**245W: Structuring your paper**[i]

Term papers generally have 3 sections: an introduction, a body or discussion, and a conclusion. The different sections of your term paper should relate to each other in the following way.

The introduction is a prelude to the body or discussion of a term paper or any type of scientific paper. (Because of this, it is either written last, or rewritten after the discussion is finished; it is difficult to know how to start a story if you don't know the end.) It should provide a general background to your topic, and contain a thesis statement towards the end. It should also briefly mention what evidence for your thesis you will be discussing later on. This means that specific details should be saved for the discussion. For instance, the following is an excerpt from an introduction from Klappert and Reinhold (2005), with the thesis statement in italics:

> Two main processes, deleterious mutations and coevolutionary host parasite cycles, have been proposed to maintain genetic variance in [male] fitness. Here, we will address a third possible mechanism for the maintenance of genetic variance in fitness: migration between locally adapted populations. This hypothesis has only recently been examined in detail although it has been proposed as a possible mechanism for the maintenance of genetic variance in fitness before.
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> If individuals are genetically adapted to their local environmental conditions, and if migration occurs between populations that differ in their local adaptations, then migration can lead to the maintenance of genetic variance because it causes genes to occur in environments for which they are not adaptive. There is considerable evidence showing that local adaptation is widespread in plants and animals and local adaptation has even occurred in artificial selection experiments. In some of these studies, local adaptation was found to have a large effect on male mating success. *Theoretically, the combined existence of local adaptation and migration between populations can thus cause the maintenance of genetic variance in fitness that is necessary for the good genes hypothesis, and females should benefit from choosing locally adapted males.*

As you can see, the authors are planning to focus on the local adaptation hypothesis; they will try to show that local adaptation, when females prefer locally adapted males, is a valid mechanism that could maintain male genetic variance, and in turn, female choice. They give you a glimpse of what kinds of evidence they might discuss later on. Most importantly, their thesis is very clear.

Your discussion should be closely tailored to match your thesis statement, and correspond to your introduction. If you are working from an outline, using headings from your outline can help make the structure of your discussion more transparent. From the example above, we can predict that the authors will probably go on to discuss examples of local adaptation from (1) plants and animals and (2) artificial selection experiments. They will then discuss specific cases, presumably from the

examples they present, where local adaptation had a large effect on male mating success. They may also consider explanations as to why some studies found contradicting or negative evidence for the local adaptation hypothesis (Klappert and Reinhold 2005):

> The observed preference of females for males from their own population may also indicate that male traits and female preferences have diverged for other reasons. In great reed warblers and great tits, where male traits probably did not differ between populations, resident females also seem to prefer native males over immigrants. Since these analytical studies were not focused on examining the effect of local adaptation on attractiveness, the difference in attractiveness between residents and migrants might, for example, also be explained by an increased migration tendency of less fit individuals. Experimental studies specifically aimed at testing the hypothesis that choice of locally adapted males contribute to the maintenance of female choice are therefore necessary.

In the end, you must show through careful discussion that you have thoroughly understood your topic. Based on the evidence you present in the discussion, you must then come to a strong conclusion. Conclusions typically summarize the thesis statement, the evidence, and then present the final verdict. Imagine that your reader just finished your term paper and asked you, "So what? What does this all mean? What next?" (McMillan 2001). Your conclusion should aim to answer those questions, by emphasizing the theoretical significance, pointing out the conflicts that need to be resolved, and indicating what further directions need to be taken.

**References**

Klappert, K., and K. Reinhold. 2005. Local adaptation and sexual selection: a reciprocal transfer experiment with the grasshopper *Chorthippus biguttulus*. Behavioral Ecology and Sociobiology 58:36-43

McMillan, V. E. 2001. *Writing Papers in the Biological Sciences*, 3rd ed. Bedford/St. Martin's

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