Autonomous machines have gripped our imagination ever since the first robot flickered on the silver screen, Maria (left) in the 1927 film *Metropolis*. Most of the robots we know today—unglamorous devices like robotic welders on car assembly lines and the Roomba vacuum cleaner—fall short of those in science fiction. But our relationship with robots is about to become far more intimate. Would you be comfortable with a robot butler, or a self-driving car? How about a robo-scientist toiling away next to you at the bench, not only pipetting but also formulating hypotheses and designing experiments?

As robots become more sophisticated, psychological paradoxes are coming into sharper relief. Robots that look human strike many of us as downright creepy (as this week’s cover attests), while robots that act human—when they are programmed, for example, to cheat at cards—somehow put us at ease. And no matter how uncannily lifelike some of today’s robots may seem, the resemblance is skin-deep. A stubborn challenge has been endowing robots with not only the capability to sense their environment, but also the wits to make sense of it. Robots will get there eventually, and when that happens we’ll be confronted with a new array of ethical and moral questions. Questions like: Should robots be accorded rights as sentient beings? The rise of the machines will be anything but predictable.