4.0 ROBOT ETHICS

By Kathleen Richardson

ABSTRACT

The ethics of robotics is one of the main themes in the REELER project. The Ethics of Robotics is best understood as a subfield of the philosophy of technology. Ethics provides evaluative criteria for human behaviour, experience and action. As robotic scientists create artefacts, and put these artefacts into the environment, potentially impacting on human interpersonal interactions with each other and changing human experience of the environment. As robots and automated systems are put into environments that may displace humans, or may bring humans into close contact with machines, ethics are the set of rules, procedures or guidelines for ensuring human safety. It is predicted that robots and autonomous machines, driven by Artificial Intelligence (AI) are, and expected to become more able to carry out independent actions (or multiple interactions) without direct human supervision, leading some to be concerned about the kinds of cultures this might create. Will more robots, autonomous systems and AI create unemployment? Will they create new jobs? Will more robots in society lead to more human isolation? Or will more robot free people from mundane and unpleasant tasks so they can focus on what is enjoyable in life? These are the kind of questions we will explore in the REELER project, identifying the main actors in these debates and incorporating the perspectives of affective stakeholders.

4.1 Opening

Ethics is a central concept in the REELER project but trying to define what ethics is, is beset with difficulties. One could view the figure of Moses in the Old Testament as an ethicist, and his Ten Commandments as an ethical guide to behaviour. Anthropologically speaking, human cultures are guided by cultural 'ethical' and 'moral' preferences, but Ethics, in the formal philosophical sense of the term, is one of the oldest branches of Western classic philosophy and in its simplest form is concerned with the moral integrity of humanity; and how the basis for right and wrong is decided; and who can and should decide it. Such a statement though is controversial because what is included in the category of the human (and therefore what being is capable of exercising ethics) has shifted over historical time. Among the earliest ethical texts is Aristotle's Nicomachean Ethics (Aristotle, Thompson 1953) – a book devoted to describing good behaviour . By way of an introduction ethics concerned with laying down principles of human behaviour are referred to as normative ethics – these are ethical systems the propose norms about how human should behave (Bynum, Rogerson 2003, Bynum 2008). The main models of normative ethics are:

Virtue ethics (behavior can be guided by rules related to good and bad behaviour. Virtue ethics focuses on character). Associated with Aristotle's Nicomachean Ethics.

Deontological ethics – Kantian ethics built around the notion that humans should not be a means to an end. Developing his philosophy at the height of the Enlightenment, Kant viewed the human as exceptional. Kantian ethics resists the representation of people as forms of property and contemporary ideas against the commodification of human beings can be traced back to Kantian Ethics. (Kant was hostile to John Locke's 'possessive individualism' which proposed that a person's own body that they possessed could be property) (Margaret, Naffine 2001).

Utilitarian ethics – associated with Jeremy Bentham and focused around the greatest good overall.

Of course to be an ethicist in 2017, one need not refer to Aristotle, Kant or Bentham, but it is surprising how frequently these normative philosophies such as virtue ethics of Aristotle or the usefulness/utilitarian ethics of Jeremy Bentham are drawn on by contemporary robot ethics researchers (Bynum 2006, Wallach 2010, Stahl, Coeckelbergh 2016a, Veruggio, Operto 2008, Lin, Abney et al. 2011).

Other ethics schools include descriptive and interpretive ethics including phenomenology, focused around the nature of being and ontology and existentialism exploring the meaning of existence. This is not to include the whole class of ethics of post-modernism, post-colonial studies and feminism that take issue with classical and Enlightenment ethics. For our purposes we will hone in on those ethical debate that directly touch on robots, which often include discussion of autonomous systems and AI.

In our work in REELER we are concerned with how ethics becomes a part of practices of robotics, and explore the extent to which commercial or university driven robotics takes account of ethics and in what ways.

4.2 Methodology

The methodology of this section is primarily informed by research training and expertise of the REELER researcher in the area of robotics and the ethics of robotics and is from tacit and acquired knowledge over 15 years. The REELER researcher has training in social anthropology which has not taken the term ‘robot’ as a core category. For example a search on the term *robot* in article titles on AnthroSource (between 2000 and 2017) only recoded two journal papers. The term *ethics* by contrast as a search term in AnthroSource offered only 134 results. AnthroSource has a bias of only providing results from US based journals. There were no results for *robot ethics*. By contrast a search on SCOPUS for *robot ethics* gave a count of 2851 citations between 2005 and 2017 with Computer Science identified as the main source subject area.

This chapter’s methodology differs somewhat from the other methodologies presented in this Deliverable 2.2 because the REELER researcher is drawing on expertise in the field, or tacit knowledge (Polanyi 2015), to describe how knowledge moves through a series of stages to become tacit (understood or implied without being stated), but as a collaborative learning enterprise, REELER is bringing together researchers from different disciplines in which the tacit knowledge of each participant will differ (Gill 2015). Moreover, tacit knowledge is informed by the scholarly interactions of the researchers through conferences, journal collaborations and workshops and not merely known as an anonymous text. Therefore tacit knowledge is generated within academic and research networks.

The ethics work packages of publicly funded European projects vary widely but ethics is central to the construction of technological research. According to the Horizon2010 EU Framework Programme for Research and Innovation ‘Ethics is given the highest priority in EU funded research: all the activities carried out under Horizon 2020 must comply with ethical principles and relevant national, EU and international legislation, for example the Charter of Fundamental Rights of the European Union and the European Convention on Human Rights’ Ethics.[22]

22 https://ec.europa.eu/programmes/horizon2020/en/h2020-section/ethics

What happens when an interdisciplinary team come together, who are situated in practices that are often divergent from each other, to collaborate on an enterprise explore the development of novel technologies? What kind of ethics can emerge from this practice? How does each discipline define its "ethics"? How do affected stakeholders understand ethics?

We propose in this Deliverable 2.2 that *ethics* is not a homogenous or even agreed upon concept. Ethics can be enacted in the project process by different disciplinary practices.

This can be beneficial as this kind of methodological approach relies on expertise, training and tacit knowledge. However, the drawbacks of such an approach could be bias and preferences for certain authors or ideas are given space while others are excluded. In order to minimize this potential bias, I outline a range of issues that are relevant to all the major actors identified above: anthropologists of robots, philosophers of robots, roboticists, computer scientists and engineers, the European Union and businesses. In what follows several themes in ethics are considered for discussion:

- Approaches to Robot Ethics (4.3)
- Health and Safety (4.4)
- Rights of Privacy of Research Participants (4.5)
- Non-disclosure and Liability (4.6)
- Privacy and Data Protection (4.7)
- Responsible Research and Innovation (RRI) (4.8)
- EU and Robots (4.9)
- Conclusion (4.10)

4.3 Approaches to robot ethics

Robot ethics is the study of ethical systems of humans and robots. Robot ethics can be bifurcated into two main strands:

1. Deciding the ethical good or bad of a new robotic technology and its implications for humans, society and the environment.
2. Coding into robots and AI systems ethical codes so these machines can take more actions in the world without impacting negatively or unpredictably on humans, society and the environment.

Robot Ethics in genealogical terms, is a related field of machine ethics which is a subfield of the much larger field of the ethics of science, technology and society (Lin, Abney and Bekey 2011). The ethics of technology draws on fields in the social studies of science and technology and the philosophy. Machine ethics explores the applied uses of machines, especially in contexts that might depend on an advanced degree of judgment and sensitivity such as in a war or a medical situation (Anderson and Anderson 2011). Machine ethics is now emerging as a new subject area about how to incorporate ethical principles into the technology of machines as part of their functioning practices, so that the machines are able to carry out ethical acts in the applied domains in which they are situated (Turkle 2012, Sherry 1984, Coeckelbergh 2009, Coeckelbergh 2012, Stahl, Coeckelbergh 2016b).

Philosophers dominate the field of robot ethics (Seibt 2017, Coeckelbergh 2012, Gunkel 2014, Sullins 2006, Stahl, Coeckelbergh 2016a) exploring questions such as: Can a robot be a moral agent? What constitutes personhood? Do robots need rights and protections? Philosophers have explored this idea in relation to what it means to be human (Ohlin 2005), animals (Francione 1996) and artefacts (Pinch, Bijker 1984). Moral and ethical agency is shaped by the capacities of the agent to act, effect, to be responsible, and to be able to act with obligations, rights and duties. Legal personhood is a core category in ethics as, developed during the Enlightenment as a set of legal obligations a person could hold. But, as we will see the concept of legal personhood has not been universally attributed to all humans (slaves and women have typically been excluded), nor is a person only a physical human being, as we understand from the concept of corporate personhood (Margaret, Naffine 2001).

Another important cohort of contributors to the field of robot ethics is among robotic scientists, engineers and computer scientists, who have been encouraged to consider ethics as part of European Union funding guidance exploring robots for children with autism (Robins, Dautenhahn et al. 2006, Pop, Pintea et al. 2014), among the elderly (Flandorfer 2012, Gallego-Perez, Lohse et al. 2013, Roy, Baltus et al. 2000, Sharkey, Sharkey 2012) and social robots for various human level applications (Costescu, David 2014, Breazeal 2004, Sharkey, Sharkey 2010).

There is now, a small, but growing cohort of anthropologists including Richardson (2015, 2016), Robertson (2014, 2007), Hasse (2017, 2015) and Suchman (2007), and the field has grown significantly in the last few years. The REELER project is guided by anthropological researchers and fieldwork methods. This approach is grounded in empirical data collection, interpersonal engagements, participant observation and a consideration of power, gender, race and class, topics that will materialise in the project in different ways.

This could be regarded as surprising considering the figure of the cyborg is so prominent in anthropological texts to explore the cultural production of boundaries. The cyborg I am referring to here was a concept developed in this particular way by Donna Haraway, (1991). Moreover, the work of Strathern (1992) were part of pioneering studies in to the ethics of biotechnology and the ways it was impacting on concepts of the person, self, kinship and relations. We might ask why anthropologists have been slow to take up work of robot studies and a related field of robot ethics? Or Roboethics to coin a term by Gianmarco Veruggio in a paper The Birth of Roboethics (Veruggio 2005). For Veruggio, roboethics is:

> "Robotics is rapidly becoming one of the leading field of science and technology, so that we can forecast that in the XXI century humanity will coexist with the first alien intelligence we have ever come in contact with - robots. It will be an event rich in ethical, social and economic problems. Public opinion is already asking questions such as: 'Could a robot do "good" and "evil"?' 'Could robots be dangerous for humankind?'."
>
> (Veruggio 2005)

Our ethics approach will draw on these ethical actors and demonstrate this multidisciplinary in our approach. There are difficulties with trying to incorporate the perspectives of other research fields, as each research field of robot ethics has developed inside different intellectual traditions, have different genealogies and different motivations of effect (the EU is a tax-funded entity working for all of its European citizens, a research scientist can be motivated by the pursuit of knowledge for its own sake).

Companies have their own set of protocols and standards for new technologies, producing technologies as new inventions and using marketing and advertising to promote their robotic products so that they will be bought by consumers and businesses. In REELER we will explore the way in which robotic companies think about ethics and what ethics means to this specific community in regard to their new inventions, and how and if they will be marketed.

4.4 Health and safety

According to the REELER team's engagements with engineers and robotic scientists who participated in a collaborative learning experience in June 2017, ethics is primarily around the issue of safety. Robots must be safe. They must be safe to those who produce them, and those who use them. If robots are sold commercially, robots must meet particularly kinds of safety standards as given by national and European and international safety standards. In labs, experimental platforms are developed but they must still comply with International Standards of Health and Safety, such as the EU Safety Requirements for Collaborative Robots and Applications expressed as Council Directives that are specifically focused around different kinds of engineered products including machinery (89/392/EEC), safety toys (88/378/EEC) or electrical equipment designed for use within certain voltage limits 73/23/EEC – all these were amended by Council Directive 93/68/EEC of 22 July 1993 (Directive 1993).

As the REELER project will work with many different kinds of robots and issues of proximity and autonomy of the robots will be important. For example, if robots (including autonomous systems and AI) are able to act independently of human assistance, what kind of safeguards are built into the machines so that the equivalent of an 'off' or 'emergency' button can be activated if a collision or some other danger is detected?

Experts in the field agree there is no commonly accepted definition of autonomy in the AI or cognitive sciences (Frose et al., 2007 p. 455; Vernon 2014). Autonomy of a robot implies some degree of freedom from its human controller (Frose et al., 2007). Autonomy may be set on a continuum with autonomy at one end, and heteronomy (its antinomy) on the other. Or as a spectrum that includes different kinds of self-determination of a system: autonomy, supervised autonomy, or behavioural autonomy operating in the same system.

One such definition of autonomy is given here:

> "Autonomy can be defined as the degree of self-determination of a system, i.e. the degree to which a system's behaviour is not determined by the environment and, thus, the degree to which a system determines its own goals. Implicit in this definition is the notion that, in addition to selecting its goals, the agent can then choose how best to achieve them and that it can then act to do so. A system might have different degrees of autonomy with respect to the determination of goals and their achievement."
>
> (Vernon 2016)

Behavioural autonomy represents a form of autonomy that is behaviour led. Behavioural autonomy can be characterized by at least two distinct attributes: (a) the degree of autonomy (i.e. the extent to which a system is assisted by a human in the achievement of its goals and the execution of its behaviour), and (b) the strength of autonomy (i.e. the extent to which a system can deal with uncertainty or unpredictability in any aspect of achieving its goals). There is a continuous spectrum of both degree and strength.

Robots designed for public use are developed with guidelines that hand over control to the humans, but may carry out certain functions without human supervision. For example, even a toaster carries out some of its actions without human supervision (it browns the bread), but a human operator can intervene and stop the action by pressing a stop button on the device or closing down the power source. Moreover, considerations such as the size of robots and proximity to humans will also be important ethical issues, and as we will see liability for damage to humans or the environment may cost companies if not attended to in the early stages of production. Many robots come with a Best Practice document as guidelines, that give the user instructions on the maintenance and safety of the robot.

Moreover, there are recommended and mandatory standards for software and hardware. Software standards can include GNU Coding Standards, or Java Code Conventions. Some research scientists choose to build robots with open source software, while others are fiercely guard code as commercial property. While these issues may not impact on consumer use of the robot, they are considerations on the side of the engineers and coders of the systems. For example, by using the GNU Coding Standards, research scientists are also building into an ethical model of technology. GNU is a system (the kernel is LINUX), a free software system associated with MIT computer scientist Richard Stallman (Stallman 1999).

In addition commercial and lab robots are subject to rigorous tests enshrined in the codes of the CE mark, a mandatory conformity marking for certain products sold within the European Economic Area (EEA) since 1985 (Council Directive CE).

At a very simple level, the potential health and safety issues that impact on users of a new technology are an open discussion, and most discussions tend to be concerned with the immediate safety of the user and not the wider term effects of introducing a technology: displacing workers or increasing isolation, nor the opposite, the wider effects of its beneficial introduction.

REELER will explore these issues throughout the project.

4.5 Rights of privacy of research participants

In REELER we take the issue of protecting the confidentiality of research participants seriously and have ensured that consent of affected stakeholders and roboticists meet with the highest standards of ethics. Aside from needing signed consent from our participants, we anonymise the data so that our interlocutors are not personally identifiable in any work we make publicly available. The REELER project will interview a wide range of stakeholders, from the producers of the technology, to the corporations that promote and sell the products, to the persons who will be impacted socially, personally or economically by the impact of robots. In the REELER project we refer to these participants as the 'affected stakeholders'. The REELER project will follow European and national guidelines which makes a mandatory requirement of 'informed consent' which includes forms describing the project are given to participants and signed before any data collection can commence. It is crucial that all participants can withdraw from the project at any time and that special attention is given to participants with unique needs (physical or cognitive impairments) and that attempts will be made to support the participation of a wide range of stakeholders.

4.6 Non-disclosure and liability

Moreover, as our research brings us into close contact with private corporations who fiercely protect the company's technology, we have established a non-disclosure agreement procedure in REELER project as a matter of course and collaboration. In our non-disclosure agreements, we wish to allow commercial companies an opportunity to retrieve the information and data they have share with REELER. Such a stringent non-disclosure agreement with private companies shows the balance of power differs between academic researchers and companies and can tip in the favour of companies. Such an approach raises ethical questions about power, and access to knowledge, and who remains in control of information (Sussman 2008). As a matter of course, companies ask employees to sign non-disclosure agreements when employees have access to sensitive aspects of the company's information. As the European Union funding streams encourage the participation of partners from universities and business, the non-disclosure agreement could significantly shape the next few decades of academic research.

Moreover, as the European Parliament Committee on Legal Affairs' Commission on Civil Law Rules on Robotics is currently drafting guidelines on robotics, disclosure, non-disclosure and liability could become increasingly a matter of EU policy and practice. The recommendations by the commission included:

> "Disclosure of use of robots and artificial intelligence by undertakings Undertaking s should be obliged to disclose: – the number of 'smart robots' they use, – the savings made in social security contributions through the use of robotics in place of human personnel, – an evaluation of the amount and proportion of the revenue of the undertaking that results from the use of robotics and artificial intelligence."

On the issue of liability, the commission proposed several recommendations such as the one that cited below:

> "Risks that may occur are inherently linked to the use of autonomous machine in our society. A robot's behaviour potentially has civil law implications, both in terms of contractual and of non-contractual liability. Thus clarification of responsibility for the actions of robots and eventually of the legal capacity and/or status of robots an AI is needed in order to ensure transparency and legal certainty for producers and consumers across the European Union. The Commission is called on to carry out an impact assessment of its future legislative instruments to explore the implications of all possible legal solutions, such as, among others, the establishment of a compulsory insurance scheme and a compensation fund."

As robotics companies may face the prospect of increased liabilities if the civil laws are put into statue law, the tug of war between disclosure, non-disclosure and liability creates an ethically charged space of interaction between different stakeholders.

4.7 Privacy and data protection

Robots are technological devices capable of recording information about users. As physical devices robots are able capture information and therefore they are devices of data protection and privacy. There are several directorates of the European Union that protect individual privacy and data protection, putting restrictions on how corporations (and theoretically governments) can access and use personal data of users of computer systems. In regard to large corporations they face different issues with protecting data from hackers and thieves and potentially other corporations. Here are the directorates:

- Data Protection Directive (95/46/EC) of the European Parliament and of the Council of 24 October 1995 on the protection of individuals with regard to the processing of personal data and on the free movement of such data. This directive specifies a number of confidentiality and security safeguards for this and other interactive on-line services.
- Council Directive 83/570/EEC of 26 October 1983 amending Directives 65/65/EEC75/318/EEC and 75/319/EEC on the approximation laid down by law, regulation or administrative action relating to proprietary medicinal products.
- The Declaration of Helsinki - Ethical Principles for Medical Research Involving Human Subjects (art I.3 and I.4 related to the careful assessment of risks to the subject), and all articles of section III Nontherapeutic clinical research, related to the obligation for patients' informed consent and right to withdraw as well as to the safeguard of patient's dignity and personal integrity.
- The Data Protection Act (1988) and Data Protection Amendment (2003), Directive 2002/58/EC on Privacy and Electronic Communications (amending Directive 97/66/EC), regulating personal information protection across the telecommunications sector; ISO 13482:2014 for Robots and robotic devices - Safety requirements for personal care robots.

Privacy is a core principle of the European Union. Communication and information technologies have reshaped many crucial principles and issues of privacy for citizens of Europe. We propose to follow the guidelines of the European Union (EU) and the Council of Europe (CoE) for the need to protect private data in digital formats.

With the entry into force of the Treaty of Lisbon in December 2009, the Charter of Fundamental Rights of the EU became legally binding, and with this the right to the protection of personal data was elevated to the status of a separate fundamental right. A better understanding of Council of Europe Convention 108 and EU instruments, which paved the way for data protection in Europe, as well as of the CJEU and ECtHR case law, is crucial for the protection of this fundamental right (Handbook on European data protection law pg. 3).

Prior to the internet, robots acted as digitally connected devices and rarely linked to any wider system. Now robotic systems are often wirelessly tethered, and companies that sell their products to other companies or consumers update software systems via the internet. This means that data is a currency. Data can be sold onto advertisers. This has led to a growth of Big Data, billions of internet interactions that are able to be captured in data form.

If robots are wirelessly tethered and connected to the internet, they are not just devices that are used in particular situated locations, but also become recording and surveillance devices. Therefore, data (in the form of use, images, text, audio) can be captured by the device. The ethics of robotics must pay attention to the privacy and data protection issues of users of these devices, and ensure protections are available for citizens. In the digital age, data is a currency for corporations, and can be monetised leading to incentives by corporations to collect personal data of citizens when interaction with technological devices. The ethics of robotics must include attention to privacy and data protection of its citizens.

4.8 Responsible research and innovation (RRI)

The importance of ethics in European Union projects have prompted a new field of Responsible Research and Innovation (RRI), and as 'a consequence, all aspects of the programme which has an overall financial volume of approximately €70 between 2014 and 2020 have to adhere to principles of RRI' (p. 155). For the EU RRI is headed under five interrelated topics:

- engage society more broadly in its research and innovation activities,
- increase access to scientific results,
- ensure gender equality, in both the research process and research content,
- take into account the ethical dimension, and
- promote formal and informal science education .

The European Union has been keen to include stakeholder perspectives in research across science and technological research broadly termed as Responsible Research and Innovation (RRI) includes bridging the gaps between technology producers and affected stakeholders (Stahl, Eden et al. 2014, Stahl, Eden et al. 2013, Owen, Macnaghten et al. 2012). According to innovation specialist Rene von Schomberg (2013), RRI

... is a transparent, interactive process by which societal actors and innovators become mutually responsive to each other with a view to the (ethical) acceptability, sustainability and societal desirability of the innovation process and its marketable products (in order to allow a proper embedding of scientific and technological advances in our society).

RRI comes out of the concerns about the impacts of technology on the environment, and the growth of "risk society" (Beck 1992) and the complexity created in modernity through the interrelations of economy, technology, science and lived experience. The European Union is home to the "precautionary principle", a principle exploring the potential social, environmental, biological and technological risks from the introduction of new technologies (Sunstein 2005, Ladeur 2003). The precautionary principle is a statuary requirement in the law of the European Union and was adopted is detailed in Article 191 of the Treaty on the Functioning of the European Union (February 20001).

Moreover, the EU commissions a number of Special Eurobarometer Reports to gage citizen perception and two of these reports are important to our REELER project, and these are: Public Attitudes Toward Robots (Eurobarometer 2012) and Autonomous Systems (Eurobarometer). These reports invited responses from citizens from all member states to give their opinions on the development of robot systems across Europe. Some important findings we report below. There are those that dispute the usefulness of such mass citizen surveys, showing how the details and specific needs of citizens can be obfuscated by general questions (for example individual surveys often are more favourable towards robots in healthcare, which in the barometer reports were looked upon negatively). Moreover, when we are thinking about affected stakeholders, to what extent do they really have a say in how policy develops in relation to robots – do affected stakeholders really have a say. The mass media and movie industries have an impact on the way in which ideas about robots are circulated more widely in society, as we discuss in the section Robots in the media. To what extent are affected stakeholders concerns or hopes shaped by this cultural imaginary?

In 2012, the European Union commissioned a report, Special Eurobarometer on Robots, among all of its member states and these was one of the findings in a section called "public attitudes toward robots" which investigates people beliefs regarding the use of robots in different contexts. The results of this survey are presented below:

> "EU citizens also have well-defined views about the areas where robots should be banned. Views are most emphatic when it comes to the care of children, elderly people and people with disabilities, 60% of EU citizens saying that this is an area where robots should be banned. There is also considerable opposition to the use of robots in the other more 'human' areas included in the survey: 34% of respondents believe robots should be banned in education, 27% are against the use of robots in healthcare and 20% oppose their use for leisure purposes. Less than ten percent oppose the use of robots in any of the other areas. Overall, ten percent of respondents spontaneously said that robots should not be banned in any of the areas listed."
>
> ("Public Attitudes Towards Robots" 2012, 382-383)

The report raised the questions if robots were developed, would the public accept them? There was support for robots in areas where no face-to-face or direct human contact was a priority. Education, healthcare and leisure are areas of human endeavour where information is passed between people interpersonally. Roles that were not considered interpersonal or dangerous to human were areas the EU respondents favoured over and above these areas where direct human contact is central to the experience. We tend to view roles that require interpersonal interactions so there is concern that roles that require human interaction cannot be replaced by machines. The machine is considered 'cold' 'non feeling' and therefore not able to act in roles that might require awareness of a human being's emotional state.

European citizens make a distinction between robots that are developed for impersonalised forms of work, and "care" work, activities that require an affective component. A barometer published in 2015 found European attitudes to robots had softened significantly on the 2012 survey. Important findings were:

> Eight in ten Europeans (82%) who use robots think well of them, while nine in ten (90%) among them would purchase one.
>
> 74% of young Europeans have a positive view of robots and 72% of all Europeans (77% of young people) believe robots are good for society because they help people.

> A fifth of respondents (20%) say that they would consider having a robot at home. One in ten (10%) could get one within the next five years.
>
> (EU Barometer, 2015)

In response to the growing field of robotics, researchers in the field have established a number of principles that are shared widely. One such set of principles was established by the UK research council the Engineering and Physical Sciences Research Council (ESPRC) titled: Principles of Robotics (2010) which outlined the following five legal guidelines:

1. Robots are multi-use tools. Robots should not be designed solely or primarily to kill or harm humans, except in the interests of national security
2. Humans, not robots, are responsible agents. Robots should be designed; operated as far as is practicable to comply with existing laws & fundamental rights & freedoms, including privacy.
3. Robots are products. They should be designed using processes which assure their safety and security.
4. Robots are manufactured artefacts. They should not be designed in a deceptive way to exploit vulnerable users; instead their machine nature should be transparent.
5. The person with legal responsibility for a robot should be attributed.

4.9 EU and robots

The European Union is one of the world's largest funding organisations investing 2.8 billion euros in robotics research as part of Horizon2020 . Moreover, the EU has established a Legal Affairs Committee on Robots directed by Rapporteur Mady Delvaux (S&D, LU). The Legal Affairs Committee will establish EU-wide rules guided by ethical, social, and economic considerations.

In January 2017, the European Parliament have begun to draft a new set of regulations as part of Commission on Civil Law Rules on Robotics. The document proposes to regulate the development of robots, so that the technology is developed safely, considering the ethical and social effects of the new technology. Moreover, the Fourth Machine Age (robots and AI) is predicted to radically alter working practices across the world, as robots and AI replace human jobs, the impact of these development could increase unemployment while simultaneously reducing social security payments in the form of taxation or national insurance contributions to nation states. As a way of addressing this potential issue, the Committee on Legal Affairs propose the introduction of the term 'electronic personhood' for robots, to make companies and corporations liable for potential harms of the technology and reduced funding for state welfare provision.

Personhood is a legal category, designed to indicate rights, responsibilities and obligations. Personhood is a controversial category, as it has historically been applied to both persons and things. The person was a legal construct that evolved out of the Enlightenment humanism (Margaret and Naffine, 2001). The use of the term 'person' is not without its problems. The person is a legal category at the onset of the liberal western democracies. The term 'person' has not been confined to human beings. The concept of 'corporate personhood' developed in parallel with the concept of the person in Western liberal democracy. The term 'person' was used in the US constitution's Fourteenth Amendment which included the rights of free slaves to be recognised as 'persons' and was later taken up as a term of corporation to be able to access the same rights as human beings. The Fourteenth Amendment enacted laws to abolish slavery and recognise former slaves as 'persons', at the same time, corporations (which is a large company or group of companies) the power to be recognised as persons, this is termed 'corporate personhood'. As stated earlier, the extension of the political franchise to include those other than wealthy white men, was gradually extended over 400 years to include Black people, former slaves, working men and all eventually all women. In extending the franchise, inherent in the legal personality was a new way to represent humans as forms of property.

As a legal category, the attribution of personhood to those other than human beings has been an ongoing political issue. To give a recent example of the use of personhood to refer to something other than a human being, in early 2017, legal claims by indigenous Māori people have led to legal recognition of personhood to a New Zealand river. The ninety mile Whanganui River will be represented by two guardians in legal matters. There are efforts to recognise the personhood of great apes, and campaigns include the Nonhuman Rights Project (NhRP).

While the EU commission on the civil law on robotics intended to use the phrase 'electronic personhood' as a category to highlight liability, the political fallout from the use of the term personhood in relation to a robotic machine is likely to have longstanding political ramifications if accepted.

4.10 Conclusion

For REELER, ethics, in all its multiple forms and representations are important for developing an ethical roadmap. Anthropology as a discipline is committed to taking multiple perspectives, but also recognising the influence of class, race, gender and sexuality inform human relationships, economic structures and political systems. Through our project we will collect data on the different ways in which ethics is articulated by the producers of robots, business and affected stakeholders. We will creatively explore ethics by using novel methods of sociodrama and the mini publics, as well as the through qualitative interviews and participant observation. We have identified several issues that will form the basis of subsequent discussion:

- increased unemployment (offset some argue by the creation of new jobs)
- potential danger to humans (robots in factories have been cordoned off from people), but now human-level proximity increases, such as in the production of healthcare, domestic or industrial work
- human isolation – will more interactions with robots reduce human level contacts.
- Loss of purpose – deskilling that comes from have greater parts of skilled production processes transferred to machines that began in the industrial revolution.
- robot as tool or something more -which set of actors are changing the meaning of the robot, is it the affected stakeholder (e.g., the drivers who may lose jobs through autonomous cars), the European Members of Parliament (wanting to find ways to protect taxable revenue but still support the introduction of robots), or corporations (who want to open up new ways of thinking about social reality in order to change commercially exploit it?).

The attribution of the category of 'personhood' to robots opens up a minefield of issues from a human point of view. If a robot for example becomes a person, does that mean it will need the same treatment as a human beings. Will the robot needs holidays and breaks. Will it be 'cruel' to use a robot as an instrument? This is an ongoing issue and in the REELER project we envisage this to be one of the most important debates we will follow.

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