Constructive Mathematics with the help of Harold M. Edwards.
Putting our fininfinities on the proper footing.

Infinity proved addictive. Once the habit of using completed infinites in mathematical arguments has become established, it is hard to root out. It is part and parcel of mathematics today, and Kronecker is regarded as ridiculously old-fashioned and reactionary by all but a small minority of us today.

But he is on the upswing. And he is on the upswing for a clear and persuasive reason. Computers.

http://math.nyu.edu/faculty/edwardsd/talks.htm

Fundamental Theorem. *Given a monic polynomial with integer coefficients, there is a valid way to compute with its roots.*

I have come to believe that Euclid's practice of having two types of 'propositions'—'theorems' and 'constructions'—should be revived and 'constructions' should play a much larger role in our mathematics. The 'Fundamental Theorem' can be stated as a construction:

Given a monic polynomial with integer coefficients, construct a system of computation that extends rational computation with integers in such a way that it beco[...] factor the given polynomial into monic linear f[...]

The name 'Fundamental Theorem of Algebra' is too firmly settled on the statement that a polynomial of degree n has n complex roots (counted with multiplicities) to expect it to change, but in my opinion the theorem I just stated is much more fundamental.

And it is a theorem of *algebra*, which the other is not.

In my opinion, it is an outright *mistake*, however, to regard the splitting field as a subfield of the complex numbers. Complex numbers are limits and can only be described by infinite sequences of approximations. They are always in a state of becoming, not of being. An element of a splitting field, on the other hand, is a root of a polynomial equation and as such can be described exactly in the sense that one can write down a finite set of rules to make it possible to compute it to any prescribed degree of accuracy.