

Exercise 3 (Mini-essay with 100% bonus points), due November 28, 2019

**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.**

**Do not quote literally from sources, and indicate the source of illustrations.**

**A typical volume of the essay is about 5 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 section on two-layer fields, but read again the Section "Relationship between DPA's...." (p. 86) and the Conclusions.

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. Summarize the argument in your own words. You can do this more abstractly than in the chapter. Try to express the core idea. Why was the same experimental demonstration not done for motor cortex? (The answer is in the chapter).
2. 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 any given neural 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* cortical area?
3. This is a somewhat free task: I ask you to write down in one paragraph at least one point that you now understood better than in the lectures. Or, if there wasn't such a point, write down one idea that you understood well and that seemed important to you in either the lecture or the chapter. Alternatively (or in addition), you may write down one question you have that didn't get answered. You could also write down one criticism, refutation, or argument you have with any point in the Chapter or lecture.