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Robots, artifical intelligence (AI) and the future of work

→

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Technological *revolutions*

"This is not to say that any group,
organization, or class has a clear idea
of how a particular technology will evolve (...)
Uncertainty characterizes the evolution of any new
constellation of innovations, and the ultimate outcome is not
quite what anyone specifically intended in the early days."

('As Time Goes By', Christopher Freeman en Francisco Louca, 2001)

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WRR-project

The future of work

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Mastering the Robot

The Future of Work in the Second Machine Age

Robert Went, Monique Kremer & André Knottnerus

Monique Kremer, Robert Went en André Knottnerus (eds.)

FOR THE SAKE OF SECURITY
THE FUTURE OF FLEXIBLE WORKERS AND
THE MODERN ORGANISATION OF LABOUR

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Will 47% of jobs disappear? Not so fast…

- Since 2013 the number op jobs has only increased
- Jobs are bundles of tasks
  (OECD -/- 9% jobs, McKinsey <-/- 5%)
- There will be (often unknown) new jobs and tasks
  (robots, cobots, AI)
- Not everything can be automated
  (D. Autor; e.g. Toyota, Mercedes)
- Technology: 'overselling' and 'underperforming'

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Technology doesn't just happen to us

Discussion since the 1950s: AI versus IA (augmented intelligence)

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The federal government would no longer finance research that could lead to the "replacing of an adequate and willing work force with machines."

1980, Robert Bergland, agriculture secretary president Jimmy Carter

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Robot waiters fired after spilling drinks and food during restaurant service — Mirror — mirror.co.uk/tech/robot-wai …

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Google Deepmind – Lee Se-Dol

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(compare Resonsible Robotics)

Issues about AI (EESC)

The future: an inclusive robot agenda

"Digital investments need analog complements to ensure everyone will reap benefits" – Worldbank 2016

1. Invest in robots... and humans

- There are not enough robots: productivity and growth (care, the 'silver' economy, R. Gordon)
- Heavy and drudgery work can (partly) be automated with robots and cobots (e.g. DAF)
- Automate to release more time for other tasks
- 'Lifelong' learning, learning on the job, and 'learn while you earn'

2. Complementarity key: humans wíth machines

- "Humans are underrated" (work that is human, or that should stay human)

- Also for low-skilled work and lower incomes (Atkinson; MIT inclusive innovation contest; care)

- Organize co-creation (government can set examples; Philips; pilot in cleaners agreement)
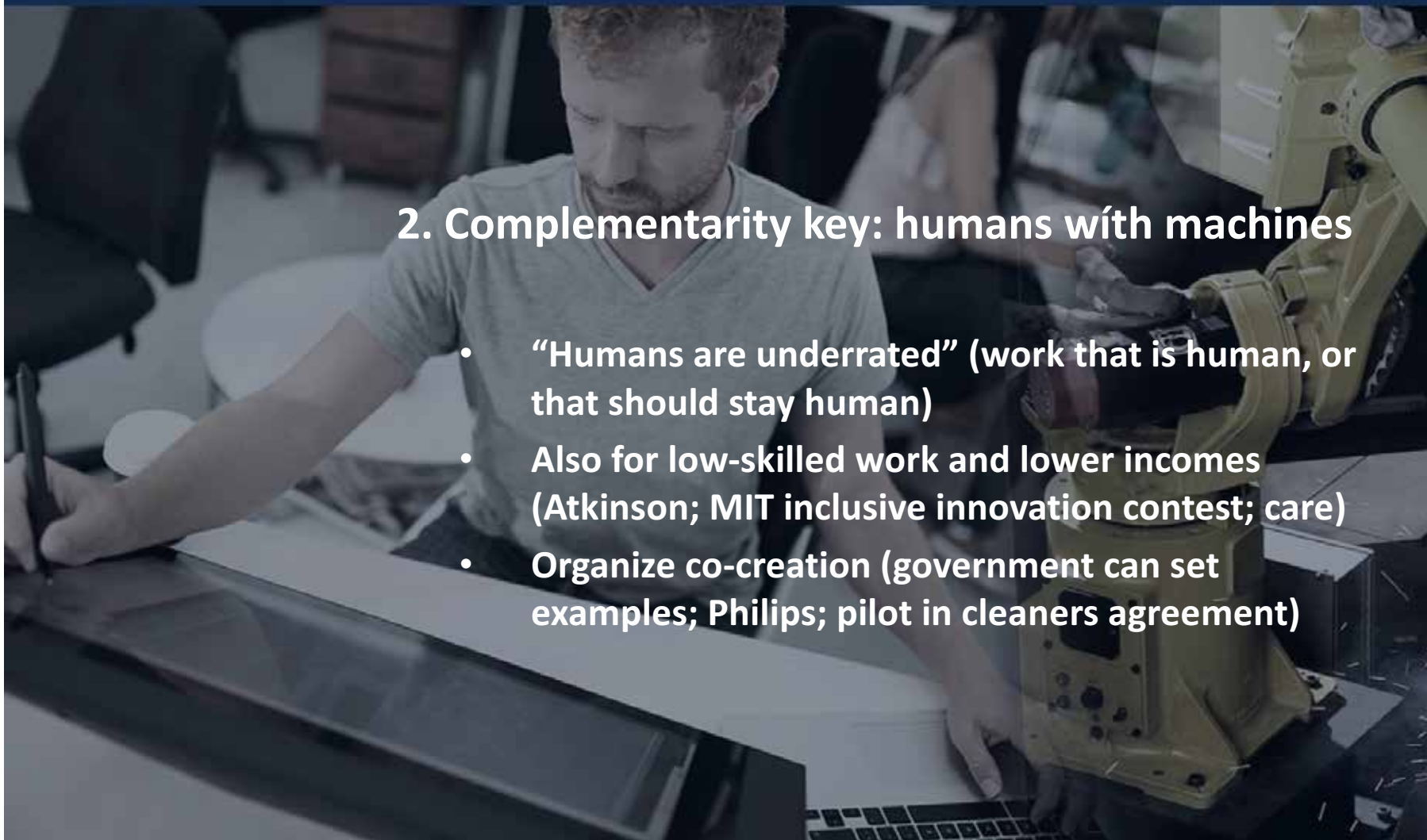
3. Ownership of work

- **Autonomy and control are good for productivity and innovation (e.g. TNO study on 'internal flexibility')**
- **Better jobs: reduce stress, burn-out, increase well-being (happiness)**
- **"Don't change workers into meat robots" (e.g. an algorithm as boss; pee breaks Dutch bus drivers)**
- **Social innovation is key: innovation is teamwork, most innovations are incremental**

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4. New inequality issues

- *Income:* Job polarization, more low-skilled jobs (multiplier)
- *Wealth:* Who owns the robots owns the future (robot dividend, social technology funds)
- *'Loosers':* Portfolio of measures to support people not able to cope (targeted "basic income", supported jobs, early retirement)
- Regional differences may increase with robots and AI

Summing up

- Technology doesn't just happen to us (re: Ravi Kanbur)

- Don't forget! 'Jobs are bundles of tasks'

- Humans with machines: *augmented intelligence*. Labor essential, not a cost to reduce as much as possible

- Key for technological applications: understand what skills a job requires (e.g. truckdriver), and what workers need

- Co-creation: the role of humans, new tasks

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Questions?
Reactions?

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