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Carl Cowen*, Department of Mathematical Sciences, IUPUI, Indianapolis, IN 46202-3216. *An unexpected group.*

“What should I study to prepare myself for my future?” is a question for all students, even ‘students’ who are senior(!) mathematics faculty members. Part of the answer is that ANYTHING you know can turn out to be useful in mathematics! In mathematics, you should expect the unexpected! The topic for today illustrates this principle.

The problem that is the focus of this talk concerns polynomials in one variable, viewed as complex valued functions on the complex plane. In addition to the polynomials being a ring, with the ring operations being addition and multiplication of polynomials in the usual way, the polynomials are also closed under composition of functions. Clearly, the composition of a polynomial of degree m with a polynomial of degree n gives a polynomial of degree mn . In this talk, we will investigate the question “When can a given polynomial be written as the composition of two non-trivial polynomials?” For example, some polynomials of degree 15 can be written as a composition of a polynomial of degree 3 and another of degree 5, and some cannot. If we are given a polynomial of degree 15, how can we tell whether it is or is not a non-trivial composite? The answer will be given in terms of a (for me) unexpected group associated with the polynomial. (Received June 12, 2013)