Science is knowledge that helps us make predictions. What is the science of software? What predictions can we make about the programs we write? More generally, what predictions can we make about the systems we build? After discussing possible approaches to tackling these questions, we focus on some of our recent work on: (1) the Refinement Calculus of Reactive Systems, a compositional modeling and formal reasoning framework; (2) links between program synthesis, automata learning, and something in-between; and (3) synthesis of platform mappings with applications to security.