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Dynamics of networks and collective

How collective emerge from networks (or not)?

How interpersonal emerge from collective (or not)?

1. Categories: persons, resources, collective, social networks

2. Emergence of collective

3. Emergence of interpersonal relationships

Embedding and Decoupling: "emergentists" concepts

Embeddedness (Polanyi, Granovetter, etc.) dependence of a type of activity in relation to broader social structures. Example: economic activity is embedded in social structures.

Decoupling (White): Reciprocal: getting autonomy. Example: a "market" becomes autonomous in relation to networks that sustain it.

By extension: emergence or dissolution of social forms with respect to what constitutes them or what they a part of.

Dissolution of a level of action: embeddedness



Emergence d'un niveau d'action : découplage



Space of social phenomena

Entities and phenomena studied are deployed in a three-dimensional space:

- Mass (number of entities considered)
- Duration
- Generality (number of collectives involved)

For a given period, resources have a relevance area that unfolds in these three dimensions.

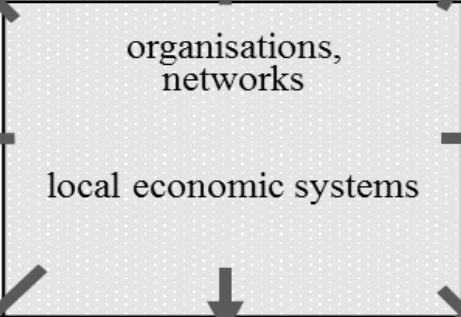
Examples for mass:

Shopping list to the person who established it (1)

Reciprocal knowledge and involvement of two persons (2)

Operating rules of an association (n)

Table 1. Typology of Social Phenomena by Magnitude and Duration

Scale of time (Order of magnitude)	I short time, immediate or very short term	II biographical time (< human lifespan)	III historical time (> human lifespan)
1 interaction (a few dozen at most)	interactions	life stories, lasting relationships (networks, communities, groups, families)	family lineages
2 organisation, action system, network, (a few thousand at most)	group assemblies, shows, conferences, sound volumes, environments	<div style="text-align: center;">  <p>organisations, networks</p> <p>local economic systems</p> </div>	<div style="text-align: center;"> <p>dynasties, religious movements</p> <p>villages / small towns</p> </div>
3 mass	media events, or concerning large organisations, institutions	<div style="text-align: center;"> <p>creation or evolution of large companies or institutions (schools, the army, etc).</p> <p>cities, transportation infrastructure</p> </div>	<div style="text-align: center;"> <p>creation of institutions (States, markets, schools, science, etc).</p> <p>cities, transportation infrastructure</p> </div>

Sketching a static ontology



« Elementary » social entities

1. **Person**: human conscious to exist as such and having (basis of) meanings that position her in the social world.

("An individual of the human species, regardless of gender (...) This individual [is] defined by his awareness of existing, as biological, moral and social being"
Treasury of the French Language)

2. **Animal persons**: living beings with sensitivity with which human beings can interact on the basis of a certain sort of sharing of emotions and meanings.
Problem of thresholds. Problem of non animal life.

3. **Non persons (resources)**: entities not regarded as having sensitivity.

Statutes of the entities in the interaction from the perspective of persons

The status depends on the interaction between the entity concerned and persons.

Instrumental resource (constraint/stake) : to interact with entities also considered as resources



LES TABLES DE MULTIPLICATION

Table de 2

$2 \times 0 = 0$
 $2 \times 1 = 2$
 $2 \times 2 = 4$
 $2 \times 3 = 6$
 $2 \times 4 = 8$
 $2 \times 5 = 10$
 $2 \times 6 = 12$
 $2 \times 7 = 14$
 $2 \times 8 = 16$
 $2 \times 9 = 18$
 $2 \times 10 = 20$

Table de 3

$3 \times 0 = 0$
 $3 \times 1 = 3$
 $3 \times 2 = 6$
 $3 \times 3 = 9$
 $3 \times 4 = 12$
 $3 \times 5 = 15$
 $3 \times 6 = 18$
 $3 \times 7 = 21$
 $3 \times 8 = 24$
 $3 \times 9 = 27$
 $3 \times 10 = 30$

Table de 4

$4 \times 0 = 0$
 $4 \times 1 = 4$
 $4 \times 2 = 8$
 $4 \times 3 = 12$
 $4 \times 4 = 16$
 $4 \times 5 = 20$
 $4 \times 6 = 24$
 $4 \times 7 = 28$
 $4 \times 8 = 32$
 $4 \times 9 = 36$
 $4 \times 10 = 40$

Table de 5

$5 \times 0 = 0$
 $5 \times 1 = 5$
 $5 \times 2 = 10$
 $5 \times 3 = 15$
 $5 \times 4 = 20$
 $5 \times 5 = 25$
 $5 \times 6 = 30$
 $5 \times 7 = 35$
 $5 \times 8 = 40$
 $5 \times 9 = 45$
 $5 \times 10 = 50$

Statutes of the entities in the interaction from the perspective of persons

2. Coordination resource (constraint/stake): for interacting with other persons



Tu ne tueras point



Statutes of the entities in the interaction from the perspective of persons

Interaction partner: reciprocity of action



Typology of elementary social forms: simplified version

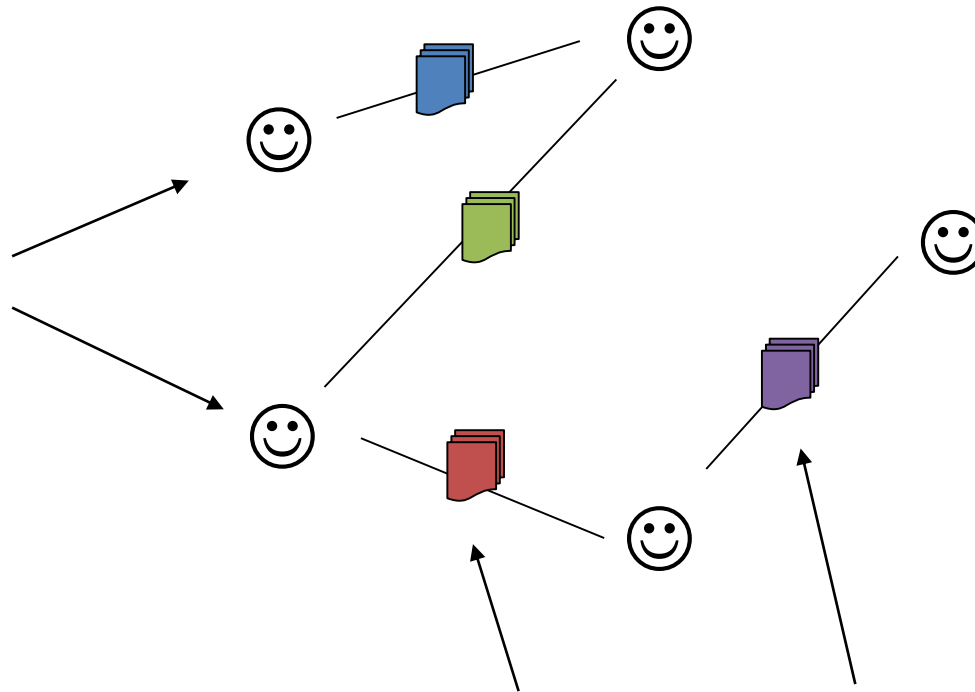
1. **Person**: human conscious to exist as such and having (basis of) meanings that position her in the social world.
2. **Resources** (resources / constraints / stakes / coordination): All what persons can mobilize, suffering from, what they may be interested in, which makes it possible interactions with other persons. The resource status (instrumental), constraint, stake, or coordination (or other) depends on the interaction between the entity concerned and the persons

Social forms: Compounds of people, relationships and resources

Collective: Sets of people sharing resources. When some of the resources produce specific coordination with all concerned persons, a decoupling process begins. Beyond a certain level of decoupling a group becomes an explicit class. Possible empirical indicators (not exhaustive): existence of a name, a declaration of belonging from participants, explicit boundaries.

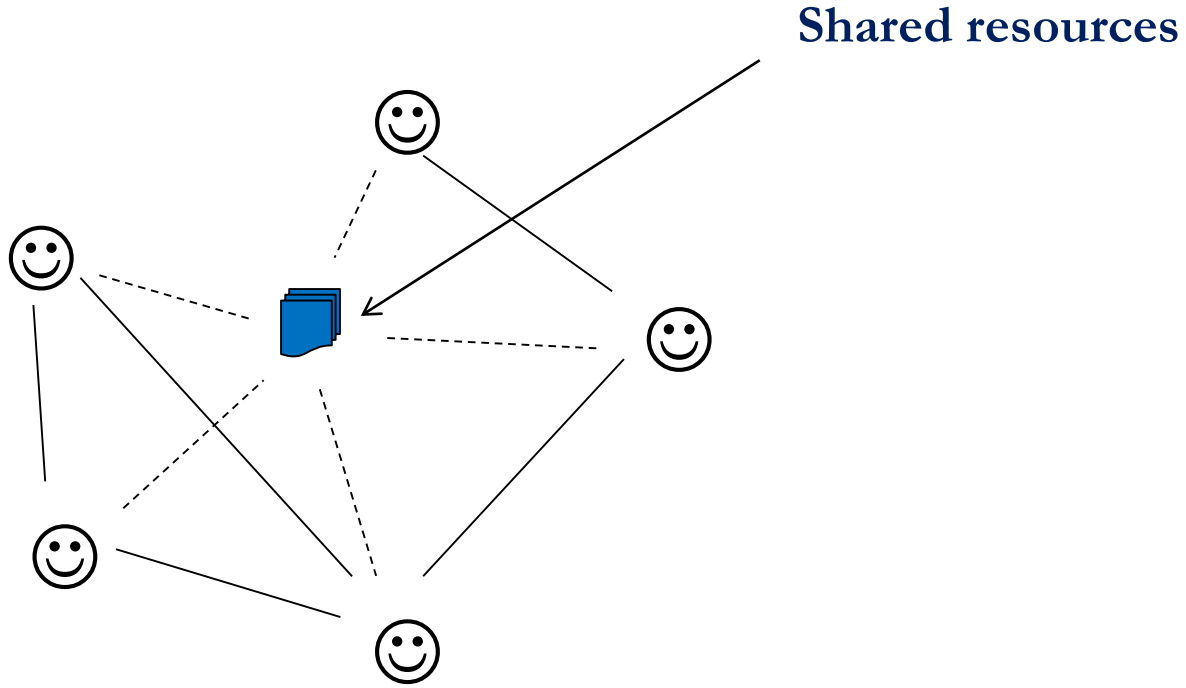
Social Networks: Sets of dyadic collective (linking two persons, i.e. interpersonal relationships).

Persons

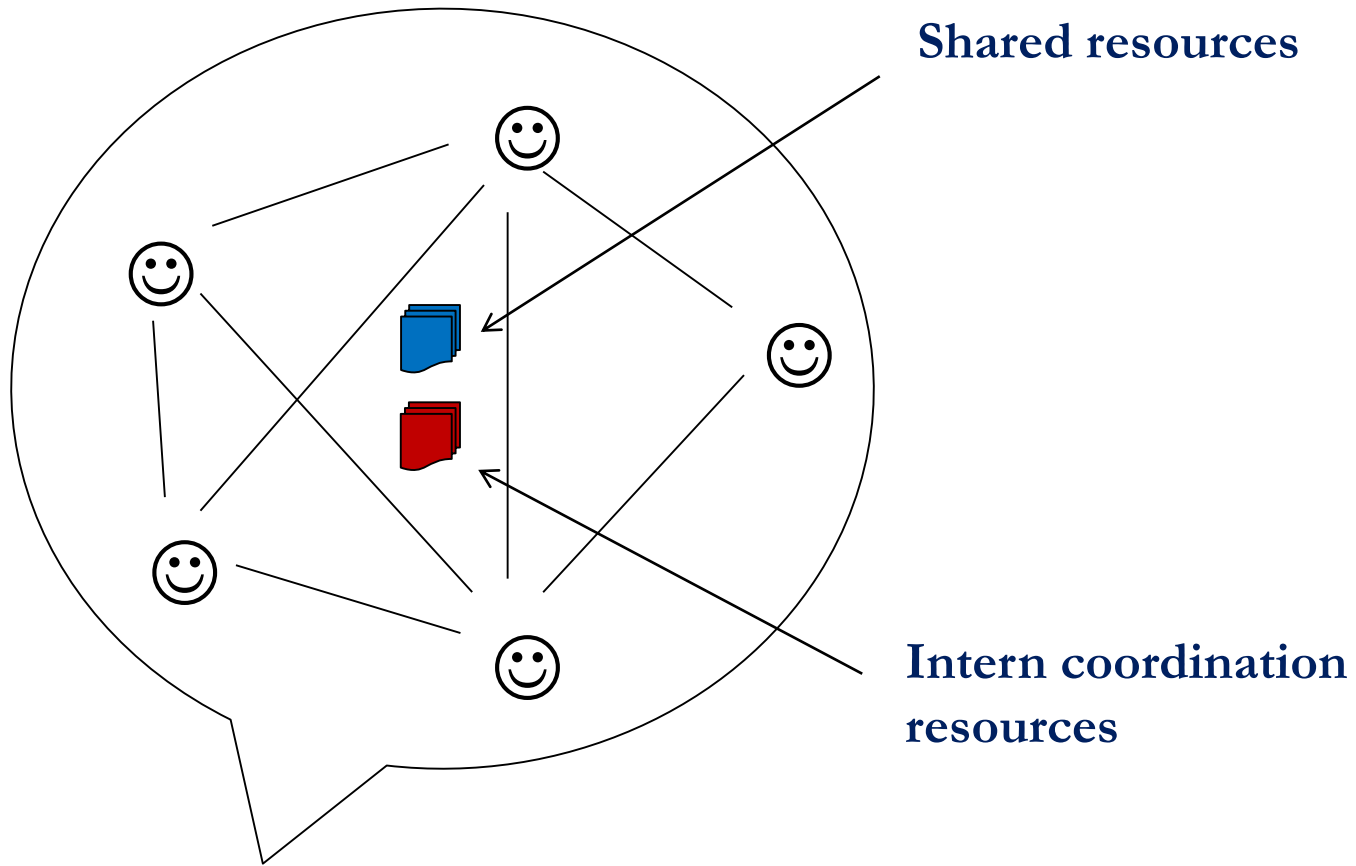


Dyadic resources of coordination

Network



Latent collective



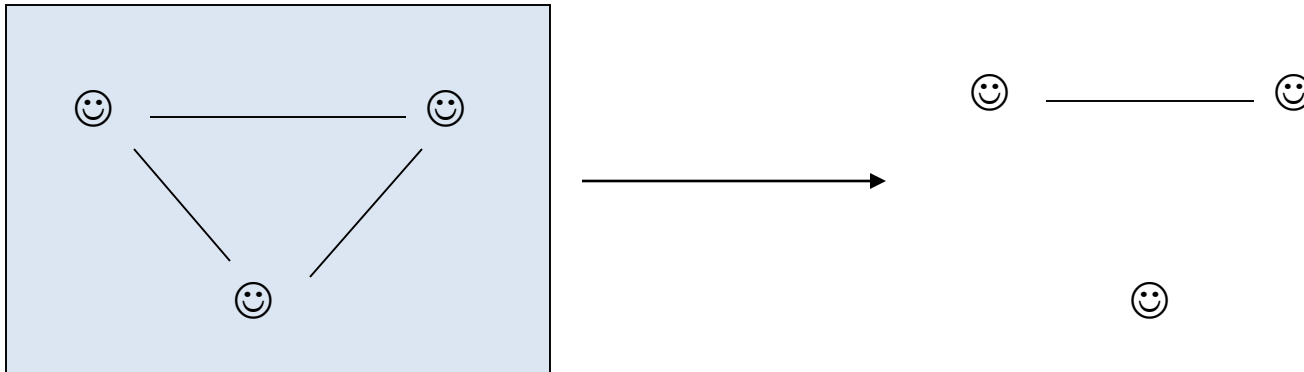
Boundaries, name

Explicite collective

Emergence of interpersonal relationships

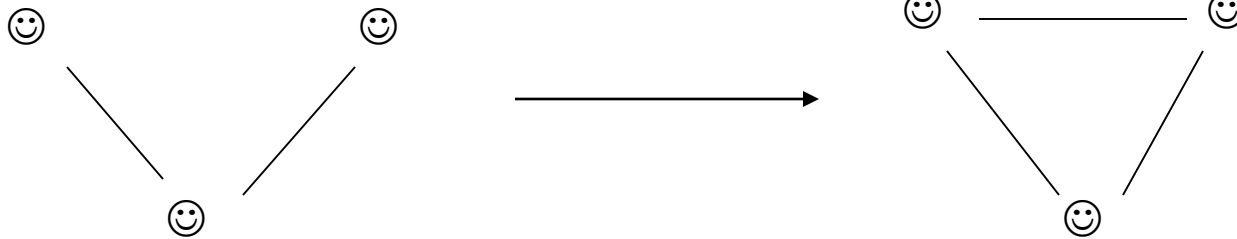
Where do the relationships come from?

1. From collective to relations



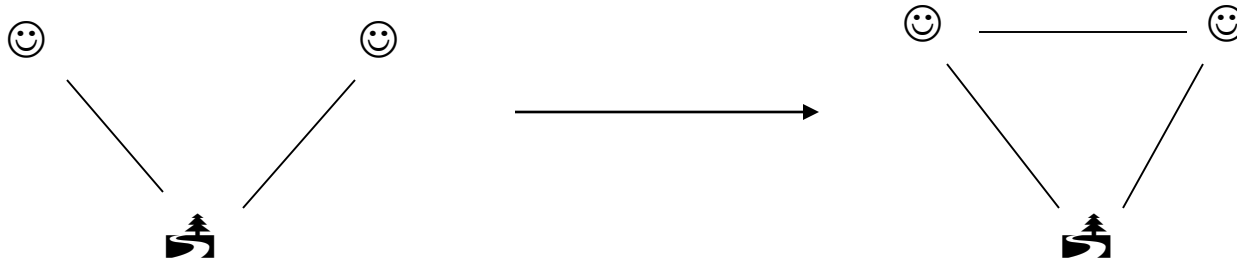
Where do the relationships come from?

2. From relations to relations



Where do the relationships come from?

3. From resources to relations

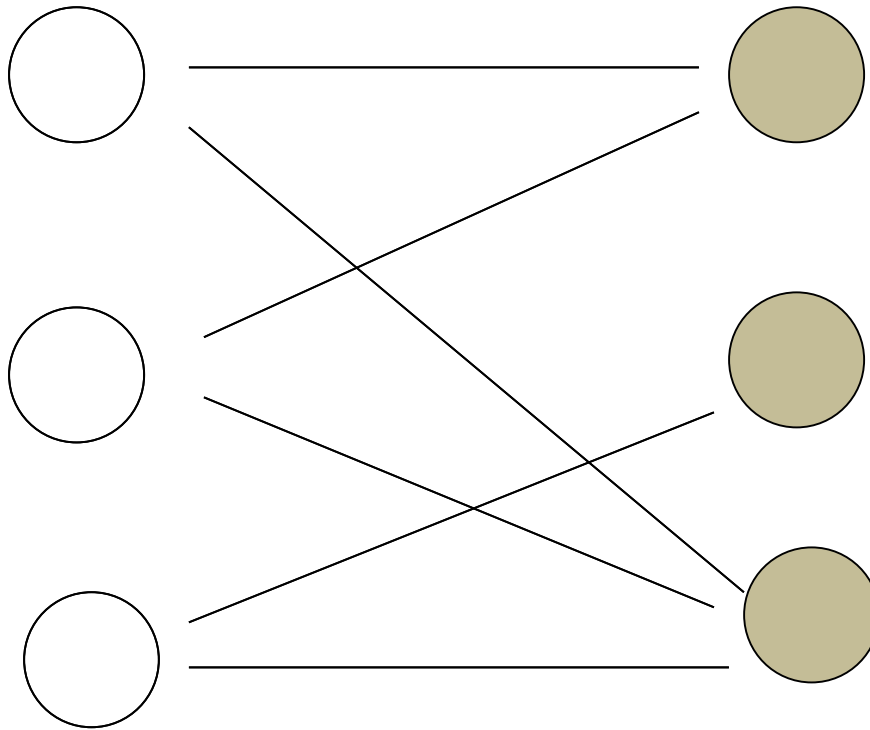


Process of emergence of collectives from the network:

- 1. External polarization (eg the markets in White, social classes for Marx)**
- 2. Grouping and densification (eg Mullins specialties and art worlds of Becker)**
- 3. Fragmentation (branching, Abbott)**

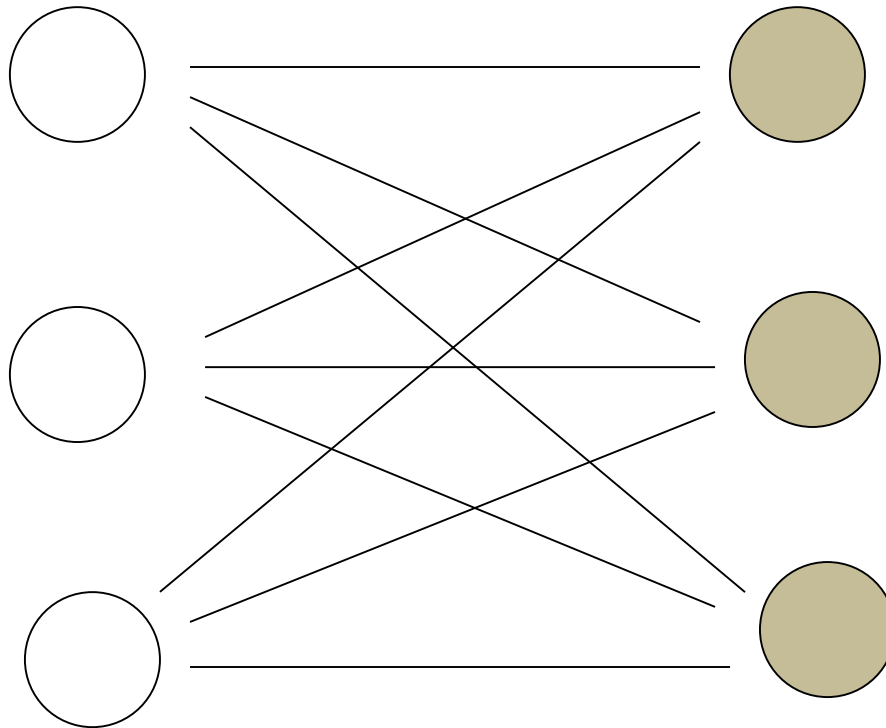
The Harrison White's theory of markets:

the market as emerging form of structural equivalence in economic networks



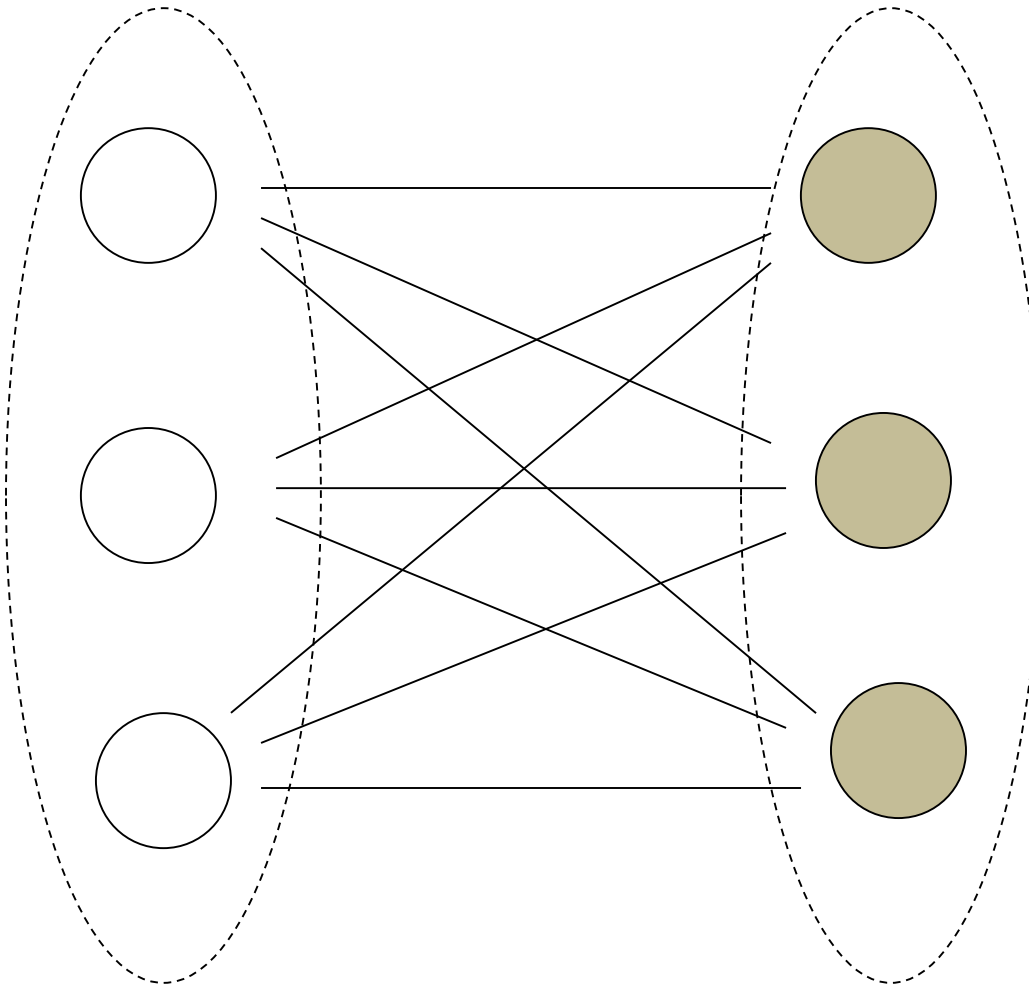
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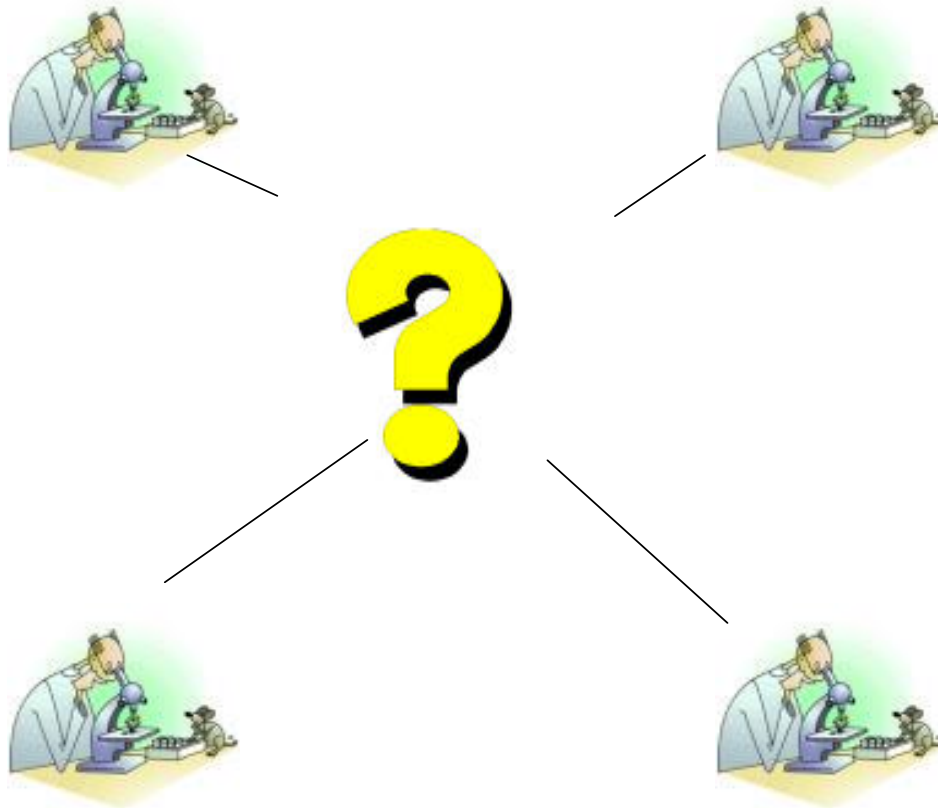


Densification process

**An example of decoupling of a collective
and construction of cognitive resources**

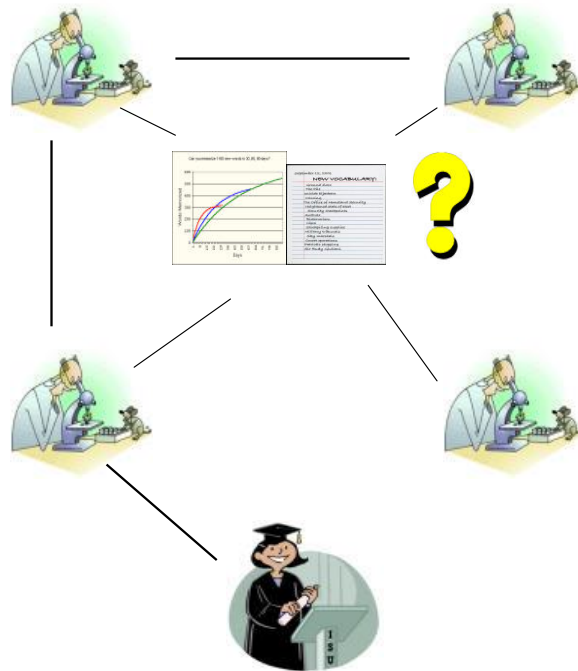
Nicholas Mullins, constitution science specialties (1972)

1. paradigmatic group:



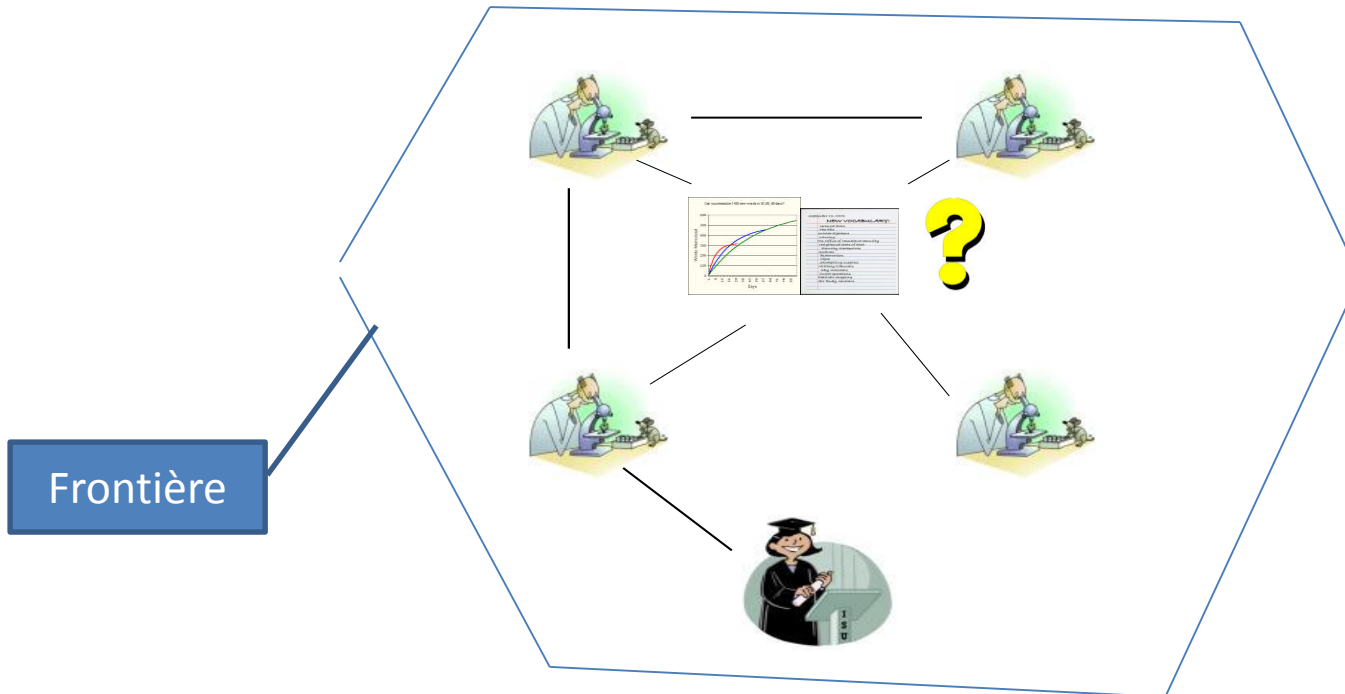
Nicholas Mullins (suite)

2. Communication network :



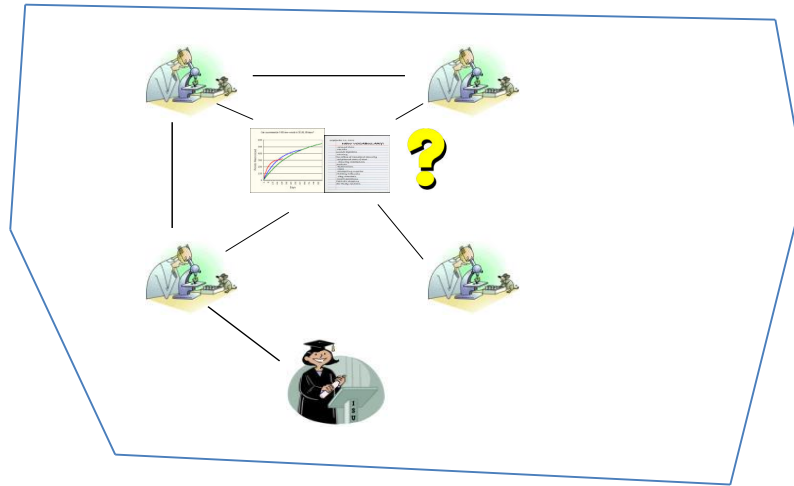
Nicholas Mullins (suite)

3. Cluster (explicit collective) :

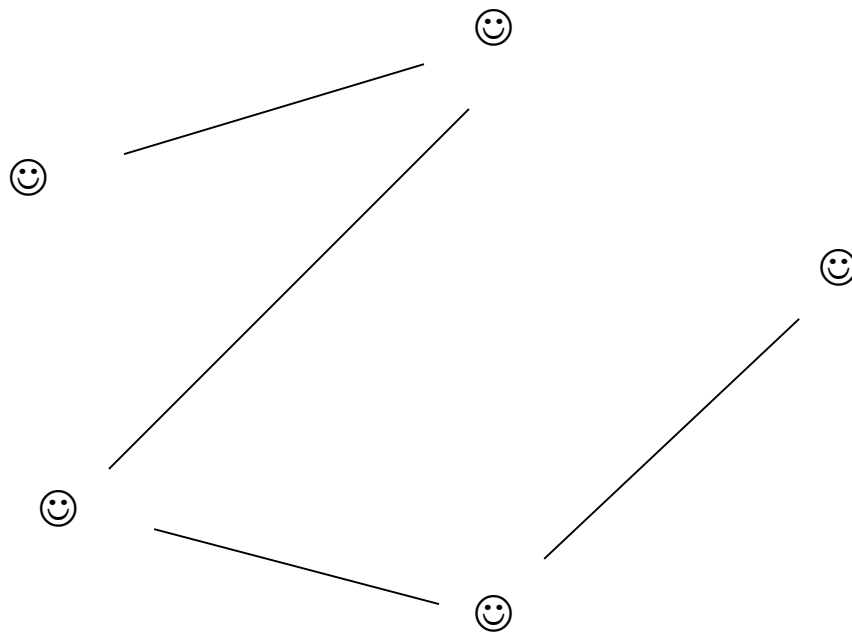


Nicholas Mullins (suite)

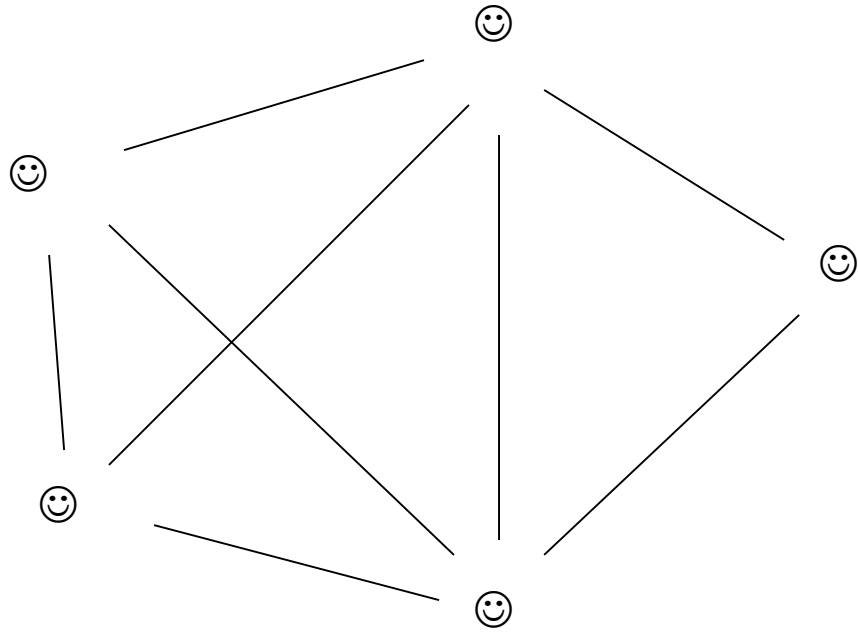
4. Specialty :



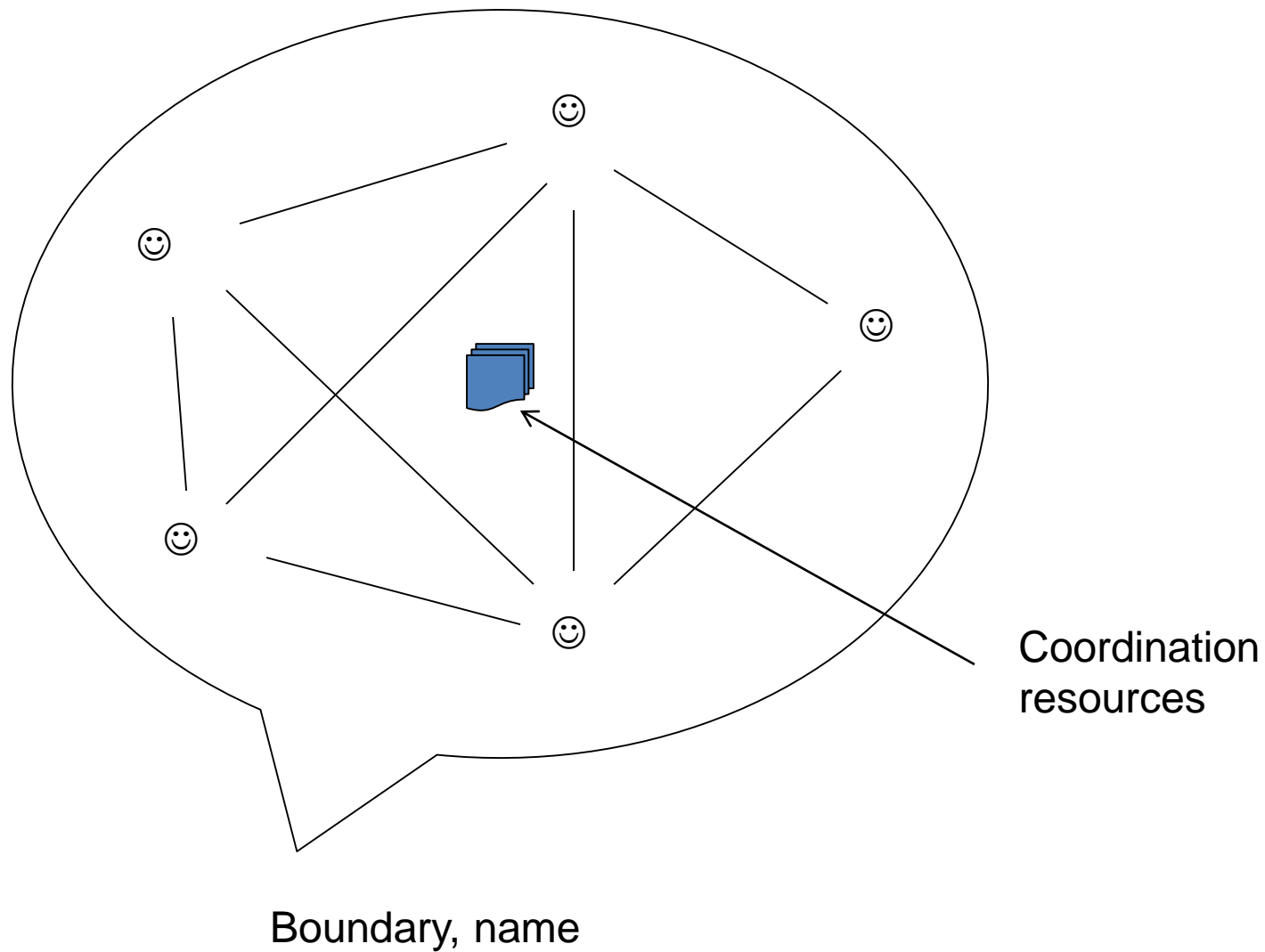
Densification: step 1



Densification: step 2, densification



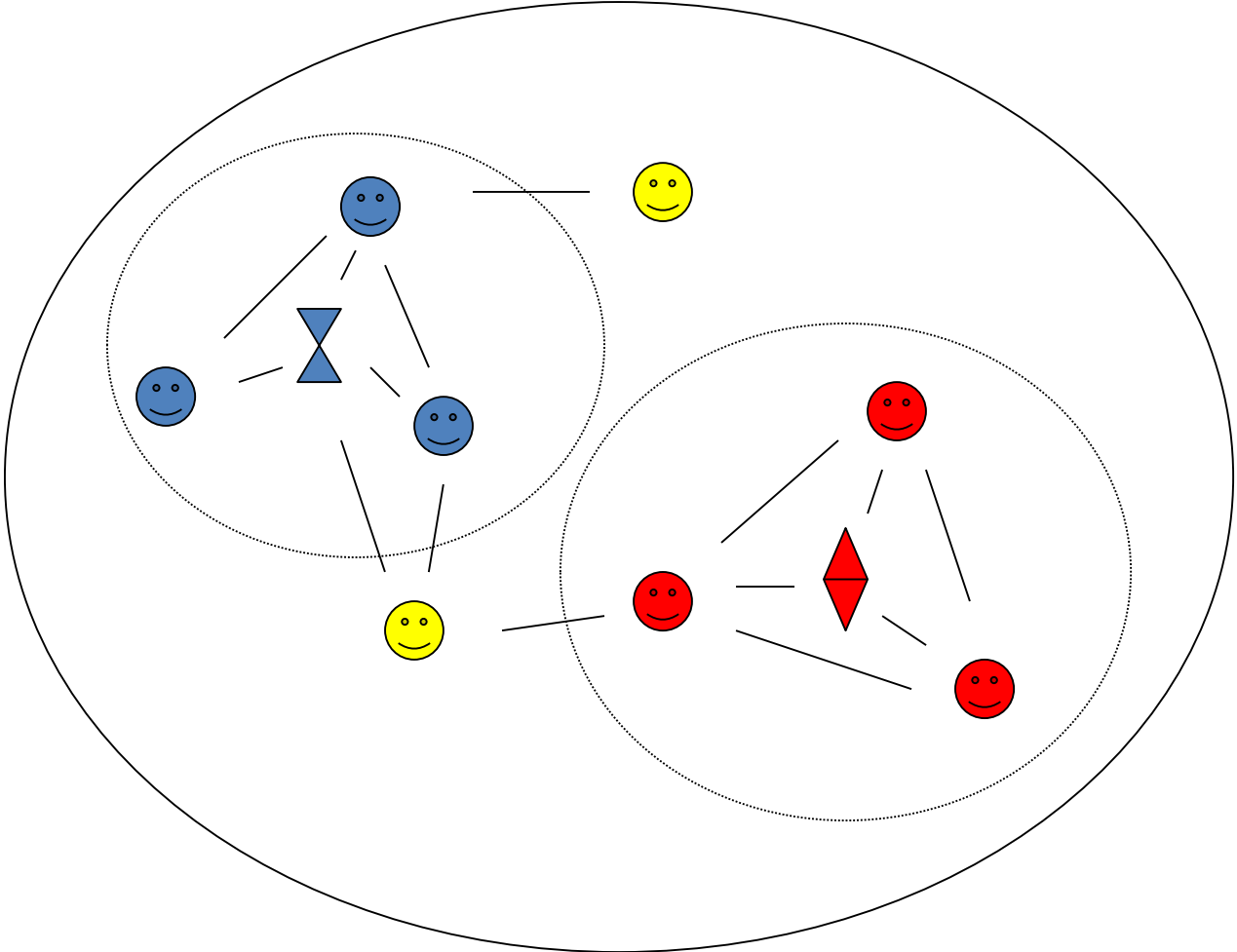
Densification: step 3, emerging of an explicit collective

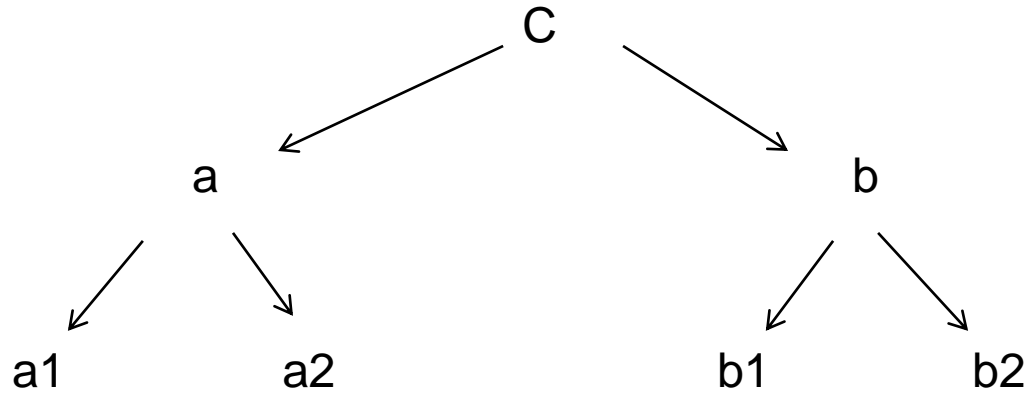


**The emergence of collective fragmentation of existing collective
(Internal polarization)**

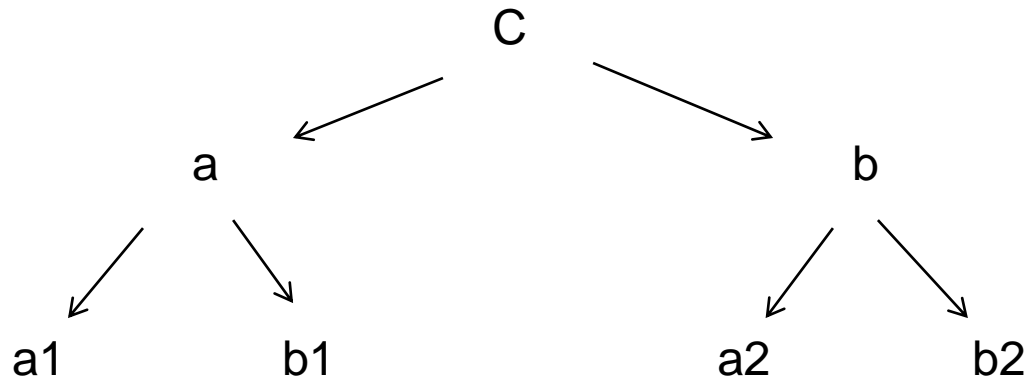
Mulkay and Edge, Abbott, etc.

Fragmentation

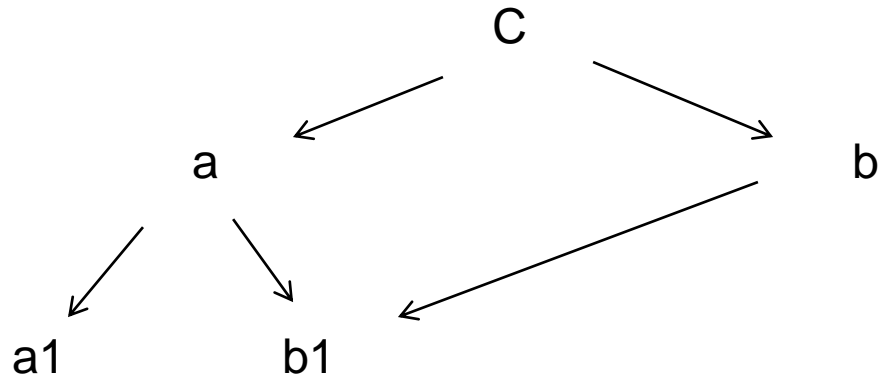




Simple fragmentation



Fractal fragmentation



Fractal fragmentation with reformulation

These examples from the networks and collectives are far from exhausting the variety of processes of emergence in the social world.

The emergence in SHS has specific characteristics still poorly formulated, such as entanglement of social forms and cognitive resources.

In the emergence of collective processes, often observed the presence of "collective entrepreneurs" who strive to make them exist.

Thank you

