Answers to Questions for Ch. 11 - 13 audio slides

1. Ch. 11:
   a. What are the 4 elements of learning? Can learning be directly observed?
   Improvement, relative permanence, consistency and adaptability. And no. The point is it has to be inferred from changes over multiple occasions, as any improvement we are directly observing can’t be distinguished from performance effects (improvements that are temporary).
   b. What factors might cause people to follow different shaped learning curves?
   From the examples in the slides, these are the complexity of the task and the experience of the individual. For some a relatively simple task (few degrees of freedom) might still follow a positively accelerated curve, as they simply haven’t mastered those degrees of freedom yet, while for those with extensive experience of the required degrees of freedom will generally follow a negatively accelerated curve, even for a task involving a relatively large number of degrees of freedom. But in the general case, the more complex a task, the more likely a positively accelerated curve will emerge.
   c. Give couple of reasons why performance plateaus may occur, and an example.
   The issues I want to focus on here are technique and strategy. There are mechanical limits to the efficiency of certain movements, and we often don’t discover that we’ve hit a glass ceiling until some technical analyst (posh modern version of coach) points out this deficiency. Then it’s back to the drawing board and redesigning our movement to take better advantage of the mechanical degrees of freedom available to us. In dynamic systems terms, we had reached a locally stable solution, and then artificially reinforced it so much that we never discovered the globally stable solution. Examples from golf are both Nick Faldo and Tiger Woods. Each made big changes to their swings over particular stages of their careers. Nick Faldo took a whole year off the tour to revamp his (and then won six majors). Tiger Woods kept playing while working on his, and suffered 18 months of questions about his slump, and that he’d never be as dominant again.

2. Ch. 12:
   a. What function does freezing and freeing degrees of freedom have?
   Freezing – simplifies the movement so that we can control it deliberately (of course, this results in a very awkward movement). Freeing – allows the natural dynamics of the limbs to assert themselves.
   b. What are intrinsic dynamics?
   The tendency for our bodies to prefer certain movement patterns to others. We’re all born with a tendency to prefer perfect in-phase and anti-phase coordination, but we quickly learn several others, of course. The point is, you can assess the difficulty of learning new movements based upon their similarity of difference to the person’s current intrinsic dynamics.
   c. Give an example of how experts differ from novices in their use of their senses.
   Think of how you used your sight differently before and after playing the red box task. When you are accomplished, you look in different places, to anticipate cues, or seek them out.
   d. Why is early success at movement skills no guarantee of later success?
   According to the analysis given in the text, when we are in an early stage of learning the thing that differentiates between learners is the possession (or lack of it) of key cognitive abilities (used to pick up certain key cues, to grasp the overall objective of the movement, to strategize about how to make progress*). When we progress to a later stage of learning, the thing that
tends to separate the wheat from the chaff is the possession of key psychomotor abilities that form the fundamental basis for success with that particular movement.

*Though see slides on chapter 14 and 15 for a different perspective – that cognition is only important with certain learning methodologies, and perhaps these methodologies are not the most effective.

3. Ch. 13:
   a. Give a pair of skills between which you would expect
      i. positive transfer
         Pretty much any pair of ball sports.
      ii. Zero transfer
         Two things with little or no movement or contextual similarities – for instance, tiddlywinks and powerlifting.
      iii. Negative transfer
         You’d probably come up with baseball/softball, and golf (or at least that’s the one that I hear most often from students).

         I’d say tennis and badminton, or tennis and table tennis. The reason with any pair of skills here is that the start of the skill tends to remind you (not necessarily consciously) of a previous skill that you have already become very familiar with. This association tends to make you repeat the previously well learned response. Unfortunately, for the current sport, this movement is not well suited. Hence the previous experience impairs current performance. This is a temporary effect, but for well learned previous skills it can be a significant irritant.

   b. Why does positive transfer happen?
      Well, it’s in the book and the slides, but I’ll repeat it – similarity of skill or context
   c. Why does negative transfer happen?
      See above.