Math 145
Chaos Theory

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Spring 2017

Meeting #10Th, June 8

- The origins of chaos in the brain
  - Walter J. Freeman III
  - Christine A. Skarda

Chronology

- 1975: Walter J. Freeman, book Mass Action in the Nervous System
    - Ensembles of oscillator, K-sets
- 1979: Abraham and Shaw MS#21
    - Preview of the 1980s picture books
- 1982: Christine Skarda meets Freeman
- 1983: Skarda and Freeman talk in Carmel
- 1985: Freeman and Skarda, Spatial EEG patterns, non-linear dynamics and perception: the neo-sherringtonian view

Freeman and Skarda 1985, p. 32

Our ability to distinguish chaos from equilibrium under perturbation is inadequate.

The fractal dimensions and Lyapunov exponents have not been measured reliably.

Chaos is likely to play major roles, first in the background state as the means for giving rapid access to any of a collection of limit cycle attractors on each inhalation, second as a means for expressing failure of convergence, and third as a vehicle for information of kinds not yet defined.

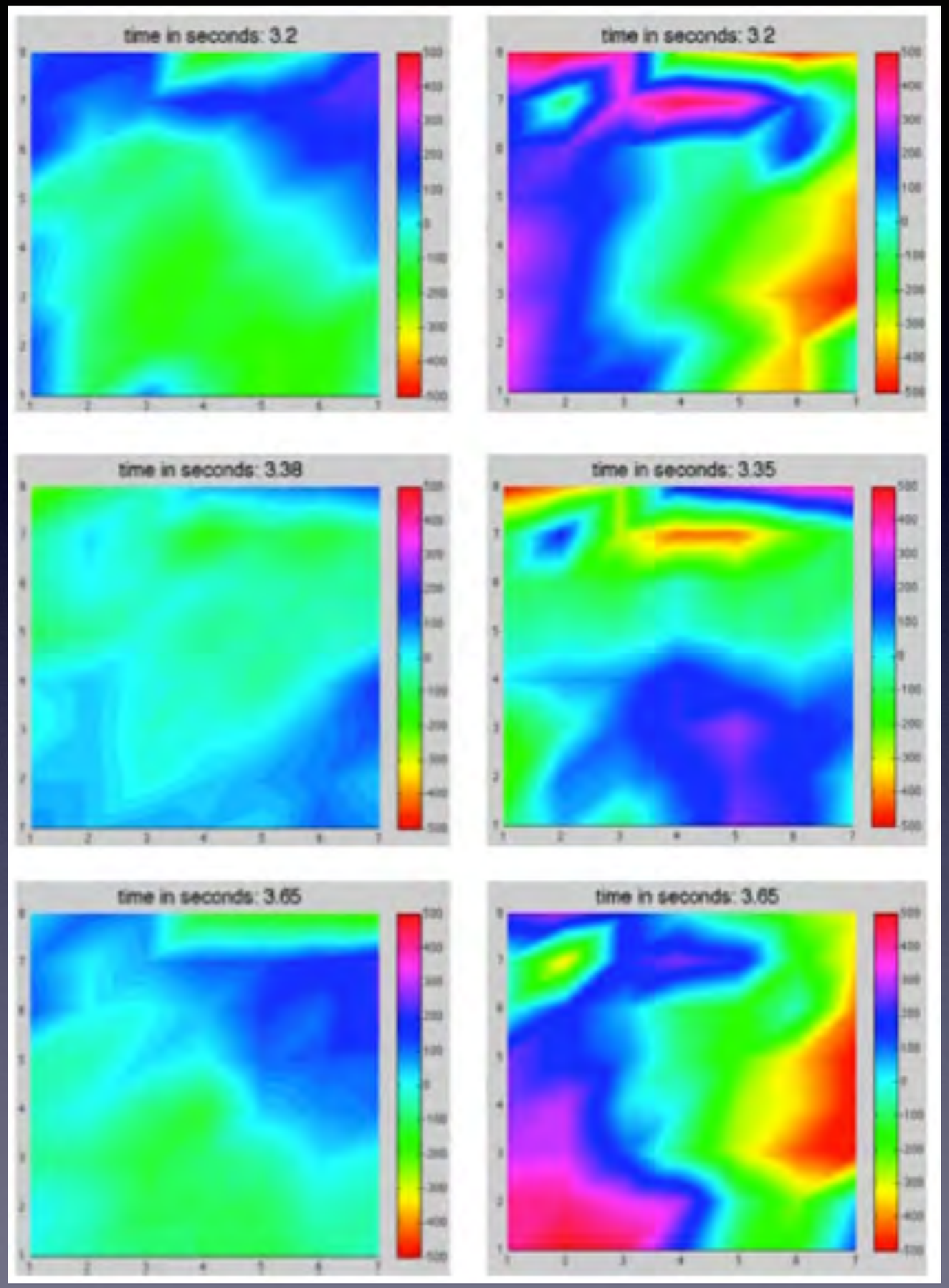
This area of EEG studies will be of major importance in the next decade.

Subsequent Books

- 1995, Freeman, Societies of Brains
- 2000: Freeman and Nunez, Reclaiming Cognition
- 2001: Freeman, How Brains Make Up Their Minds
- 2015: Freeman and Kozma, Cognitive Phaase Transitions
  - Minimal attention to chaos

Smells

Kozma, 2016



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