1063-70-273   **Alethea Barbaro*** (`alethea@math.ucla.edu`), UCLA Mathematics Department, Los Angeles, CA 90095, and **Lincoln Chayes** and **Maria R. D'Orsogna**. *A statistical mechanics approach to gang territoriality.* Preliminary report.

We study the problem of gang territory formation by simulating an interacting particle system on a lattice. Our basic hypothesis is that territory formation occurs through territorial marking. We show that gang territories can develop in reaction to graffiti. We study a two–gang model in which there are agents from two different groups, red and blue, and each agent is identical aside from its affiliation. Red agents create red graffiti, blue agents create blue graffiti, and all graffiti decays in time. Using methods from statistical mechanics, we prove a phase transition occurs in this system and thus when the number of gang members is conserved, red agents and blue agents segregate themselves and distinct territories are formed. (Received August 17, 2010)