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Thomas Warren Scanlon* (scanlon@math.berkeley.edu), Department of Mathematics, Evans Hall, Berkeley, CA 94720-3840. *Polynomial dynamics.*

By an algebraic dynamical system over a field K we mean a pair (X, f) consisting of an algebraic variety X and a self-morphism $f : X \rightarrow X$. We discuss connections between the theory of algebraic dynamical systems and the model theory of difference fields and valued fields. Specializing to the case that $X = \mathbb{A}_{\mathbb{C}}^n$ is affine n -space over the complex numbers and f is given co-ordinatewise by 1-variable polynomials, we give a precise description of the f -invariant varieties and from this description deduce theorems on the arithmetic of these dynamical systems. (This is in part joint work with Alice Medvedev.) (Received August 19, 2008)