

# Modélisation des transports collectifs informels : approche multi-agents du cas de Brazzaville

Léa Wester





Informal transports

Paratransit

Artisanal transports



Self-organized transport systems

Emergence

Limited information

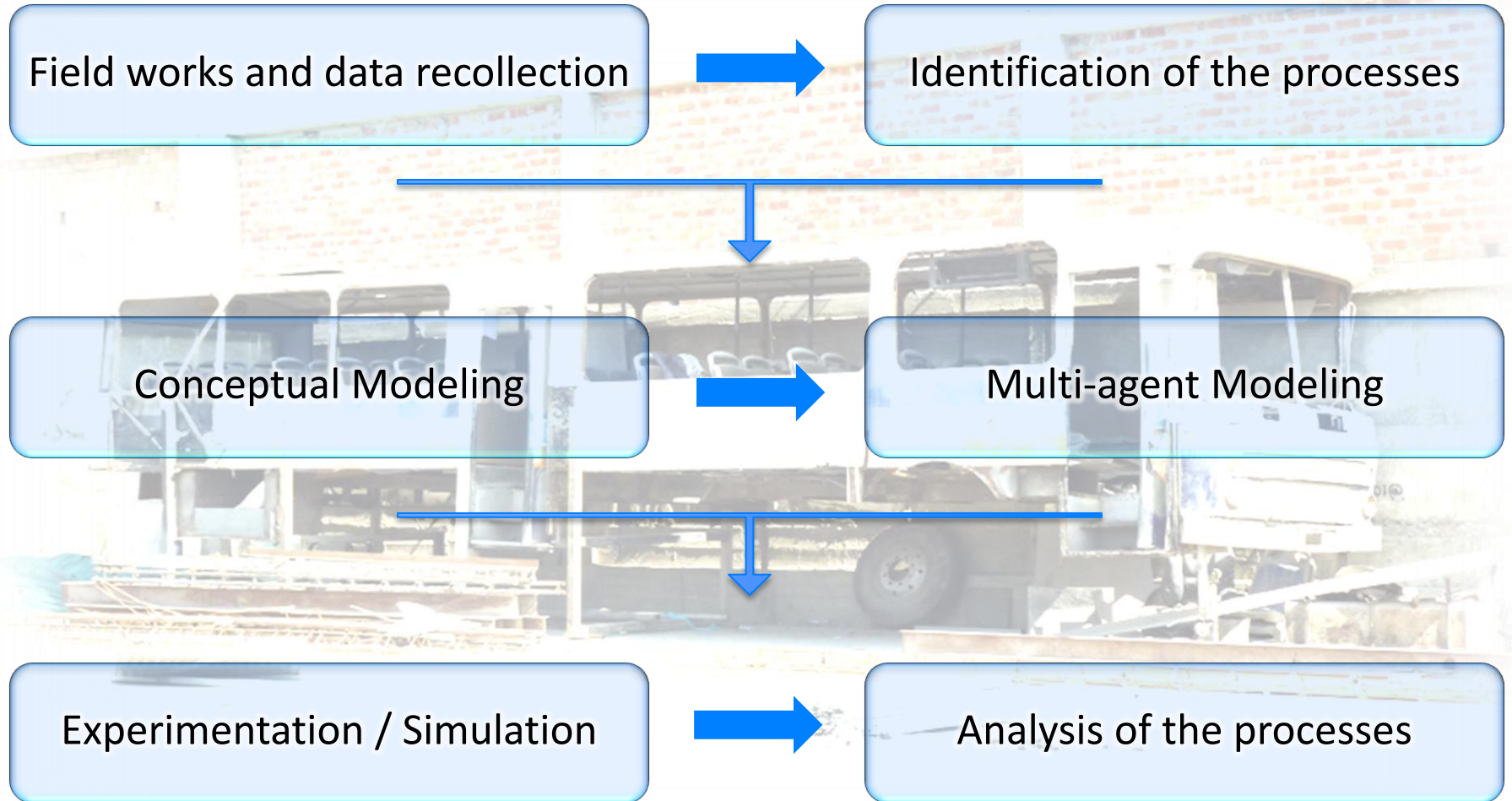
Adaptation

Caractériser les structures et les dynamiques spatiales  
des transports collectifs auto-organisés

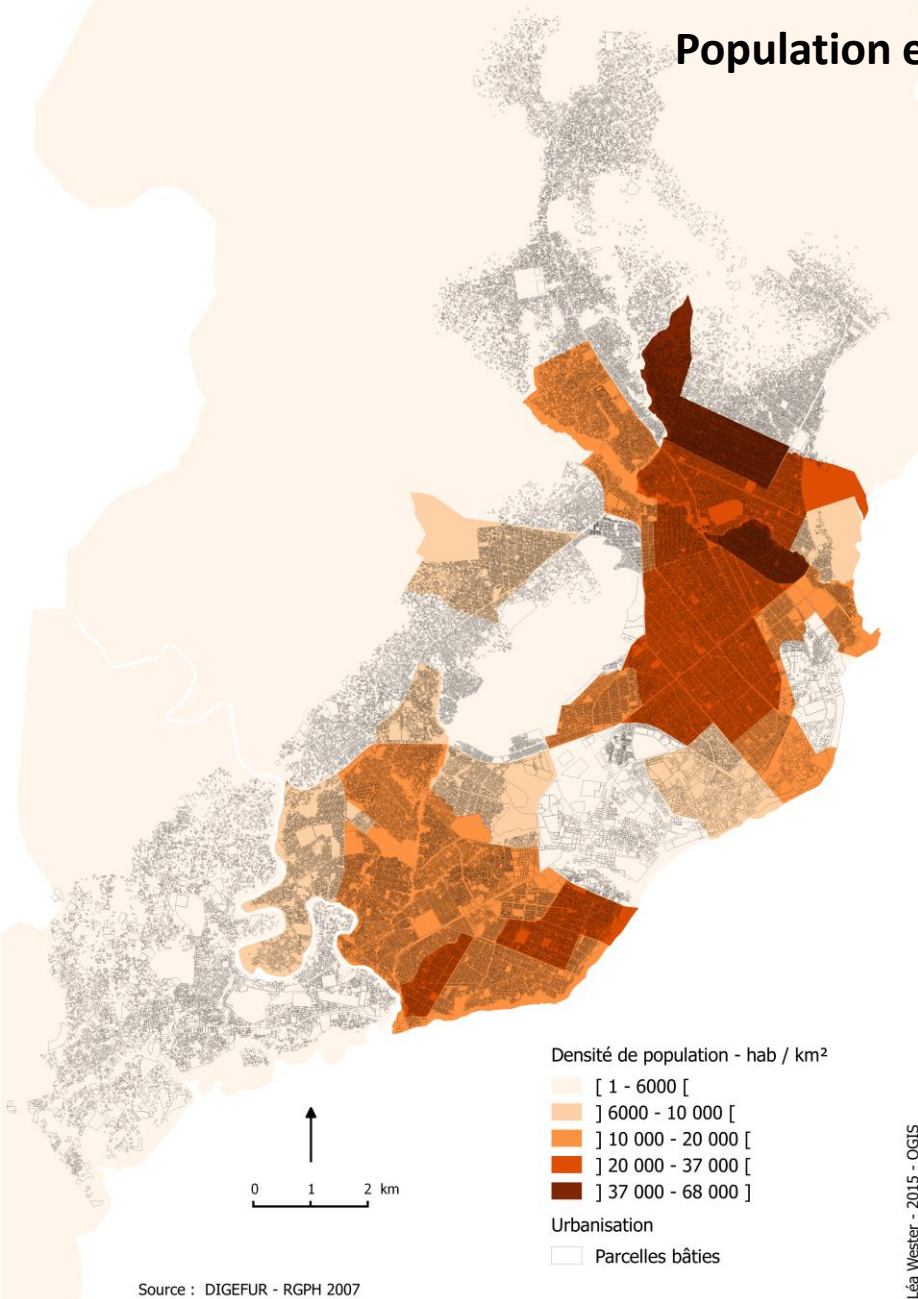
Stratégies individuelles



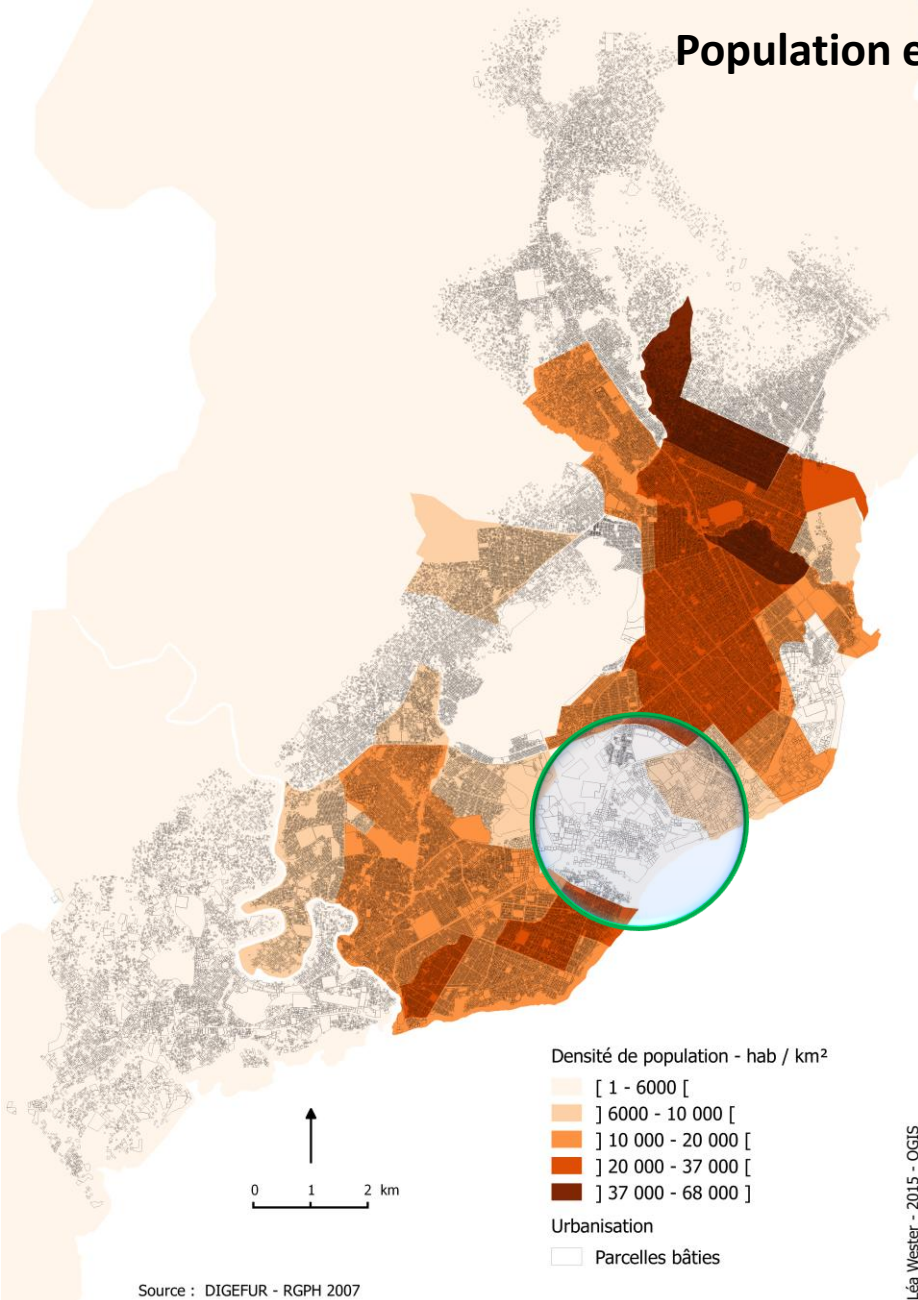
Structures / Dynamiques



Population et infrastructures



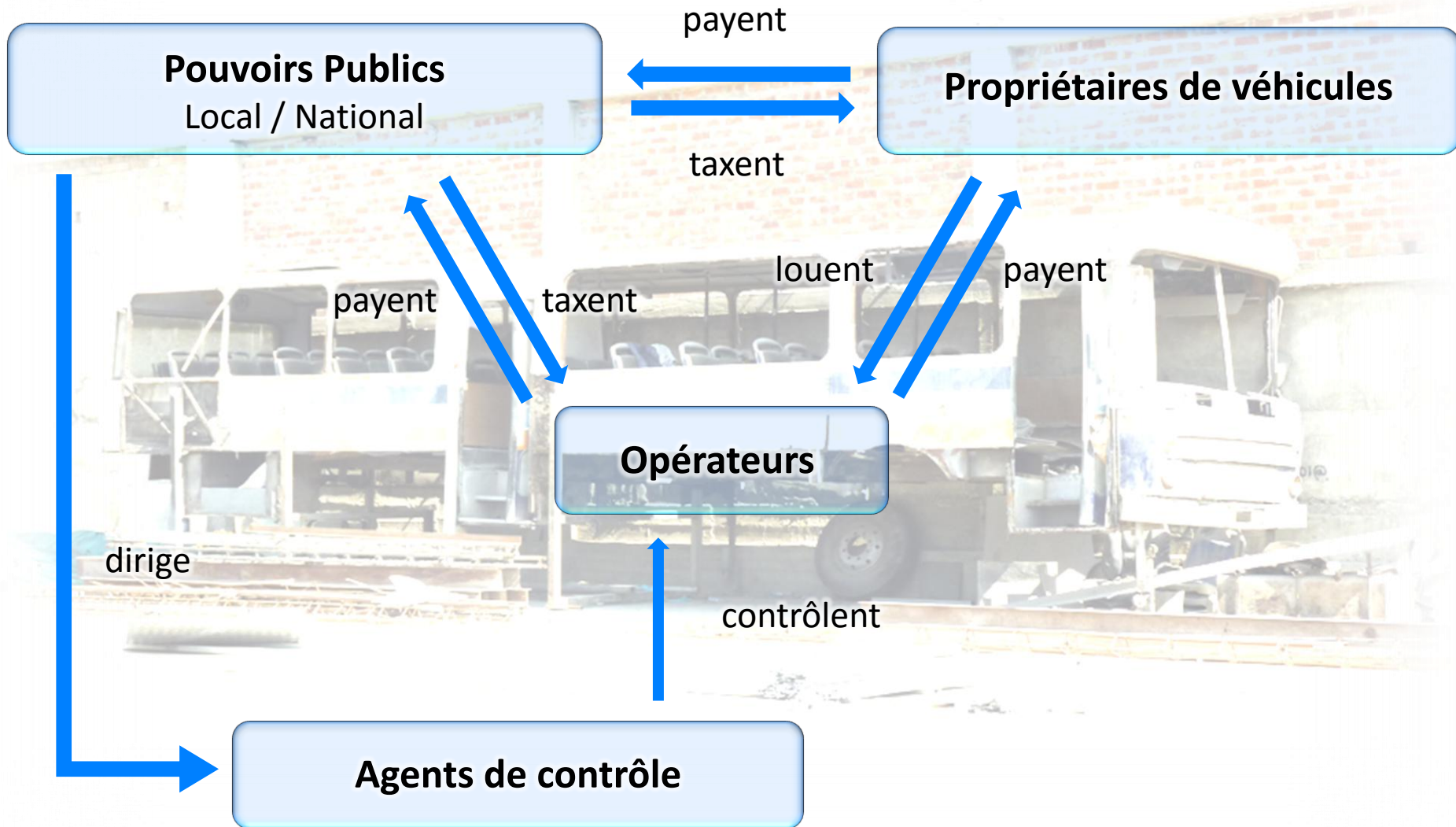
## Population et infrastructures



Léa Wester - 2015 - QGIS



Léa Wester - 2015 - QGIS





**ARRET 1**

**ARRET 2**

**Opérateurs**

**Destination ?**

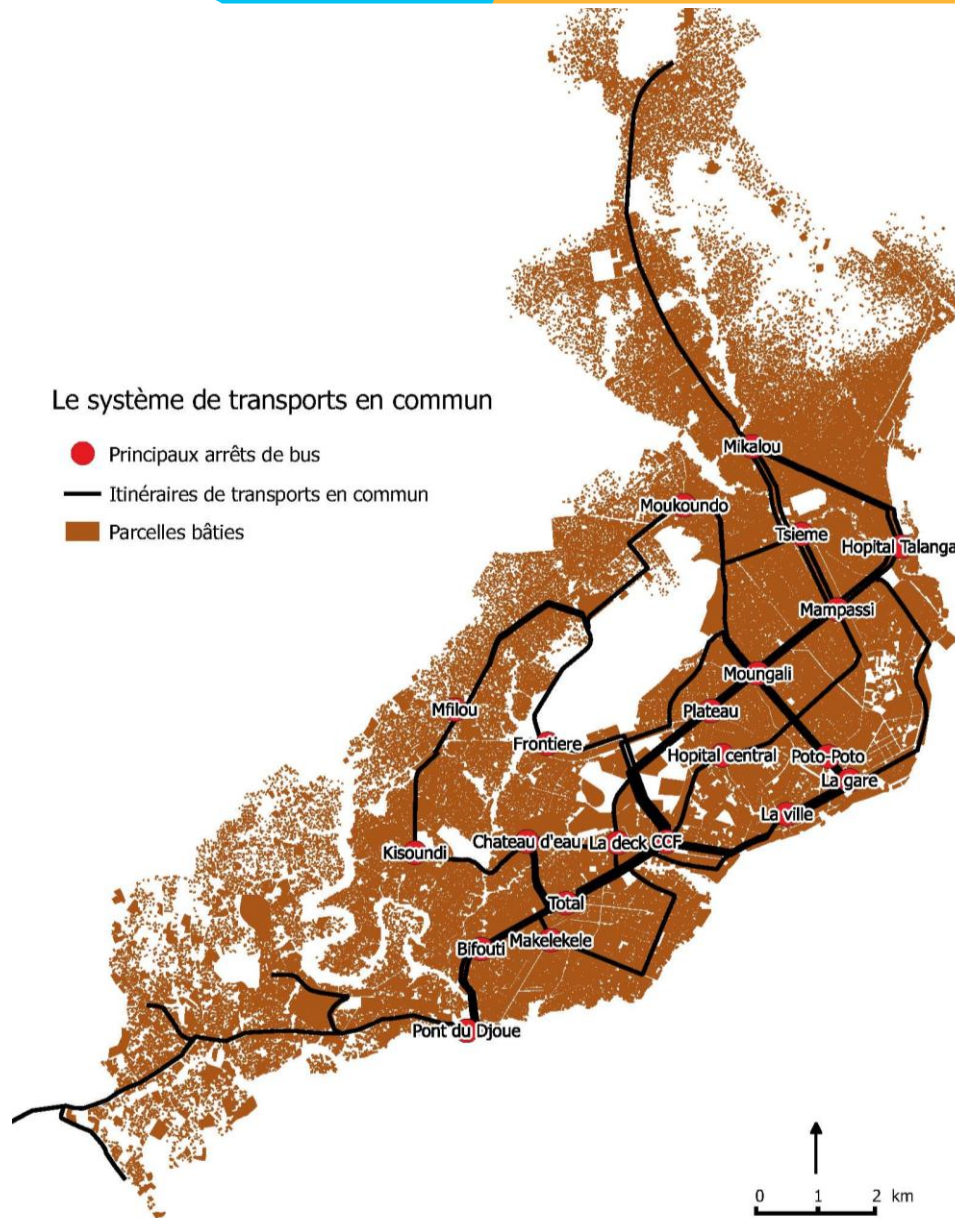
**Destination ?**

**Usagers**

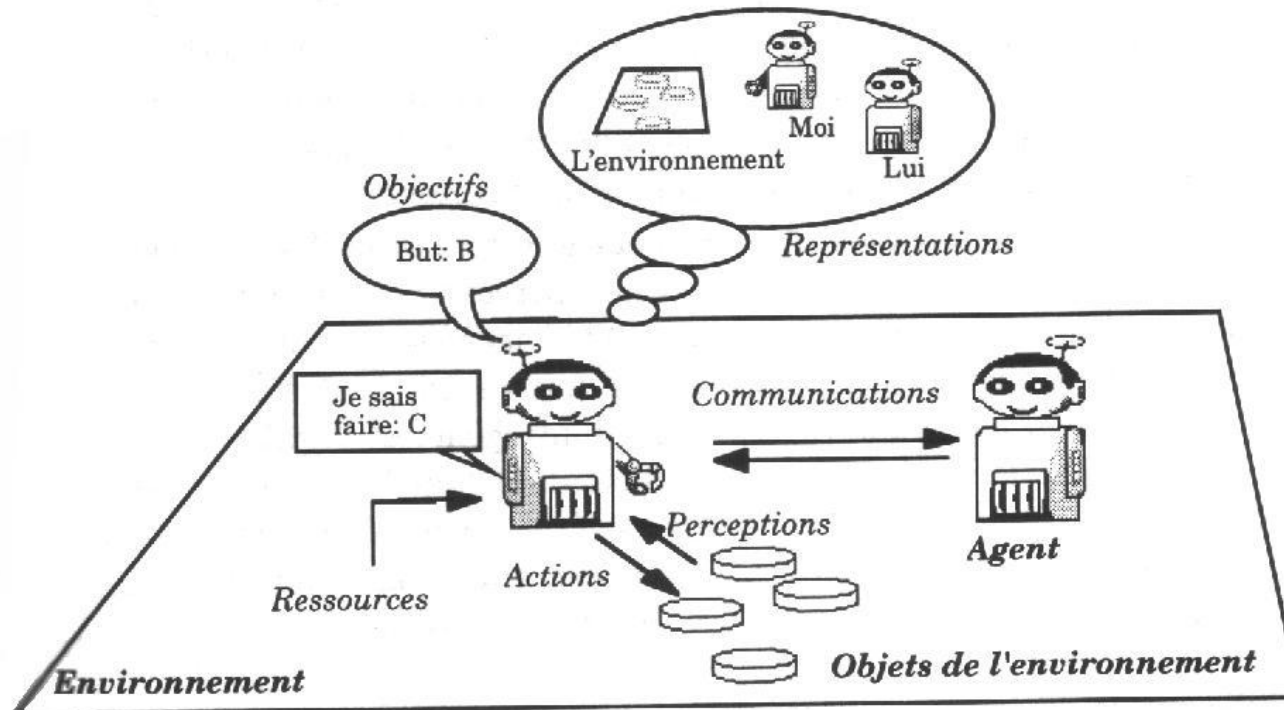
**Usagers**

### Le système de transports en commun

- Principaux arrêts de bus
- Itinéraires de transports en commun
- Parcelles bâties



# Modélisation Multi - Agents



(Ferber, 1995)

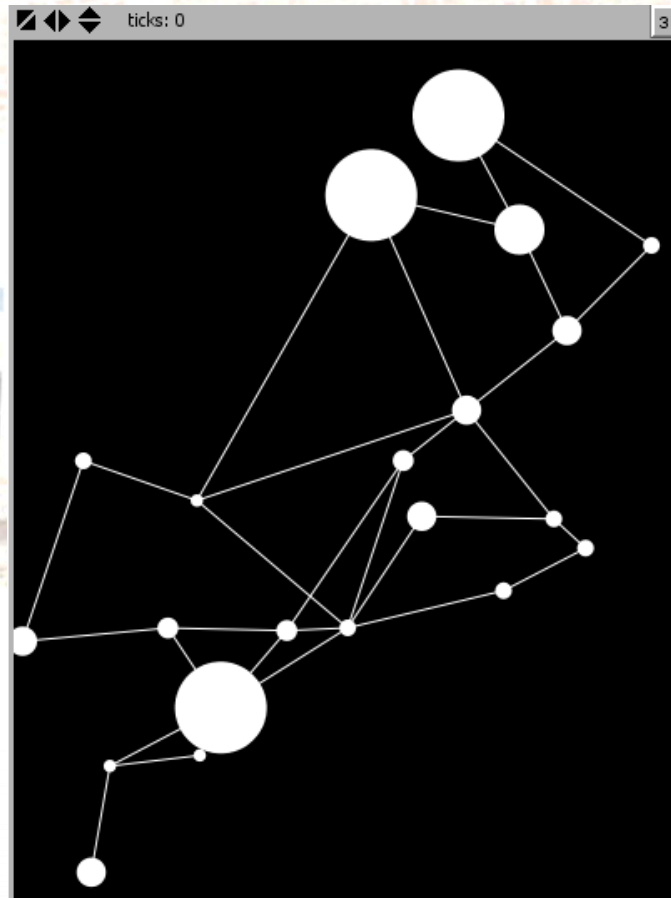
## Graphe

Points

Liens

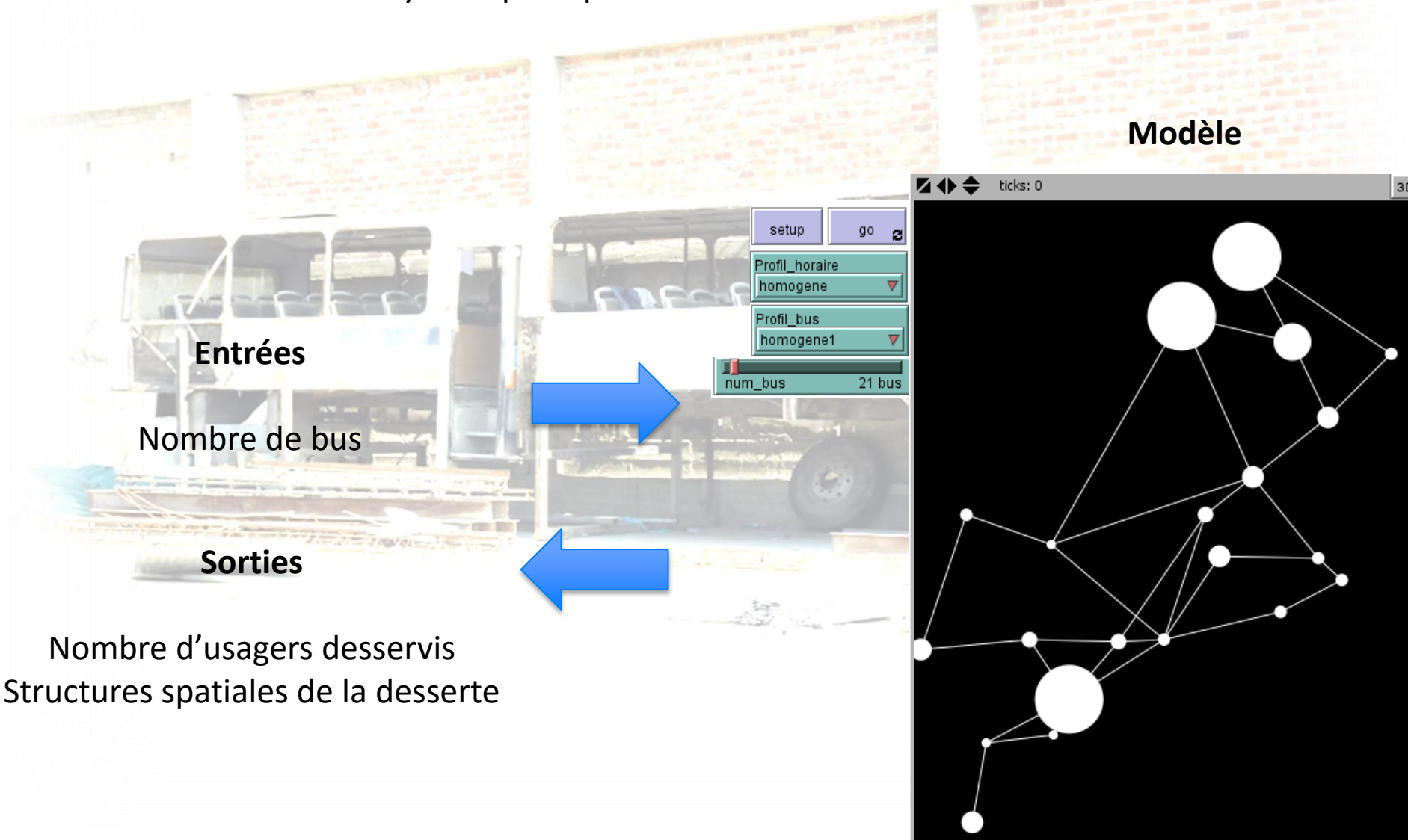
Demande

Routes possibles

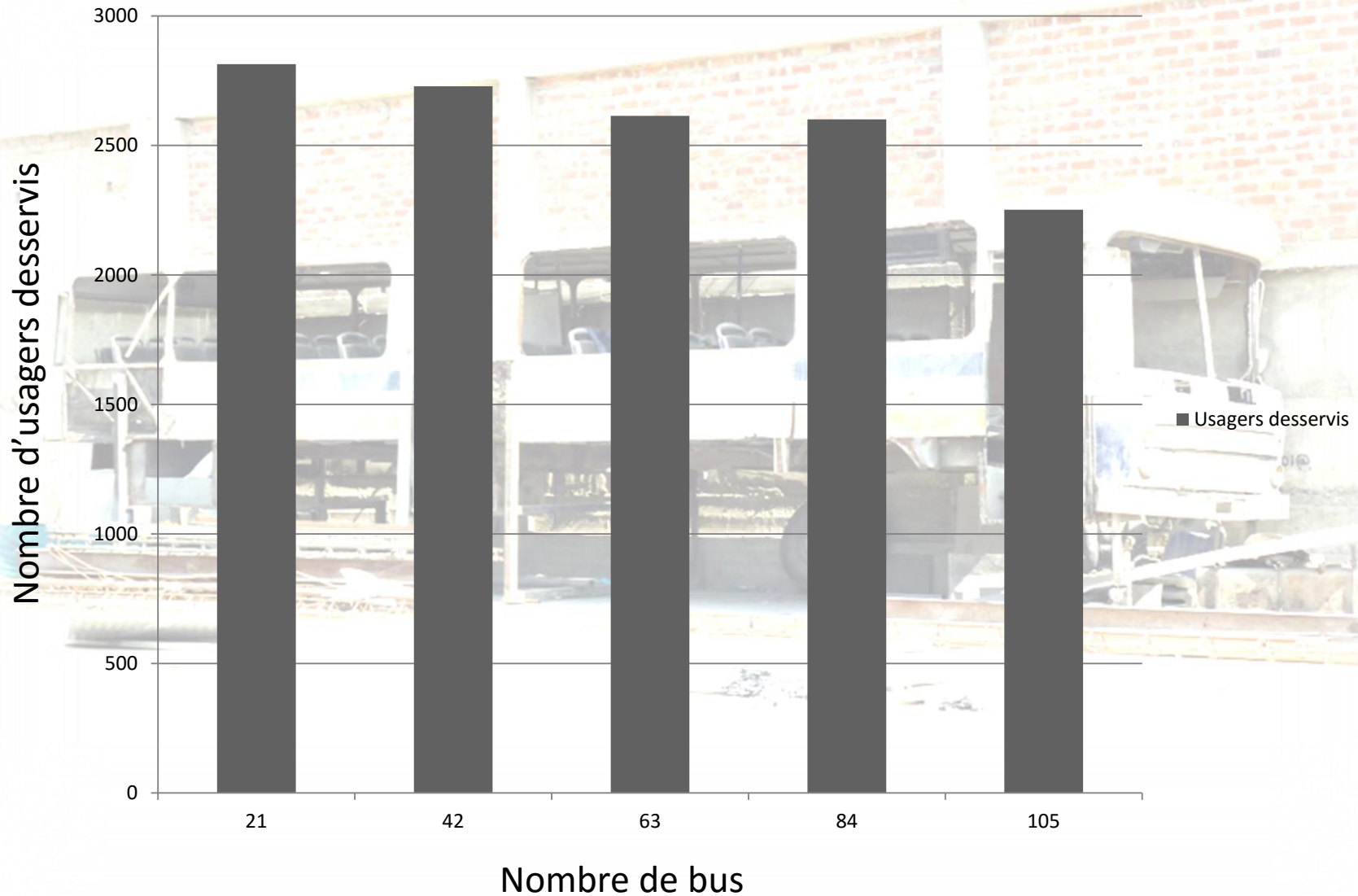




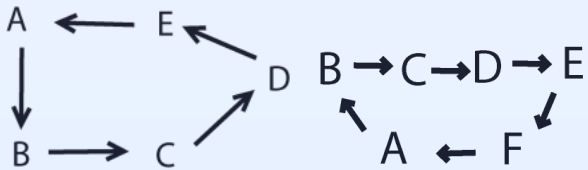
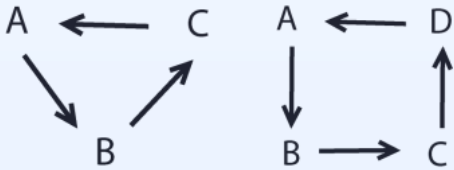
La stratégie de gestion des itinéraires génère différentes structures et dynamiques spatiales en fonction des conditions initiales



## Usagers desservis au cours d'une simulation



## Boucles

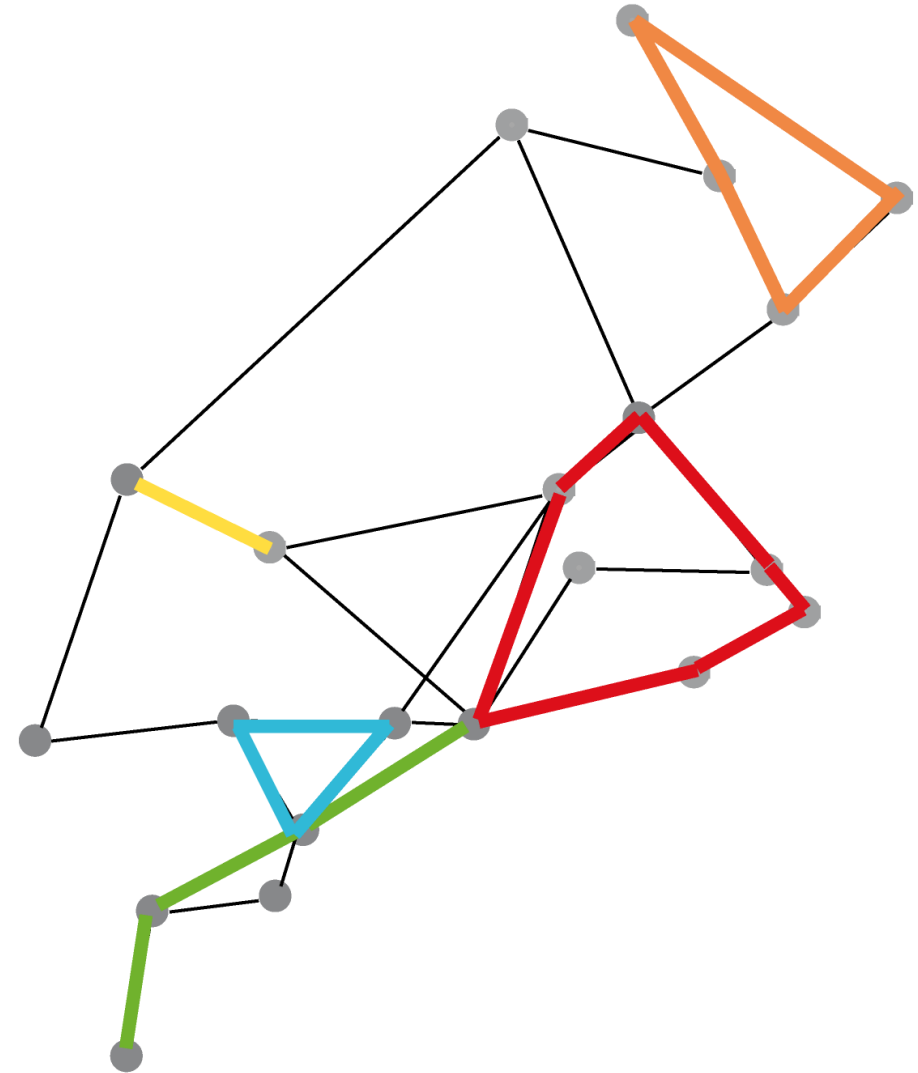


## Navettes

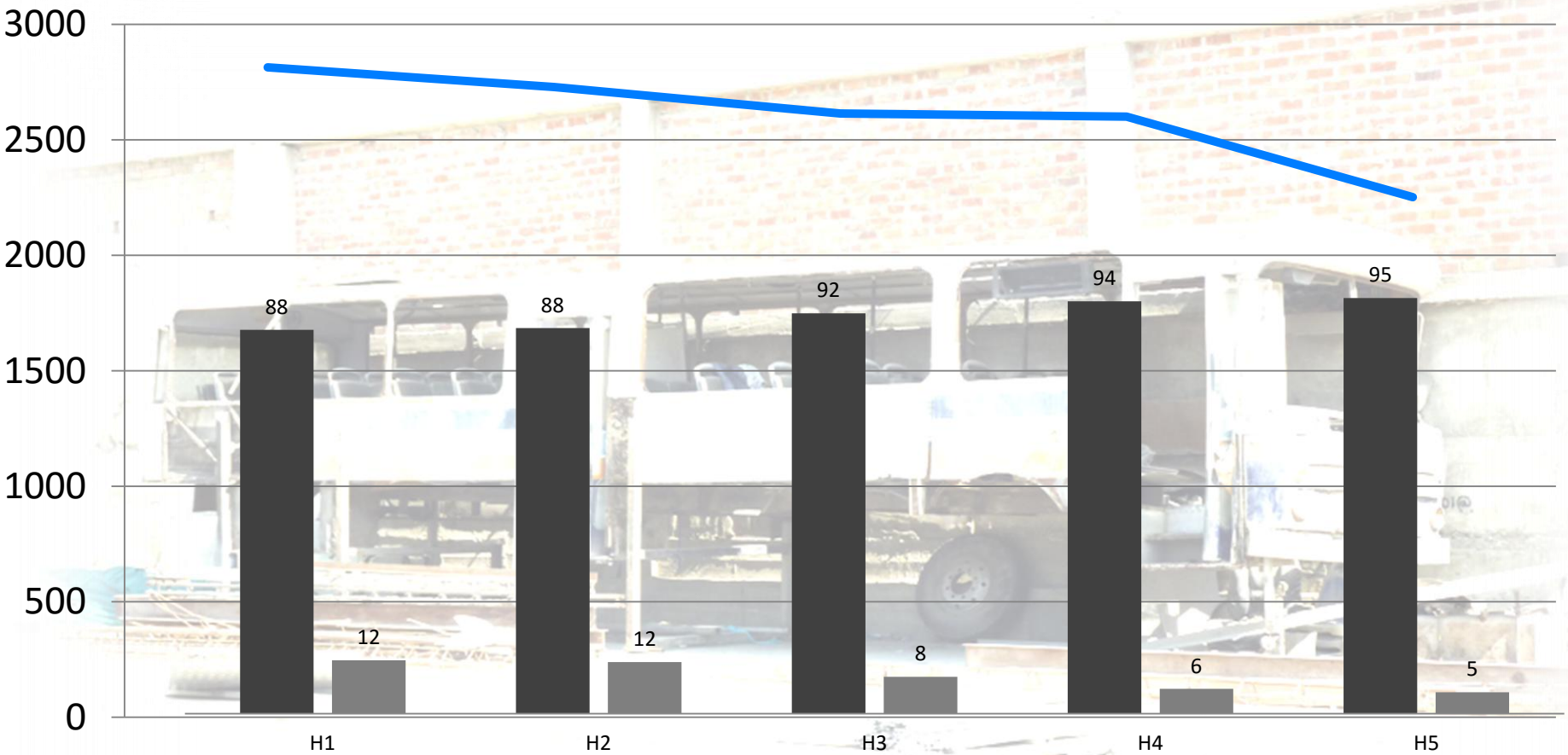
$A \rightleftarrows B \rightleftarrows C \rightleftarrows D$

$A \rightleftarrows B \rightleftarrows C \rightleftarrows D \rightleftarrows E$

$A \rightleftarrows B \rightleftarrows C \rightleftarrows D \rightleftarrows E \rightleftarrows F$



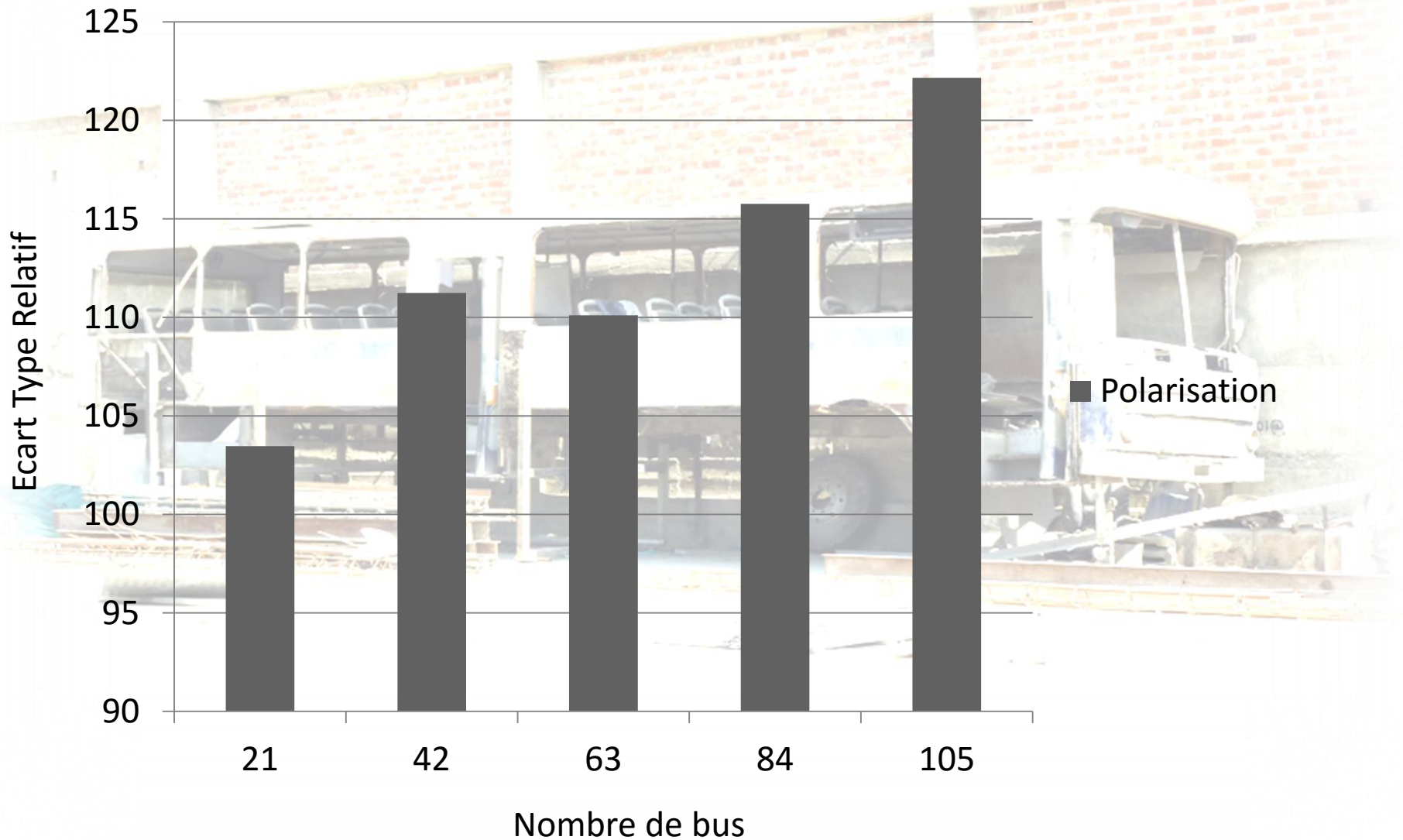


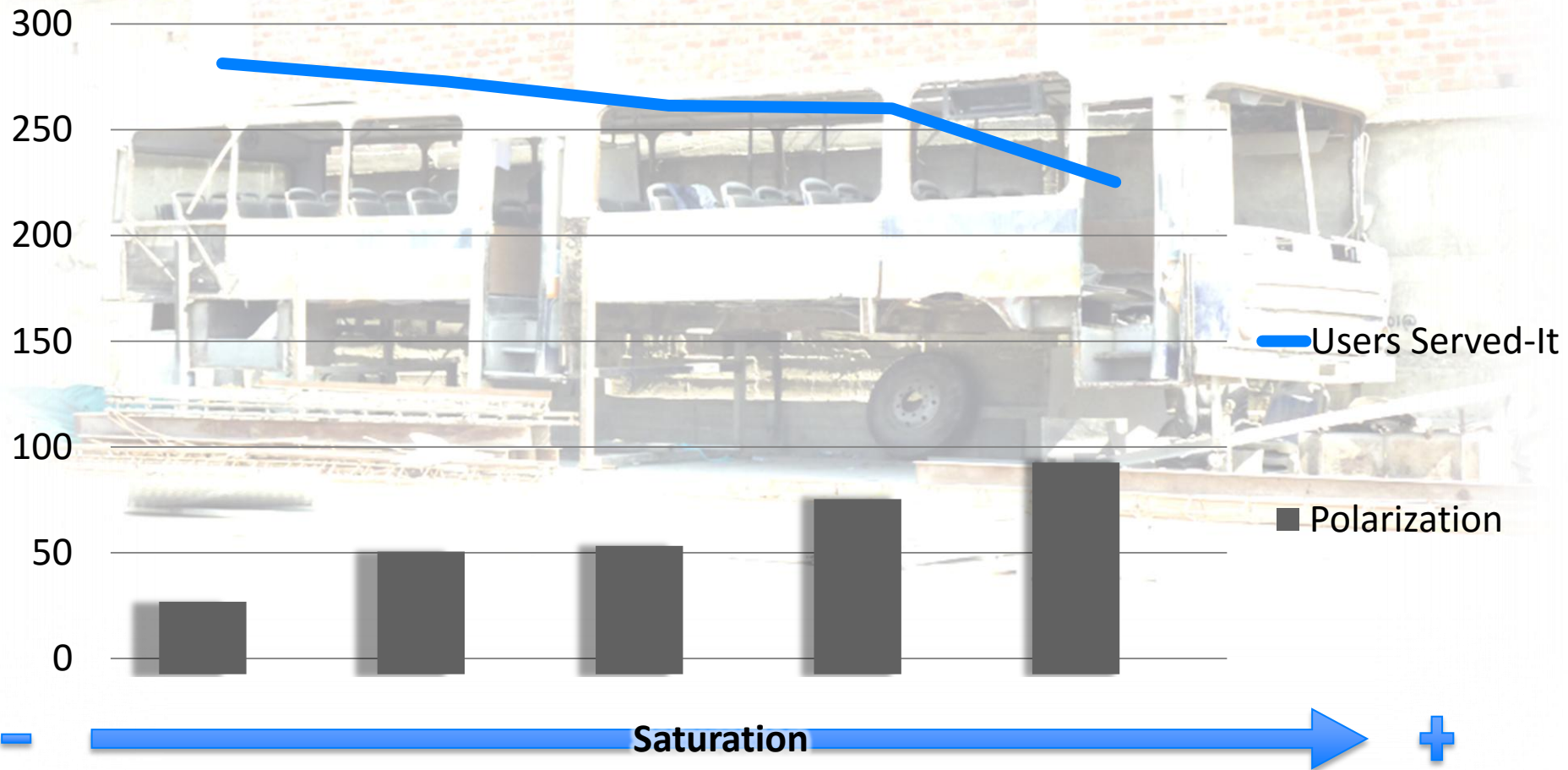


— served users    ■ % Navettes    ■ % Boucles

Number of buses

## Polarisation de la desserte





Système de transport collectif artisanal



Modélisation des processus d'auto-organisation



Modèle multi-agent



**Efficacité du système**

**Structures spatiales**

Saturation du système

Diminution de usagers  
desservis

Diminution de la variété des  
structures observées

Augmentation de la  
polarisation

**Merci de votre attention**

Léa Wester

*Doctorante en Géographie  
UMR ESPACE – Aix en Provence*

[lea.wester@laposte.net](mailto:lea.wester@laposte.net)