

Exercise 6/Essay (worth 3 exercise sheets), due November 23, 2017

This is a reading and essay exercise. In response to each question, write a self-contained text that can be read without having read the question. Make sure you deliver to the reader all information necessary to appreciate the point you are making. Take the reader step by step through your argument. Use illustrations that you label and explain so that they can be understood without going back to the source. Finish each point with a short conclusion.

Do not quote literally from sources, and indicate the source of illustrations.

A typical volume of the essay is about 10 pages, but the size varies with how concise you are. Given the same contents, shorter is better.

Read the Chapter 3 "Embedding Dynamic Field Theory in Neurophysiology" by Sebastian Schneegans, Jonas Lins, and Gregor Schöner in the book "Dynamic Thinking" (available as page proof on the course web page). You don't need to read the boxes and you may also skip the last section on two-layer fields.

1. The experiment of Lee et al (1988) is described around Figure 3.3 and provides evidence for population coding of saccadic gaze shifts in superior colliculus. To formulate the argument in your own words, begin by unpacking what is meant by "neurons in superior colliculus are tuned to the angular direction of saccades" and then take the reader through the argument.
2. Why was the same experimental manipulation not performed in motor cortex? (The answer is somewhere on page 66.)
3. The chapter reviews how Distributions of Population Activation (DPA) can be defined for both sensory and motor areas. Could more than one DPA be constructed for a particular population? What would be required experimentally to do that? Would it be even possible to construct both a sensory and a motor DPA for a *single* area?
4. Write down in one paragraph one point that you now understood better than in the lectures. If you do not find such a point, write down one idea that you understood well in both lecture and chapter.
5. Formulate at least one question you have about the Chapter. This may be a question of clarification, of generalization, or of apparent contradiction/conflict. You may also write a critical comment instead.