1.   Introduction

> … we no longer live in the Age of Reason. We do not have reason; we have computation. We don't have a tree of knowledge; we have an information superhighway. We don't have real intelligence; we have artificial intelligence. We no longer pursue truth, we seek data and signals. We no longer have philosophers, we have thinking pragmatists. We no longer have morals, we have lifestyles. We no longer have brains that serve as the seat of our thinking minds; we have neural sites, which remember, store body signals, control genes, generate dreams, anxieties and neuroses, quite independent of whether they think rationally or not. (…) We need to know there are machines that are cleverer than we are, so none of our systems of knowledge function as complete explanations of anything, and our understanding is always a partial phenomenon.
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> (Malcolm Bradbury, *To the Hermitage*, 2000: 193)

A correct diagnosis? A dystopian prediction? Both? As "thinking pragmatists," we decided to dip into other descriptions of robotization – which is more visible now than it was when Bradbury wrote his *magnum opus*. In order to paint a comprehensive picture, we looked at science fiction, at the media, and at social science, all of which are closely connected.

It was Czech author Karel Čapek who, in 1920, coined the term "robot" (from *robota*, "labor" in Slavic languages; *robotnik* means "worker"). In his play, *R.U.R*, *Rossum Universal Robots*, artificial humans made of synthetic organic materials worked in factories, and developed lives that were not substantially different from those of the people.[1]

R.U.R. became a science fiction classic between World War I and World War II, and its topics were taken up with great enthusiasm in the 1950s and 1960s. The Cold War found expression in space competition, among other things. Cybernetics and cyborgs seemed to be an inescapable future, initially in space travels, but later even in industrial production. The matter was so serious that by 1942, Isaac Asimov had already formulated his Three Laws of Robotics, meant to keep humanoid machines in their place subordinate to humans. Although it was fiction,

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[1]   Machines doing things existed before Čapek's work (see e.g. Edgar A. Poe's essay on "Maelzel's chess player" from 1836, and more recently Riskin, 2016), but they were not meant to perform actual work.

it has been taken extremely seriously by artificial intelligence (AI) researchers and others.

When the Iron Curtain fell, space travel lost its attraction, but robots entered production processes in many industries. The end of the 1970s had seen the latest of recurring debates about automation, technological unemployment, and deskilling, triggered by Braverman's book (1974), but it had faded out in the 1980s.

Now the debate is back. "Robots could take half of the jobs in Germany." Serious authors write either enthusiastic or dystopic books about robotization. (John Searle critically reviewed two in 2014: Floridi's enthusiastic *The Fourth Revolution* and Boström's dystopic *Superintelligence* from the same year, protesting that computers will never develop a consciousness.) We are apparently witnessing a "robot revolution" – or so such serious sources as Bank of America Merrill Lynch investigators claim. In the next seven chapters, we analyze the fears and hopes occasioned by automation, as reflected in popular culture from the coining of the term "robot" to the present media hype. Have such hopes and fears changed? If so, did the changes reflect actual changes in robotics, or do robotics remain the same?

We limit the scope of our investigation by adopting the definition of robots suggested by Danica Kragic, a professor at the Royal Institute of Technology in Stockholm (see e.g. Bütepage and Kragic, 2017). According to her, robots are machines that possess a physical body and are equipped with sensors and motors or actuators. Artificial Intelligence (AI) is learning software that processes information collected by the robot's sensors, thus permitting it to work. In this sense, advanced robots are dependent on AI, but not all AI software serves robots. (Kragic tends to look too far into the future here, however. After all, a great many industrial robots were and are *automatic* robots, operated by simple programs that are unable to learn. It is only now that the number of AI-steered robots – *autonomous* robots – is growing.)

We have chosen to include popular culture in our inquiry because we believe it has a greater impact on public opinion than the social sciences (more on that in the section, "Robotization and popular culture"). But considering the enormity of the material involved (novels, films, comics, etc.), we chose only the groundbreaking works – those which were undoubtedly popular practically all over the world. Some of them have become widely popular only after having been remade into movies. They

all belong to the genre known as science fiction, or its close cousin, "speculative fiction."[2]

We begin by tracking down possible sources of the present media hype – reports on ongoing robotization of work.

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[2]   A term allegedly coined by Robert Heinlein (Asimov, 1981) but used to describe works of e.g. Ursula Le Guin and Margaret Atwood.