

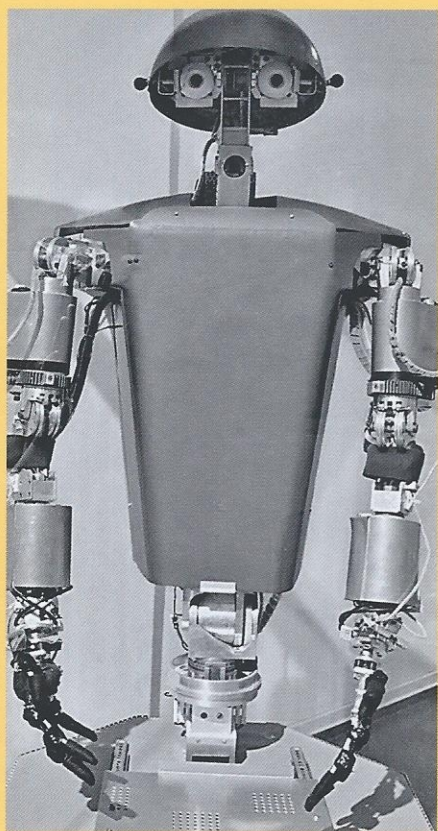
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# Robotics in Germany and Japan

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# **Robotic Appearances and Forms of Life. A Phenomenological-Hermeneutical Approach to the Relation between Robotics and Culture**

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## **Introduction**

Cultural differences with regard to how people relate to robots raise questions concerning the nature, causes, and meaning of these differences. How can we conceptualize the relation between robotics and culture? Focusing on differences between the West and Japan in the perception and design of human-like intelligent autonomous robots, this paper discusses different approaches to the relation between robotics and culture. It is argued that the limitations of realist, dualist, and objectivist scientific methodologies can be overcome if we adopt a hermeneutical-phenomenological approach, which understands the usual “cultural” and “historical” explanations of differences in robotic culture not as scientific explanations, but as part of a hermeneutical process and as illustrative of different forms of life. Robots are revealed as hermeneutic tools that function within techno-anthropologies, for example Western negative anthropologies.

By reflecting on robot ontology, meaning and appearance, the paper suggests a non-dualist view that reveals robots as hermeneutic tools that contribute to our self-understanding as humans. It also employs a transcendentalist argument in order to show that different ways of viewing and developing robots are only possible on the basis of material-social forms of life, which may differ between East and West. However, forms of life do not only function as conditions of possibility for the perception and design of robots; to some degree they are themselves also shaped by robotic design, use, interaction, experience, and discourse. This analysis attends us to the hermeneutic-phenomenological responsibility of robotics designers, engineers, managers, and policy makers in East and West. It recommends an ethics that demands more than adherence to safety guidelines, deontological codes, and ethical principles: it asks us to imagine how particular robots may fit into a particular form of life and how they might contribute to ongoing transformations of that form of life.

It is often suggested in the media that the Japanese love robots, whereas the West fears them. For example, an article in “The Times” headlines: “Japan: The Nation that Loves Robots” and claims that “to say that the Japanese are fervent about robots is a great understatement” (Lewis 2009). And Hornyak’s book on Japanese robotics carries the title “Loving the Machine” (Hornyak 2006). But while there is little doubt that robots are popular in Japan, it remains unclear if there really is a difference in attitude between Japan and the West, what the extent and nature of this difference is, how this difference can be explained, and

what it means for robotics use and design. More generally, the issue of the “Japanese difference” raises the deeper question concerning the relation between technology and culture: Is the use and design of technology dependent on culture, and if so, in what way?

Philosophy of robotics can contribute to discussions about this issue by helping to conceptualize the relation between robotics and culture. Focusing on differences between the West and Japan in the perception and design of human-like intelligent autonomous robots, this paper will discuss different approaches to the relation between robotics and culture. It will be argued that the limitations of realist, dualist, and objectivist scientific methodologies can be overcome if we adopt a hermeneutical-phenomenological approach.

First I will present some common explanations of cultural differences between Japan and the West, featuring the history of robotics in Japan, Japanese popular culture, Japanese religion and world-views, and Japanese society and ethics. Then I will criticize these “cultural” and “historical” explanations, at least in so far as they pretend to be scientific explanations of differences in attitude. I will argue that they should rather be understood as part of a hermeneutical process in which we try to understand ourselves as humans and as illustrative of different forms of life, which function as conditions of possibility for robotic use, design, and discourse.

### From Robots to Histories, Cultures and Gardens

The usual answer to the question why the Japanese are more inclined to adopt and accept humanoid and social robots tells a story about puppets, mangas, gardens, and spirits (see for example Schodt 1988; Wagner 2009).

References are often made to the history of robotics in Japan. In the Edo period (17th-19th-century) *Karakuri* puppets were used: automata with mechanical parts inside, inspired by Chinese and Portuguese designs. A *Karakuri* automaton would be able to carry tea and make other performances. Appearance and show mattered: “*Karakuri Ningyo*” (mechanized puppet) means a mechanical device to trick or surprise (*Karakuri*) that has a person-shape (*Ningyo*) (Law 1997; Boyle 2008). Moreover, Japan is also known for its history of *Bunraku*, a tradition of puppet theatre which started in Osaka in the 17th-century and has been continued ever since. Hornyak also mentions Nishimura’s “Buddha robot”: a bronze robot created for the 1928 Kyoto Fair (Hornyak 2006).

This history of Japanese popular culture is also often mentioned to account for the popularity of robots in Japan. It has been argued that in the past popular mangas like Tetsuan Atom (Astro Boy) have helped to construct a positive view of robots as friends or companions that live side by side in harmony with humans (or are in any case not evil). Contemporary robotics also seems to put the emphasis on entertainment and companionship (for example with Aibo, Asimo,

Paro, and other friendly, often animal-like robots). This is then contrasted with Western negative views of robots. Wagner et al. write:

“We find a tension between the Japanese idea of advanced technology as beneficent helper, companion, even savior, and the Western apprehensiveness that advanced technology could become an alien, threatening, and destructive force.”

The Japanese view of nature and its relation to technology has also been mentioned as an explanation for the high acceptance of social robots in Japan: as Japanese gardens show, the aim is not so much to control nature but to imitate it. This imitation is artificial, of course, but this is not seen as problematic. The “artificial reproduction of nature” (Kaplan 2004) is a homage to nature, up to the point of imitating mistakes (Sone 2008). Kitsch is not problematic since the artificial/natural distinction lacks significance in this sense. This seems to render robots less problematic.

Furthermore, explanations of robot popularity in Japan usually make references to Japanese religions and world-view(s). Whereas the Western view presupposes the existence of a self and is dualist and individualist, the three religious (under)currents in Japanese culture entertain different views. Buddhism rejects the idea of a (real, stable) self. Shintoism holds that spirits can inhabit objects, animals, trees, and rocks. Even tools have spirits, which live in harmony with human beings and are taken to the temple when broken (Kitano 2006). Robots are therefore taken to be “living things” and we can live with them since “nature is not external to culture and society” (Robertson 2010). Japan is also influenced by Chinese philosophy, in particular Confucianism and Daoism, which teach that the self is “interdependent” and must be understood in a relational way (Lai 2007). Relations with robots, it seems, are therefore unproblematic.

Finally, Japanese society is collectivist and emphasizes social harmony, consensus, trust, loyalty, and group responsibility (Herbig & Palumbo 1994; Kitano 2006; Wagner et al. 2005; Saha 1994). Although this emphasis on the group also has downsides – it is often called “ethnocentric” (Herbig & Palumbo 1994, p. 93) – it means that its ethics is a social ethics as opposed to the Western emphasis on individual responsibility. Ethics (*Rinri*) is equated with “the study of the community, or of the way of achieving harmony in human relationships” (Kitano 2006, p. 80) and is “defined by the relationship between the individual and the community to which he/she belongs” (Nishigaki 2006, p. 238). Tetsuro Watsuji, a 20th-century Japanese philosopher, has written a book on ethics called “*Rinri-gaku*” (for a partial translation in English see Watsuji 1996), which literally means the study of the “betweenness” of human beings (Kitano 2006, p. 82). What matters is living together in a harmonious community. With or without robots.

## From Facts and Explanations to Interpretations and Constructions of Meaning

However interesting, it remains doubtful if these references to Japanese history and culture can count as an explanation of the popularity of robots in Japan as opposed to the West – if there is a significant difference in attitude at all.

First, is the attitude towards robots really different? A study by Bartneck et al. (2007) showed that the Japanese are not as positive as stereotypically assumed. And MacDorman et al. (2009) found similarities in attitude among faculty of US and Japanese universities.

Second, Western popular culture has friendly robot characters too, both in fiction (R2D2, C-3PO, Wall-E) and in reality (for example the social robots developed by Breazeal's team at MIT, US).

Third, not only culture but economic and political factors play a role as well, such as the expertise with factory automatisations and the search for additional markets (MacDorman et al. 2009), a cooperative model of innovation (Saha 1994), and post-war governmental pressure to develop robots for entertainment and for solving the demographic crisis rather than for military applications.

Fourth, can we really establish a causal relationship between on the one hand culture and on the other hand the development and adoption and technology, as Herbig and Palumbo (1994) suggest? Not only are empirical data still missing, as Wagner (2009) says, but the very project of trying to provide proof for causal relationships in this domain is at least very questionable.

Finally, these constructions of robotics history are vulnerable to the charge of orientalism and self-orientalism. Do the Japanese really have a "natural" relation to robots? For example, some argue that there are also animistic tendencies in the West (Aupers 2002). And as Wagner has argued, the construction of a continuous line of robot loving has been used by the Japanese to justify the technological empowerment of post-war Japan and a positive image of robots helped to give hope to the people and made it easier to accept robots rather than foreign workers as a solution for labor shortage (Wagner 2009, pp. 511-514). Thus, it seems that robotic (self-)interpretations are important to both East and West. This is especially so given the relation between technological development and globalization. As Nishigaki says:

"Japan is by no means the only country in the world that is faced with the collapse of traditional communities and the unsettling of ethical and moral values caused by the rapid penetration of information technologies into every corner of society and by the globalization of economic activities." (Nishigaki 2006, p. 242)

On these grounds, I propose to regard references to the history and culture of Japan not as scientific explanations of differences in attitudes towards robotics, but as part of ongoing hermeneutic exercises – in East and West – that aim at interpretation, understanding and self-understanding rather than explanation, and are

concerned with meaning rather than facts. Viewed in this light, the previous overview of historical and cultural elements should not be understood as a collection of facts and factors, but as hermeneutic exercises: constructions and interpretations of history and culture that help us to come to terms with techno-social developments in robotics. At the same time, robots are used to construct that culture. As I will argue below they are not mere material objects that stand completely apart from culture; they also structure our experiences and beliefs.

From this hermeneutic perspective, it is interesting to look not only at Eastern robotic culture, but also at the Western attitude towards robots and the culture it presupposes and shapes.

It has been claimed that robots challenge the Western world-view and sense of identity. Robots present what has been called a "category boundary problem" (MacDorman & Cowly 2006; Ramey 2005; Turkle 2007) since they lie on the boundary between human and non-human. In contrast to Japan, so it is claimed, this does pose a challenge to the Western sense of personal and human identity (MacDorman et al 2009, p. 487), since in the West people think it is important to make that human/non-human distinction. We want to be special. Kaplan has even argued that this is true for technology in general: in the West technology seems "fundamental for defining what humans are" (Kaplan 2004).

But is this only true for the West? It seems that robots, and perhaps other technologies also, function in West and East as what I propose to call "hermeneutic tools": we use them for defining and re-defining the human. They function as mirrors that help us to understand ourselves and the world around us. They function within a cultural-hermeneutical process. More generally, the way we define ourselves as humans depends on the observation, construction, and imagination of quasi-humans or non-humans.

In the West, we have "used" gods, angels, demons, animals (e.g. apes), "Golems," "Homunculi," machines, monsters, computers, artificially intelligent systems, "Zombies," "Aliens," and robots as hermeneutical tools to construct the human. For example, in the Jewish tradition the "Golem" is said to be created by man as an imitation of divine creation, although this does not mean that it is the same as divine creation. In this way, "Golem-stories" serve to explore both similarities and differences between human and divine creation, and between humans and God. And Descartes' philosophical anthropology, including the famous mind-body distinction (or rather: soul-body distinction), heavily relies on the construction of animals as complex machines and indeed on the construction of the human body as a machine. (Self-definitions usually involve selective and one-sided constructions of quasi-humans or non-humans.) Without using animals and machines, Descartes could not have developed his view; he needed them in his (early-) modern hermeneutics.

Typically, Western self-definitions come in the form of what I propose to call a "negative anthropology": in the West humans are defined by what they are

not. They are not-gods, not-animals, not-“Zombies,” and indeed not-robots. In this way, robots and (some) other technologies provide a “via negative” that helps us to define ourselves as humans. New and emerging technologies like robots are used to explore the boundaries of the human. In the past it was held important to distinguish ourselves from the gods and from God. In the history of Western culture we find the Romantic idea that we are alienated from our nature and the idea that we should not play god (or God) since that would constitute hubris. This has involved a Romantic re-interpretation of ancient stories (the tower of Babel, Goethe’s “Der Zauberlehrling,” “Golem-stories,” “myth of Prometheus,” “Faust,” etc.). In contemporary times it is more important to distinguish ourselves from technology, since it is held that technology has caused alienation and encouraged hubris. This gave rise to the so-called “Frankenstein syndrome”: the idea that if we play God by means of technology, this may turn against us; technology will dominate us rather than the other way around (see for example Čapek’s play “R.U.R.,” which is about a revolt of robots, Asimov’s Three Laws of Robotics as a response to this danger, “Terminator,” the film “I, Robot” etc.). Contemporary Western culture, in particular science-fiction but also contemporary art, explores the differences between robots and humans: Are we more than machines?

Thus, in both Western and Eastern culture we can observe that the meaning and boundaries of the human are explored and constructed by using machines in general, and robots in particular. Robots are hermeneutic tools within what we may call “techno-anthropologies:” they help us to define the (boundaries of the) human.

### From Reality to Appearance and Forms of Life

This approach to robots can be further clarified and developed by using a phenomenological perspective.

Standard robot ontology is realist and objectivist: a distinction is made between on the one hand “what the robot really is” (a machine, implementation of code, information, etc.: “objective reality”) and on the other hand the appearance of the robot (“subjective,” depends on human perception). Hence the engineer’s task is to design for appearance (to produce a certain appearance, to be a “master of illusion”) and the scientist’s task is to unmask, reveal, uncover, strip away the phenomena in order to show objective reality, purified from human subjectivity, perception, and emotions. (An example of this approach can be found in Kahn et al. 2006, who categorize claims about human-like robots in a way that distinguishes between “people’s psychological beliefs and actions” and “the correct ontological status of the robot” (Kahn et al. 2006, p. 365).)

But can we know the “correct” ontological status of anything? And is it always meaningful to discuss ontological differences between humans and robots? As Kitano writes, in Japan “there is unlikely to be much philosophical discus-

sion about, for instance, ‘what robots are and what humans are’ as takes place in the West” (Kitano 2006, p. 79). In the West, however, such discussions are central. This may have to do with Western metaphysics, which is dualist: since Plato a distinction is made between the world of appearance and the real world, between the subjective and the objective. Is there a way to go beyond standard ontology and, more generally, beyond Western metaphysics?

An obvious way to proceed here would be to turn to non-dualist Eastern world-views in order to explore an alternative robot ontology. However, there is a route available to us that is much closer to home: the tradition of (Western) phenomenology, which has always challenged realist, objectivist, and dualist metaphysics. Phenomenological and hermeneutical approaches to technology (ranging from Dreyfus and Ihde in the U.S. to Irrgang in Germany) draw on Heideggerian phenomenology to show that there is more than one way of seeing artifacts and that they can have more than one meaning. For example, Ihde has argued that the meaning of technological artifacts are “multistable” (Ihde 1990). Hence a robot can appear to us as a human or a “quasi-other” (Ihde 1990) and as a machine. This means that there is not one, “objective” reality but rather something like “Gestalt”: the same object (to call it an object is only one way of seeing it) can be viewed in entirely different ways. Our perception of a particular robot is mediated by our ways of seeing. This means that there is not one “correct” way of seeing. Any “correctness” depends on what we, as embodied and inner-wordly beings, perceive from within a perceptual scheme that is available in a particular culture. However, the robot is not “interpreted,” since this way of speaking remains dualist in so far it assumes that “first” there is objective reality and “then” (cultural) interpretation. Rather, the robot already appears to us in a particular way, is already interpreted. This process does not just depend on us as individuals (on our individual will), but also on the culture and social context we live in and on the non-linguistic, embodied and skilled ways of perceiving and doing that are nurtured by that culture and co-constitute that culture, on the structures of what Heidegger called “being-in-the-world.”

I propose to articulate this phenomenological-hermeneutical alternative to objectivist thinking in the form of a transcendentalist argument: how robots appear to us depends on cultural and bodily conditions of possibility that both enable and limit how we can view these robots. Thus, the appearance of the robot depends on preconditions that could be called “forms of life” (Wittgenstein). This means that the mentioned historical and cultural differences do not really cause attitudes towards robots, but are rather to be regarded as descriptions of forms of life: forms that enable and limit what we say about robots and how we act towards robots. They are contributions to a robot hermeneutics, which itself depends on the forms of life it tries to describe.

This approach has not only implications for what can be said about robots, but also what can be said about humans. In the light of the hermeneutical ap-

proach, anthropology becomes a hermeneutics of the human that is necessarily a relational and non-dualist anthropology: humans (formerly called "subject") and robot (formerly called "object") mutually constitute each other. In this way, a dualist ontology and metaphysics is overcome. Put in transcendentalist language, this approach suggests that our human-talk, like our robot-talk, depends on a relational a priori – relations between humans, robots, things, etc. – which structures our ways of speaking, perceiving, and doing. In other words, with regard to anthropology both the hermeneutics and its preconditions (the forms of life) must be understood in relational terms.

This view seems compatible with relational and non-dualist Eastern philosophy. For example, the influential Japanese philosopher Nishida Kitaro (1870-1945) has a non-dualist notion of pure experience that is prior to all reflection (Nishida 1990; Feenberg & Arisaka 1990), which is the ontological basis of reality (Feenberg 1994), perhaps even "the always already present ground even of reflection itself" (Feenberg 1999). The forms of life in question seem to constitute such a ground. There may also be parallels to non-dualist metaphysics in Buddhism, Taoism, and Confucianism. However, I will not further develop this comparative inquiry here.

### Summary and Conclusion for Responsibility

In this paper I have shown that a phenomenological-hermeneutical approach can conceptualize the precise relation between robotics and culture in a novel way. I have argued that common descriptions and explanations of cultural differences between the "West" and Japan with regard to robots should not be understood as causal explanations of differences in attitude, but rather as attempts to understand both robots and the human. By reflecting on robot ontology, meaning and appearance, I have suggested a non-dualist view that reveals robots as hermeneutic tools that contribute to our self-understanding as humans: I have employed a transcendentalist argument in order to show that different ways of viewing and developing robots are only possible on the basis of material-social forms of life, which may differ between East and West. This material, technological aspect is important: forms of life do not only function as conditions of possibility for the perception and design of robots; to some degree they are themselves also shaped by robotic design, use, interaction, experience, and discourse.

This analysis attends us to the hermeneutic-phenomenological responsibility of robotics designers, engineers, managers, and policy makers in East and West. It suggests an ethics that demands more than adherence to safety guidelines, deontological codes, and ethical principles: it asks us to imagine how particular robots may fit into particular forms of life and how they might contribute to ongoing transformations of those cultural-technological life-forms, which ground and structure what we call real, valuable, and meaningful.

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