Twenty years ago, we knew of only one planetary system -- our own. Since then, astronomers have found hundreds of confirmed planets and thousands more planet candidates around other stars. These discoveries, most of which have been made by measuring the subtle effects that planets induce on stars, have revealed a remarkable diversity of worlds. The picture is far from complete, however. Direct imaging, which is complementary to other techniques, will help by revealing planets in wide orbits and allowing us to characterize them. Despite daunting technological hurdles, we have now succeeded in taking images and spectra of a few extra-solar planets. I will discuss how these exciting finds challenge our preconceptions yet again and consider prospects for the future.