



“No Autonomy is an Island”

Presented by Matthew Johnson

Questions

- How is assured autonomy interpreted in your field?
 - “accomplish goals independently, or with minimal supervision from human operators in environments that are complex and unpredictable.” (<https://www.darpa.mil/program/assured-autonomy>)

... correctly suggests a need for greater self-sufficiency and competence

“When it comes to the job itself, however, the problem is not to dissect it into parts or motions but to put together an integrated whole.”

– Peter Drucker *The Practice of Management* (1954)

The goal of building intelligent systems

Dependent *-Autonomy-* **Independent**



The goal of building intelligent systems

Dependent *-Autonomy-* **Independent** *-Teamwork-* **Interdependent**



Questions

- What are key challenges and problems your field thinks about?
 - Misconceptions and Myths
 - Bradshaw, J.M, Robert R. Hoffman, Matthew Johnson, and David D. Woods. [The Seven Deadly Myths of "Autonomous Systems."](#) *IEEE Intelligent Systems*, May/June 2013 (vol. 28 issue. 3), pp. 54-61.
 - Mindell, David A. [Our robots, ourselves: Robotics and the myths of autonomy.](#) Viking Adult, 2015.
 - Brooks, Rodney. "[The Seven Deadly Sins of AI Predictions. Mistaken extrapolations, limited imagination, and other common mistakes that distract us from thinking more productively about the future.](#)" *MIT Technology Reviews*). 2017.

As autonomy increases and is more independent, does it need more or less teaming capability?

Although counter-intuitive,

the greater the individual competence (autonomy/intelligence),
the greater the need for more sophisticated collaborative skills.



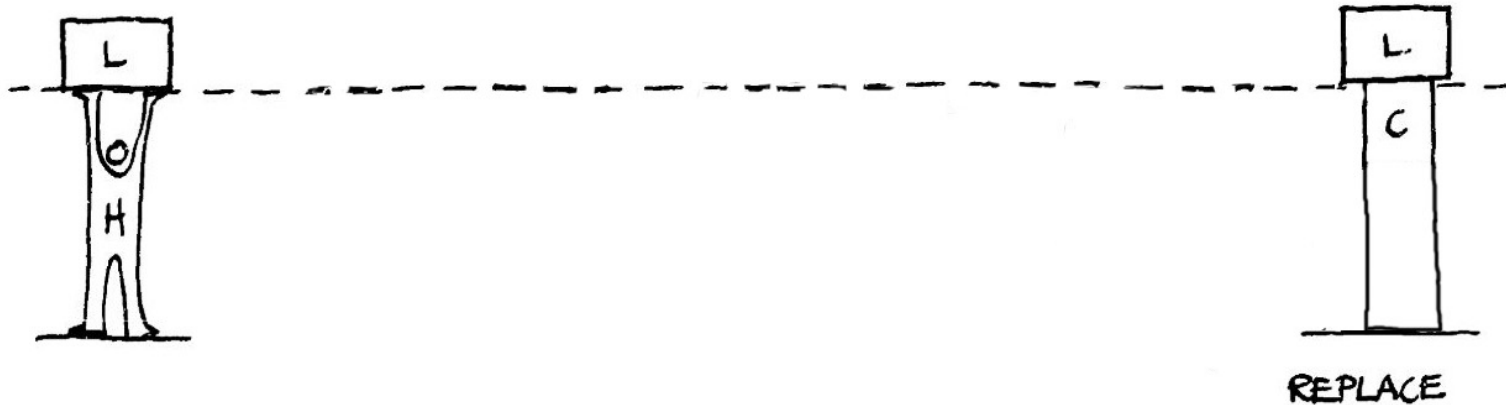
Questions

- What advances do you think are needed to address these challenges and problems?
 - Assuring individual competence
 - Assuring teaming competence
 - A better understanding of what it means to team

The Role of Autonomy

ROLES OF COMPUTER

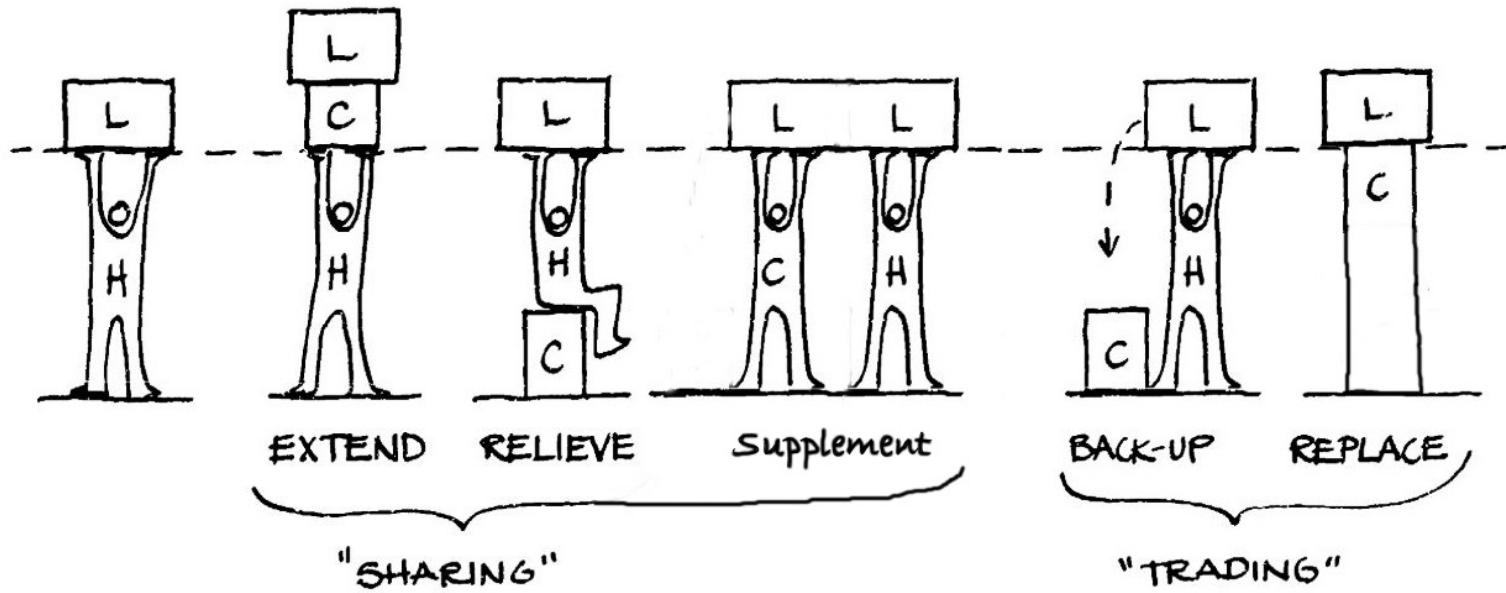
(L - load or task, H - human, C - computer)
**Physical or Cognitive Load*

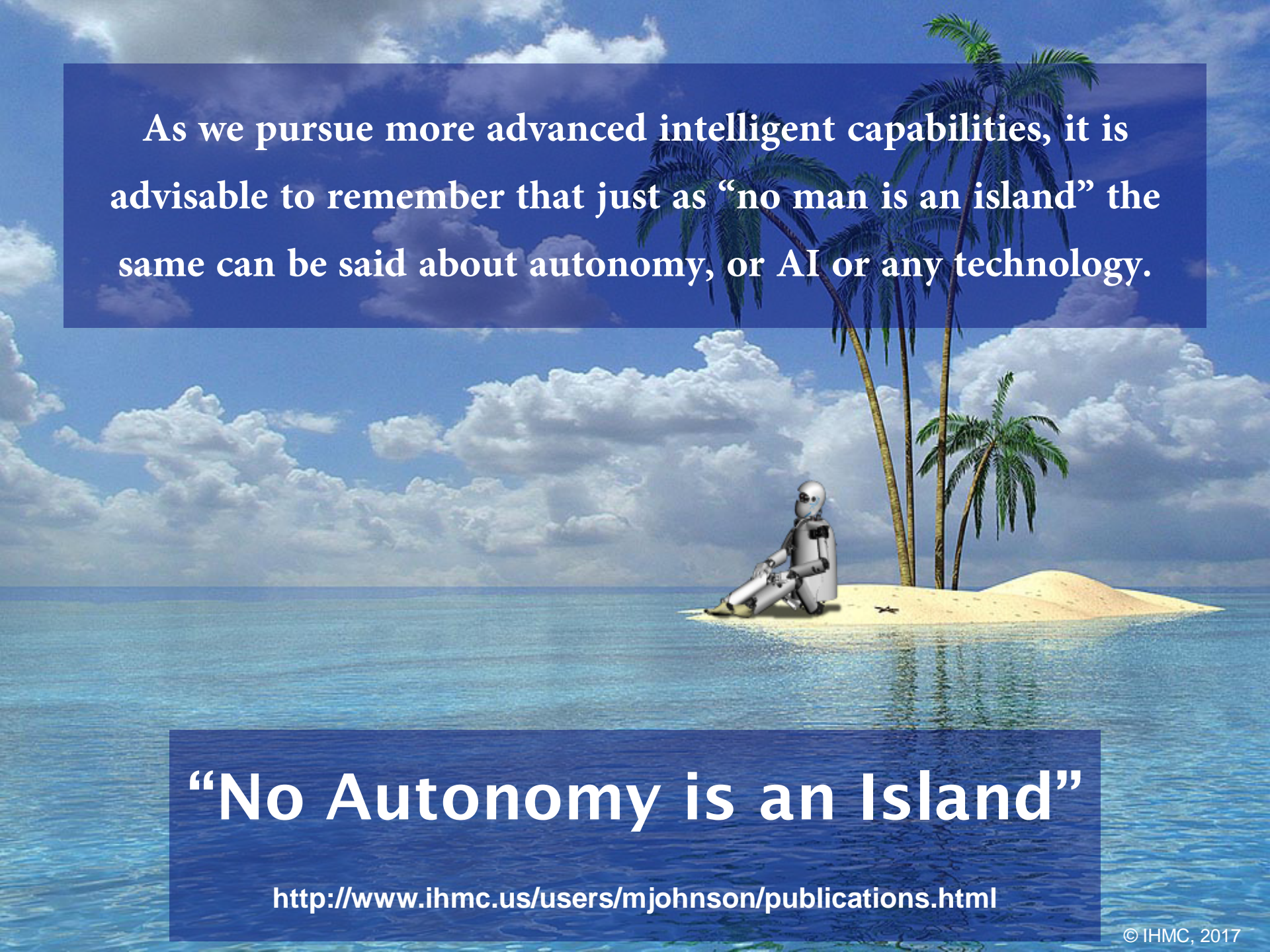


The Role of Autonomy

ROLES OF COMPUTER

(L - load or task, H - human, C - computer)
*Physical or Cognitive Load





As we pursue more advanced intelligent capabilities, it is advisable to remember that just as “no man is an island” the same can be said about autonomy, or AI or any technology.

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<http://www.ihmc.us/users/mjohnson/publications.html>