

Principles Involved in Care Robotics Legal Compliance

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There are four constraints that regulate a 'pathetic dot': the Law, the Social Norms, the Market and its own Architecture [L. Lessig, Code version 2.0. Basic Books, NY (2006) p. 121.]

Of the four, Personal Care Robots (PCR), lack some specific legal regulation.

First Problem:

1. There is no concrete binding regulations addressing which fundamental rights these robots individually violate,
2. if they should be granted agenthood
3. or what happens if they cause harm
4. Etc.

Second Problem:

While we are still in a 'brainstorming phase', some of this technology is already entering the market, or will enter very soon.

This leads roboticists that are building a precise technology to address a two-fold problem:

1. The identification of the principles involved in their technology;
2. The understanding of their meaning



Identification of the principles involved: RoboLaw

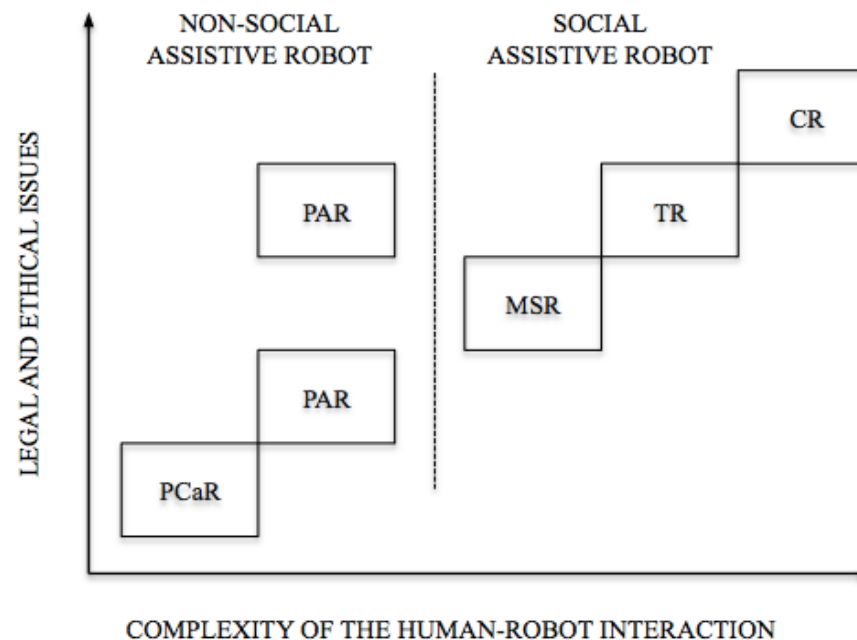
[D6.2. Guidelines on Regulating Robotics. EU RoboLaw Project, 2014, more specifically pp. 167-196 also p. 18.]

- **5 legal themes:** health, safety, consumer, and environmental regulation; liability; intellectual property rights; privacy and data protection; and capacity to perform legal transactions
- **9 ethical questions:** safety, responsibility, autonomy, independence, enablement, privacy, social connectedness, new technologies and justice, and ethics and scientific research
- **In addition to this:** importance of respecting fundamental rights (e.g. independence and autonomy in the light of independent living, participating in community life, equality and access), liability and insurance, privacy, and the legal capacity and legal acts performed by personal care robots (PCR).

However, PCR sub-types (person carrier, PCaR; physical assistant, PAR; and mobile servant robots, MSR) are not all involved in these principles.

In fact, by analyzing in more detail the meaning of these principles each of these robots comply gradually with them in a scale determined by the level of complexity of the human-robot interaction (HRI):

“The more complex the HRI is, the more complex the associated legal issues become”



The interaction between the user and the robot is nevertheless the only variable that increases legal complexity. In reality, other discrete but interrelated factors play a major role in determining the level of complexity in the legal layer:

(1) The attributes of the robot (hardware and software, and normally to the robot functions) and capabilities of the robot, in combination with the users' expectations

(2) The technology applied to the robot: the more sensors, cameras, microphones, etc., the more the robot can monitor and track sensitive data in all stages of its interaction with the user. A robot should gradually meet compliance metrics of the different components it incorporates.

(3) The context where the robot is inserted: this includes not only the physical premises (structured/non-structured environment) but also the end user.

CONCLUSIONS

The identification of general principles concerning robotics represents a great effort towards something yet unaddressed by policy makers. Even so, roboticists need to know the concrete principles underlying their particular technology. These can be classified according to the HRI; however, only taking into account other variables like robot attributes, the technology applied to the robot and the context where it will be inserted, it will be possible to know precisely which principles will apply to each particular situation.

A Modular Regulation based on the concept "Regulate-As-You-Go" is needed. This could make robotics compliance more flexible. Indeed, a robot should be compliant for what it is: for some general modules (shared among all robots like safety, user protection and liability) and some specific modules (depending on the specific attributes of the robot, the technology applied to it, and the context where it will be inserted). This could avoid current over-/under-regulated scenarios

