

Math 145

Chaos Theory

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Meeting #6Th, May 11

- Neuroscience:
 - Walter Jackson Freeman III (1927-2016)
 - MS#141
- Economics:
 - Richard M Goodwin (1913-1996)
 - MS#140
- System Dynamics (NetLogo demo)

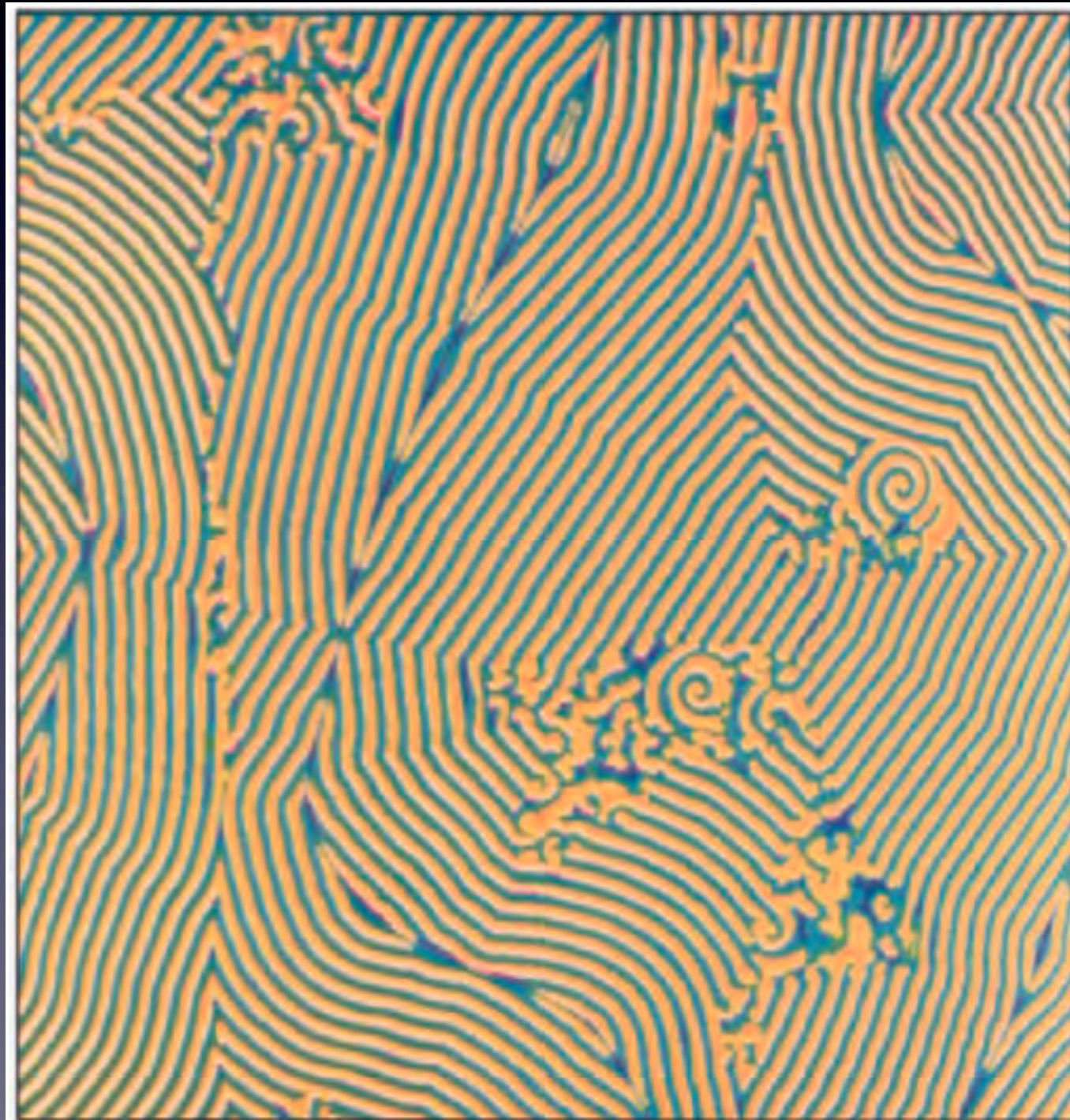
Walter Freeman

- Mass Action in the Nervous System, 1975
 - Katchalsky models, levels
- Societies of Brains, 1995
 - The role of chaos
- How Brains Make Up Their Minds, 1999
 - The role of patterns
- Neurodynamics, 2000
 - ??????

Freeman's 3 Levels

- Microscopic units
 - Small network of neurons
- Mesoscopic units
 - 10,000 interconnected microscopic units
- Macroscopic units
 - Large organs, eg, olfactory bulb
 - Network of mesoscopic units

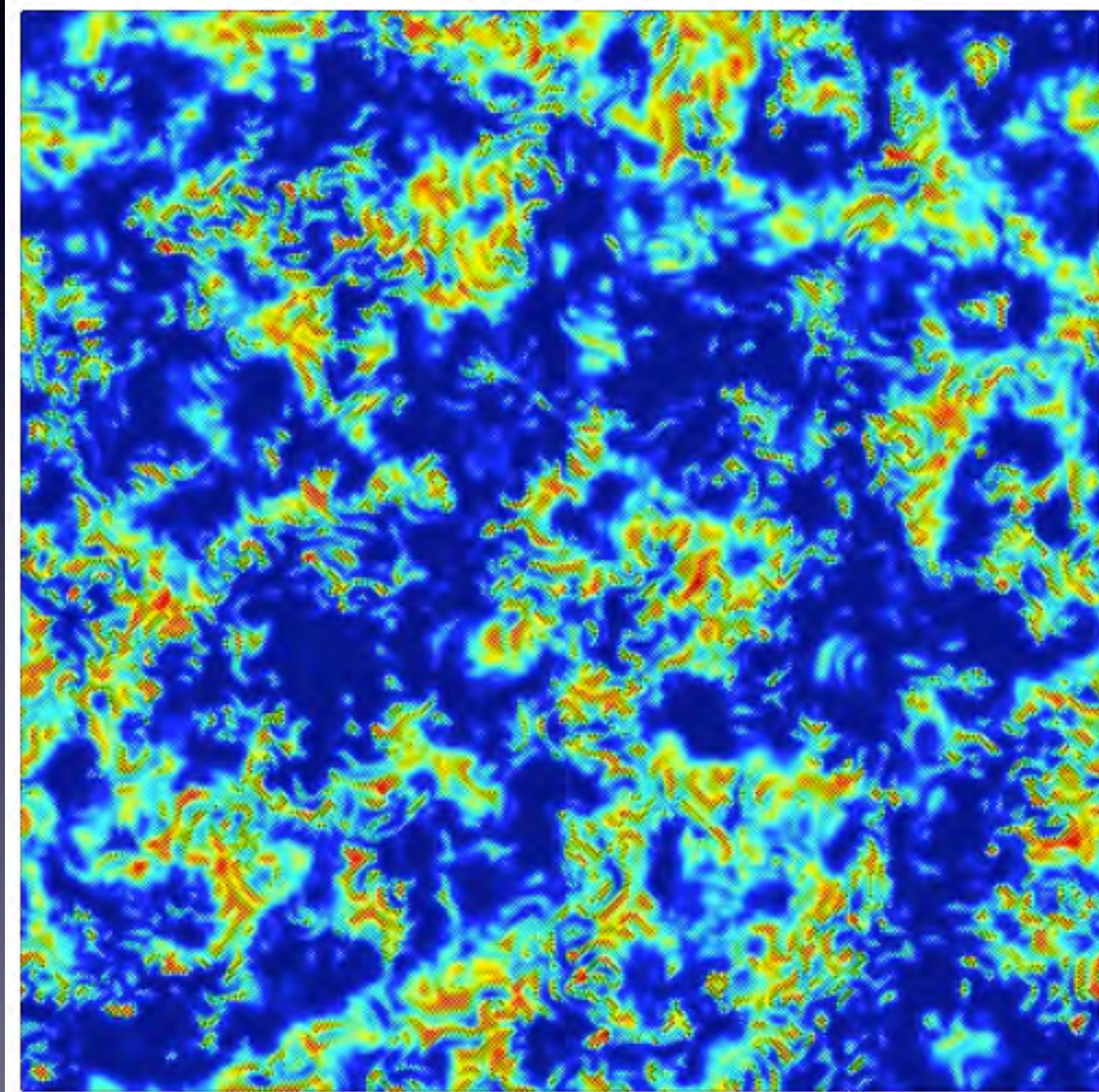
16,000 Brusselators



Richard Goodwin

- The Business Cycle as a Self-Sustaining Oscillation, 1949
 - Adapted Volterra-Lotka to business cycles
- Chaotic Economic Dynamics, 2000 ???
 - Adapted Rossler to the global economy

160,000 Rosslers



160,000 Rosslers



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On to NetLogo SD