The Analytic Leap:
From 'Some Xs are Ys' to 'All Xs are Ys'*

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A common tack in linguistic analysis is to argue that certain occurrences of an element X have the remote representation Y, and then to extend the representation Y to all Xs, even those that lack the salient properties of the original examples. This extension I call an analytic leap; the rule taking Y to X is the basis rule for the leap. Instances of analytic leap arguments are to be found in both phonology (section 1) and syntax (section 3). I argue here that phonological leaps have no warrant in isolation (section 2), whereas syntactic leaps do (section 4). In section 5 I offer two reasons for this asymmetry.

    1. Illustrations: Phonological. Phonological cases involve the familiar principle 'once a phoneme, always a phoneme'. In structuralist methodology, this principle says that if some instances of a phone are assigned to a phoneme, then all instances must be so assigned. Thus, since German has a phonemic distinction between [t] and [d] (Deich 'embankment' vs. Teich 'pond' and the like), the [t] that appears in word-final position is assigned to the phoneme /t/, even though some instances of this [t] alternate with [d] (in Rad 'wheel' as opposed to Rat 'counsel' and similar pairs). If some [t]s are assigned to /t/, then all are. Similarly, since the distinction between [s] and [t] is phonemic in English, dialects with both [bɛst] and [bɛss] for best must be analyzed as having alternative phonemic representations for this word. If some [s]s are assigned to /s/, then all are.

    The 'once a phoneme, always a phoneme' position is not obligatory within structuralist phonemics, of course; there, it is one of a set of principles intended to force biuniqueness on phonemic representation. But even linguists who reject phonemics entirely tend to adhere to some form of the 'once a phoneme, always a phoneme' principle. Thus, Chomsky and Halle,[1] having argued that such morphophonemic alternations as [aj] in divine ~ [I] in divinity, [aw] in profound ~ [ʌ] in profundity point to underlying /ī/ for the [aj] in divine and /ū/ for the [aw] in profound, go on to analyze other occurrences of [aj aw] as /ī ū/, even when there are no alternations to support this treatment--for words like kite, tile, silo, lout, mouth, pouch. Although it is never made entirely clear in SPE, the motivation for this step is presumably simplicity: the existence of a rule generating some [aj]s and [aw]s permits us to simplify the inventory of underlying vocalic elements by eliminating the remaining cases of /aj aw/ in favor of /ī ū/.[2] The analysis is then extended to the third true diphthong in English, [ɔj] (for which there is only a handful of marginal alternations), so that a general ban against underlying

VG sequences can be stated. However, the criteria appealed to
in this (largely implicit) line of reasoning--catching free
rides[3] on the vowel shift and associated rules, reducing the
number of elements in the underlying inventory, increasing the
symmetry of the underlying inventory--are not of much weight,
especially in comparison to other methodological principles (notably,
the principle that remote representation shouldn't differ from surface
representation without reason). Consequently the SPE analysis
cannot be taken as lending indirect support for a 'once a phoneme,
always a phoneme' principle in generative phonology. In fact,
the synchronic vowel shift rule provides a poor basis for analytic
leap arguments, since it is highly morphologized, exception-ridden,
and of doubtful psychological reality.[4]

An even less convincing case is the SPE treatment of [ǰ].
Some occurrences of [ǰ], as in analogy, are in alternation with
[g], as in analogous, and are derived from it by a rule of velar
softening, which applies to k and g before nonlow front vowels.
However, there are numerous words in which [g] occurs before nonlow
front vowels, as in gill and get, and in which [ǰ] occurs before
other vowels, as in Japan and Joan. Nevertheless, SPE treats all
[ǰ]s before nonlow front vowels, as in gin, as derived from /g/.
Here, an analytic leap is made even though there is no resulting
simplification in the underlying inventory, since words like Japan
(157n) and Joan will have underlying /ǰ/, while words like gill
(173f) and get must be treated as exceptions.

2. Criticism: Phonological. The [aj] and [aw] analysis
illustrates a leap from 'Some instances of [aj aw] are derived
from underlying /ī ū/' to 'All instances of [aj aw] are derived from
underlying /ī ū/'.[5] The [ǰ] analysis illustrates a leap from 'Some
instances of [ǰ] before nonlow front vowels are derived from
underlying /g/' to 'All instances of [ǰ] before nonlow front vowels
are derived from underlying /g/'. Other examples are easy to find--
among them, Schane's 1968 treatment of nasalized and front rounded
vowels in French and my 1967 analysis of umlaut vowels in German,
according to which even invariant vowels like the ö in schön were
treated as derived from back vowels. These are just the sorts of
analyses objected to by Kiparsky (1968)--analyses positing special
remote representations, on the basis of an existing rule, for forms
that don't participate in alternations--Kiparsky's objection being
that these analyses predict the possibility of historical changes
that simply don't occur.

So it seems that phonological leaps yield objectionably
abstract analyses. However, I am not prepared to follow recent work
of Vennemann's and give up all phonological leaps. I would
argue for an underlying /n/ for [tẽt] tent, even in dialects with
an invariable nasalized vowel in this word; for an underlying /t/
for /bʌʔn/ button, even in dialects (like mine) with an invariable
glottal stop in this word; and so on. The leaps here are justified
by the automaticity, generality and cross-linguistic plausibility
of their bases and can be further supported by distributional
arguments.[6]

I conclude that phonological leaps require extra justification; it is not enough merely to observe that some Xs are Ys.

3. <u>Illustrations: Syntactic</u>. A standard argument[7] for a <u>you</u> subject in English imperative sentences appeals to the pattern of reflexive pronouns in object position:

> (1) Wash *myself/yourself/*oneself/*himself/*herself
>   /*itself/*ourselves/yourselves/*themselves.

and to the generalization that direct object reflexive pronouns occur when and only when they are coreferential with the subject of their S. Therefore, the argument goes, imperative sentences must have <u>you</u> (singular or plural) subjects. The basis for this leap is a <u>you</u>-deletion rule. The argument can be strengthened a bit by reference to sentences with reflexive indirect objects:

> (2) Give *myself/yourself/*oneself/*himself/*herself
>   /*itself/*ourselves/yourselves/*themselves a treat.

to sentences with <u>own</u>-possessives:

> (3) Wash $\left\{\begin{array}{l}\text{*my/your/*one's/*his/*her/*its\ \ own\ face.}\\ \text{*our/your/*their\ \ own\ faces.}\end{array}\right\}$

> (4) Give $\left\{\begin{array}{l}\text{*my/your/*one's/*his/*her/*its\ own\ face}\\ \text{*our/your/*their\ \ own\ faces}\end{array}\right\}$
>
>   the Bnick Beauty Treatment.

and to request imperatives with modal tags, for instance those with <u>will</u>, <u>would</u>, <u>won't</u> and <u>could</u>:

> (5) Give me a pack of Acapulco Golds, will/would/won't
>   /could *I/you/*one/*he/*she/*it/*we/*they.

Each of these arguments[8] takes a leap, from the assertion that <u>some</u> imperative sentences have a <u>you</u> subject in remote structure, to the claim that <u>all</u> imperative sentences have such a subject.

Other analytic-leap arguments have been used to justify covert performative structures for sentences lacking explicit performative verbs. There are, for instance, Ross' (1970) arguments referring to various types of 'spurious' reflexives, those not occurring in the same simple S as their antecedents, as in

> (6) Linguists like myself often write unclearly.
> (7) As for myself, I find canned hearts of palm disgusting.
> (8) This squib was written by Annabella and myself.
> (9) This bizarre object is a picture of myself.

For (6)-(9), Ross argues that the reflexives in their main clauses
share significant properties with reflexives in embedded clauses;
a general statement of these properties is possible if (6)-(9) are
themselves embedded clauses in remote structure. We then need a
rule deleting the embedding structure. Other arguments refer to
sentences with the verb lurk in them, with the phrase according to,
with the idiom be damned if, and with some further lexical items;
evidence from the occurrence of adverbials has been stressed by
several writers (Rutherford 1970, Schreiber 1971, Davison 1972,
Sadock to appear); and, for Latin at least (Lakoff 1968:ch. 5),
the distribution of moods, tenses, negative markers, and
complementizers can be used to argue for higher sentential stucture.[9]

   In each case, a motivating rule or constraint gives evidence
for remote structure, and then we take an analytic leap: some
simple declarative sentences--those in (6)-(9)--have a complex
remote structure, therefore all simple declarative sentences do;
some declarative (imperative, interrogative) sentences with certain
adverbials have a complex remote structure, therefore all declarative
(imperative, interrogative) sentences do; and so on. What makes
this particular chain of argumentation persuasive is that distinct
leaps seem to yield compatible remote structures.

   4. Criticism: Syntactic. It would not be extravagant to
claim that the analytic leap is the standard syntactic argument
form; virtually every argument in the syntactic literature involves
one or more leaps, although they are rarely made explicit and even
more rarely defended. However, the rationale for leaps is not so
obvious as to need no examination. A critic might respond to the
argument for you subjects given in connection with (1) above by
maintaining that it shows only that imperative sentences with
reflexive direct objects have a you subject; the argument from (1),
according to this criticism, says nothing whatever about other
imperatives. Adding the evidence in (2)-(5) merely extends the
number of structures for which the you analysis might be justified;
there will still be an indefinite number of structures for which
there is no evidence at all, our critic[10] might conclude--among
them, Say 'cheese' and Pass me the salt.

   How do we reply to this case-by-case position? What do we
say about (1) and (2), for instance?

   Suppose we adopt the case-by-case position with respect to
(1) and (2)--the position that an imperative sentence has a remote
subject (you) only if it also has an object coreferential to this
subject. Then there is apparently no principled way to state this
restriction: we are obliged to say that an imperative sentence lacks
a subject unless it has a direct or indirect object you, in which
case it has the subject you. This effect can be achieved by a
constraint on underlying structures (assuming that some underlying
imperative structures have subjects and some don't) or by a (rather
foolish) make-work rule that generates a subject you in every
imperative structure with object you (assuming that all underlying
imperative structures lack subjects). The constraint, or rule, is
not only ad hoc; it also duplicates the existing reflexivization

rule--the constraint by mentioning the conditions on reflexivization, the rule by applying only so as to generate structures to which reflexivization applies.

The unprincipled character of the case-by-case position becomes more obvious as the cases pile up. Adding (3) and (4) as evidence for the remote structure of imperatives forces us to complicate the ad hoc constraint or rule so as to duplicate both ordinary reflexivization and the conditions on own-possessives. Adding (5) causes us to duplicate tag-formation as well. The problem is that the grammar must somehow specify exactly which imperative structures can have subjects, and the list of environments is not only quite strange and arbitrary (in the sense that it has no intrinsic connection with imperative sentences), but it is also a repetition of a set of existing constraints and/or conditions on existing rules--just those constraints and rules that motivated the remote structures in the first place. We are thus unable to state uniformly various generalizations (about the occurrence of reflexives, own-possessives, and tags, in this example).

Moreover, there are technical problems that make the case-by-case analysis even more unpalatable. First, the conditions that must be duplicated are on the structures to which existing constraints and rules apply, and these structures are not necessarily the same as underlying structures (the level problem). Second, some of the conditions incorporate essential variables (the variable problem). Neither of these difficulties is obvious in the you-subject example, because the phenomena in (1)-(5) all occur within a simple S, so that we might think that the environments for whatever constraint or rule is required could be listed.[11]

Now consider a case-by-case approach to the performative analysis. For a level problem, take the spurious reflexives illustrated in (8). Many speakers (I am one) find these reflexives unacceptable in subject position:

(10) *Annabella and myself wrote this squib.

Consequently, if we want to say that a performative structure is justified for declarative sentences only in those cases for which there are syntactic reflexes, we cannot just list

(11) Structure has object of the form: NP and I

as one of the conditions permitting underlying performatives, because there are various rules moving NPs from object to subject position, and the condition on spurious reflexives applies to the outputs of these rules. (8) and (10) share an underlying structure in which Annabella and I is subject and not object; nevertheless, the case-by-case position must permit an underlying performative for (8). Since Annabella and I is moved into object position in the derivation of (8), the distribution of underlying performatives would have to be determined by reference to the outputs of rules, by some sort of a derivational constraint. If the distribution of

performatives is described by a rule rather than by a constraint
on underlying structures, then we need a structure-creating rule
applying after all rules that could shift objects into subject
position and before the rule generating the spurious reflexive in
(8). Even if this analysis can be pushed through, it suffers from
the grave defect mentioned earlier: the performative-creation rule
acts merely to create structures for the spurious reflexive rule
to apply to; it is pure make-work, Either a transparently ad hoc
rule is required, or else a very complex sort of (opaquely ad hoc)
constraint.

A variable problem arises in connection with the same spurious
reflexive myself, which is not limited to main clauses:

> (12) Dolores heard that this squib had been written
>   by Annabella and myself.
> (13) Simon was surprised to learn that this squib had
>   been written by Annabella and myself.
> (14) Margaret began to wonder whether anyone realized
>   that this squib had been written by Annabella
>   and myself.

If we try to permit higher performatives in underlying structures
in exactly the right places, then the constraint on underlying
structures must somehow incorporate an essential variable, unlike
any other sort of deep structure constraint thus far proposed.
Or else, once again there is a make-work rule, with an essential
variable in it. Either there is a make-work rule, or else both the
level problem and the variable problem require very powerful devices
for their solution--both steps we should be unwilling to take if
there is a plausible alternative.

I conclude that the case-by-case approach is rarely satisfactory.
Even a single analytic leap can be supported by arguments that the
corresponding case-by-case position loses generalizations--and
in many cases, that the case-by-case position requires complex or
pointless descriptive devices. With more than one analytic leap,
the inadequacy of the case-by-case analysis is even more apparent,
since the special constraint or rule must incorporate several
disparate sets of conditions at once.

Syntactic analytic leaps are especially strongly supported
when (as in the phonological examples in section 1) the rule
motivating an analytic leap and its basis rule are the same. If
I argue that some sentences with reflexive objects have underlying
structures with coreferential subjects and objects, then this
argument applies not merely to the particular examples, I've chosen
but to all examples of their type. Reflexivization serves here as
both the motivating rule and the basis rule, and the case-by-case
position is even harder to justify than it was above. Briefly, in
syntax we assume that a rule, once motivated, is as general as
possible.

Syntactic leaps do have restrictions, which need further
investigation. Some of these are obvious. We cannot, for instance,

leap from the observation that some sentences have coreferential subjects and objects to the claim that all sentences do; here there is no basis rule to appeal to. Nor can we leap from an argument that some sentences have underlying structures with coreferential subjects and objects to the claim that all sentences do; this time there is a rule, reflexivization, but it is not the basis for the leap, because the class of sentences for which the leap is made has been overgeneralized (the proper leap would be from the argument that some sentences with reflexive objects have underlying structures with coreferential subjects and objects to the claim that all sentences with reflexive objects do). Moreover, similar surface facts may motivate different leaps.[12] To continue our example, there are more sources for reflexive pronouns than the ordinary reflexivization rule--spurious reflexives of several types, emphatic reflexives (Maisie herself saw it), the reflexive in by oneself 'alone', and so on. These must be distinguished if proper leaps are to be made. Finally, some rules are lexically constrained, so that the corresponding leaps must be short ones.

　　5. Resolution. In section 2, I claimed that analytic leaps in phonology had no warrant without independent evidence. In section 4, I argued that analytic leaps in syntax are normally warranted. In phonology the burden of proof lies on the analyst who makes a leap, in syntax on the analyst who objects to one. Why should there be this asymmetry between phonology and syntax? On the whole, argument forms applicable in one are applicable in the other; why not here?

　　I think the difference lies partly in the nature of the domain of a leap (the set of Xs that have been argued to have remote representation Y) and of the remainder (the set of Xs other than the original examples). In phonological arguments, both the domain and remainder are finite--a set of morphemes or words.[13] As a result, even if we have argued that certain Xs are remote Ys, we are not committed to treating other Xs in the same way, because they can be listed. Words with non-alternating [aj] can (in effect) be listed by giving them the underlying form /aj/, words with non-alternating [g] can be listed by giving them the underlying form /g/, and so on. Moreover, we have no a priori disinclination to listing items in this way; the lexicon is, after all, the repository of idiosyncratic properties.

　　In syntactic arguments, on the other hand, the domain and remainder are both infinite sets of sentences. At the very best, one or both of these can be represented by a finite set of structural formulae, like

$$(15)\quad NP_1 \; V \; _{NP}[NP_2 \; \underline{and \; myself}]$$

corresponding to the domain of the leap for examples like (8). But syntactic description has no independent demonstrated need for a list of these formulae (a list that would correspond to the lexicon for phonological representations); they are indefensibly ad hoc.

　　There is a further reason for the asymmetry of phonology and syntax in the matter of analytic leaps. This has to do with the

existing asymmetry of the two components with respect to the
question of abstractness. In both areas, we employ the principle
that remote representation should not differ from surface repre-
sentation without reason--but this principle is much weightier in
phonology than in syntax, because we have some independent
evidence about the 'other end' of syntax (semantics/pragmatics),
whereas the 'other end' of phonology is simply the deepest
justifiable phonological representation, with very little
independent positive evidence available for its make-up.
Syntactic leaps that move towards semantically plausible structures
therefore have a degree of external support which is in general
lacking for abstract phonological analyses.

Footnotes

*This work was supported by a grant from the John Simon
Guggenheim Memorial Foundation. My thoughts on analytic leaps
have been much influenced by conversations with Jerrold Sadock
(who cannot, of course, be held responsible for what I've made of
our talks). I am also indebted to Michael Geis for several useful
comments.

1. 1968. Hereafter SPE.

2. The case of the leap from the analysis of some instances
of [i] as /ē/ (as in serene/serenity) to the analysis of other
[i]s as /ē/ (as in greet and queen) is a bit more complicated,
because in addition to the simplicity motive behind the leap, there
is a technical argument: if some occurrences of [i] are underlying
/ē/ and others are represented essentially as on the surface, that
is as underlying /ī/, then diphthongization and vowel shift will
affect both underlying representations, giving incorrect [aj] for
words like greet. As a result, greet and similar examples would
have to be marked as not undergoing the vowel shift. I would
embrace a conclusion very much like this--that the items under-
going the vowel shift are specially marked. Consequently, I
don't see that the SPE 'musical chairs' argument (that once some
[aj]s are /ī/, then surface [i]s must be something else, namely
/ē/, to avoid getting caught up in the mapping of /ī/ to [aj]) gives
any real support for the analytic leap in the case of [i].

3. The connection between the free-ride principle (Zwicky
1970) and analytic leaps deserves some comment. A leap works for
greater uniformity of remote representations while allowing certain
representations (those for which the leap is made) to catch a
free ride on the basis rule. However, I am not claiming that the
free-ride aspect of leaps militates against them in phonology,
nor will I claim that the free-ride aspect of leaps strengthens
the case for them in syntax. The purpose of Zwicky 1970 was to
argue that free rides cannot be treated as a virtue of analyses,
that analyses are not somehow better for taking free rides. But
I don't see that they are necessarily worse for it.

4. It is especially doubtful that underlying /ī/ in kite
and /ū/ in lout are psychologically real. See further discusison
by Vennemann (ms. 1971).

5. Or from some other source for [aj aw]. Chomsky and Halle
(223f) argue that a few words with [aj], like right, have underlying
/ix/.

6. The abstract analyses predict that historical changes
might in some way uncover the posited segments /n/ and /t/; this
strikes me as a possibility, but I have no evidence on the matter.
Since nearly all speakers of English are literate, and since most
have had contact with speakers who at least occasionally pronounce
[tɛnt] and [bʌ́tn] or [bʌ́ɾŋ], clear evidence will be hard to come by.
It might, of course, happen that further changes will make an
analytic leap impossible: if English speakers generally dropped
medial glottal stops (and said [bʌ́ŋ] or [bʌ́n]), then neither children
nor linguists would have evidence for a /t/ in button.

7. See Stockwell, Schachter, and Partee 1972:ch. 10 for
bibliography and some survey of the literature. In this section I
restrict myself to imperative sentences that can be interpreted
as requests (and can therefore occur with sentence-final please).
The arguments for command imperatives are different in some details.
See Sadock ms. 1973 for further discussion of imperative types.

8. Because it is rather difficult to state the precise
conditions on the occurrence of own-possessives, the evidence in
(3) and (4) is not as useful as it might be. The other two lines
of evidence present a few (surmountable) problems of their own:
there are exclamatory sentences like the starred examples in (1)
and (2), for example, Give myself a treat! I couldn't afford it,
and there is another type of tag-formation that yields sentences
like the starred examples in (5), for example, Give me a pack of
Acapulco Golds, will he? I'll show him!

9. It is not, of course, necessary for every speaker to
agree with Ross' judgments (or the other writers' judgments) in
every case. Other patterns may reflect different principles of
distribution for spurious reflexives, particular lexical items,
and sentence adverbials--principles that shed no more light on the
performative analysis than subject-verb agreement does. The analysis
is in trouble if nearly all the putative lines of evidence turn out
to be irrelevant, or if some of them point to remote structures
notably at variance with the structures postulated by Ross,
Sadock, Lakoff, and others.

10. This line of criticism is sometimes advanced by students
in introductory linguistics courses. I have heard professional
linguists argue along the same line on occasion, but I can find
no quotable published examples.

11. The difficulties do arise when more facts are taken into
account. A level problem arises in connection with sentences
involving both subject-raising and reflexivization, like Imagine
yourself/*himself as a gnome of Zürich. Super-equi-NP deletion
plus reflexivization gives rise to a variable problem, illustrated
in Try to understand that washing yourself/*himself with that
pumice-stone is likely to be painful; so do occurrences of own-
possessives in embedded sentences, as in Tell Alice that your/*his
own motorcycle will do for the trip.

12. For phonology, compare note 5.

13. This would not necessarily be true for arguments concerning prosodic phenomena in phrases or sentences. It would also not be true for entirely automatic phonological processes (like those mentioned at the end of section 2), if we take their domain to be an (infinite) set of possible words, rather than a set of actually occurring words.

References

Chomsky, Noam and Morris Halle. 1968. The sound pattern of English. New York: Harper & Row.

Davison, Alice. 1972. Performative verbs, felicity conditions and adverbs: an inquiry into the nature of performative verbs. Ph.D. dissertation, University of Chicago.

Kiparsky, R. Paul V. 1968. Linguistic universals and linguistic change. In Emmon Bach and Robert T. Harms (eds.), Universals in linguistic theory, 170-202. New York: Holt, Rinehart and Winston.

Lakoff, Robin T. 1968. Abstract syntax and Latin complementation. Cambridge, Mass.: M.I.T. Press.

Postal, Paul M. 1968. Aspects of phonological theory. New York: Harper & Row.

Ross, John Robert. 1970. On declarative sentences. In Roderick A. Jacobs and Peter S. Rosenbaum (eds.), Readings in English transformational grammar, 222-72. Waltham, Mass.: Ginn.

Rutherford, William E. 1970. Some observations concerning subordinate clauses in English. Lg. 46.1.97-115.

Sadock, Jerrold M. Ms. 1973. Aspects of linguistic pragmatics. Paper presented at the Texas Conference on Performatives, Conversational Implicatures, and Presuppositions.

_____. To appear. Toward a linguistic theory of speech acts. New York: Seminar Press.

Schane, Sanford A. 1968. French phonology and morphology. Cambridge, Mass.: M.I.T. Press.

Schreiber, Peter A. 1971. Some constraints on the formation of English sentence adverbs. Linguistic Inquiry 2.1.83-101.

Stockwell, Robert P., Paul Schachter, and Barbara Hall Partee. 1972. The major syntactic structures of English. New York: Holt, Rinehart and Winston.

Zwicky, Arnold M. 1967. Umlaut and noun plurals in German. Studia Grammatica 6.35-45.

_____. 1970. The free-ride principle and two rules of complete assimilation in English. CLS 6.579-88.