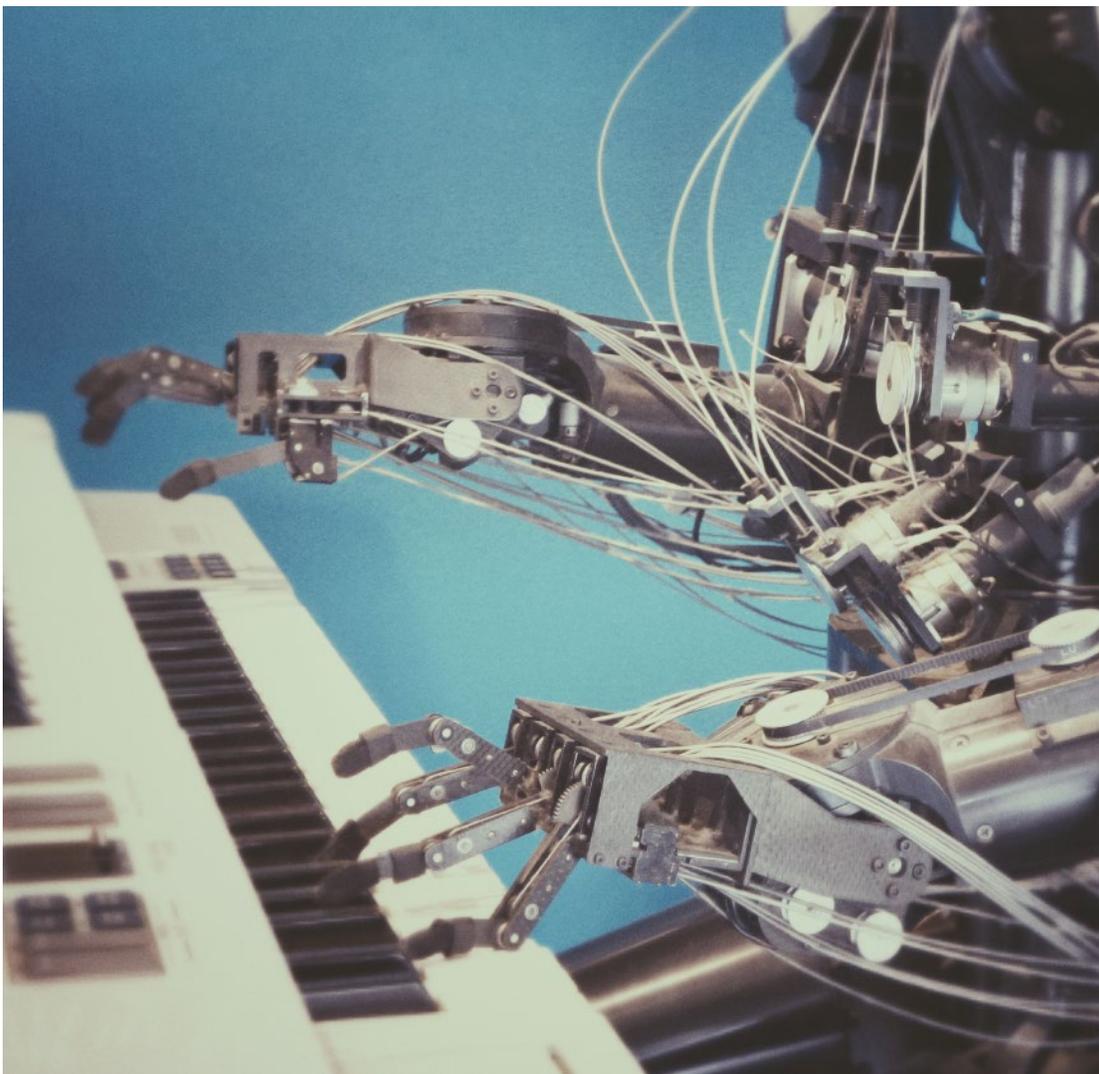


On creating valuable relationships with robots



No technology reveals as much about our relationship with the things we build as robots. In part, this is because robots and robotics are still more idea than reality. The idea of a robot centers on its ability to be the equal of humans: it is supposed to be a machine created by us that can rival us in every way. Because we are not actually able to create machines that get anywhere close to this right now, we are not in immediate risk of a robot apocalypse. But it is the idea that we can try, and may succeed one day, that captures our imaginations. We see frightening potential in a robot, and it is this that makes us uneasy. We see robots as something that can eventually be exactly like us. And as an idea, robots become a technology that forces us to ask what makes us human, and what our relationship with our technological creations should be like.

In a more practical sense, robots are exciting because they have function and purpose. They do work that humans either do not want to do, or cannot do. They tirelessly build things with more accuracy and efficiency than a human worker. They can go to Mars or to the bottom of the ocean and extend the limits of our reach and knowledge. And they can clean our floors while we do other things.

Our cultural understanding of what a robot is, or should be, is a lot more mature than the technologies needed to make it a reality.

All of this provides us with immediate value and justifies the development of robots. But this makes them little more than highly-capable tools. The relationship we have with our tools is

defined by human dominance and control. It is the human that uses the tool. The tool is a passive technology that is only used to accomplish a task. As tools that do things, robots are not a direct challenge to our existence or even our sense of what it means to be human.

So why is there such a gulf between the idea of robots and the practical reality of what robots are now? The idea of a robot was developed long before we developed the technology to fulfil this potential. The concept of a “mechanical man” is now over 500 years old, but the technology needed to make this a reality is still being developed. The idea comes from the past, while the technology lives in an uncertain, unfulfilled future. What this means is that our cultural understanding of what a robot is, or should be, is a lot more mature than the technologies needed to make it a reality.

Remember: this is still an idea. But this idea is the driving force behind the development of robots. This idea is more important than the practical reality of what a robot is now. And this idea is culturally determined, which means it is a collection of assumptions and beliefs that are far from the practical realities of engineering new technologies. Because it is a cultural construct, it can be different in different cultures. Hence, we must understand the assumptions and beliefs that shape our ideas of robotics. Only after we understand these driving forces can we understand the value of robotic systems.

A Revealing Relationship

In the West, robots are not entirely good or safe things. We see them as useful, but potentially dangerous, and we are suspicious of them as a result. Much of this unease comes from a long history of literature and story-telling. Writers, filmmakers, and thinkers have created ambivalent examples of robots since Karel Čapek coined the term in his play *R.U.R. (Rossumovi Univerzální Roboti* or Rossum’s Universal Robots) from 1920. Shortly thereafter, Fritz Lang produced the film *Metropolis* (1927) where the robot created by the scientist Rotwang in a plot to take over the

city of Metropolis. Lang's film can be understood as a statement about the problematic relationship between people and technology. The robot that Rotwang creates can transform itself into an exact copy of the hero's lost love Hel, and as such is able to be human, but the robot is not benign and proves to be the centrepiece of the scientist's dangerous plot.

While *Metropolis* is the first cinematic statement of the problem of human-like robots, its depiction of the problematic relationship between humans and our creations is much older. For that we can look to examples like God and Adam, Chronos and Zeus, God and Satan in Milton's *Paradise Lost*, Dr. Frankenstein and his creature in Mary Shelley's *Frankenstein*, and many others. These stories show us that there is always a difficult relationship between a creator and their creation. Adam defied God by eating the apple with Eve. Zeus killed his father Chronos in a rebellion. Satan spends much of *Paradise Lost* thinking about how his relationship with God is restrictive, and how he wants to supplant his father. And Shelley shows us the dangers of creating new life through technological means as the creature struggles to understand himself, eventually becoming vengeful and seeking to destroy his creator.

They also tell us that the relationship between creator and creation is a difficult one and that it may often end in destruction and sorrow. Like all myths and fables, the telling and retelling of this basic story is the way in which we solidify cultural ideas and come to believe them completely. The implication of this is clear for robots: the relationship will be problematic and robots will come to be dangerous, and the robot apocalypse is coming. That we often develop military systems capable of killing remotely or autonomously adds a fatal reality to this possibility. But this is just one cultural construct amongst many. It is not strictly true. We know this because there is another example that tells a different story.

There is a counter narrative that is told just as frequently, and it tells a story of autonomous, intelligent cybernetic systems that are friendly,

loyal, and hardworking. Films like *Star Wars*, *Short Circuit*, and *AI*, books like Isaac Asimov's Robot series, Karl Schoeder's *Lady of Mazes*, and television series like *Star Trek*, *Lost in Space*, and *Astro Boy* follow a pattern of robotic systems that work in collaboration with humans.

We either provide our robots with a role in society, or they will struggle to work with us and become potentially dangerous.

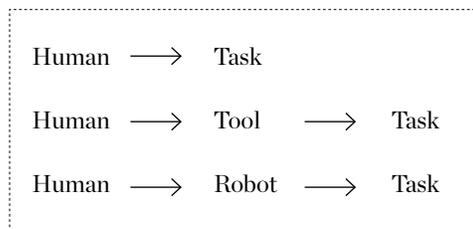
Here, we overcome our fear of our creation. These robots are helpful, even kind. They provide humans with companionship and emotional support. They rarely question their creators. They even work hard to become more human. Theirs is a tale of a well-adjusted system that has found a way to work in harmony with their human colleagues.

These differing stories about technology focus on the relationship between humans as creators of artificial beings and their creation. Their difference lies in how this relationship is articulated. In the first, the creations are struggling to find a place in the world. Most of those stories depend on the fact that the robots do not have a place in society, or become unable to participate in it as healthy members. The second set of stories show us the potential of a robotic being that has found a place in human society and culture. Together, these stories present examples and patterns that help us understand our relationship with our technology. They also present us with an insight into what we expect from our technology, and that we seem to have a choice. We either provide our robots with a role in society, or they will struggle to work with us and become potentially dangerous.

Defining the Purpose to Unlock their Value

Dr. Jin Oh Kim, professor of robotics at Kwang-woon University, describes a simple model that allows us to see robots for what they are – tools that we use to accomplish a task.

Dr. Kim's model is straight-forward:



By focusing on how a robot mediates a human's approach to accomplishing a task, he has provided us with a way of looking at any real-world situation where robots are put to use. The benefit lies in that his model is unburdened by the mythologies described above. Here, the robot is designed and used to fit a particular purpose. That purpose is defined within the relationship between the human and the task.

All of a sudden the threats presented by sentient, malicious robots fall away, because within Kim's model, a robot is just something designed to fit a purpose. It does not need to be capable of challenging us, and as a result it is less of a problem. In this way, we see that when robots are applied to a task, that they become smaller, simpler, less problematic systems. There is no challenge, because they become a tool that helps the humans in the equation of accomplishing something. The robot is a more complicated version of a knife or a screwdriver. However, it is not something that needs to challenge the capabilities or social status of a human being. If applied only to meet the needs of a task and amplifying, or modifying, our capabilities, there is no reason why it should threaten our innermost identity.

What this illustrates is that in real-world situa-

tions the value of a robot depends on the nature of the task and the capacities of a human being. The robot is the mediator of the effort and skills needed to accomplish the task and needs only to be advanced enough to accomplish what jobs we set for it.

The value of a robot lies in how well it is suited to the task that it is designed to accomplish. The principles of MVP (minimum viable product) apply here because it need not be anything more than that. This changes completely the nature of the problem of the robot's relationship with the human being. It no longer needs to be anything that threatens the human, because in this situation the robot is there to help or enhance the human's abilities only. This means Dr. Kim's model provides us with an alternative to both dangerous and friendly robots. It allows us to see robots as mediators, collaborators, and extensions of ourselves. And this means that the robot has a social role. It has a place in society and a purpose for existing.

To create value through the application of robotics, we must look beyond the technology and to the task and context of the situation.

This place in society is enough to ensure that it never challenges us, simply because we need never design it beyond this human/task relationship. However, it means that we must begin to look at robotic systems in a more holistic way. It must be framed by the limits of the humans and the tasks in the equation. The robot's value lies in how well it helps us humans accomplish our

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tasks. But this means that to create value through the application of robotics, we must look beyond the technology and to the task and context of the situation.

Ultimately, finding the value in robotics is still more about the human context than it is about the limits, problems, or capacities of the robotic system. The best way to approach value-driven applications of robotic technology of any kind is to begin by understanding the situation in which it is needed. So, finding value in robotics involves finding what is valuable to human beings and creating a contextually-driven set of solutions that describe what kind of robot is needed and what it will do. In the end, the robot will be a mediator and its only value will lie in its relationship with its user.

For more information about Gemic and how we might be able to help with your business challenges please get in touch:

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