PSY 607 W2015 – Sem Fractal Perception

Instructor: Dr. Margaret Sereno
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   Office Hours: Wed 4-5:30pm (rm 330 LISB)
Time: Mon 1:00-2:50 in room 217 LISB
CRN: 25264

Natural and man-made scenes are often characterized by their Fractal geometry. Fractals are patterns which are self-similar across scales. In this seminar, we introduce the concept of Fractal geometry, examine two basic methods used by Mathematicians/Physicists (box counting) and Psychologists (Fourier analysis) to analyze the Fractal characteristics of patterns, and examine the behavioral and neural responses to visual Fractal patterns.

The course is offered for variable credit (3-4 credits). All participants are expected to come prepared with questions and comments on each week's readings. Style of participation is flexible – you can bring up questions and comments in class or send these to me via e-mail before or after class; participants are also encouraged to present current research related to the readings. Participants taking the course for 3 or 4 credits must make a presentation and lead a discussion on one of the topics. Participants taking the course for 3 credits must also write a short 1-page single-spaced reaction essay describing their insights and opinions of the research covered in the seminar and possible directions for future research. Those taking the course for 4 credits are required to write a research proposal paper. The research proposal should be 5-7 pages long on a topic related to the seminar. It should be written like a grant application, where you propose a hypothesis and outline experiments to test the hypothesis. It should have an introduction, description of the proposed experiments (including some basic methods), possible results, and discussion.

Participant input is welcome regarding possible papers or topics for discussion not listed in the syllabus. The syllabus and all readings will be posted on the course website (http://blackboard.uoregon.edu).

Schedule and Topics:

Week 1 (Jan 5): **Introduction and Organizational Meeting**
Week 2 (Jan 12): **Fractal Geometry – An Introduction (comparing measurement methods)**
Week 3 (Jan 19): **No Class! (MLK holiday)**
Week 4 (Jan 26): **Fractal Analysis – Box Counting Method**
Week 5 (Feb 2): **Fractal Analysis – Fourier Method**
Week 6 (Feb 9): **Fractal Perception – Preference & Discrimination I**
Week 7 (Feb 16): **Fractal Perception – Preference & Discrimination II**
Week 8 (Feb 23): **Spatial Scale – Neural Response to Spatial Frequency**
Week 9 (March 2): **Preference/Aesthetic Responses to Scenes & Art**
Week 10 (March 9): **Pareidolia (perception of images or sounds in random stimuli)**
Papers/Essays Due: 4:00 Friday March 13th.