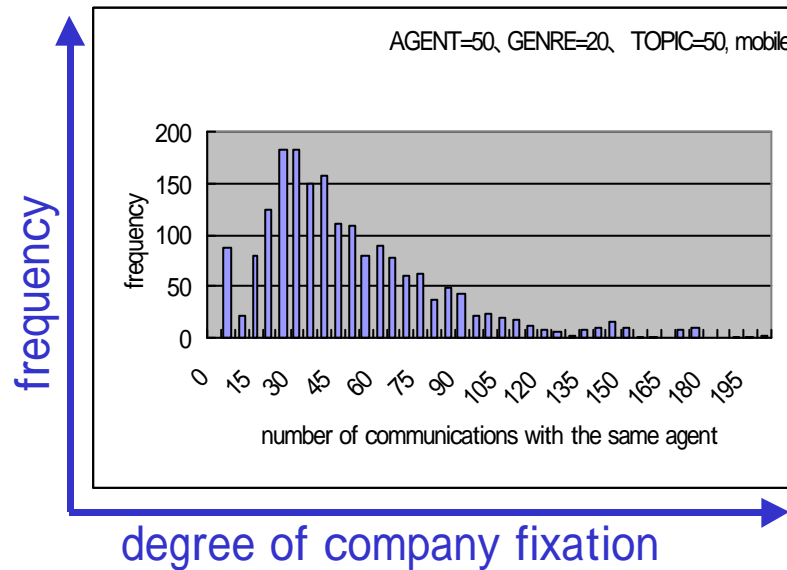
Social diversity does not affect relation formation

Observation (1)

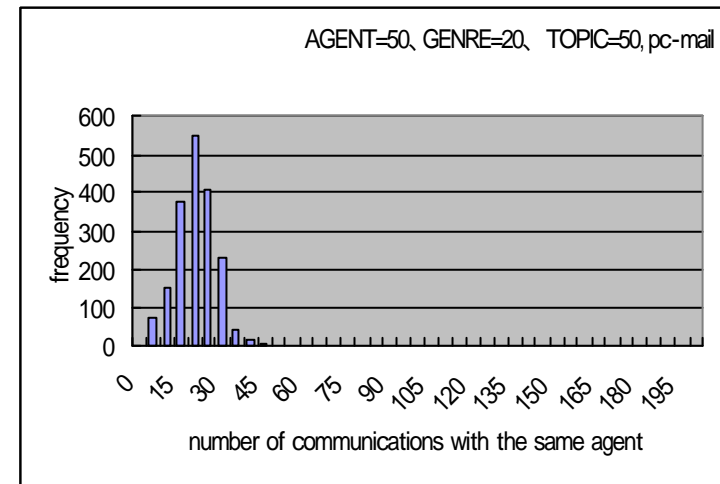
Relation fixation in PC and Mobile communication

Measurement of the degree of fixation of the communication among Agents

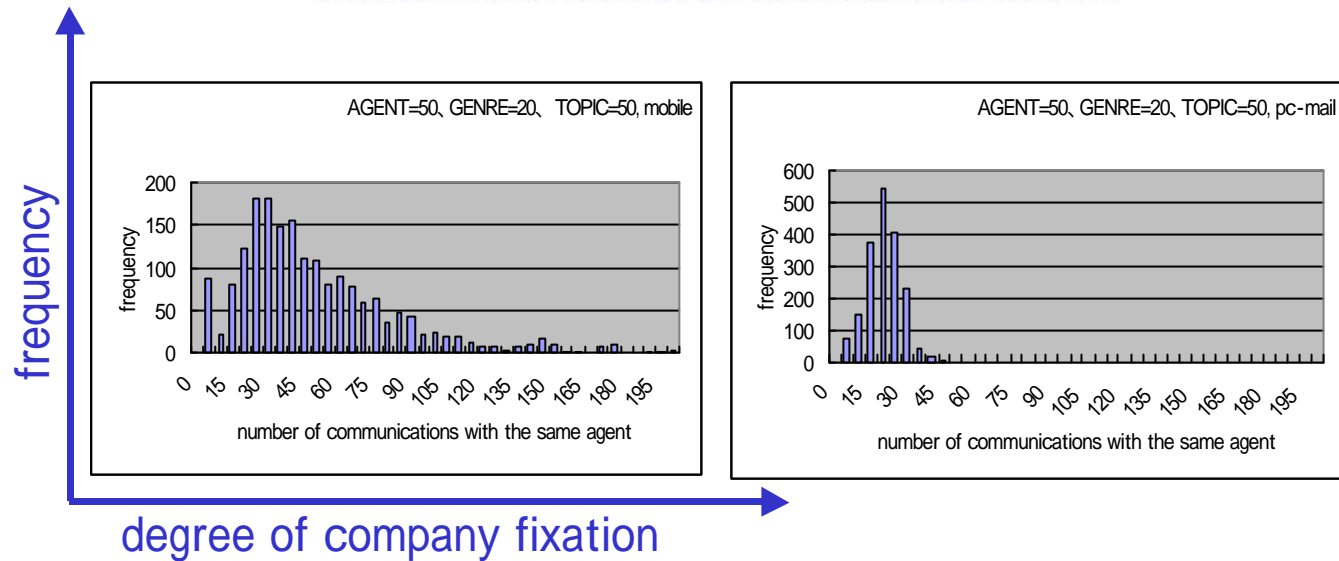
Mobile communication



PC communication



Observation (1)



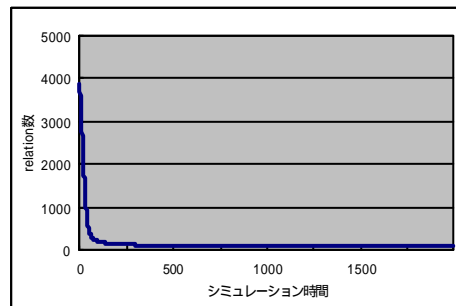
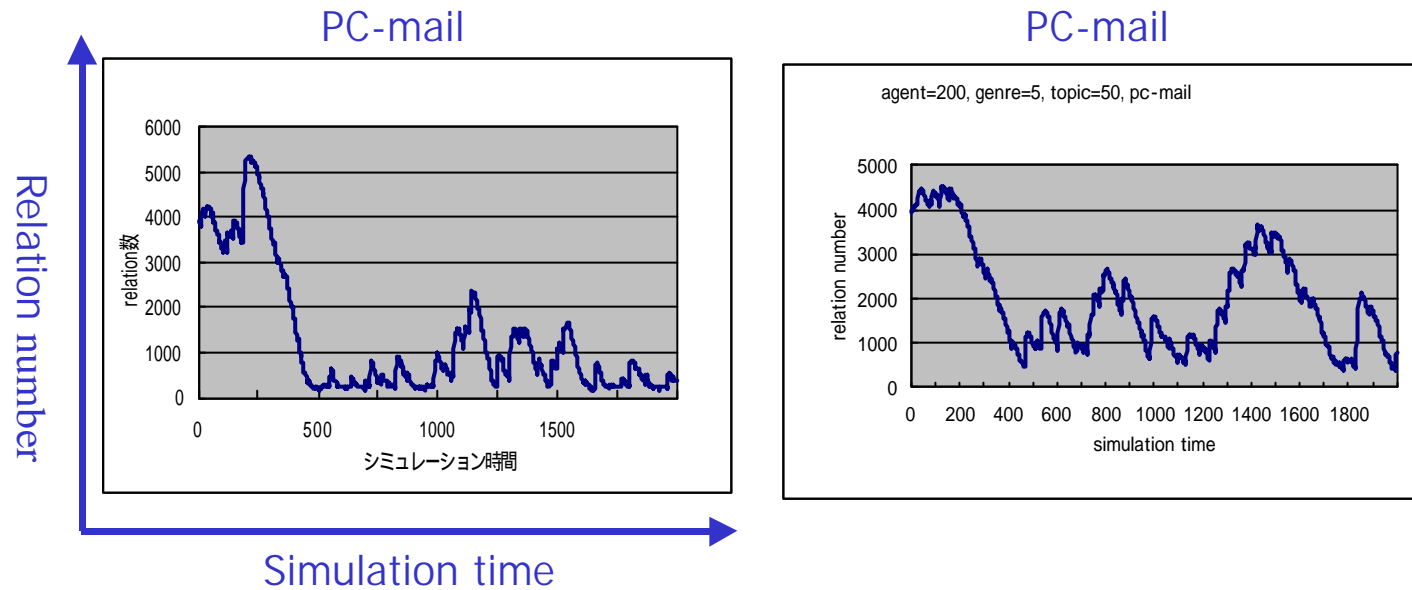
Dependency on existing relation in communication

Telephon	RG	RT			100%
PC	RG	RT	G	T	50%
Mobile	R	G	T		33%

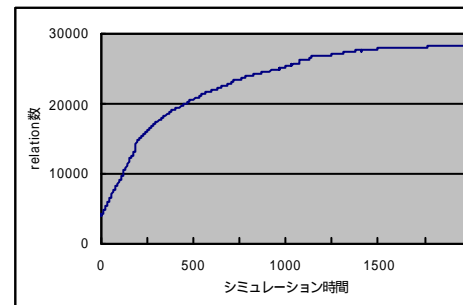
Reduction of a communication barrier emergence of Hello Message
 Communication promote communication Relation Fixation

Observation (2)

In PC communication, topic sensitivity emerges in Society



Telephone



Mobile

condition of simulation
agent=200
genre=5
topic=50

Discussion

Mobile Communication

The flexibility of communication increases
Communication is promoted. (e.g. "hello message")
Communication accelerates communication
A relation is fixed.



Mobile media are selective relation formation media

Discussion

PC Communication

It is sensitive for Topic emergence
Explosive circulation of temporary topics



The generating mechanism of chain mail is
in the character of mail.

Summary

Mobile communications have tendency to fix communication company

PC communications have sensitivity for topic emergence

Future Works

Application to actual society
By research of Mail transmission Log

Analysis of the detailed mechanism of Topic sensitivity
in PC-mail
By analysis of detailed conditions of PC-mail simulation