Work through the following in preparation for class discussion. This worksheet refers to George Perle, *Serial Composition and Atonality*, 6th ed., pp. 16-18.

1) Find the set classes of chords x and y and compute both interval vectors. Playing the music at the piano, try to get to know the sound of this basic chord progression.

Note that as the chords are clearly inversionally symmetrical, they will have fewer than 24 different transpositions and inversions. Because of the inversional symmetry, we’ll ignore the inversions, since they’re the same as the transpositions.

We’ll name the transpositions of x as pitch-class transpositions, naming them based on the pitch class of the lowest notes as written out in Perle’s example. Thus $x_0$ is \{C C# F F#\}, and the set in Perle’s example is $x_{11}$.

We’ll name transpositions of y similarly; $y_0$ is \{C C# F# G\}. The difference is that there are fewer than 12 distinct transpositions of y. Why is this? What is the name of the instance of y shown in Perle’s example 15?

2) Unpack the paragraph in the middle of p. 16 that begins “In bar 3”.

Violin 1 is clearly arpeggiating y; importantly, F#, the “highest” note of y and the one that contrasts with x, comes first – so it’s over the soonest and the farthest in the past. The “contrapuntal association” with E is simply a matter of the E in the viola sounding after the F#, so that we can hear it forming an x ($x_{11}$, in fact) with the B, F, and C in the violin 1. When the viola moves to the F#, this would seem to return to the original y in the violin 1, except that the cello plays a C# at the same time. At this point the B from violin 1 is now relatively far in the past, so we can form $x_0$ with C in violin 1, C# in the cello, F in violin 1, and F# in the viola.

Perle talks about “overlapping common elements employed as a modulatory means.” In the terms we have developed, these are invariants. As we have begun to see, the piece moves among various versions of x and y using overlapping schmoos – for example, the final C in the violin part in m. 3 has so far been seen to belong to three different sets.

Continue to trace these overlapping instances of x and y, and be specific – don’t just label x and y, label (for example) $x_7$, $y_3$, etc. Do you see any larger patterns in the versions of x and y used?
3) Now unpack the sentence that straddles pp. 16 and 18. How do mm. 18-19 recapitulate m. 5 with its upbeat? Answering this question will involve a similar kind of analysis to that done in answering question 2.

4) Listen for the connection between F#’s that Perle talks about at the end of the first paragraph on p. 18. Can you hear this? And do you agree that register and timbre make a difference?

5) Similarly, listen for the relationships that Perle discusses in the middle paragraph of p. 18. Can you hear them?

6) Finally, Perle’s analysis leaves out a particularly striking part of the piece, the almost painfully beautiful melody in the first violin in mm. 7-9 (its expressive marking, so zart as möglich, means ‘as tenderly as possible’). Can you find a way to relate this melody to the rest of the piece?