Chris Beacham

Evolving Sheepdog and Cutting Horse Behavior in a Simulated Flock

The focus of this project is attempting to evolve the behavior of a single agent or small group of agents so that they can effectively direct the movement of a much larger group. This is very similar to the roles cowboys and sheepdogs take to manage their livestock. Emphasis is placed on realistic flocking behavior.
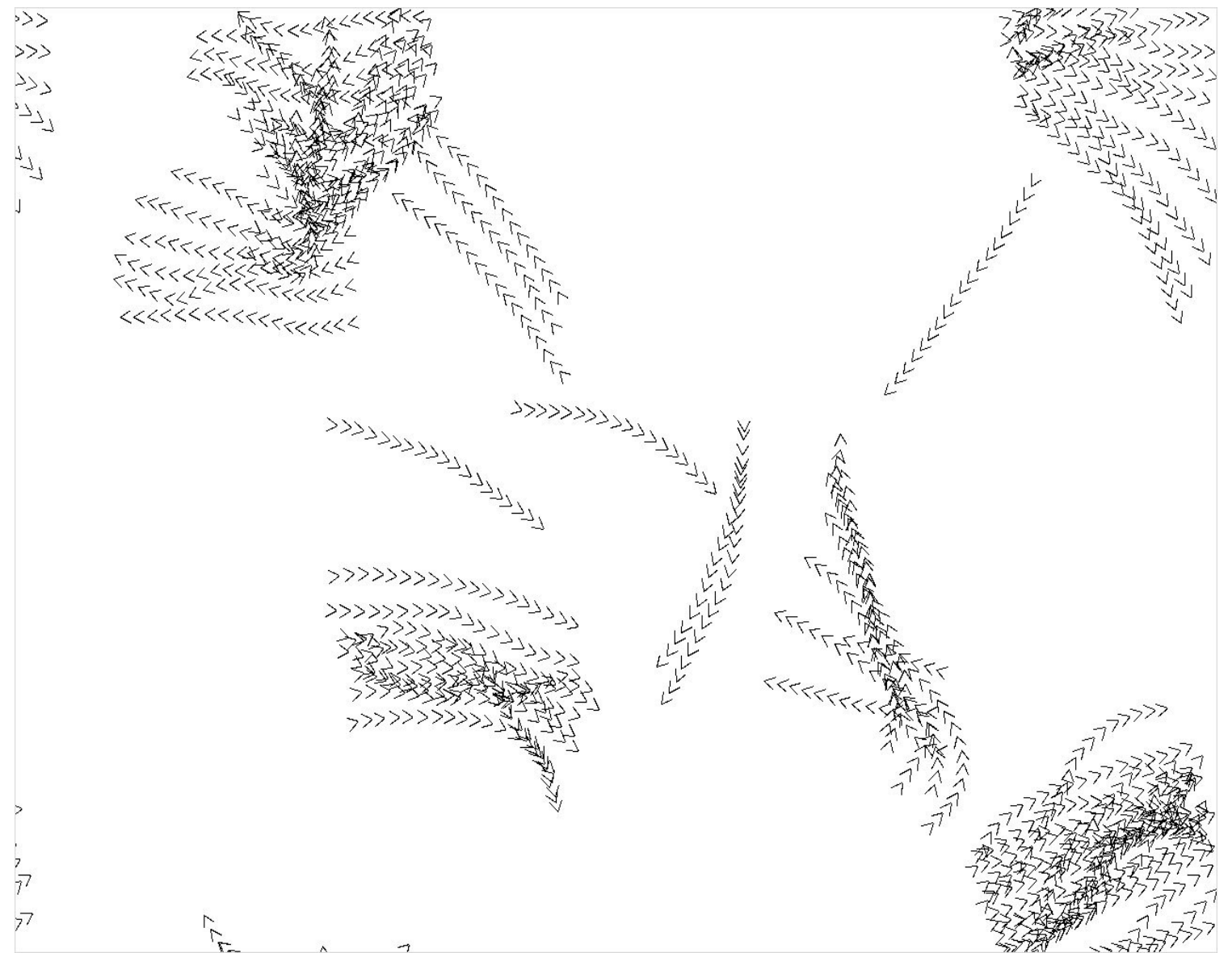
At this point, the project is mostly just an in depth flocking simulation, This screenshot shows flocks in action. Tails have been enabled for this run.

At some point, this project will include an evolution aspect. A simple evolution program was written to prepare for this stage. To the left, you can see a genepool of advanced creatures that were created by directed artificial evolution. Each of the corners is a creature carried over the last generation. The spaces between the corners is filled with a child of the creatures in the two contiguous corners. In the center is a mutation of the best creature (space 1) from the previous generation.
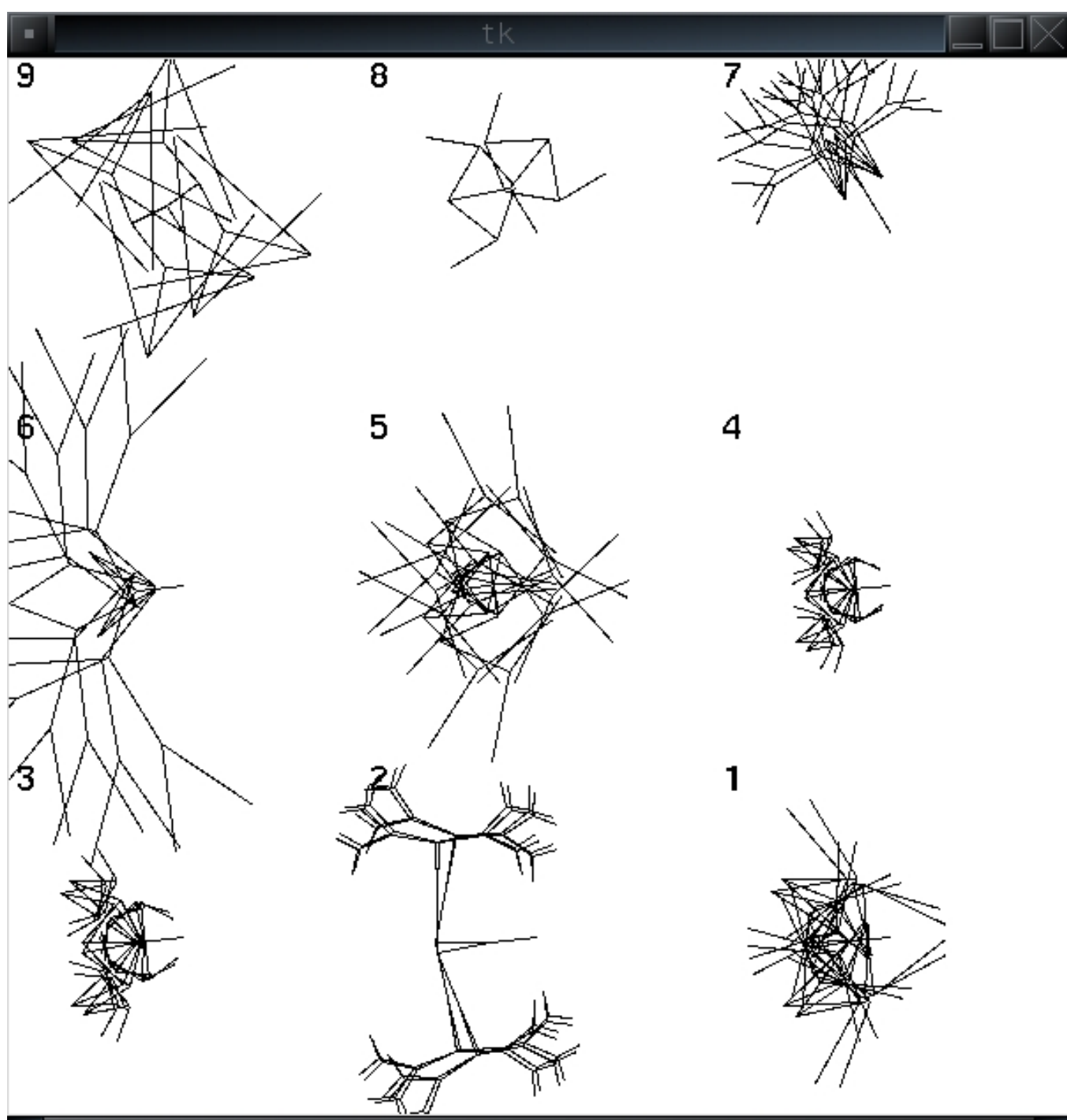
Further reading:
"Flocks, Herds, and Schools: A Distributed Behavioral Model, Craig Reynolds

Low Stress Methods for Moving and Herding Cattle on Pastures, Paddocks, and large Feedlot Pens, Temple Grandin