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Andrea L Bertozzi* (bertozzi@math.ucla.edu), Department of Mathematics, University of California, Los Angeles, 520 Portola Plaza, Los Angeles, CA 90095. *Self-organization in human, biological, and artificial systems.*

I will discuss recent work on self-organization in complex systems with a focus on human and biological models as well as artificial systems. Specific case studies include (a) the formation of crime hotspots in urban settings and the mechanisms that lead to such behavior (b) collective motion of swarms, flocks, and schools in animal populations and (c) cooperative control of robotic vehicles using models motivated by biological examples. Such research problems have led to interesting work and open problems for the mathematics community, bringing together ideas from different research areas including dynamical systems, stochastic processes, statistical sampling, bifurcation theory, graph theory, and partial differential equations. (Received September 20, 2010)