1067-01-1570 **Roger Hart*** (roger.hart@att.net), Department of History, University of Texas at Austin, 1 University Station B7000, Austin, TX 78712-022. *Chinese Roots of Linear Algebra.*

Beginning in about the first century CE in China, anonymous and likely illiterate adepts practiced an arcane art termed fangcheng (sometimes translated into English as "matrices" or "rectangular arrays"). This art provided procedures for manipulating counting rods on a counting board, which enabled practitioners to produce answers to seemingly insoluble riddles. While we know virtually nothing about these adepts, their practices were occasionally recorded by aspiring literati and incorporated in texts they compiled on mathematical arts, which were then presented to the imperial court, together with prefaces promoting the mathematical arts as the semi-divine invention of sage kings, fundamental to understanding cosmogeny, and essential to ordering the empire.

Fangcheng is remarkable because it is essentially equivalent to the solution of systems of n equations in n unknowns in modern linear algebra. The essential feature of fangcheng is, I argue, visualization of problems in two dimensions as an array of numbers on a counting board and the "cross-multiplication" of entries, which led to general solutions of systems of linear equations not found in Greek or early European mathematics. (Received September 21, 2010)