AN INDUCTIVE-WITHIN-DEDUCTIVE METHODOLOGY
FOR THE INTRODUCTORY LINGUISTICS COURSE

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This paper will present several innovative techniques for teaching linguistic structure in introductory courses. These techniques emerged from my dissatisfaction with the limited command of basic relationships that students seem to acquire from the commonly used approaches. Over the last two years I have made several small experiments, sometimes merely moving chapters around in the class-text, or adding a hand-out or two; some of the experiments were odd or whimsical in basic conception, but so impressed me with their results that I was forced to take them seriously. By now they have begun to hang together, to constitute an approach with a fairly coherent rationale.

I have gotten good results with the approach, not only in the upper division introductory course, in which I devote a full ten weeks to linguistic structure, but also in the freshman 'service' course, with a modest two weeks devoted to it. Success in the latter framework is especially relevant as an alternative to 'service'-type intro courses that simply avoid linguistic structure altogether.

Linguistic structure still typifies the whole field of linguistics, so it is especially important for the introductory course to succeed here, both in providing significant insight, and in doing so in a palatable way. Unfortunately, linguistic structure is also uniquely difficult to learn. In addition, it is specially sensitive to changing winds on research levels. Premack can announce that apes can't, after all, learn sign language; Fishman can suddenly argue that Whorf wasn't so crazy after all. Radical as these changes are for psycholinguistics and sociolinguistics, they can be absorbed into any introductory course fairly easily. In contrast, doing away with transformations or changing phonetic features can have a devastating effect on any introductory course--if we let it.

'Reaching out' to students is often a euphemism for watering down concepts, substituting memory for understanding, or simply cutting back the quantity of linguistic structure taught. But such compromises often backfire. The more popularizing textbooks, I find, are at least as forbiddingly formal as the more serious ones, even while they drain out interesting linguistic insight. Surely it is possible to REFINE the insights, to teach them effectively in whatever time-period we want to.

The present attempt to achieve this goal represents both a long-term plan, the textbook I am writing, and a short-term plan, a method of using hand-outs and syllabus-design to modify existing textbooks even while using them: as I have found, a simple hand-out may be sufficient to turn around the stickiest exposition in any existing textbook, and to bring praise upon the teacher so clever as to make it comprehensible.

Syntax

What syntax to teach? I would not hesitate to use new insights if I thought they would work, but I do not think that post-transformational syntax can be appreciated without its transformationalist antecedents. Just as physicists do not feel guilty about teaching Newtonian physics to undergraduates, I would not hesitate to use an outdated theory. Many linguists indeed feel that PS grammar is a good focus for syntax in the introductory course, nicely exemplifying the notion of linguistic rule and linguistic generalization, as well as putting a large amount of analytic power in the hands of students: a coherent theory with which one can analyze any given sentence much more effectively than with traditional sentence-diagramming. But I believe that comparison with traditional diagramming is self-defeating, and indeed shows the basic poverty of PS theory, at least for the current generation of students. Those of them who know anything about traditional diagramming hate it, so what good can come out of comparing ourselves with it? It is like trying to get your kids in to dinner by telling them that the spinach tastes better tonight.

Although the technical difficulties of PS grammar are not overwhelming, they do take time, and give too little reward. Students have an intuitive notion of grouping and categorization--so good, in fact, that the whole formalism of PS-rules and trees represent an obscure explanation for facts which, as far as the introductory student is concerned, really need no explanation at all.

The notion of a transformation has had exceptional impact beyond linguistics: more and more lay-people have heard the term in some context or other. We should take advantage of this good publicity. In addition, transformations explain a range of data (sentence-relations and ambiguities) that are actually fun for the average person. The factors combine to recommend transformations as the primary focus of syntax in the introductory course. The abstractness of classical transformational theory is not a defect: students do not mind abstractness, which they handle quite adequately in their literature and philosophy classes. What I suggest causes them trouble is the formal and methodological heaviness that we shovel at them along with it--in our well-intentioned but I think misdirected attempt to lay out the logical steps 'explicitly'.

The commonly used introduction to transformations is a two-step affair, starting with optional transformations and relationships between sentences, and only later working up to obligatory transformations and abstract deep structures. When we find some students unable to make the second step, we attribute it to the inherent difficulty of this more abstract idea. My own experiments with rearranging chapters in class texts quickly convinced me the first step itself caused the problem: rather than easing the transition, it sets up an obstacle.

The notion of the transformation, I thus find, can best be taught in a single step, from a basically deductive starting point. Its abstractness should be confronted head-on; that is, it should be defined, from the first moment, as a process that changes deep structures into surface structures--where deep structure is defined as an abstract (i.e. subconscious, mysterious) level of structure that is behind each sentence as we hear it.

Case-grammar with subject-creation is a remarkably easy way to get across a suitably abstract notion of deep structure, while focusing on data of general interest. (Who has not been taught that the subject is a primary 'logical' constituent of sentences?) But where time is limited, WH-questions will serve equally well.

I suggest that traditionally popular examples like particle-movement or passivization should serve in a supporting role only: if used as initial or primary examples, they teach a too concrete notion of transformation that will only have to be unlearned later. Other traditional favorites like imperative and reflexive explain data so obvious that students derive little pleasure from them: we again fall into the trap of providing complex explanations for facts that do not seem to need explanation.

We should avoid trying to justify deep structures as we might if we were speaking to fellow-linguists: methodological assumptions cannot be taught at the same time as concepts. We should use the trick of doctors: help the patient visualize the operation and its benefits by repeating it in confident tones. A too gruesome analysis of its essence as we perceive it professionally will only scare the patient, and excessive justification on our part will only backfire, undermining his confidence in us. We can freely admit the existence of scholarly controversy--as long as we defer specific discussion of it to advanced courses.

Whatever transformations are used, their essence can be presented neatly in a LINEAR format, as exemplified in (1). The vertical version of (1a) presents sentence-derivations compactly and clearly, contributing both to comprehension and to easy examination. The horizontal version of (1b) focuses on the transformation itself. Underlining is sufficient to indicate constituent-grouping, and terms

like 'subject' can be used without extensive discussion. The numbers
provide a surprisingly easy formalization, which students learn to work
with without special training or explanation.

(1) (a)   Q the engineer can stay near who
            who the engineer can stay near
            who can the engineer stay near

     (b)   the engineer D work in which factory
            ‾‾‾‾‾‾‾‾‾‾‾   ‾‾‾‾‾‾‾‾‾‾‾‾‾‾
                1   2 3   4   5   => _ DO-_ _ _ _

The assumed level of deep structure itself can be taught by a
diagram along the lines of (2), in which examples (specific lexical
items) are given primacy over category-names.

(2)

	(subject)	(auxiliary)	(verb)	(objects)	
Q Imp	the engineer that house which factory I who	can should will Z D	kick kiss give take stay go	(Prep) to in from near	the engineer that house which factory I who

If deep structure is presented thus at the outset, there is no limit to
the range of creative, inductive activity that students will be
able--indeed anxious--to participate in. From the beginning, they will
be able to 're-invent' transformations, and later, to figure out details
of application. More generally, exciting hand-outs are easy to make up
simply by (1) outlining the processes to be discussed in the linear
format, and (2) blanking out selected parts for students to fill in, as
was in fact exemplified in (1b). Such hand-outs allow the teacher to
exert considerable personal control over curriculum, without fighting
the textbook: even if the textbook differs in detail, it retains its
useful role as supporting reading.

The pedagogical 'trick' is to involve the students actively in the
actual construction of ideas. The fill-ins are not supposed to work
like programmed instruction: they are rather a focus for home study and
class discussion, where students are allowed to visualize the whole idea
only by virtue of their own cooperative efforts. As such, the fill-ins
are an application of 'schema-theory' in Artificial Intelligence. The
blanks in the fill-ins are 'frames'. The fill-ins that we provide are
the schemata containing frames--these schemata being the necessary
precondition for acquiring the information, by providing the frames
within which it fits. Thus the given information, the pre-existing

schema, is the deductive framework within which inductive play leads to acquisition of the composite concept.

Phonology

In phonology, it is similarly possible to adapt existing materials in an inductive-within-deductive methodology. But, whereas in syntax this amounts to proposing a more deductive approach than usual, in phonology it will mean more inductive activity than usual. This difference is justified by the greater detail in phonology, as usually taught.

I admit that students do not mind memorizing long lists of phonetic terms. But they feel almost as frustrated as we do, when they cannot USE phonetic concepts, or even recognize the linguistic relationships that take primacy within linguistics over the phonetic terms.

Students will generally respond positively to a sneakily manipulative question such as: 'Would you like me to ignore the distinction between bilabial and labiodental?' I suggest replacing the over-detailed phonetic analysis of existing textbooks with the feature-system in (3a), in which terms in capitals replace traditional phonetic terms as shown.

Symbol simplification as in (3b) will similarly endear you to students even as it allows more refined focus on linguistic insights.

(3)   (a)   LABIAL (for traditional bilabial and labiodental)
            DENTAL (for interdental and alveolar)
            palatal
            velar

            EXPLOSIVE (for plosive/stop and affricate)
            fricative
            nasal resonant
            OTHER RESONANTS (for liquid, lateral, retroflex, etc.)
            glides

            SIBILANT (not strident)
            voiced and voiceless

            high, mid, and low
            front and BACK (no central)
            SHORT and LONG (for lax and tense/diphthong)

      (b)   č ǰ   (for tʃ d$_3$)
            š ž   (for ʃ $_3$)^3
            y   (for j)^3
            h   (for x and h)

The focus should be on relationships within the system, especially analogies and natural classes. Students should not begin their learning with charts or terms: I have seen too many students, on final exams, misalign columns, or whisper voiced consonants while holding their adam's apple. The phonetic chart, even in its simplified form, is too complex a structure to learn meaningfully: it should be confronted only AFTER students have a complete mastery of analogies, to the extent that they can fill in the chart themselves.

Before any encounter with terms or charts, students should go through intensive practice with analogies--until they feel them in their bones.

But as a still earlier step, it is useful for the analogies themselves to emerge from real-language examples that are inherently interesting to students. A sufficient number of such examples is available not only in English phonological process, but more generally in historical sound-change, revealed to an extraordinary extent in English etymology and comparison between English and related languages. (4) below gives some of the examples I use to introduce the analogical pairing of fricatives and explosives. (4a) gives Latinate words in English with their native-Germanic correspondents, which work up to a summary of the sound-change or analogy. (4b) presents the same analogy from the opposite direction, since guessing the English meaning for the German words requires going from fricative to explosive.

(4) (a) | Latinate | Native | Summary of Sound-change |
|---|---|---|
| pro-(American) | for | |
| primary | first | |
| Pisces | _ish | |
| paucity | _ew | p - f |
| | | |
| triple | _ree | |
| trans- | _rough | |
| tenuous | _in | _ - θ |
| | | |
| coronet | horn | |
| canine | _ound | |
| cardiac | _eart | k - _ |

(b) helfen, schlafen, Schiffe
        (English: help, etc.)   f - _

Fuss, besser, weiss   s - _

Woche [vohə], machen, Koch   h - _

My workbook, *Tralfamadorian Phonology*, presents an abundance of such examples--more than enough for the full range of phonetic relationships. But even brief samples like (4) are helpful, and more than worth the time spent on them.

I have named my workbook for Kurt Vonnegut's Tralfamadorians--a space-people who see across time, and for whom the contrast between synchronic and diachronic linguistics presumably would not exist. ("It is just an illusion we have here on Earth that one moment follows another, like beads on a string, and that once a moment is gone, it is gone forever...The Tralfamadorians can look at all the different moments just the way we look at a stretch of the Rocky Mountains..." Kurt Vonnegut, *Slaughterhouse Five*.)

Because of the history of linguistics, we make a radical distinction between synchrony and diachrony--even though, on a research level, we are no longer very sure where the borderline lies. The separation is a hindrance, since historical sound-change is much more accessible than phonological process, conceptually. The very distinction between synchrony and diachrony can be introduced more meaningfully after sound-change has been thoroughly understood, by observing how some sound-changes are implicitly known by speakers of the modern language, without studying historical linguistics.

The proposed order of presentation is outlined in (5b), as compared with the traditional order (5a).

(5) (a) Traditional Order:

Linguistics $\nearrow$ synchronic $\rightarrow$ phonological system $\rightarrow$ P-rules
$\searrow$ diachronic $\rightarrow$ sound-change

(b) Proposed Order:

Language $\rightarrow$ sound-change $\rightarrow$ phonological system $\rightarrow$
synchrony/diachrony

Conclusion

I have proposed several radical simplifications in the concepts of linguistic structure that we teach. Apart from proposing linear formats for transformations, I have proposed that PS-rules and even trees represent an unnecessary diversion. Similarly, I have implicitly recommended against focusing on binary features in phonology. I hope to have contributed to analyzing linguistic concepts into their component parts--an important step in the development of pedagogical approaches. Few if any textbooks seem to contain such an analysis of linguistic

concepts: at best they seem to look for more palatable expositions of concepts, the concepts themselves being taken over more or less ready-made from linguistic theory in its current (or not-so-current) version.

But of course I also propose that my selection is a good one for teaching linguistic structure in the introductory course. If trees or PS-rules or binary features or traditional phonetic features must be taught (e.g. for later courses), I would still propose that they be taught at the end of the curriculum outlined here. For example, if tree-diagrams must be taught, let them be taught after students have seen numbers of examples of reference to constituent-structure in transformations. I predict that they will be learned more effectively, as well as more enjoyably.

In short, I suggest that the selection and approach outlined here represent a refinement of linguistic insight, which will allow the introductory course not only to achieve popularity for itself, but also to contribute to the popularity of the whole field of linguistics, because (not in spite) of, its focus on linguistic structure.

APPENDIX:
SAMPLE HANDOUTS [WITH COMMENTS]

A. Handout on deep structure.

[This handout can be used after a short lecture on the notion of 'deep structure' as an abstract linguistic level posited by linguists. I.e., as soon as students are prepared for an abstract level, they will accept the following as a specific description of the level.]

The following is an outline of the deep-structure level.

	(subject)	(auxiliary)	(verb)	(objects)	
Q	the engineer	can	kick		the engineer
Imp	that house	should	kiss		that house
	which factory	will	give	(Prep)	which factory
	I	Z	take		I
	who	D	stay	to	who
			go	in	
				from	
				near	

[Brief definition of Q, Imp, Z, and D in notional terms is sufficient to start the ball rolling.]

Exercise 1.

Analyze the following sentences in terms of the above outline of deep structure, noting that these are sentences whose deep and surface structure are identical, with two exceptions.

    a.   The engineer can kick that house.
    b.   That factory will stay in that house.
    c.   The student should give that book to the engineer.
    d.   I can stay.
    e.   Who will kiss me near the factory?
    f.   Which factory should go?
    g.   You will take the book.

Exercise 2.

How are the following deep structures pronounced? That is, what is the surface structure corresponding to each of them?

a. The engineer D kick the table.
b. The engineer Z kick the table.
c. I D kick the table.
d. Imp you will take the book.
e. Imp you will stay.
f. Q the student can see the picture.
g. Q the teacher should read the book.
h. Q the book will fall on the floor.
i. Q who can show me the tree.
j. Q which house can stay.
k. Q the engineer can go to which factory.
l. Q the student will read which book.
m. Q who D stay.
n. Q I D kiss who.
o. Q who can stay.
p. Q who D stay.
q. Q I can kiss who.
r. Q I D kiss who.

Exercise 3.

What is the deep structure corresponding to each of the following surface structures?

a. The engineer kick-Z the table.
b. Stay in the house!
c. Can you stay?
d. Who stay-D?
e. Will I read the book?
f. What can you say?
g. What do-D you read?

[When working through the handout, it is important to be consistent and firm, e.g. assuming throughout that Q accompanies all questions. It is also important not to dwell on details; note briefly that I changes to *me* as object, that *did, does* are actually *do-D, do-Z*, but mainly give students a chance for the simple absorption of the deep structure level in specific terms.] A format for the next step of focusing on specific transformations is exemplified in (1b) in the text.

B.   Handout on phonetic relationships as revealed through doublets.

[This handout can be used after even the briefest background
lecture on the Latin layer of English vocabulary, accompanying however
much discussion of Indo-European it has been decided to include.
Special attention might well be devoted to the common misconception that
Latin is the root of all languages. The ultimate goal of the handout,
however, is to work up to the analogies in the 'summary' which the
students practice orally after filling in.]

 Fill in the missing sounds:

Latin-derived	Native (Anglo-Saxon)	Summary of Sound-change
paternal	father	
pedal, (tripod)	_oot	
Pisces	_ish	
(pyromaniac)	_ire	
plateau	_lat	
nepotism	ne_ew	
paucity	_ew	
primary	_irst	
pro-American	_or	p - f
triple	__ree	
tenuous	__in	
dentist	too__	
trans-	__rough	_ - θ
coronet	_orn	
canine	_ound	
(cardiac)	_eart	
decapitate	_ead (AS heofod)	
canabis	_emp	k - h

[() marks Greek words, which can be included to exemplify the broader
Indo-European background. Since I have not previously introduced θ, I
also find it useful to include maternal/mother, paternal/father, tu/thou
at this point, in anticipation of the later distinction, but without
mentioning the symbol [ð] here.]