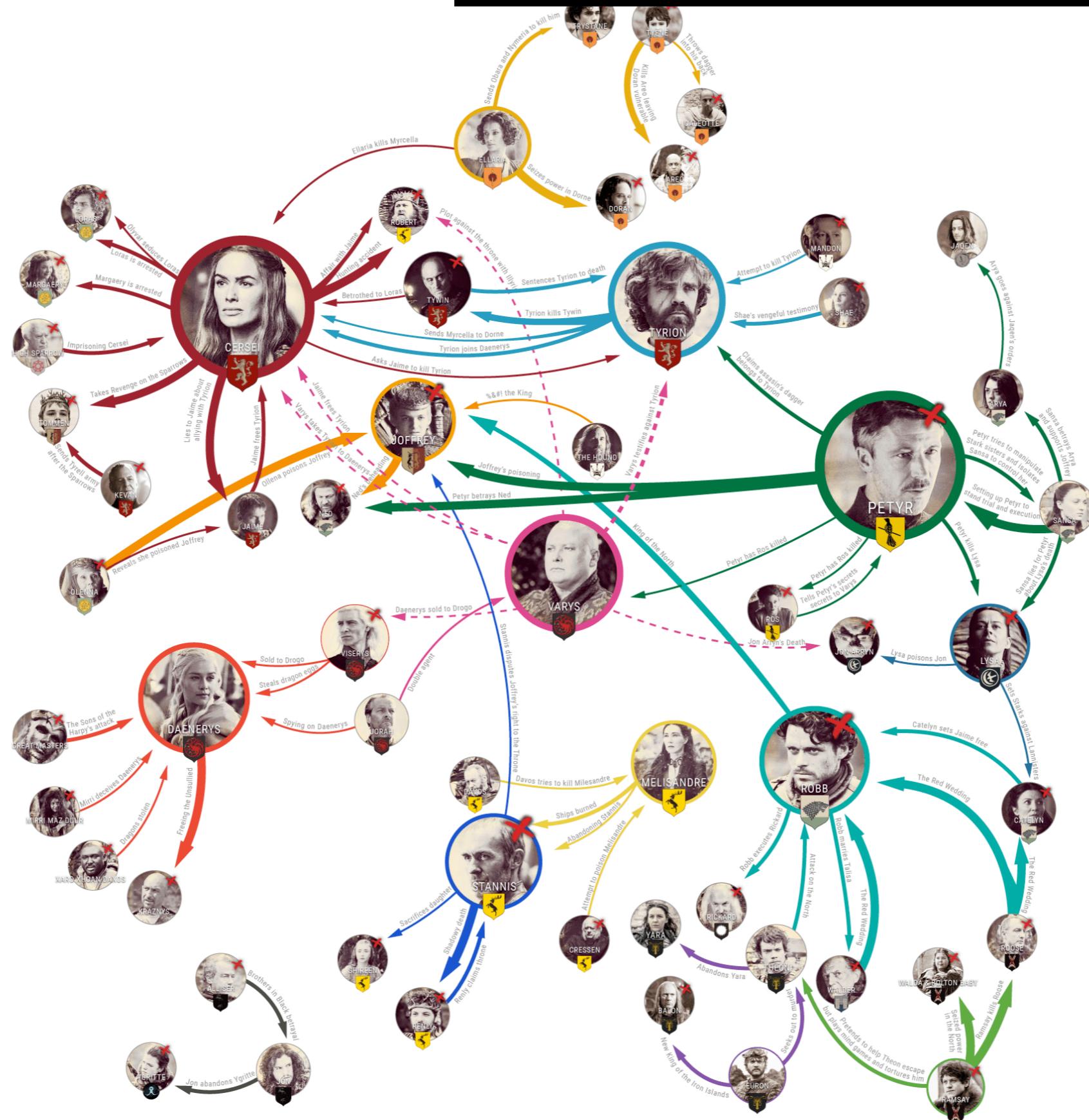


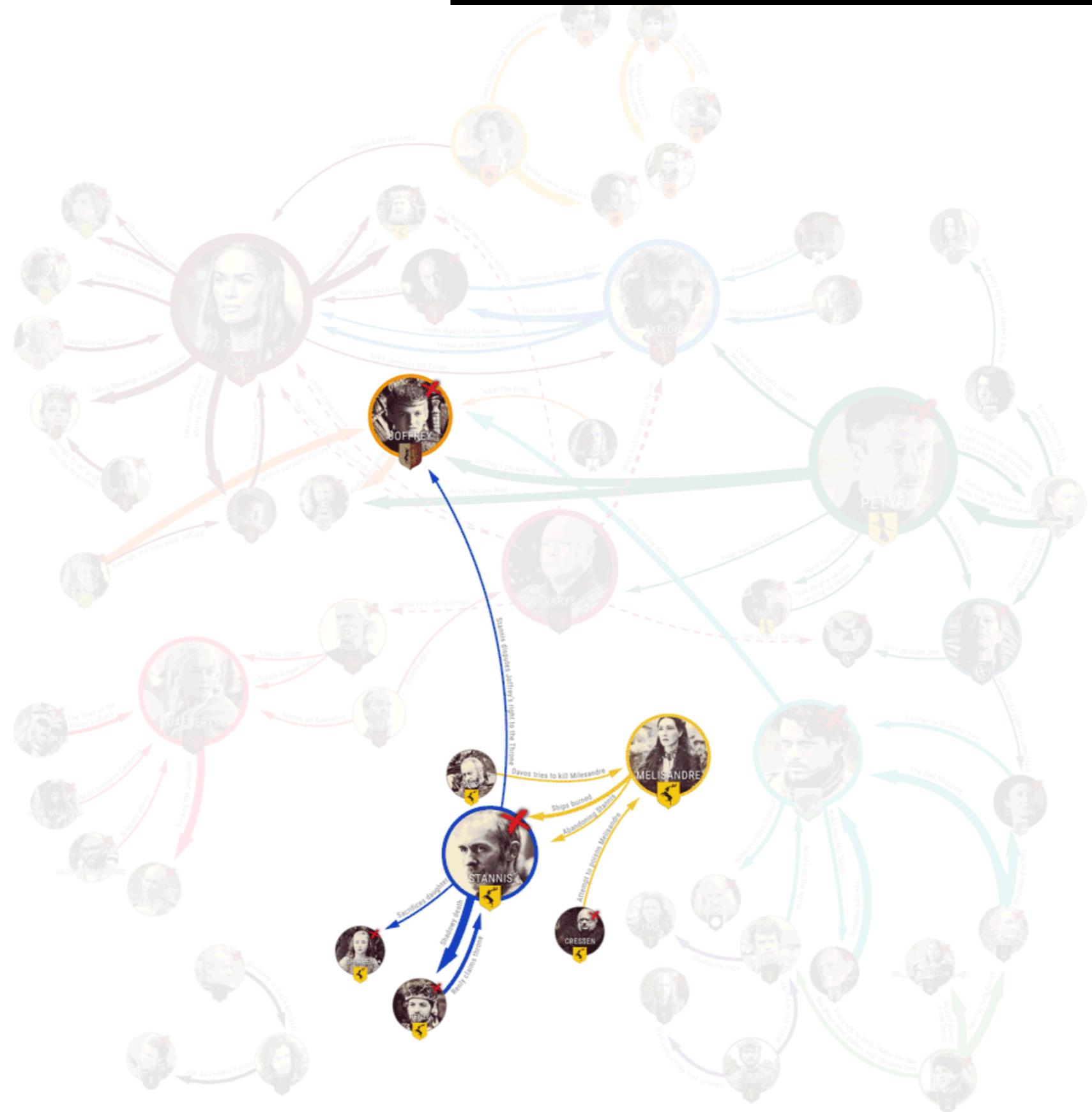
Workplace Automation & Labor: The Role of Robots and Researchers

Hee Rin Lee, Ph.D.
Assistant Professor
Media & Information
Michigan State University

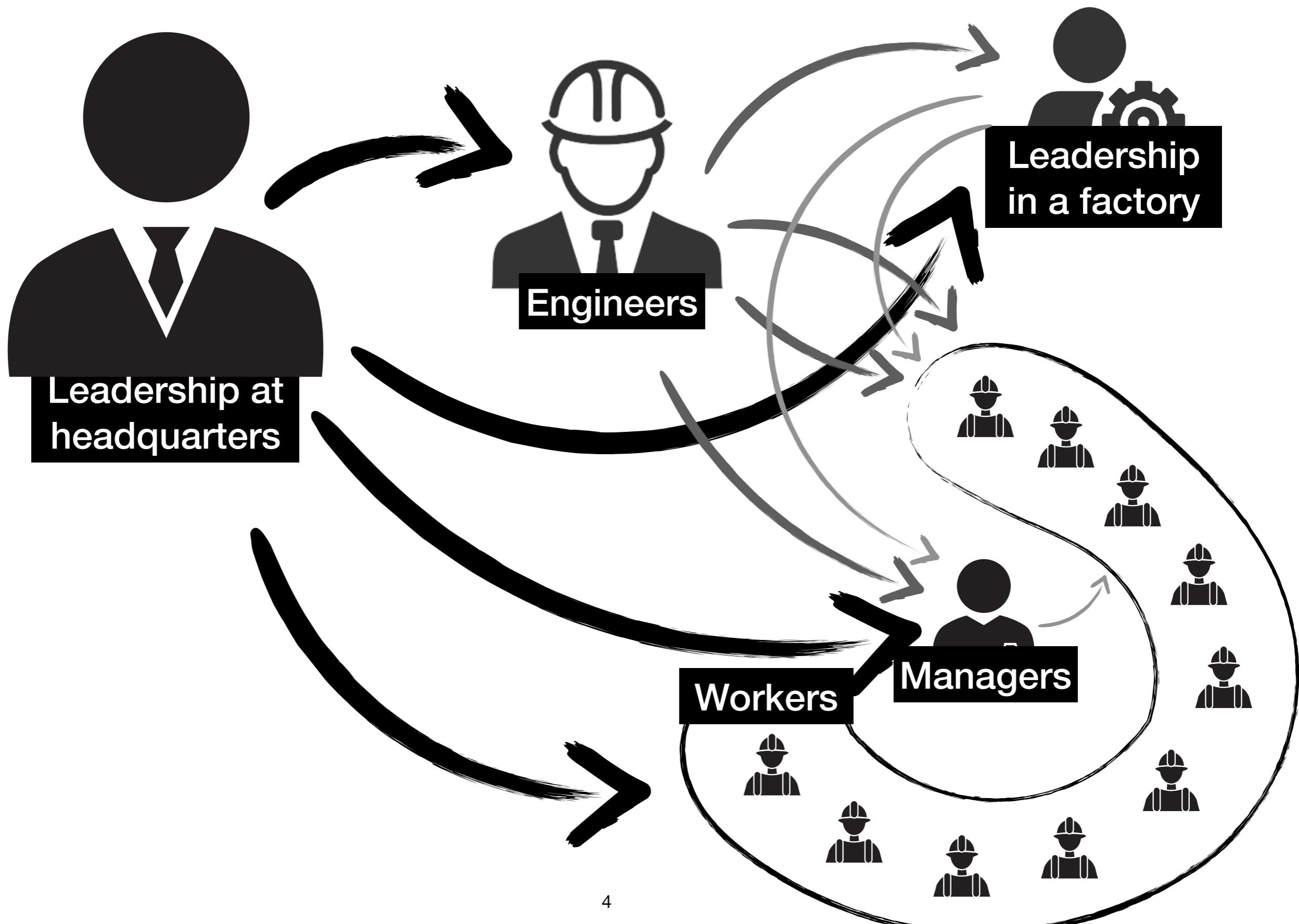
Power dynamics in Game of Thrones



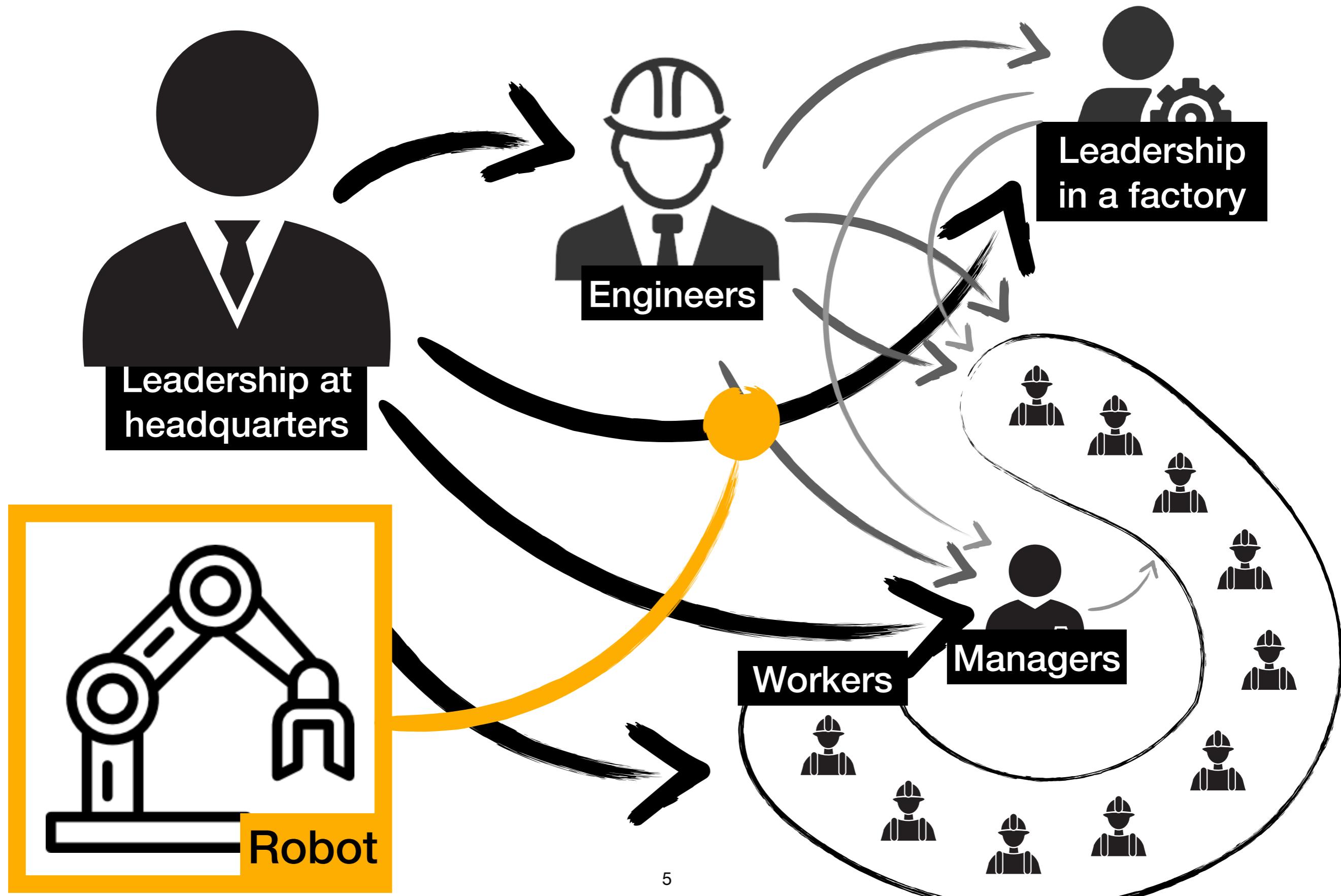
Power dynamics in Game of Thrones



Power dynamics in Workplace Automation



Power dynamics in Workplace Automation



Section 1

Robots **Challenging Power Dynamics** in HRI Research

Section 2

Robots and Power Dynamics in **Manufacturing Plants**

Section 1

Robots Challenging Power Dynamics in HRI Research

Role of 'humans' in HRI research

Type 1: Humans as **generalizable** human (59%)

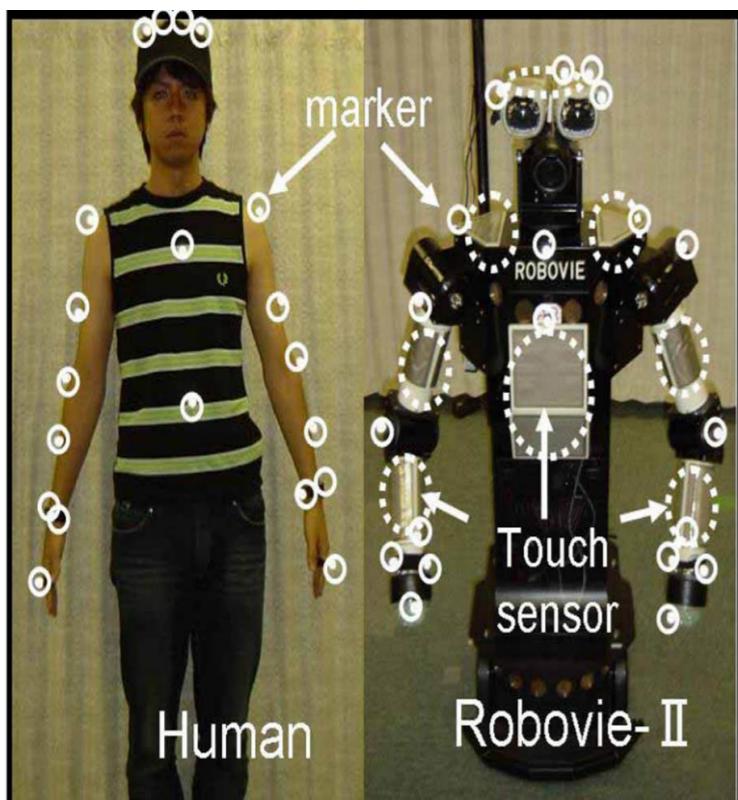


Fig. 2 Human and Robot

Yamaoka et al. (2006)

Type 2: Humans as **Users** in a Context (36%)



Figure 1. The INRIA Grenoble Sn

Barraquand et al. (2008)

Type 3: Humans as **Social Actors** (5%)

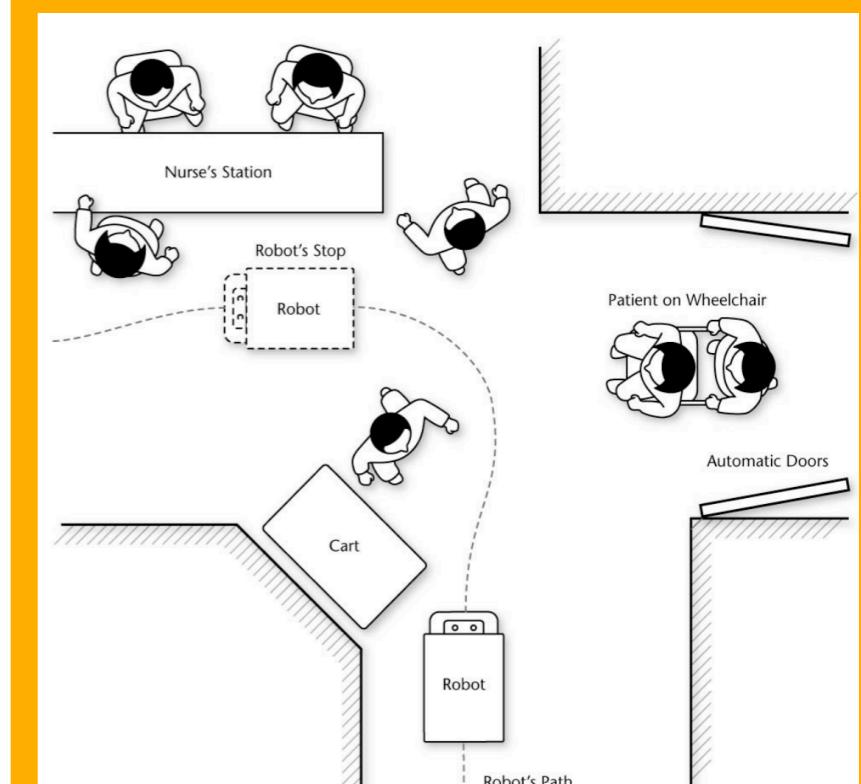
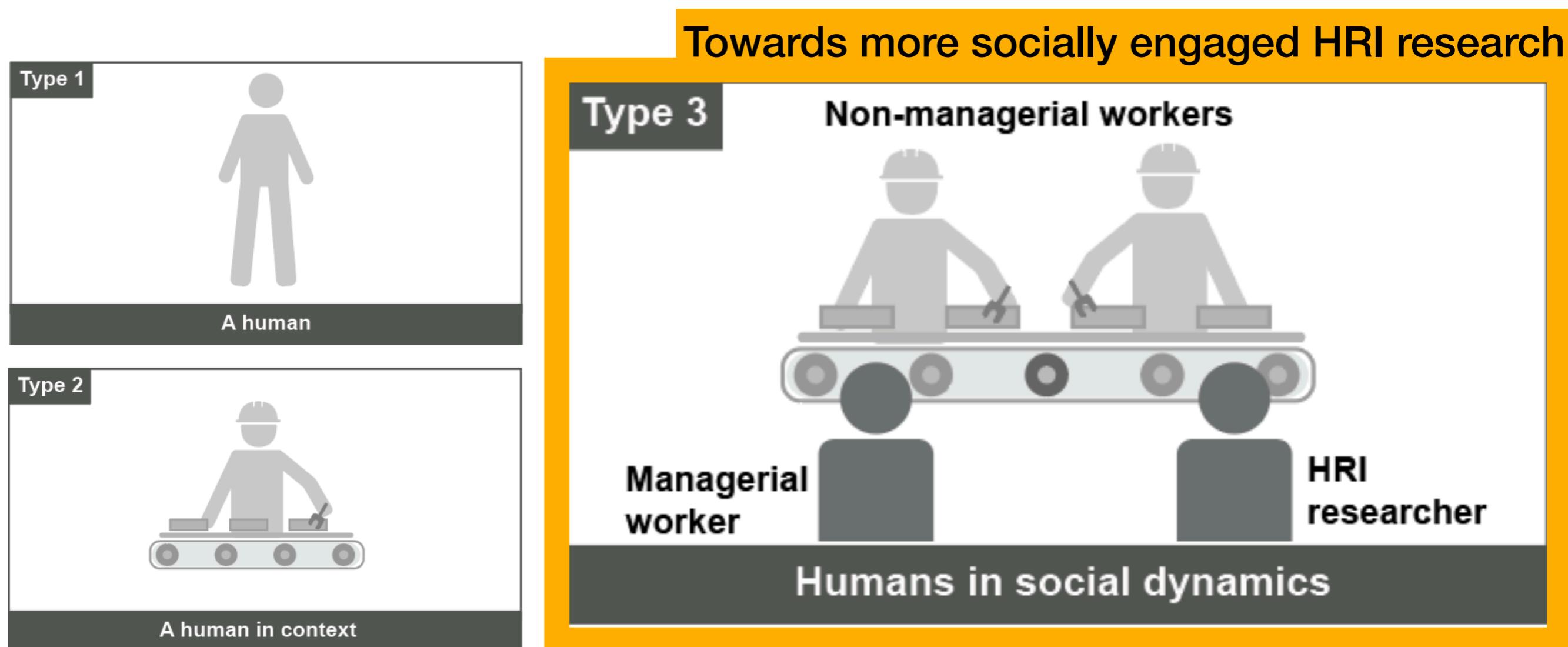


Figure 1. An abstract illustration of the hospital environment as the delivery robot navigates through units.

Mutlu & Forlizzi (2008)

Opportunity through HRI Research on Power Dynamics



Section 2

Robots and Power Dynamics in a Manufacturing Plant

Capitalism

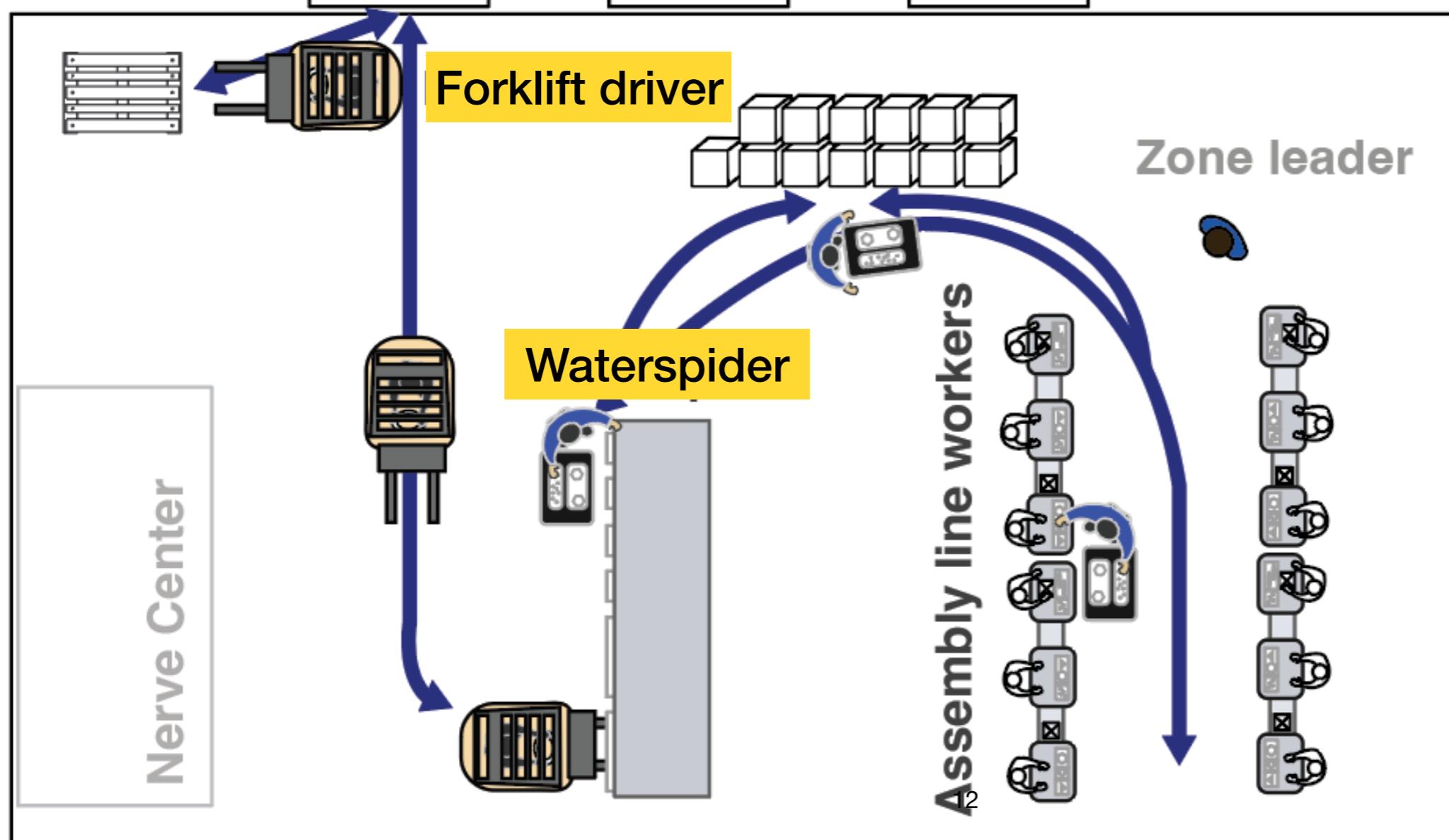


"struggles" between capitalists and laborers

(Marx, 1867)

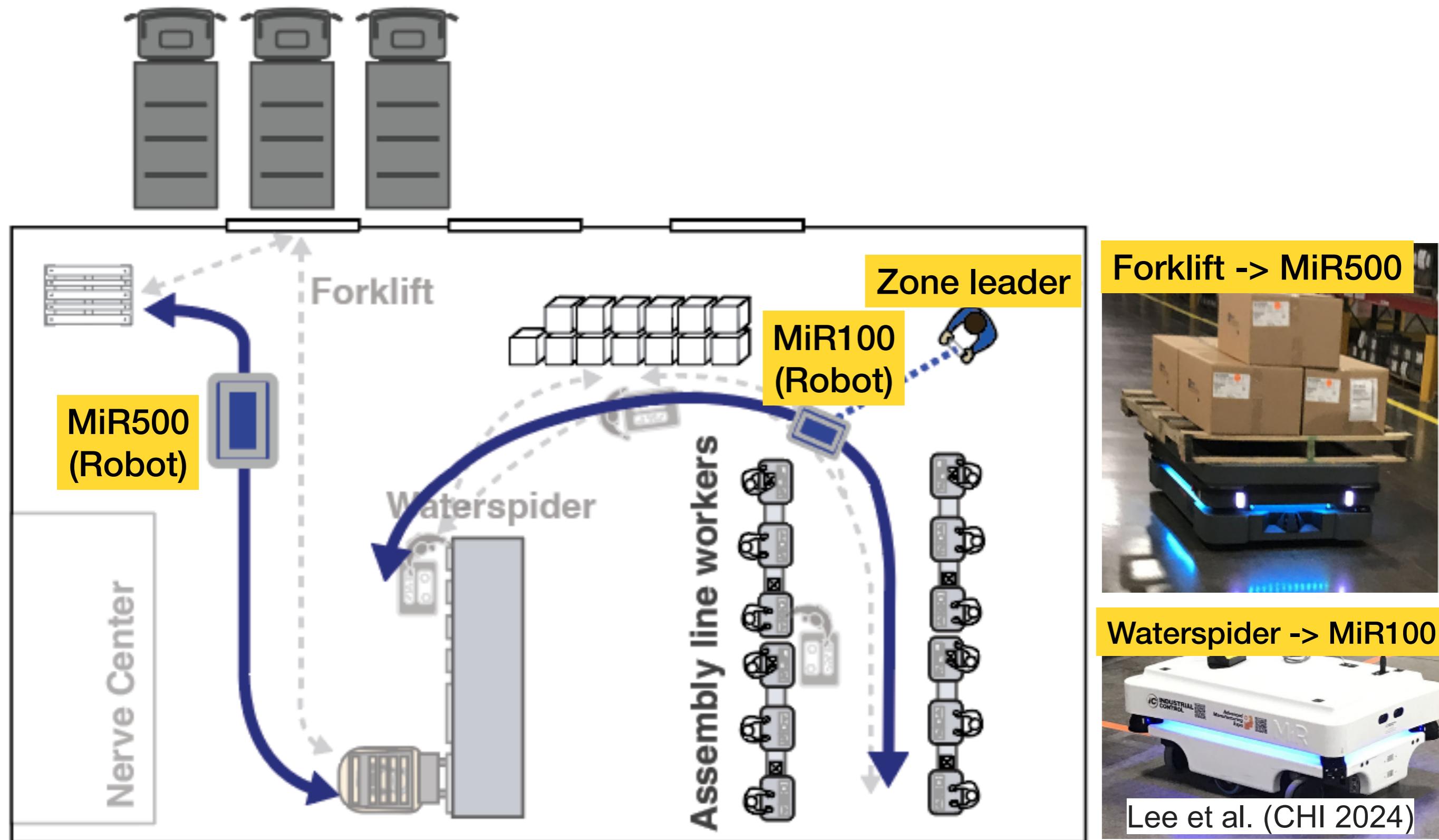
Field site:

a manufacturing plant in the US



Field site:

Automating material handling work

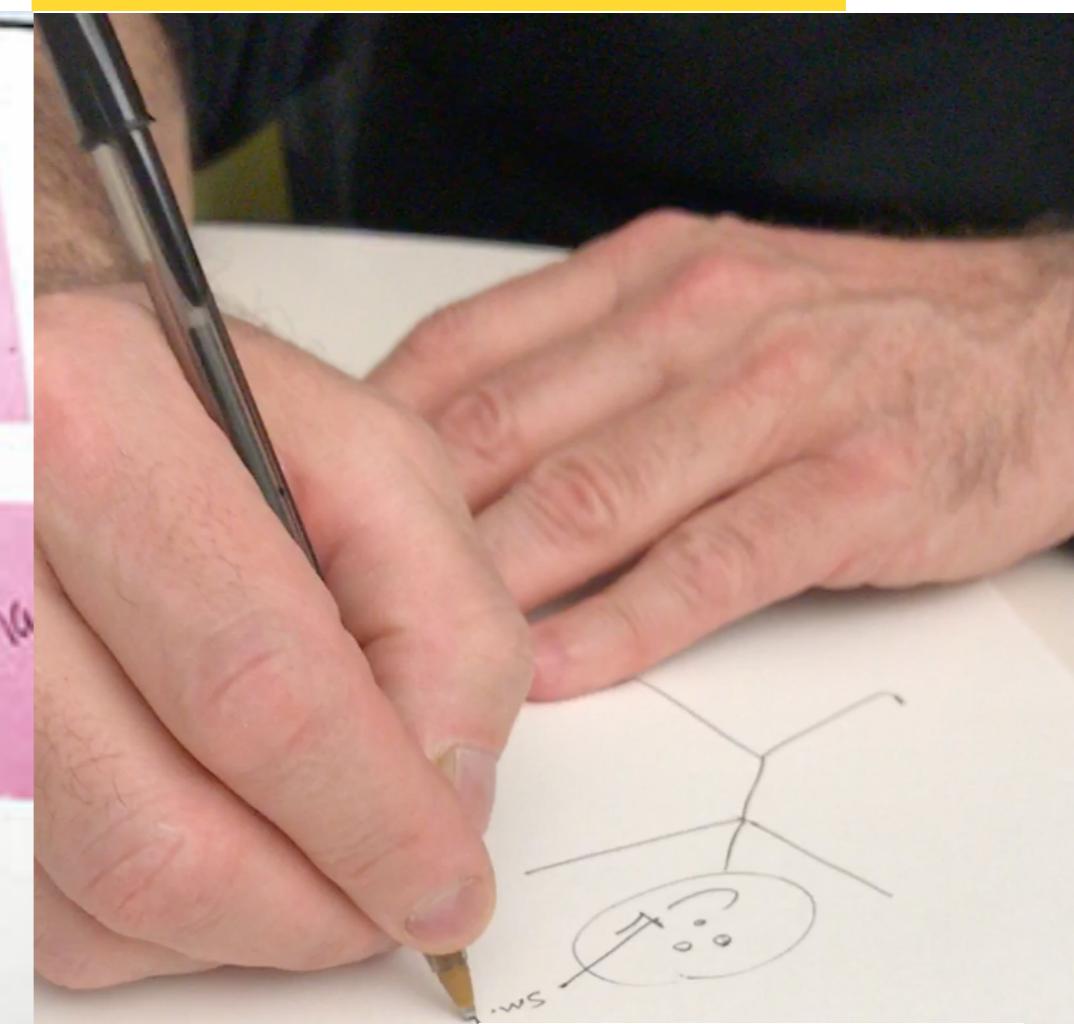


Positionality

Collaborative map making (Lee et al. 2017)



Ideal robot drawing



Lee et al. (CHI 2024)

Participants



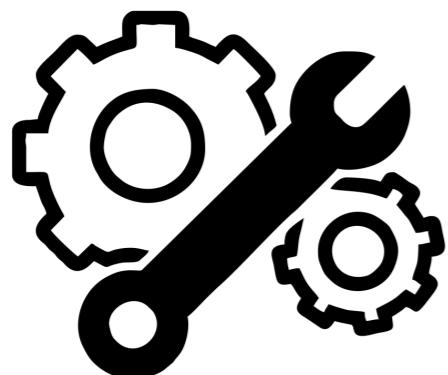
5 Material
handlers



1 Assembly line
workers



4 Mid/upper-level
Managers



1 In-house
Roboticist



1 Sales
engineer



1 Intern

Conflicting views on

1) material handlers

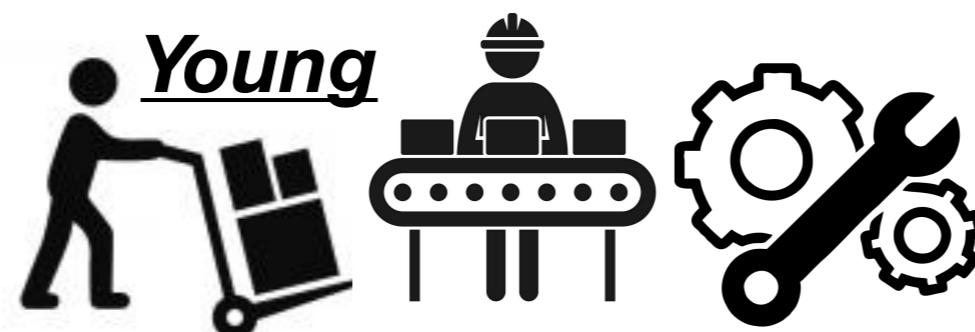
Performs **wasteful actions**

Older workers have **narrow knowledge of robots**

Smart and skilled



Leadership & sales



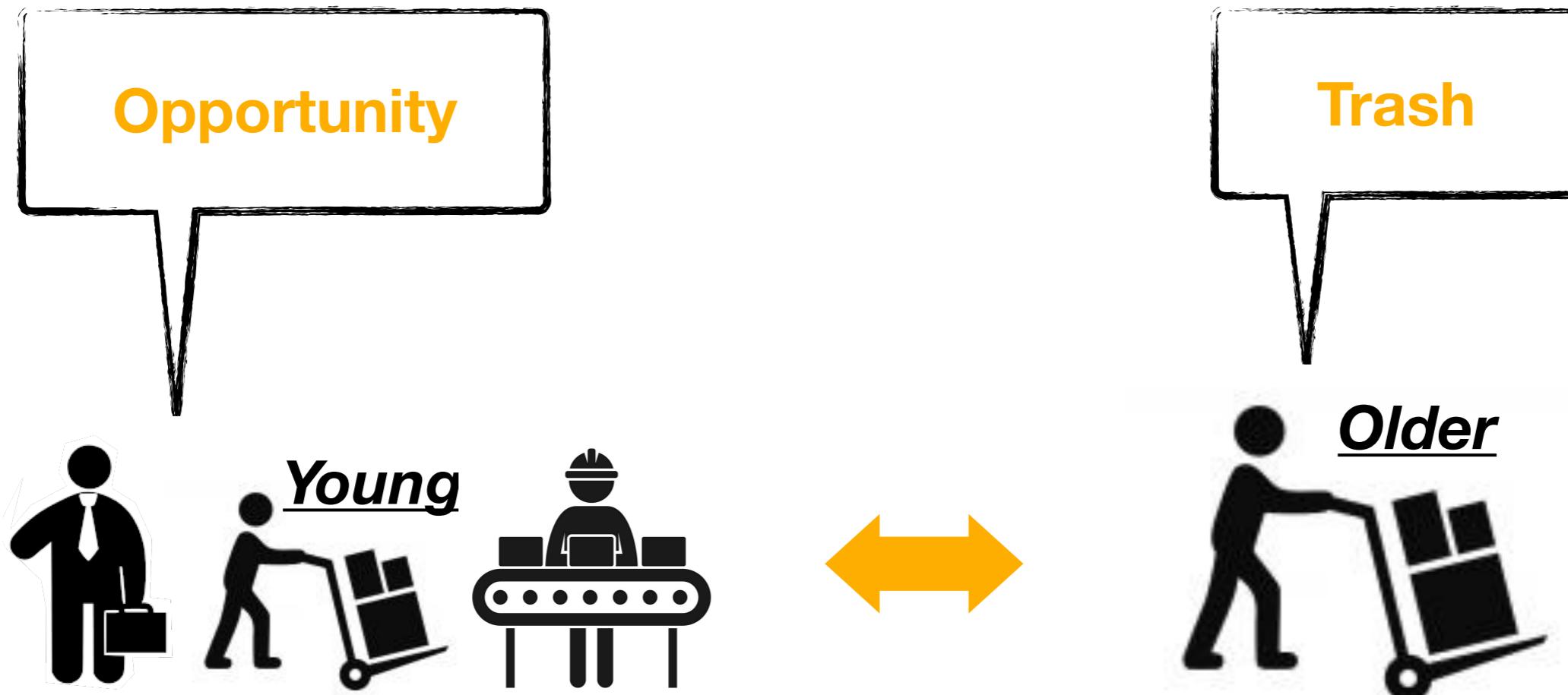
Young material handlers,
assembly line workers & roboticist



Older material handlers

Conflicting views on

2) the newly adopted robots



Sales, young material handlers
& line workers

Older material handlers

Conflicting views on

3) ideal robots

Fully autonomous & quick payback



Sales, young material handlers & assembly line workers

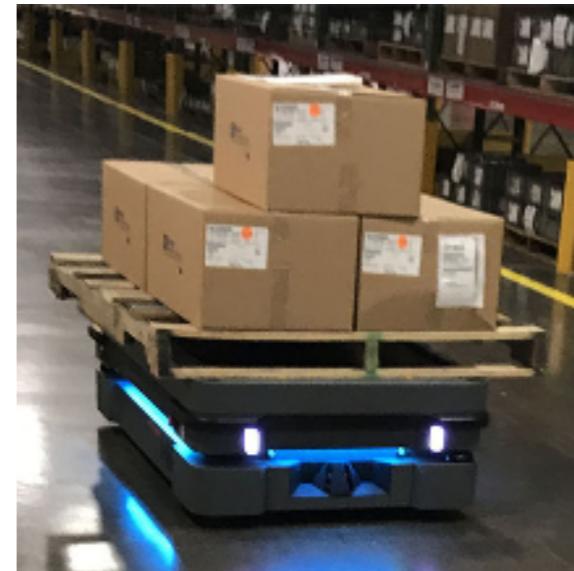
Strengthening **worker autonomy**, preventing deskilling.



Older material handlers



Why does **leadership** prefer **robots** over **forklift drivers** who can perform tasks **faster than the robots**?



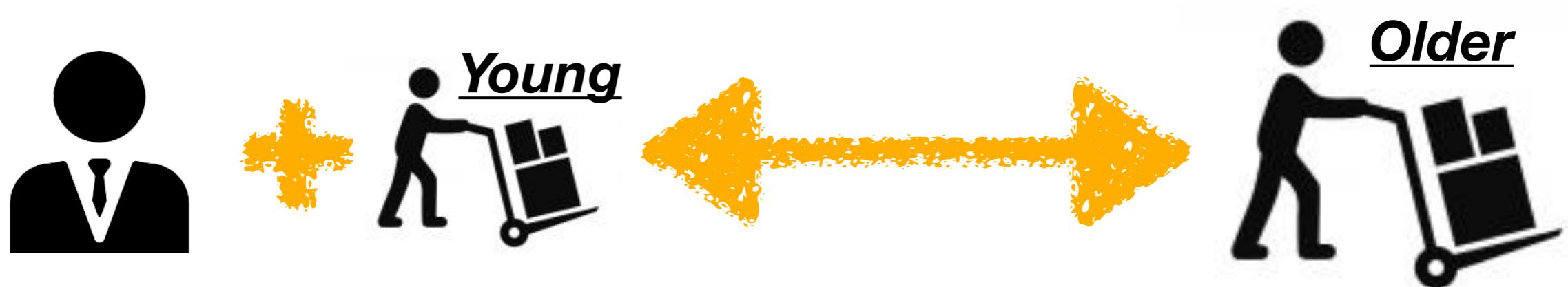
Robots contribute more to capital accumulation

Marx's theory of productive and unproductive labor

(Marx, 1966; Braverman 1998)

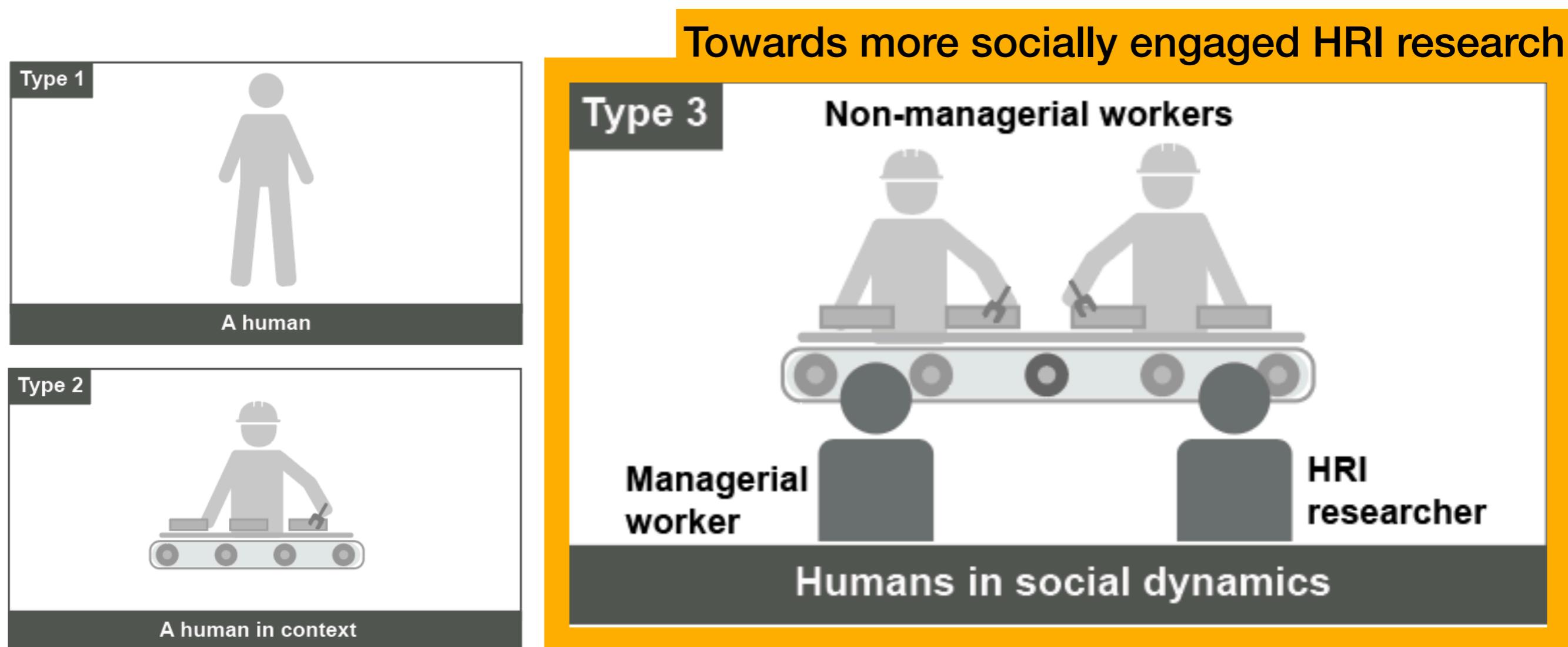
Lee et al. (CHI 2024)

Why do material handlers have conflicting views on their work, the newly adopted robots, and ideal robots?



**Worker relations entangled with
the restructuring of the economic systems** (Dollales 2023)

Opportunity through HRI Research on Power Dynamics



Restructuring of economic systems

Capitalists

**Collective voices
of workers**



Restructuring of economic systems

Capitalists

Collective voices
of workers



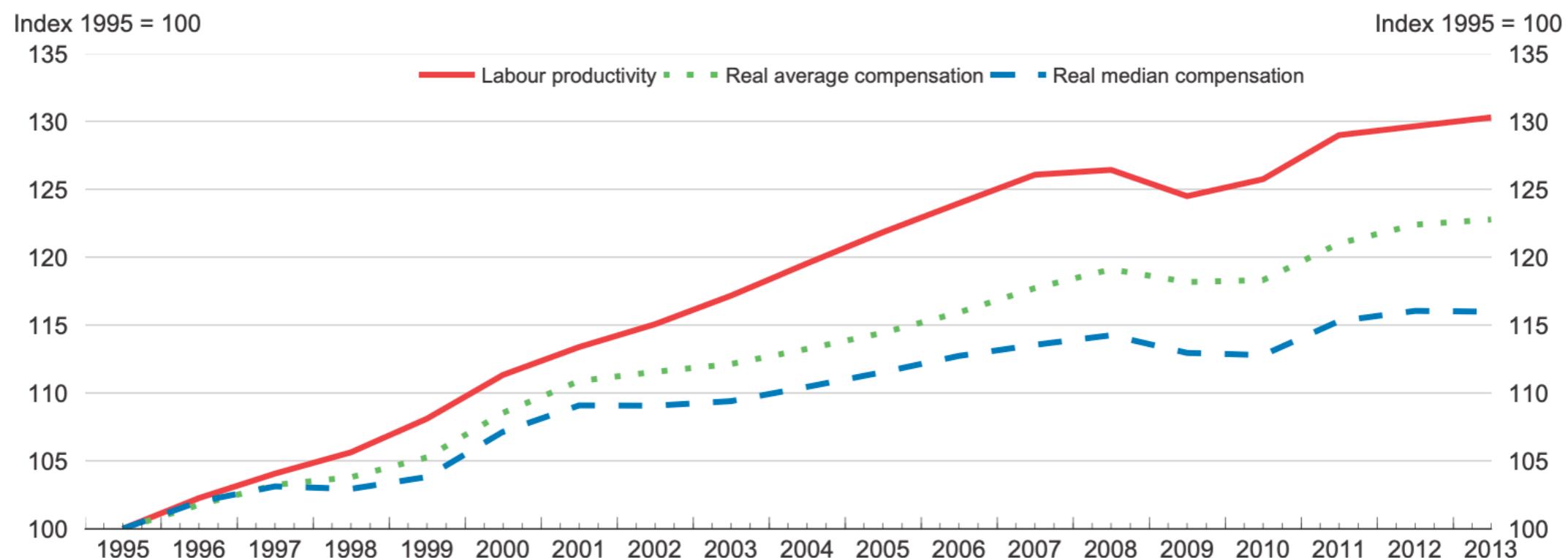
Inclusive Collective Imaginaries

(Ehn 1988, Doellgast 2022)

Decoupling of wages from productivity

Figure 2.2. **Real median wages have decoupled from labour productivity**

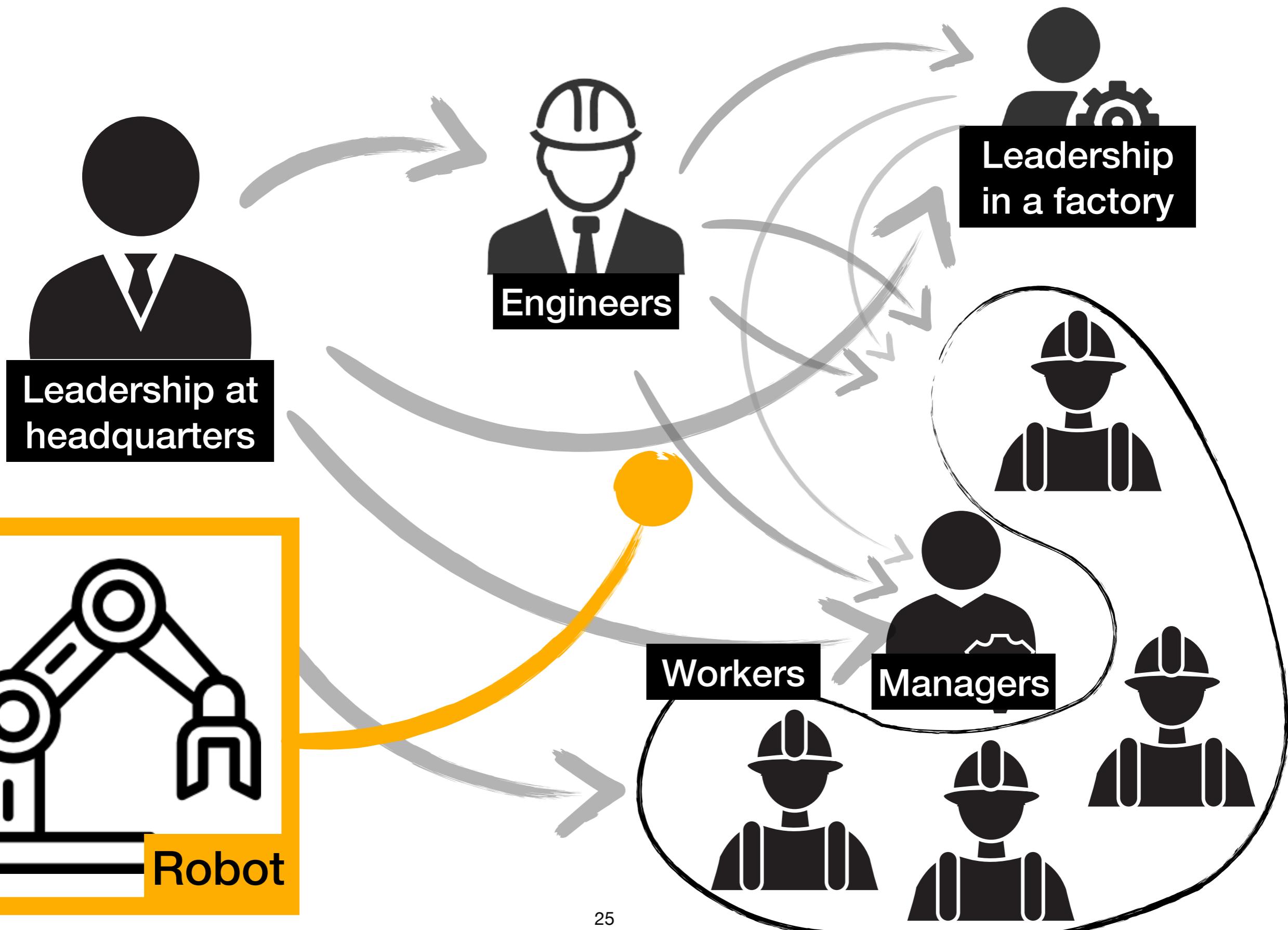
Total economy excluding primary, housing and non-market industries



Note: Employment weighted average of 60 countries. Data for 1995-2012 for Australia, Spain; 1995-2013 for Belgium, France, Germany, Japan, Korea, the United Kingdom; 1996-2012 for Australia, Spain; 1997-2013 for Austria, Belgium, France, Germany, Italy, Netherlands; 1998-2013 for Norway; 1999-2013 for Slovakia, Slovenia, Slovak Republic. All series are deflated by the GDP deflator. Industries excluded are the following: (1) Agriculture, forestry, fisheries and mining; (2) Construction; (3) Real estate activities (L), (4) Public administration, defence, education, health and social work activities (Q), (7) Activities of households as employers, and employees of households. Source: OECD National Accounts Database.

Decoupling value of the US (-1.3) >
Canada (-0.7), Japan (-0.5), France (0.3),
and United Kingdom (0.4)

Power dynamics in Workplace Automation



Thank you!

Q & A

Hee Rin Lee

heerin@msu.edu