

PSYCHOLOGY 3130

Mind and Nature

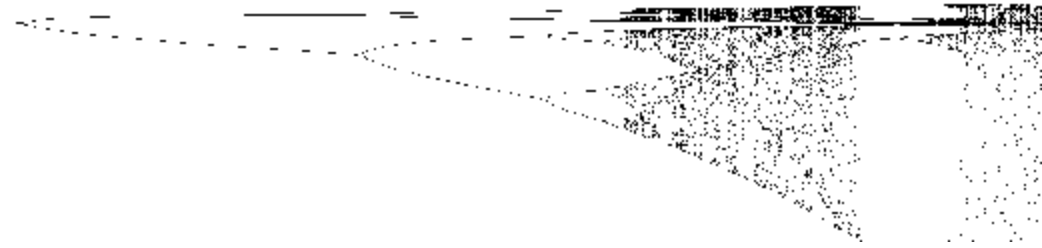
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Office hours: Wednesday noon - 1:00 p.m. & by appt.

Teaching Assistant: TBA



DISCLAIMER: If all goes well, the evolution over time of this class will bear some resemblance to the above bifurcation graph. This means that the trajectory outlined in this syllabus will probably be pretty much accurate for a while but after several bifurcations the class may well proceed to points which cannot be predicted for many reasons. One reason is that the initial conditions will be set by the students as well as the teachers. So these initial conditions won't be known until you begin to specify them.

TEXT:

- ! Course packet available at University Bookstore.
- ! There will also be readings on reserve at the Marriott Library which you will be able to photocopy.

WHAT WILL BE EXPECTED OF STUDENTS:

This course will develop a very open theoretical perspective: Dynamic Systems Theory. Consequently you will be asked to provide some of the content applications of the theory as it is developed.

- ! You must submit in writing a focus theme from your interest in psychology which you will follow throughout the course by thinking about it in terms of Dynamic Systems Theory. You may change this focus anytime during the quarter as many times as you like by written notification of the instructor. But too many changes

may make doing your projects very difficult.

- ! You must regularly interpret experiences and observations from your Everyday Life in terms of Dynamic Systems Theory. This may diverge or converge with your focus theme in Psychology.
- ! You will work with computers to learn elementary mathematical bases of Deterministic Chaos Theory. This is not a math class, but much of Dynamic Systems Theory cannot be understood without a little math. I will do my best to guide you through this painlessly, but you will be expected to learn some math.
- ! You will write short answer essay for homework regularly. These thought papers will be checked in by the instructor but they will not be graded; in fact, they usually will not be read. It is up to you to make sure that the quality of your thought in these papers is up to class standards by talking to other students and by asking questions in class.
- ! You will be given irregular and unannounced short answer essay exams in class. These will pertain to whatever we are talking about at the time. Sometimes you will answer these exams alone; other times you will work in small groups to generate the answer.
- ! You will be expected to work together in collaborative groups with other students and to complete work (even exams) together. In these cases you will all receive the same grade.
- ! **MOST IMPORTANT:** You will be expected to create a large project which will count as the most heavily weighted part of your grade in this class. I can't say what this will be because it will come out of your own interest. Some possibilities are: a paper, a community service project which reflects the themes of Mind and Nature as developed in this class, a class presentation, etc. You may do this project on your own or in a collaborative group.

Week 1

Order out of Chaos: Students will set some initial conditions
Magical Number 7: Seven places where a child plays
Dynamic Systems

Week 2

Dynamic Systems

Week 3

Self Organizing Systems

Week 4

Deterministic Chaos

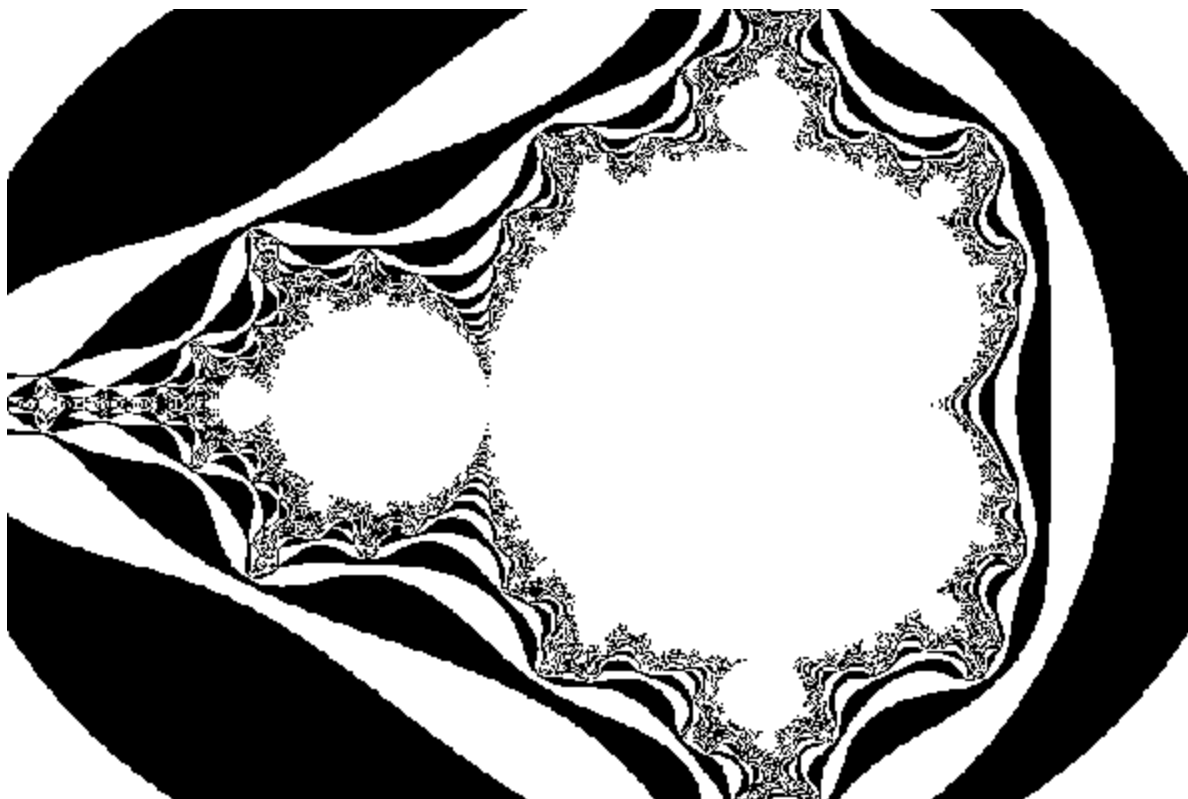
Week 5
Deterministic Chaos

Week 6
Mind and Nature: The Pattern Which Connects

Week 7
Going Whither to Fetch What?

Week 8
Going Whither to Fetch What?

Week 9
Going Whither to Fetch What?



Week 10

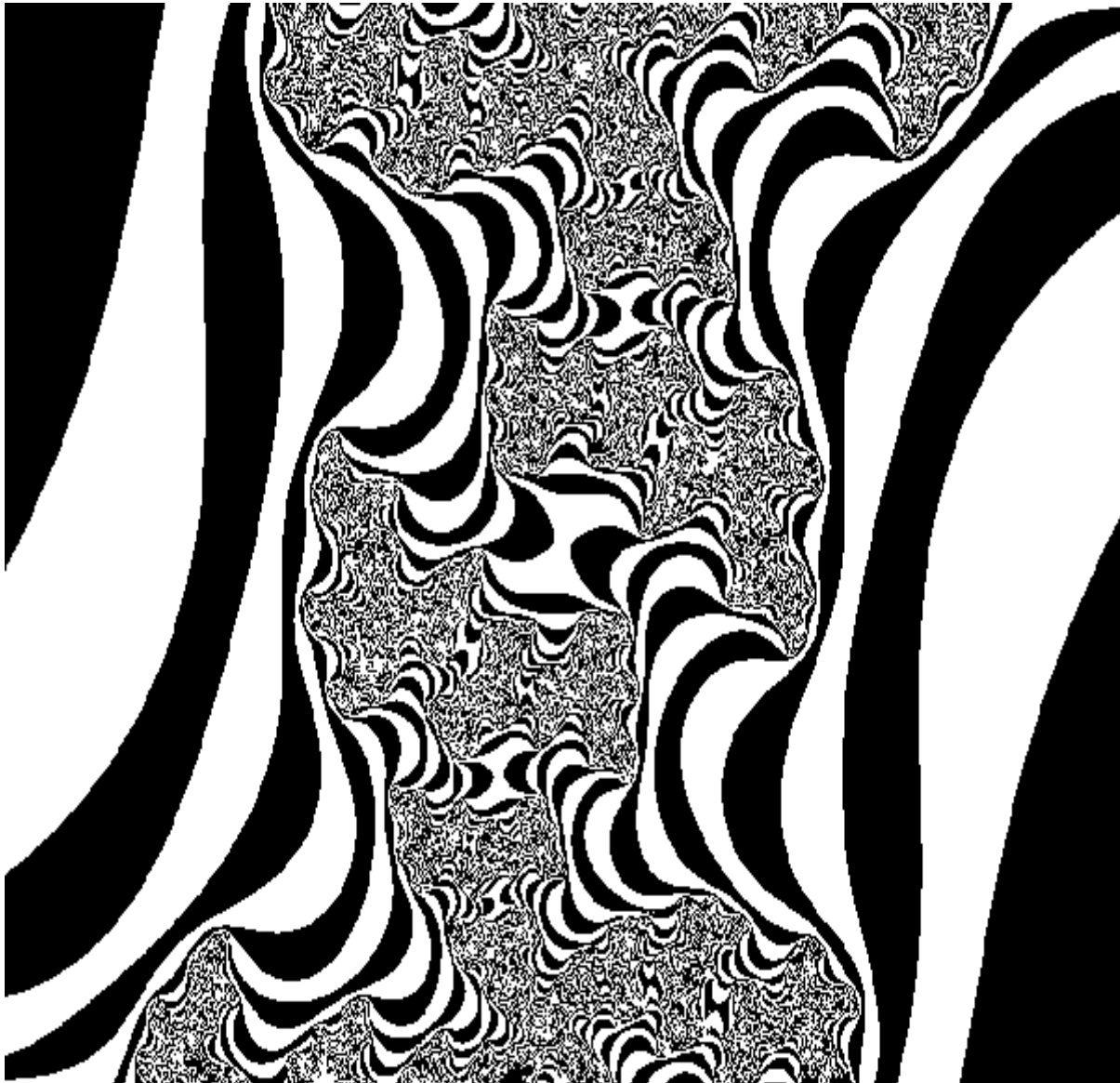
Have any dynamic systems self-organized?

If not, what were the barriers?

If so, how can we describe them and how did they come about?

Week 11 FINALS

Final exam period: To be arranged by instructor in consultation with the students:
Perhaps a self-organizing service to the local natural context?



Readings

I. Interdisciplinary interconnections and applications

The following readings are on reserve at the Marriott Library. You will be asked to read them and use the information in them as examples to which to apply Dynamic Systems Theory. You may, with permission, substitute readings from the focus which you choose in this class to generate examples of the application of Dynamic Systems Theory.

Accidental Conquerors by Jared Diamond
Adapting to Complexity by Russell Ruthen
A Tale of Three Chimps by Jared Diamond
Chaotic Climate by Wallace S. Broecker
God's Utility Function by Richard Dawkins
How Special is the Universe? by John Gribbin and Martin Rees
How the Leopard Got its Spots by Brian Goodwin
Order out of Chaos by Ilya Prigogine and Isabelle Stengers
Rediscovering Mind by Harold J. Morowitz
Selfish Genes and Selfish Memes by Richard Dawkins
Symmetry in Chaos by Michael Field and Martin Golubitsky
The Evolution of Life on Earth by Stephen Jay Gould
The Golden Age that Never Was by Jared Diamond
The Great Leap Forward by Jared Diamond
Where Am I? by Daniel C. Dennett

II. Readings in course packet

Various readings on the topic of Mind and Nature are included in your course packet. Some of these were included in the required readings for my Psychology 265 class but bear reading again. Others are new to this class.

III. Readings in Theory

These are also on Reserve in the Marriott Library

Criteria of Mental Process by Gregory Bateson
Fractals for the Classroom, Volume one "Chapter 1" by Peitgen *et al.*
Fractals for the Classroom, Volume two, "Iteration" by Peitgen *et al.*
How nature handles complexity by J. A. Scott Kelso

IV. Fractal Lab Manual

These readings are included in your course packet with permission of the author Terry Perciante. They will be used to guide homeworks in the use computer exercises

developed by Terry Perciante and available at the Marriott Library.

GRADING

Grades will be based on several activities: 3 short papers (10% each), your Big Project (30%), several Impromptu Quizzes (20%) and 3 Math Homeworks (20%).

Short Papers. These papers will require you to write about your focus of interest in psychology and/or your observations of everyday life. They will occur about every two weeks and will lead up to your Big Project. The first of these papers will be done in the American style. The second will be done in the Balinese style. The third will be done as a single collaborative effort in a group.

Big Project. This is your most important assignment. Right now it is open-ended and will be defined with your input as the quarter progresses.

Impromptu Quizzes. These will replace the traditional midterm and final exams. We hope that they will occur at peak moments in the class and will contribute to the class dynamic. You may drop one quiz score during the quarter. If you are absent for a quiz, it will not count against you. Your quiz grade will be the average of all the quizzes you take after you drop your lowest score. If someone misses too quizzes due to repeated absences (that is, takes less than half the quizzes), missed quizzes will be given a zero and averaged in with other quiz scores.

Math Homeworks. Deterministic Chaos Theory is a mathematical topic. Several lectures will focus on this topic. You will be asked to work with some of the basic math and work on computers at the Marriott Library. Based on this work you will do 3 math assignments.