Robot Companions as Case-Scenario for Assessing the "Subjectivity" of Autonomous Agents. Some Philosophical and Legal Remarks

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Abstract.
In this paper the European flagship project proposal Robot Companion for Citizens (RCC), grounded on the idea of developing robot companions for citizens, is taken as a case scenario for investigating the feasibility of ascribing rights and duties to autonomous robots from a legal and philosophical standpoint. In talking about rights and duties with respect to robots endowed with autonomous decision capabilities, one should face the implications that inevitably these terms rise, especially in the field of law. The paper points out the technological problems related to the application of the notion of duty to robots and the problems deriving from attributing a legal subjectivity to non-human entities such as robot.

1 INTRODUCTION

The legal problem of robotics, or legal gap, as it has been defined by [1], is the consequence of the new possibilities offered by technological advancements in artificial intelligence and robotics components (perception, computation and actuation), namely the possibility to have autonomous machines. In robotics, the term autonomy in general refers to the ability to perform a task in an unknown environment for a prolonged period of time without human intervention. An autonomous robot can be defined as 'a machine that collects information from the surrounding environment and utilises them to plan specific behaviours which allow it to carry out actions in the operative environment' [2]. The current legal systems, from East to West, are not ready to deal with robots that exhibit autonomous behaviours in human-inhabited environments. The most remarkable illustration is provided by the case of the Google Car. As a matter of fact, although the car is capable of driving autonomously, namely without the need of a human being, by law there must be a person on board, just for liability purposes. Things get even more complicated, from the regulatory point of view, if robots are endowed with learning capabilities.

In this paper the European flagship project proposal RCC (http://www.robotcompanions.eu), grounded on the idea of developing robot companions for citizens, is taken as a case scenario for investigating the feasibility of ascribing rights and duties to autonomous robots from a legal and philosophical standpoint. In talking about rights and duties with respect to robots capable of autonomous decisions, one should face the implications that inevitably these terms rise, especially in the field of law.

The paper is organized as follows: next section briefly explores the concept of autonomy, as well as the technologies that will be developed in the framework of the RCC project. In Section 3 the nexus between autonomy and duties is explored from a philosophical point of view. Section 4 deals with the rationale at the basis of the recognition of a subjective status to robot companions. It explores the cases of attribution of subjectivity to entities other than persons in Europe and attempts to extend such cases so as to include robotic agents as well. Finally in Section 5, the question concerning the need for having an autonomous subjectivity with respect to robot companions acting in the legal environment is analysed.

2 FROM CURRENT ROBOTICS TO ROBOT COMPANIONS FOR CITIZENS: AN OVERVIEW

The concept of autonomous agent applies to systems being either physically instantiated or not. The former case refers to embodied agents, such as robots, i.e. those agents having both brainware and bodyware and thus being directly capable of physical actions, while the latter refers to agents that have not an evident physical instantiation, such as the case of non-human operators in financial transactions (e.g., in stock exchange markets or in business-to-business platforms managing industrial supply chains).

Autonomous agents present both significant Scientific and Technological (S&T) challenges and related Ethical, Legal and Societal (ELS) implications, with particular reference to liability aspects associated to the deployment of autonomous agents in society.

Autonomy is inherently multi-scale depending of the layer of the control hierarchy being awarded with a degree of autonomy, or involving environmental or human influence in the decisional loop.

Autonomy may span from low-level control (e.g., in tracking a reference trajectory in the joint space of a robot), to task planning and execution given a specific objective (e.g., in identifying optimal trajectories while navigating between two locations), to the definition of specific objectives given a general objective (e.g., the

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sequence of intermediate stops in product distribution chains), to management of energetic resources (e.g., energy saving and battery charge policies), to cloud robotics (e.g., agents sharing decisions and experiences over ICT infrastructures), to interaction and communication (e.g., the case of the "Chinese room thought experiment"), to the decision of strategic objectives in abstract form, etc.

All such layers and scenarios, from the low-level to the abstract one, present subtle aspects while attempting to define autonomy, as well as to differentiate an automatic control from a degree of autonomy. As a matter of fact, the concept of autonomy is directly connected to automatic control, though autonomy is much more controversial. Influence of past experience on future behaviours is not sufficient to characterize autonomy versus automatic control: a simple integrator is influenced by past experience, but nobody would assert the integrator to be an autonomous machine (rather, it is automatic, as a fundamental block of traditional control and automation theory).

A peculiar characteristics of an autonomous agent is the ability to develop and learn automatic behaviours and policies, and a higher degree of autonomy may be associated to a shift from low-level control towards higher order functions (as it is occurring to advanced robotic systems: Justin [3], the Jazz player robot musician [4], indoor and outdoor service robots [5], [6], just to mention a few) in applying novel and emerging machine learning approaches (as it is the case of the "Formal theory of creativity, fun, and intrinsic motivation" [7]). Previous experience and environmental constraints radically influence and may introduce bifurcations in shaping the evolution of agents endowed with machine learning methods or embodiment of computational functions [8], [9].

What are the associated ELS implications (particularly, with respect to liability aspects), given the potentially unmanageable and unpredictable variety of learning experiences and operational scenarios for agents being instantiated in unstructured physical environments?

Such questions will concern next generation robots, such as those that will be developed within the "FET Flagship Candidate Robot Companions For Citizens" (RCC). The RCC S&T programme proposes a radically new approach to develop machines and to truly deploy them in society as RCC Platforms: HealthCompanion, ExploreCompanion, WearableCompanion, WorkCompanion, UniversalCompanion.

The RCC highly ambitious programme is summarized by the RCC cross-domain grand scientific challenge: "To unveil the natural principles of simplexity, morphological computation and sentience and to translate the resultant scientific knowledge into design principles and fabrication technologies for Robot Companions that effectively and safely act, interact and adapt to their physical and social environment".

In particular, sentience is the ability to integrate perception, cognition and action in one coherent scene and context in which action can be interpreted, planned, generated and communicated [10]. Morphological computation is a novel paradigm asserting the role of materials in taking over some of the processes normally attributed to control [10]. Simplexity comprises a collection of solutions that can be observed in living organisms that, despite the complexity of the world in which they live, allows them to act and project the consequences of their actions into the future. Simplexity can be described as a property of living systems such that they can cope with the complexity of their world [10]. The highly ambitious RCC S&T programme will raise ELS issues, including liability aspects, which will be carefully managed and investigated in the RCC workplan, by means of dedicated and interdisciplinary teams composed by roboticists, experts in ethics, and lawyers. In this paper, we will start to approach such ELS issues, by focusing on the feasibility of ascribing rights and duties to robots.

3 WHICH AUTONOMY? A PROVISIONAL OVERVIEW WITHIN THE SPHERE OF DUTIES

When we try to focus such complex range of claims and issues through the lens of ethics, we must admit the necessity of dealing with a mass of problems, which are far from being captured and solved by both traditional and contemporary ethical theories [11]. The "Robot Companion" framework could indeed constitute a good chance to renew the toolbox of ethics, and surely the concept of autonomy is one of the most questioned in such field of ethics, the robot ethics, which takes seriously into account the new challenges introduced into the ethical domain through the developments of robotics.

Thus, just an overview to the topic of autonomy within the contemporary literature confirms that the debate has now achieved a level of maturity [12], [15]. This is perhaps a sign of the fact that current technological developments seriously begin to lay down the conditions for being able to discuss on such a topic, beyond any science fiction presuppositions. Moreover, another "travel into infinity" might occur to the researcher who wanted to reach a sufficiently wide competence about the so-called robot ethics or machine ethics [16], [17], [2] that constitutes the unavoidable framework for the attempt developed below.

The contemporary debate about robot ethics has developed some interesting results in such frame, firstly connected to the health-care robots [18], [19], but also to the particular context of child-care robots [20]. Furthermore, autonomy is an undoubtedly relevant task also for robotic warfare [21], [22].

In order to take a step forward in such framework, it could be useful to take a step back, by examining briefly, from another point of view, the concept of autonomy and the theoretical conditions of its attribution to an agent. It is surely trivial to affirm that assessing the status of autonomous agents with respect to robots is a problematic issue. In this context, we would briefly explore an articulation of the nexus between autonomy and duties [23] (another of the key-concepts of an ethical toolbox for robotics) that could support a less trivial way of posing that issue.

Starting with a short definition of duty, it is possible to recall a paradigmatic statement drawn from Th. Reid's Essays on the Active Powers of Man (1788) [24]. Duty is neither something that belongs exclusively to an agent («It's up to you!»; «You must, over and beyond any considerations!»), nor something that is intrinsically related to action («This action should be done!» «It's impossible not to do that»). Rather, duty is structurally and inseparably connected to both, or to agent and to action at the same time. In other terms, duty is a relationship between agent and action that triggers "spontaneously" and "mandatory" when a certain situation occur. For example: I see a person falling while she is walking in front of me and immediately I feel / perceive the duty (as subject) to help her to get up.

By remaining within the framework of duty, this (apparently) simple situation opens (at least) three areas of questioning. One is

related to the time of reaction, or: What does "immediately" in such a context mean? A second point regards the verb used in such situation: What do "feel the duty" or "perceiving the duty" mean? Last but not least: Which is the meaning of the word "agent", in relation to this situation? All these areas are widely discussed, in philosophy as well as in neurosciences, but also in roboethics (see [25], [26], [27]). For the purposes of this paper, the authors could just sketch synthetically the third one – and only a little portion of such problematic area.

The concept of agent, in relation to the claim of duty – and to such specific duty («help the person who is in trouble») –, needs at least the clarification of a central aspect. Any duty implies a power, conceived as "to be able to do something": if I have the duty to do a certain action, I must also have the power to do that action, I must be able to do what I am "obliged" to do. Otherwise, no practical question can exist, i.e. any question of ethical relevance.

It has been R.M. Hare [28] to identify this point with deep sharpness.

In its turn, the "power-to-do" issue should deal with a double question: firstly, with an external condition, that can be called "the possibility side": I had the duty to help the person who had fallen in front of me, but there was a ditch along the street (or another physical impediment) between me and her that I have not been able to exceed it. Consequently, the possibility to fulfil such a duty has been denied to me.

Secondly, the "power-to-do" issue should deal with an internal condition, which is – on its turn – intrinsically double. So, there is what can be called "the first level capacity side", I should have the ability to perform exactly the action I am obliged to do: I can do precisely the action of helping her to get up, for example, as I exactly know how to approach her and to surround his her shoulders while she is stretching out his her arms to get up. But it is also possible to distinguish a "second level capacity side", that implies the ability to do more than one sole action in order to answer to the duty-question in that / such situation ("help her to get up"). The agent can choose among different possibilities, all oriented to the goal of helping: I can grab her arms, or I can bend over, so she can lean on me. Still, I can try to stop the traffic, since she fell in the middle of a road and this is surely the first priority in order to help her. In other words, I can value by myself – "in complete autonomy"– what is the best action to do in this specific situation.

The entire question, related to both an external condition and to (at least) an internal one, could be considered as the core of every possible discourse about the attribution of autonomy to an agent. The authors have consciously chosen an example with multiple facets related to a task implying movement. And they are also aware that anyone of these trivial examples opens enormous problems of implementation, if it was possible to transfer the terms of such question to robots – and even larger problems would need to be questioned if the aim of this paper was to consider duties less related to physical aspects.

Nevertheless, a crucial point remains here at stake: It is possible to attribute duties to robots – and to open the discourse about this topic – without asking whether robots [can?] support [or not?] the set of conditions this section has tried minimally to enlighten?

Moreover, if this paper wanted to frame this issue at a greater distance, the authors would realize that it was only a half of a sphere, which finds its ideal completion in the legal dimension.

4 LEGAL SUBJECTIVITY AND ENTITIES OTHER THAN PERSONS: POSSIBLE INCLUSION OF ROBOT COMPANIONS?

In debating whether, one day, robots will have rights and duties, it is crucial to start wondering whether and how robots could become legal subjects, instead of ever remaining an object of the law.

Understanding the cases in which legal subjectivity is recognized to entities other than natural persons serves the purpose to answer the question: is a legal subjectivity for robots needed (or useful)?

In this context it is important to underline immediately that the concept of "subjects" and "subjectivity" that it is used in this paper does not refer to the philosophical notion, widely accepted by modern and contemporary philosophy. The use of these terms is a strictly legal use, functional to the aims of the authors.

Nevertheless, one has first to consider that the meaning and the nature of the "legal person" and "legal subject" concepts are still controversial. While nobody doubts that the human being represents the legal person par excellence, it is not unanimous how they acquire their legal capacity – namely the capability of being entitled of rights and duties – and whether other entities, which are not human beings, could be considered legal person in a specific legal system.

With respect to the first aspect, some scholars believe that the legal capacity is a natural feature of human beings, so that legal systems can just recognize it by law; on the contrary, others think that the legal capacity is a legal status that law awards to certain entities, as argued in Kelsenian theory. It is quite evident that the latter approach eases awarding the status of legal person to entities that are not persons. Associations, foundations and organisations are a significant example; indeed, the experience in existing legal orders shows that considering them as legal person gives rise to several issues and that the rationale of such an option has to be found in patrimonial responsibility [29], [30].

Nonetheless, further questions arise from the possibility of assigning the legal personality to entities that are not composed by a group of people, but are individual entities other than human beings. Can we speak about them as a legal person in legislation, since they are not people in real life? Some theories argue that the concepts of "person" and "human being" do not overlap at all. The scientific and technological progress in biology and medicine has led to rethink, especially at a philosophical level, these notions and the opportunity of including some stages of human life in the category of "person"; at the same time, they started to assume that other living beings, such as animals and plants, or even intelligent things would be considered as a person [31]. Engelhardt, for instance, believes that autonomous agents only, thanks to their potential capacity of self-determination, can be considered as a person, irrespective of their human or non human nature [32].

In any case there are no doubts that robotic technologies, whatever the level of autonomous capacity to determinate their actions would be, cannot be included in the notion of person. The intrinsic qualification of person prevents to assimilate to this ethical and juridical category any entity without a naturalistic dimension of life and self-awareness.

The Italian constitutional framework (and the constitutional framework of several European Union Member States) grounds on the "personality" principle to be interpreted as the general recognition of the fundamental human rights for every human

being, independently from their citizenship, economic, social conditions. The "recognition" of "inviolable" rights means, in the Italian constitutional context (Article 2), that human rights are the authentic base of society, and the human being is the true scope of the legal system and of the public organization of power. In the European Charter of Fundamental Rights, Article 1 introduces the concept of human dignity: this is the leading criterion in the definition of the axiological paradigm that can guide the possible attribution of some subjective status to robotic technologies.

Therefore, sometimes the law itself individuates a distinction between person and subject (or other forms of "subjectivities"), providing hypotheses of differentiation between the two notions.

This possible differentiation grounds on the distinction between two "laws": the law of legal rules (the positive law) and the law of society, "intrinsic to society as principle and rule of coexistence" [33]. The positive law has the mission to recognize the "subject", whilst the law of society would recognize the "person": this means that the positive law can create (legal) subjects that are not persons, but never denying the human being, with her form and substance and, before her, the capability to live [34].

Three are the main cases of differentiation between person and subject, and the individuation of subjects that are not included in the notion of person, that we can find in the European Member States law: i) unrecognized organizations and some kind of corporations without legal personality; ii) conceived baby before birth; iii) animals.

This paper aims at individuating the rationales that base these various recognitions in order to assess the eventuality to extend some of them to the possibility of recognition of robots' subjectivity.

In the first hypothesis (i) the subject is a sort of summation of natural persons that act in order to pursue common scopes, both economic-proprietary and not. The rationale seems to be the recognition to these entities of a legal capacity necessary to carry out the activities legally appertained to the single natural persons that make them.

In the second (ii) a status including (fundamental) rights is recognized to a subject that is potentially (natural) person: this subject must be protected under the umbrella of the principle of human dignity [35-37].

The rights to life, to psychic and physical integrity, are not legal goods lavished by the legal system on individuals. They directly derive from the belonging to a human society. Because the human being is person just for her evident existence in society; although the embryo cannot be considered as a person, it is a "human reality" in which we find all the dignity of the future human being.

It is possible to try an assimilation with the third category: (iii) animals.

In the core values of constitutionalism certainly we can individuate the base for the protection of rights of non-human species [38].

a) The constitutionalism protects the human being because she is holder of goods – for example physic and emotional integrity – that cannot be limited or abolished without determining an injustice: the limitation or the abolition would directly prejudice the condition of happiness of humans. From this point of view the creation of a "protective" status of subjectivity for the animal would derive from the consideration that the animal has got "sentience" too. How animal sentience could be described? It is evident that in this case "sentience" may be intended as the capacity to feel sensations of pain and pleasure, and in particular pain (physical and emotional – not strictly psychic because this would attribute to animals a "psyche" that could be ascribed to the possibility to self-determine in right and wrong).

In this framework the recognition of subjectivity is directed above all to the protection against behaviours aimed at (gratuitously) inflicting pain, and to clear - though partially - the relationship between the animal and its owner from a strict dimension of property rights.

Recently a theory has been developed in France – the Marguénaud's approach – according to which refusing to recognize human rights to animals does not mean denying at all the protection of certain animal interests. Another approach, supported by Joel Feinberg, an American law philosopher, considers animals equivalent to elderly, disabled people and minors from a legal point of view. As a consequence, they would be necessarily represented in order to fulfil their rights (Council of Europe, 2006).

In Europe, the first laws on animal protection were approved at the beginning of the XX century. Since 1968 the Council of Europe approved five Conventions for the protection of: animals during international transport (1968, revised in 2003); animals kept for farming purpose (1976); animals for slaughter (1979); vertebrate animals used for experiments (1986); pet animals (1987). Provisions for animal rights have been included in the national Constitutions of Switzerland (1992, 2000) and Germany (2002), while the EU Lisbon Treaty (2007) states that the Union and the Member States shall, since animals are sentient beings, pay full regard to the requirements of animal welfare. In the United States, despite the Constitution does not mention animals, a US federal judge was asked to rule on whether animals take benefit of the constitutional protections against slavery as human beings; thus, the judge ruled that slavery is uniquely a human activity, as those terms have been historically and contemporaneously applied, and there is no basis to construe the Thirteenth Amendment as applying to non-humans.

b) Jurisprudence and case-law in various European countries unanimously confirm the existence of a human right to the protection of biosphere, the equilibrium among species, and set up a right of future generations to a healthy environment and a sustainable management of environmental resources and ecosystem. Animals are of course part of this reality and, from this point of view, they can be seen as instrumental goods to the protection of human rights, and therefore recognized as subjects (or subjectivities) to be protected by the legal system.

c) Animals, and pets in particular, have an "emotional" relation with humans, contributing to their wellbeing and the development of their personality. The main objective of the Western constitutionalism and the aim pursued by legal systems as described by the most important Constitutional Charters in Europe and in the other Western Countries is undoubtedly the development of personality, the happiness, or the fulfilment of a strong interpretation of the human dignity principle. In this third framework the recognition of subjectivity would constitutionally ground on the protection and promotion of a "relational good" [39].

In order to investigate the possibility to give the RCs a subjectivity, it is necessary to understand whether some of these elements could regard robotic technologies as well.

Certainly b) can be excluded without need of motivations.

Indeed some reflections could be made about a) and c).

With regards to a) the definition of "sentience" is decisive, in the specific meanings applied to animals and to RCs, as briefly discussed in Section 2.

The animal's sentience is today quite well known by ethologists: they underline that "a fairly solid body of information about what animals are feeling is collected by indirect means. They have been assembled about states of suffering experienced by farm animals such as pain, fear, frustration and deprivation" [40]. They use various methods in order to define a pain assessment in animals [41], and the results provide evidence that the animal would be able to experience negative sensations similar than the human ones, suitable to raise the demand of justice mentioned above [42-44].

The different content of "sentience" in the animal in comparison to RCs prevents the recognition of a legal subjectivity for animal and the (prospective) recognition of a legal subjectivity for robots to be ascribed to the same rationale.

With regards to c), it is worthy to point out that the RC could build (is supposed to build) a "personal" relationship with the individuals who "use" it, and that examples of robotic technologies with emotional-relational functions already exist (e.g., the case of the well-known Paro robotic therapeutic seal). Nevertheless, because of the extreme subjectivity of the capacity of an entity (or simply a thing) to represent an emotional object and an instrument of happiness for an individual, this element does not seem sufficient to ground the recognition of legal subjectivity (that could otherwise concern televisions, cars, computers, etc.).

5 ROBOT COMPANIONS ACTING IN THE LEGAL ENVIRONMENT: IS THERE A NEED FOR AN AUTONOMOUS SUBJECTIVITY?

Assigning legal capacity to RCs as an acknowledgment of their peculiar status of "sentient beings", comparable to animals, is an issue to let open at the present moment. Nonetheless, the option of recognizing them as persons in a legal sense has to be analysed from a more empirical and functional perspective as well. First of all, the prospect of creating companion robots devoted to assist elderly and disabled people requires to provide them with the ability of rendering basic services that go beyond acts of pure material care. People with reduced capacity to move around, to carry weights or even to speak out their wishes in verbal ways have to be assisted and helped also in purchasing goods, such as food, drugs, newspapers, bus tickets. This means that the technology would be more helpful and worthy whereas robots were provided with the ability of performing legal transactions. Many operations a companion robot could be asked to carry out effectively imply entering into a contract. Assigning legal capacity to a robot, in this sense, could solve the problem of having a centre of imputation of the effects deriving from the agreement and avoiding the contract to be considered void. Such an option may appear redundant because the transactions done by robots are deemed to be elementary and of minor value; moreover, they are normally immediately executed, hence most often contractual remedies would not be called to intervene. Nevertheless, one cannot exclude in principle that disputes will arise and that the problem of identifying the contractual parties, and their capacity of entering a transaction will become controversial. Therefore the need of referring the contract to someone to be held responsible with regards to its effects remains. A plain answer could be to consider robots as a sort of extension of their users' will and physical body, so that any act they execute is directly referable to them. On the one hand, this solution would circumvent the conceptual difficulties of awarding robots full capacity; the same we would encounter also by accepting that robots are simply mandated by their users, because the latter option equally requires to confront the issue of capacity for the deputy. On the other hand, it appears rebuttable under two aspects: it is counterintuitive, because of the detachment and possibly the physical distance between the primary actor and his supposed offshoot; most of all, it does not take into account the limited, but not inexistent, autonomous decision-making ability the robots companions are doomed to have. Another possibility is to consider the companion robots as autonomous agents, endowed with the status of subjects, but capable of entering into transactions under certain constraints. The reduced capacity of minors or of the mentally impaired, known and disciplined in the current legal systems, could be taken as a model for regulation. Under this special regime, robots would be entitled to act validly but only with regards to transaction of minor importance and value, those that are needed in order to satisfy the basic necessities of their users (See, for instance, art. 409, comma 2, of the Italian Civil Code).

Another practical reason suggests to investigate the possibility of awarding some kind of legal capacity to the robots companion, that is the issue of liability for damages. Ensuring the safety of these devices trough careful design and manufacturing does not exclude that accidents might occur either to their users or to third parties. Hence the crucial question of who and under which circumstances is responsible for the damages brought about by robots. The stance taken on the status of autonomous agents of RCs becomes decisive in order to frame properly the problem of liability. More precisely, it is necessary to appreciate whether the existing rules about producer's liability or liability deriving from the ownership or possession of things apply; or if the technology is so highly developed and advanced, and provided with a certain degree of decision-making ability, that the rationale underlying those sets of rules cannot operate. The concern should be about fixing a general divide between traditional machines, that can be designed and manufactured so that their behaviour will be predetermined or predictable by the constructor and afterwards mastered by their user; and sophisticated robots, that do not correspond to this archetype. If the robots companion belong to this latter category and cannot therefore be entirely controlled, we need to part from a rule that assigns liability precisely on the basis of the power that the subject who responds for the damages can exert over the sphere of the actual agent. Again, the basic structure of most legal regimes regarding injuries caused by minors and incompetent persons could be taken as a model rule. The two cases share some common features: the limited capacity of the agent, not sufficient to held her fully responsible for the damages he has produced; but also an independence of action, more or less substantial, that the agent exhibits and that accounts, at the same time, for the possibility of the guardian to be exonerated by demonstrating not to be at fault (or to have adopted every reasonable precaution in order to avoid accidents).

Recognising the autonomy of RCs, be it limited and only "functional", may result in the potential attribution of duties or obligation, deriving from the agreements undertaken or stemming by the wrongs committed. Nevertheless the legal mechanisms thus evoked, both contractual and non contractual liability, are not self-sufficient. If robots do not have assets to make up for their obligation or to compensate for damages, to hold them liable without providing a vicarious responsible will not make sense. The supplier would not get paid, the victims could not recover

damages, if we stick to the previous examples. The prospect of assigning legal capacity to the RCs for practical, instead of ontological, reasons definitely requires to implement other instruments through which these can be achieved.

6 CONCLUDING REMARKS

Besides an ethical and social problem concerning robotic technologies, there is also a legal one. Simply speaking, the former problem deals with whether it is right or wrong to carry out research in a specific way or field or to deploy robots in certain contexts or for certain tasks. Many relevant arguments in favor and against robotics research and applications have been raised by scholars in the last years [45-52]. On the contrary, the legal problem does not seem to care too much about the issue of robots' legal subjectivity, whilst it should be a preliminary question to pose.

Of course every attempts to regulate new and emerging technologies should be accompanied by careful ethical and social analyses as well as risks and safety analysis. Too often science and technology have been embraced uniquely on the basis of political, economic and/or scientific interests. The truism that the possibility to do one thing (e.g. make robots autonomous) is not enough for justifying its accomplishment is even more true in case of machines which should interact or coexists with human beings.

In addressing the issue of rights and duties of autonomous software or robot agents, therefore, a preliminary question should be concerned with the ethical and social implications ensuing from their deployment.

On the other hand, the issue of rights and duties should be considered as a "second level" topic to be addressed: it is necessary to assess the (legal) possibility and significance of a recognition of subjectivity for autonomous agents. In other words, 'to define regulations and control mechanisms to ensure sound and consistent behaviours' maybe is not enough.

The RoboLaw project, funded by the European Commission (EC) in the Seventh Framework Programme (www.robolaw.eu) aims at providing the EC with new knowledge on the regulation of robotics technologies. The most relevant result of the project will be a White Paper guidelines for the regulation of emerging robotic technologies. However, the RoboLaw goal is not just to provide roboticists with legal regulations for bringing their inventions outside their laboratories, but to deeply analyse the impact of robotic technologies and applications on traditional legal concepts and constitutional rights.

In this paper, in talking about Rights and Duties with respect to autonomous agents a few critical issues have been pointed out.

May we apply to current robots and to the RCs the (philosophical and legal, philosophically grounded) notion of duty? They do not seem to support the set of conditions that pertains to the notion of duty.

May we recognize them a legal subjectivity? It seems very hard to individuate a "reasonable rationale" that could ground this kind of choice, comparing robots with the other "legal subjects", different than natural persons, already existing in the Western legal framework. Finally, awarding a legal status to robots companion may be necessary according to a more functional perspective. If they operate in a living and therefore legal environment, rights and duties are simply a legal tool for implementing the technology and better reaching the social goals to which it is devoted.

According to this functional perspective it seems inappropriate to use "binding" legal concepts like rights and duties (and autonomy) are, and, instead, it appears more suitable a case-by-case application of existing legal instruments provided for other machines.

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