A Lab-style Greek Course: Treebanking and the Flipped Classroom

This paper discusses the pedagogical design of an intermediate Greek class offered at Tufts University in 2015 centered on the instructional use of syntactic treebanks: dependency-based sentence diagrams. The errors that students make while producing treebanks can be analyzed as data indicating what students do and do not understand. The ability to detect specific areas of confusion enables a data-driven approach to teaching Greek. Furthermore, treebanking allows the creation of a flipped classroom where students work on assignments collaboratively with the instructor and each other during class time. The collaborative nature of this class also allows me, an undergraduate student, to be a peer instructor and work closely with students throughout the course.

When creating a treebank, the annotator tags individual words according to their relationship with the word they depend on. Students especially struggle to correctly identify adverbial, attributive, or objective forms of modification. (Majidi, Saeed and Gregory Crane. "Human and Machine Error Analysis on Dependency Parsing of Ancient Greek Texts." 2014.) This pattern of error indicates an underlying insufficient comprehension of the relationship between verbs and the words that depend upon them. Tailored grammar reviews were designed to resolve this lack of understanding: e.g. https://goo.gl/qvqpgH. This set of examples allows us to automatically compare student-produced trees with completed trees as a measure of comprehension. These completed trees also provide primary source models from the texts students are reading in class.

In addition to these materials, treebanks of Plato's Apology of Socrates and Xenophon's Apology of Socrates were completed to serve as a "gold standard", which will allow the instructors to score student treebanks of these texts quickly using a comparison tool built into the

treebank annotation software. These "gold standard" trees can also be subsequently used by students as a guide for working their way through the texts.

In order to help students master the tools themselves, video tutorials (e.g. https://goo.gl/Qk4vEJ) and classroom demonstrations were prepared. Encouraging students to collaborate among themselves can also help them become more comfortable with the tools. In addition, as a teaching assistant and a peer, I am able to work closely with students to resolve technical or language difficulties with the treebanks.

In addition to working with students to resolve difficulties, the instructor and I are both actively working with students in a lab-like fashion during class time. The course meets three times a week. On the first day is a review of grammar and a topic from Greek culture, done through student work on treebanks. On the second meeting day the class groupwork on elaborating treebanks together. On the third day, students and the instructor do a close reading of the text together. The lab structure of the class allows us to work through the problems and questions students have about their readings and treebanks while delegating the easier material, such as simple trees or easy reading passages, to out of class readings and preparations. In this way, all of the instructor time is used on the areas students actually find challenging or do not understand.

The intensive use of treebanking as a teaching method entails the need for adapted assessment criteria. Students are graded according to their ability to produce accurate treebanks and translations. This accounts for morphology, syntax, semantics, vocabulary, and overall understanding of the text. Special emphasis is placed on correct treebanking of morphology and syntax of, and translation of, unadapted Greek. Students also assess the work of their peers on their ongoing treebanks over the course of the semester to provide feedback and gain

understanding by learning to identify shortcomings in other students' work. Students are also tasked with judging their own treebanks in the same fashion, to encourage them to understand their own weaknesses and gaps in understanding. Peer and self-assessment are each a small part of the overall semester grade for the class, which encourages students to take their assessment of each other and themselves seriously. Students use the same rubric for assessment as the instructors use to assess exams, so there is a consistent standard for all grading. Assessment is based on data points from the treebanks. A particular student's' tree with mislabeled adverbial accusatives, for instance, would be marked off for mislabeling syntax, but because of the data the trees provide we could then review that topic in the next class when we talk about the assessment.

In short, this class takes a data driven approach to teaching Greek. As a peer instructor, I have learned more from helping other students with Greek than I ever could have on my own. Furthermore, this experience as a teaching assistant has been rewarding as a contribution to original research and to the development of teaching methods in our discipline.