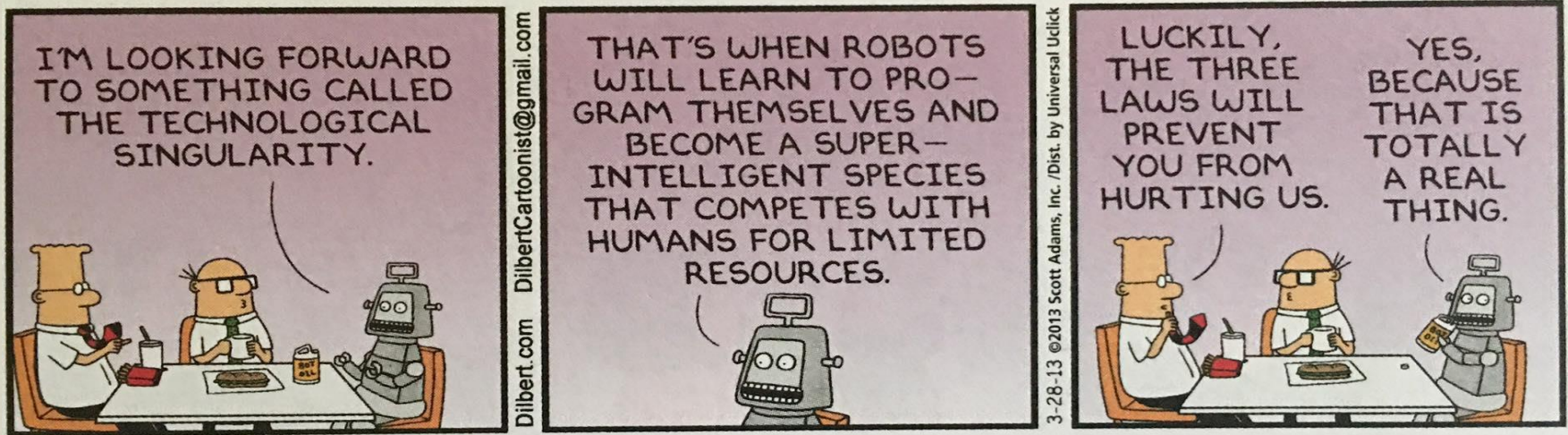


Autonomous Weapons Systems

Political and Legal Responsibility for AWS Conduct

Neha Jain, Associate Professor, University of Minnesota Law School

Conceptions of Autonomy



- ∞ **Scripted Autonomy:** Carrying out a **pre-planned script**
- ∞ **Supervised Autonomy:** Robots plan, sense, and monitor **with human assistance**
- ∞ **Intelligent Autonomy:** Software allows the robot to engage in decision making, problem solving, and perceiving and interpreting information.

Meaningful Human Control



International Committee for Robot Arms Control (ICRAC) Elements

1. Appropriate **deliberation** on the need for attack;
2. The attack must be executed by a **human operator**;
3. The operator has “**full contextual and situational awareness** of the target area”;
4. The operator is “**able to perceive and react** to any change or unanticipated situations”; AND
5. The operator **retains the ability to call off the attack.**

Control in Criminal Law



The ability of the perpetrator to execute or obstruct the commission of the offence according to his will.

- ↪ Direct control over the actor
- ↪ Indirect control over the actor's will
- ↪ Functional domination of a participating joint actor

Command Responsibility



ELEMENTS

1. Existence of a **superior-subordinate relationship**;
2. The superior **knew or had reason to know** of the subordinates' crimes; **AND**
3. Failure to **control, prevent, or punish** the commission of the offence(s).

Potentially Liable Actors

Software Programmer

Field Commander



Civilian/Military Commander

Subordinates

Recklessness



ELEMENTS

1. A substantial **AND** unjustifiable risk exists;
2. The risk relates to a material element of the offense; **AND**
3. The defendant is **actually aware** of the risk.

Issue: What risk must the defendant be aware of? Any risk? Or the exact risk?

Negligence

ELEMENTS

1. A substantial AND unjustifiable risk exists;
2. The risk relates to a material element of the offense; **AND**
3. The defendant is not actually aware of the risk, but he **should have been aware** of the risk. (Inadvertent Risk Creation)

Civil Negligence & AWS

ELEMENTS

1. Breach of a **duty of care**;
2. The breach **proximately caused** the injury; AND
3. The injury was **reasonably foreseeable**.



Strict Liability & AWS



Requires foreseeability of **at least one** of the following:

1. The kind or type of risk of harm
2. The person likely to be harmed
3. The manner of harm

Future Accountability



Fig. 4. Atlas Robot. "The Next Generation of Boston Dynamics' ATLAS Robot." *Futuristic News*, February 2016. Image from [Boston Dynamics](https://www.bostondynamics.com).