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The Roman Laws of Delict as Applied to Robots

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Outline:

Introduction

Review of Isaac Asimov's Laws of Robotics

Robots: classified as a slave, or four-footed herd
animal? Depends on situation

Review of owner's liability for slaves and four-footed
herd animals

Examination of owner's liability in three situations:

1. A robot does damage to property due to
ignorance of a situation.
2. A robot does damage to property
because it has been ordered to do so
by a person who owns neither the
damaged property nor the robot.
3. A robot does damage to property in
order to save a person from harm.
4. A robot does damage to property in
order to save a person from non-
physical harm.

Conclusion: robots can not be classified as either
four-footed herd animals or slaves, since different
cases have different parallels.

In the coming century, there will emerge a series of legal problems relating to the actions of artificially intelligent agents. Specifically, in the short term, the continued development of robots will no doubt lead to new legal questions - are owners responsible for the actions of their robots? In an attempt to provide perspective on this issue, I will examine the opinions of roman jurists on the application of the Lex Aquilia and decisions under the Lex to cases involving slaves and owned animals. In order to apply opinion to events and technologies that are still in our future, I will rely on Isaac Asimov's *i, robot* to provide a basis for the behaviour of robots.

The robots described in Asimov's text are autonomous machines with artificially intelligent minds. Their behaviour is determined not merely by a strict computer program, but rather by an initial programming with the additional capacity to learn from their experiences. The ability to learn adds autonomy of the mind to the autonomy of the body already achieved by providing the mechanics and ability to regenerate power separate from human control. There are limits to their autonomy, however. Asimov imposed three absolute rules on the behaviour of robots, which he called the "Laws of Robotics". These rules could

not be overridden by anything a robot learned, or was ordered to do. From the preface of *i, robot*:

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 Law.

These laws form the basis of the behaviour of robots - even a damaged robot would find it mechanically impossible to violate them.

The balance of this paper will be dedicated to the examination of juristic opinion on matters that parallel potential situations involving robots.

It is tempting to draw an absolute parallel between robots and other owned living entities. The Roman jurists provide two sets of liability case law in this matter - one associated with slaves, the other, with four-footed herd animals. A purely superficial analysis reveals that an absolute parallel can be drawn to neither set. Setting aside the issue of whether entities created by man truly can be "alive", it is plain to see that robots can

philosophically be designated neither herd animal nor slave. Robots cannot be universally classified as four-footed herd animals because artificially intelligent robots have much more highly developed cognitive processing. The artificially intelligent robots with-which Asimov dealt in *i, robot* possess levels of intelligence comparable to, and even superior to, man. They can also not be classified as slaves because of the absolute limitations on their actions (the laws of robotics). Robots do not have the same range of actions as slaves, and so, cannot fully meet any set of criteria that could be developed to classify a slave. Clearly, an approach combining the jurists' opinions on these two sets of owned-entities must be taken in order to gain insight on how their views could be paralleled to robots.

The combined approach leads to some difficulty - it seems that juristic opinion was that owners were not responsible for the independent actions of their four-footed herd animals, but that they were for those of their slaves. On the liability for independent acts of liability by four-footed herd animals, Ulpian, in the eighteenth book on the Edict, writes: "Hence we ask whether there is an action under the Lex Aquilia if a lunatic inflicts loss? Pegasus

denied this; for what *culpa* can a person have who is not in his right mind? This view is exactly correct. Therefore the Aquilian action will fail, just as it fails if a four-footed animal inflicts loss" (from case 35, page 53). On the issue of responsibility for the actions of one's slaves, Ulpian writes: "The owner is liable in the name of a slave who slays" (from case 86, page 126). These seemingly opposing views can be reconciled by examining the aspects of the two classifications of owned-entities which most closely parallel a robot in a given situation. In order to determine an owner's responsibility for the actions of his robots, we shall examine hypothetical happenings as follows:

1. A robot does damage to property due to ignorance of a situation.
2. A robot does damage to property because it has been ordered to do so by a person who owns neither the damaged property nor the robot.
3. A robot does damage to property in order to save a person from death.
4. A robot does damage to property in order to save a person from non-physical harm.

(in all of these situations we take "damage" to be equivalent to "burns, breaks, or rends")

It is possible for a robot to do damage to property due to ignorance. Though the robots in Asimov's text are autonomous and artificially intelligent, they sometimes lack some of the basic senses that humans enjoy. If a robot not equipped with sight destroys property by walking in to it, it would be consistent with juristic opinion to say that the owner would not be liable under the Lex, since "an animal cannot have acted wrongfully, since it lacks understanding" (case 96, page 138). This would also apply to a robot doing damage to property it does not recognize because of limitations of its programming (lack of understanding) or experience (which would be analogous to a young child, as in case 35, page 53: "the Aquilian action will fail... if a young child inflicts loss, the same will be held"). It is likely that an action on *pauperies* would be held against the owner of the robot, however, as it would against the owner of a four-footed herd animal ("an action derives from the Twelve Tables; this statute provided that either which did harm... be surrendered, or that an evaluation of the harm be provided" from case 96, page 138).

No amount of experience can prevent a robot from following orders issued to it by humans, since the second law of robotics requires that robots follow orders, and the laws of robotics cannot be disobeyed. The only exception that may exist to this is if the property the robot is ordered to damage is a slave, since this could possibly violate the first law of robotics (this depends on whether the robot had been programmed to recognize slaves as human beings). Unlike a slave, robots are required to obey the orders of all human beings, even those who do not have a legal right to issue the order. If a robot is ordered by someone other than its owner to damage property, it is reasonable that the person issuing the order be responsible for the damage, and not the owner. This most closely parallels case 68 on page 103, where Javolenus' fourteenth book from Cassius is quoted: "If a free man inflicted injury by his own hand but on another's orders, the action under the Lex Aquilia lies with the person who ordered, provided he had the right to command". This situation is analogous because the relationship between a robot owned by someone other than the person issuing the order and the issuer of the order is the same as that of two free men - the man ordering does not own the robot, so, to him, the robot can be viewed as a free man. The liability would lie with the person issuing

the order because, though he does not have the legal right to issue the order, he does have the right to do so under the laws of robotics, which can be viewed as parallel to any power structure which gives one free man the right to issue orders to another.

A robot is required by the first law of robotics to act in order to save a person from harm ("A robot may not injure a human being, or, through inaction, allow a human being to come to harm"). There could arise a situation where a robot would need to cause damage to property in order to act within the requirements of the first law. For example, if a robot were separated from a choking man by a wall owned by a third party, the robot would break-through the wall in order to reach the choking person in time to apply treatment. In this case, it could be said that it is within the rights of the individual who is choking to be saved, and so, the robot did not act wrongfully by damaging property in order to save him ("nor does any other statute punish loss which is inflicted without *iniuria*" in case 26, page 42). If the choking person was only pretending to be choking, however, with the knowledge of the robot's presence in the next room, he would be responsible for the damage caused by the robot's attempts to save him (parallel

to case 22, page 36: "There is an action of theft against a person who held up a red flag and put to flight a herd in order that it fall into the hands of thieves, so long as he acted intentionally. But even if he did not act in order to steal, so dangerous a game should not go unpunished; therefore Labeo writes that an *in factum* action should be given"). By pretending to choke, he is, by analogy, inciting the robot to act in the same way someone waiving a red flag "put to flight a herd".

The requirement of the first law of robotics is not that a person be faced with mortal danger, but simply that he not be allowed to "come to harm" by the inaction of a robot. Consider that two people were engaged in an argument, and one was about to hurl an insult at the other. The robot, sensing this, burst through a wall owned by a third party in order to interrupt the conversation (Asimov does view psychological harm as being an issue for the first law: from page 114 of *i, robot*: "But what kind of harm? Why-any kind. Exactly! Any kind! But what about hurt feelings? What about deflation of one's ego? What about the blasting of one's hopes? Is that injury? ... Do you suppose that it doesn't know anything about mental injury? Do you suppose that if asked a question, it wouldn't give exactly that

answer that one wants to hear?... I take it you asked him whether Lanning had resigned. You wanted to hear that he had resigned and that's what Herbie told you."). So, even though the action taken by the robot in this case was unreasonable (destruction to a third-person's property to avoid emotional harm to another), the robot had no choice but to cause the damage. It is likely that the owner of the robot would be spared liability for the damage, however, since the robot had no control of its actions. Case 35 (page 53) states that "we ask whether there is an action under the Lex Aquilia if a lunatic inflicts loss? Pegasus denied this; for what *culpa* can a person have who is not in his right mind? This view is exactly correct". A robot is not "in his right mind" when it acts by requirements of the laws of robotics, since it has no control over its actions. It is, in effect, temporarily insane. Therefore, there is no Aquilian liability for the owner of the robot in such a situation.

Robots clearly present a unique situation in legal circles - how best they can be dealt with depends on the situation in which they find themselves. Clearly, a robot's owner would not be responsible under the Lex for actions it performs out of ignorance, though there is liability for

impoverishment. A robot that acts on the orders of any person, even those without the legal right to issue them, is not acting wrongfully, because it has no ability to disobey. A robot that damages property in order to save a choking man is not acting wrongfully, because the man has a right to live. If that man were only pretending to choke, however, he would be responsible for the actions of the robot. A robot that destroys property to avoid harm of a person is not responsible for its actions, nor is its owner, since it has no control over them. These issues will no-doubt be presented to legal theorists and practitioners quite seriously in the coming centuries - the Roman laws of delict offer interesting parallels from which they will be able to draw.

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