

Websites only for number 2, 4, 11, 12, 16, 23, 24, 26, 28, 32, 34, 38, 39, 40 - use <https://www.citethisforme.com/cite/website>

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2. The testing of robots: from Asimov's three laws of robotics to the present day.

- The Three Laws are:

1. A robot may not injure a human being or, through inaction, allow a human being to come to harm.
2. A robot must obey the orders given it by human beings except where such orders would conflict with the First Law.
3. A robot must protect its own existence as long as such protection does not conflict with the First or Second Laws.

In 2011, the [Engineering and Physical Sciences Research Council](#) (EPSRC) and the [Arts and Humanities Research Council](#) (AHRC) of [Great Britain](#) jointly published a set of five ethical "principles for designers, builders and users of robots" in the [real world](#), along with seven "high-level messages" intended to be conveyed, based on a September 2010 research workshop:^{[2][3][4]}

1. Robots should not be designed solely or primarily to kill or harm humans.

2. Humans, not robots, are responsible agents. Robots are tools designed to achieve human goals.
3. Robots should be designed in ways that assure their safety and security.
4. Robots are artifacts; they should not be designed to exploit vulnerable users by evoking an emotional response or dependency. It should always be possible to tell a robot from a human.
5. It should always be possible to find out who is legally responsible for a robot.

The messages intended to be conveyed were:

1. We believe robots have the potential to provide immense positive impact to society. We want to encourage responsible robot research.
2. Bad practice hurts us all.
3. Addressing obvious public concerns will help us all make progress.
4. It is important to demonstrate that we, as roboticists, are committed to the best possible standards of practice.
5. To understand the context and consequences of our research, we should work with experts from other disciplines, including: social sciences, law, philosophy and the arts.
6. We should consider the ethics of transparency: are there limits to what should be openly available?
7. When we see erroneous accounts in the press, we commit to take the time to contact the reporting journalists.

The EPSRC principles are broadly recognised as a useful starting point. In 2016 Tony Prescott organised workshop to revise these principles, e.g. to differentiate ethical from legal principles

In June 2016, [Satya Nadella](#), a CEO of [Microsoft Corporation](#) at the time, had an interview with the [Slate](#) magazine and roughly sketched five rules for artificial intelligences to be observed by their designers:^{[7][8]}

1. "A.I. must be designed to assist humanity" meaning human autonomy needs to be respected.
2. "A.I. must be transparent" meaning that humans should know and be able to understand how they work.
3. "A.I. must maximize efficiencies without destroying the dignity of people".
4. "A.I. must be designed for intelligent privacy" meaning that it earns trust through guarding their information.
5. "A.I. must have algorithmic accountability so that humans can undo unintended harm".
6. "A.I. must guard against bias" so that they must not discriminate against people.

[Mark W. Tilden](#) is a robotics physicist who was a pioneer in developing simple robotics.^[9] His three guiding principles/rules for robots are:^{[9][10][11]}

1. *A robot must protect its existence at all costs.*
2. *A robot must obtain and maintain access to its own power source.*
3. *A robot must continually search for better power sources.*

What is notable in these three rules is that these are basically rules for "wild" life, so in essence what Tilden stated is that what he wanted was "proctoring a silicon species into sentience, but with full control over the specs. Not plant. Not animal. Something else."

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