

## A prospect of the future. How autonomous systems may qualify as legal persons

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### Abstract

In this provocation, the concept of legal personhood is explored as a possible solution to the challenging problems of a future in which autonomous systems interact more and more with the world. For example, when mistakes or failures occur during these interactions, the question arises who is liable. I will illustrate the complexity of this question by investigating the deadly accident with one of Uber's self-driving cars. By exploring this case, I will explore the question as to whether or not the attribution of legal personhood to autonomous systems could be one of the conceptual legal frameworks in which responsible innovation, with application of artificial intelligence, is made possible.

**Keywords:** Artificial Intelligence, liability, meaningful control, legal personhood, automotive

### Introduction

*'SAM employs water kefir grains to produce a beverage, acting as a small scale automated food production system. This hybrid entity is both technological and organic, and strives to earn a living in the human world raising questions on ethics and machine rights.'*

*(Jense and Caye, 2017)*

The robot SAM is autonomous. However, it pays water and electricity bills, and it also employs and pays people. SAM has a bank account and, last but not least, SAM pays taxes. According to the artists, Arvid Jense and Marie Caye, this makes SAM into an independent economic entity. SAM comprises both organic and technological components. This is what makes it so difficult to classify SAM. The artwork questions the futuristic idea as to whether or not autonomous systems, when they are independent entities, can become susceptible to having rights and obligations.

The idea of legal personhood for robots, in a society that is increasingly interwoven with autonomous systems, is becoming ever more relevant. SAM's ability to act as a legal subject (e.g. to contract) depends on SAM qualifying as a legal person. In the future we may decide to attribute legal personhood to entities such as SAM. In the light of such developments, the European Parliament published a report with *'recommendations to the Commission on Civil Law Rules on Robotics'* (from now on titled: the report),<sup>1</sup> in which legal challenges surrounding autonomous systems are reviewed comprehensively. The report urges the European Commission to further explore whether or not the attribution of legal personhood to robots may be a possible solution to such challenges. This was stated as shown below:

*(S.) Whereas the more autonomous robots are, the less they can be considered simple tools in the hands of other actors (such as the manufacturer, the owner, the user, etc.); whereas this, in turn, makes the ordinary rules on liability insufficient and calls for new rules which focus on how a machine can be held partly or entirely – responsible for its acts or omissions; whereas, as a consequence, it becomes more and more urgent to address the fundamental question of whether robots should possess a legal status.*

Bryson et al. (2017) argue that the case for electronic (legal) personhood is weak and that its application will also present us with certain issues. They advise us to take caution and to reflect on the problems, such as corruption, that have arisen in the past with the arrival of novel legal persons. Other examples of novel legal persons include entities that are accountable but unfunded, or fully financed but unaccountable. According to Bryson et al (2017) these examples illustrate the weakening of the legal protection for humans versus artificial persons.

In this provocation, the concept of legal personhood is explored as a possible solution to the challenging problems of a future in which autonomous systems interact more and more with the world. For example, when mistakes or failures occur during these interactions, the question arises who is liable. I will illustrate the complexity of this question by investigating the deadly accident with

one of Uber's self-driving cars. By exploring this case, I will explore the question as to whether or not the attribution of legal personhood to autonomous systems could be one of the conceptual legal frameworks in which responsible innovation, with application of artificial intelligence, is made possible.

### **Autonomous systems and meaningful control**

Autonomous systems relate to the research field of artificial intelligence; one of the primary goals in this field is to replicate human intelligence in machines. The hope to quickly match human intelligence to its fullest extent disappeared once it became clear how big and complex this ambition turned out to be. Successes and breakthroughs in the research field of artificial intelligence occurred only gradually and at a slow pace (Brooks 1991). Two questions arose with regards to how applications of artificial intelligence influence the human-machine interaction: how does autonomy of systems relate to human autonomy? And, to what extent does human autonomy change because systems become autonomous?

Autonomy concerns the attribution of meaningful control. Meaningful control relates to power and insight. Without this, there cannot be a form of meaningful control over how to carry out an operation or action. When we look at the implementation of meaningful control in autonomous systems, we could interpret that Artificial Intelligence/Machine Learning models in systems can be controlled, and monitored, when they are transparent. In order to create the possibility of meaningful control, transparency refers not only to the makers – the insiders – it explicitly refers to others who can check and understand the models as well. Pasquale (2016, 191) states:

*Black boxes embody a paradox of the so-called information age: Data is becoming staggering in its breadth and depth, yet often the information most important to us is out of our reach, available only to insiders. Thus the novelists' preoccupation: What kind of society does this create?*

After all, transparency in *optima forma* concerns the entire AI/ML model. Which datasets were used? Which performance metrics were applied? How has the data been labelled, and which algorithms have been selected – and why (Hofman, et al. 2017)? Taking these questions into account, it is hard to fathom that parties would hide behind the so-called black-box algorithms. Ultimately, how else can we know whether the value of analyses through these models should represent a value in reality?

### **Who is liable for accidents?**

Around 9:58 a.m. on Sunday, March 18, 2018, an Uber test car with software from Volvo hit a 49-year old woman on the northbound Mill Avenue, Arizona. The woman did not survive the accident. The lethal accident caused by the self-driving test car was – in all probability – caused by a software error, according to the National Transportation Safety Board:

*(...) the self-driving system software classified the pedestrian as an unknown object, as a vehicle, and then as a bicycle with varying expectations of future travel path. At 1.3 seconds before impact, the self-driving system determined that an emergency braking manoeuvre was needed to mitigate a collision.*

What is meaningful control? Does it entail the control of people over systems? Or does it mean that autonomous systems themselves have restricted autonomy, with a strict margin and assessment framework in which they are allowed to evaluate, judge and act? In this accident, various parties were involved; therefore, the question of who, or what, was in control concerns different actors. Is it Volvo that delivered the emergency brake software that did not work correctly? Is it Uber who has purchased this software? Or is it the operator who monitored the test-car, as he was looking at a monitoring screen instead of the road just before the accident? Perhaps it is the autonomous (test) car itself?

These questions address the matter of liability: who is responsible for how the architecture of the software works? And who can, for example, be held responsible for meaningful control over the systems? Failures and errors are in the news on a regular basis (Burkitt 2018; Feed 2018; Holley 2018; Marshall 2018). They are mainly caused by the enormous amount of complex traffic situations that must be assessed by the software. Cruise Automation from General Motors had problems with the blocks for roadworks, and even more worrying were GM's prototypes that tried to change lanes to the opposite side of the road. Google's Waymo was involved in an accident in Arizona, where the car

tried to drive into streets that were too narrow. At Telenav, the prototype confused a roundabout for a stationary vehicle. Nissan faced a shutdown of the entire autonomous system. The more autonomous systems function, the more they will make their own assessment frameworks and rules, and the more complicated it becomes to address the responsibility question.

After these accidents and the ensuing discussion about liability, several brands have stopped testing their autonomous vehicles on public roads. This implies that if the question of responsibility cannot be addressed sufficiently, it can, in turn, inhibit innovation. Meaningful control is connected to successful innovation. A successful innovation is, amongst other things, a responsible innovation for society. On the one hand, to stimulate responsible innovations companies that develop or use autonomous systems could be held accountable for the performance and transparency of the AI/ML models. Still, the question remains as to whether legal personhood for autonomous systems solves more problems than it initiates. On the other hand a possible solution can be trace back the control on existing legal (corporate) entities.

After all, citizens and consumers need to be able to rely on products and services developed through AI/ML models that result from responsible innovation. This, in turn, would mean that applications based on simulations with AI/ML must fit reality, and if they are not – and this results in accidents – the brands would be liable. To deviate from norms which entail responsible innovation, is not acceptable and could lead to liability.

### **Can an autonomous system become a legal person?**

Will the attribution of legal personhood to autonomous systems provide a useful legal framework for solving liability issues? The system of law is flexible and as such has the possibility to create new entities in the existing system of law. The question of the European Parliament on this matter is stated in the report as below:

*(T.) Whereas, ultimately, robots' autonomy raises the question of their nature in the light of the existing legal categories –of whether they should be regarded as natural persons, animals or objects –or whether a new category should be created, with its own specific features and implications as regards the attribution of rights and duties, including liability for damage.*

When an autonomous system is granted legal personhood, this creates a reality that can possibly give direction to the questions of meaningful control. Nevertheless, addressing legal personhood in the context of autonomous systems is complicated and leads to new challenges. Who identifies which systems qualify for legal personhood? How and under what conditions should this be done? What are the consequences when the system is disconnected and no longer exists?

Just as you can hold a company liable the European lawmaker could also create a reality in which an autonomous system can be liable. We need to be cautious and to reflect on the problems, such as abuse: it may be useful for the brands who are using autonomous systems to declare the system liable and walk away, without paying damages.

When we apply the attribution of legal personhood to the previously discussed Uber case, the above questions become concrete. Who will represent the autonomous system in court? Is it Uber or Volvo? If the self-driving car is a legal person, with—in this case—representatives of Uber and Volvo, the challenging question is: does this mean a distributed control and liability that stretches out over these actors? Tackling this problem, both practically and legally, is crucial to bridge the gap between human control over systems and the increasing autonomy of those systems.

### **Notes**

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<sup>1</sup> Committee on Legal Affairs, European Parliament, Report with recommendations to the Commission on Civil Law Rules on Robotics (2015/2103(INL)), 27 January 2017.

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