19

The Overestimation of Functionalism

The four chapters of part D were concerned with the resolution of the controversies and paradoxical findings that proceeded from the Neogrammarian position on the regularity of sound change. The results have provided remarkably strong support for their point of view. Once the Neogrammarian concept is modified by our present understanding of the hierarchy of abstractness of linguistic categories, the regularity of sound change appears as a substantive reality. In part E, our attention turns to another aspect of the disagreements that have followed from the original Neogrammarian statement: the relation of sound change to meaning.

The Neogrammarian position on this matter is quite simple: the course of sound change is not modified by the communicative needs of speakers and listeners. Grammatical systems do show adjustments that preserve meaningful relations, but these are the result of a separate process of analogical change. The problem of distinguishing analogical change from regular sound change has been argued continually since the Neogrammarians first articulated their position. But recent years have seen a revival of the view that sound change is directly affected by the need to preserve meaning, under the title of *functionalism* and the *functional hypothesis*. This general point of view applies to synchronic variation as well as to historical change. To assess functional arguments, we will have to deal with both types of variation. The most detailed developments have taken place with respect to synchronic, stable variation, and much of this chapter will focus on this area of investigation. It will first be helpful to look at the place of functional arguments in general and their relation to linguistic argumentation.

19.1 Functionalism and functionalists

Over the past half century a number of linguistic schools and tendencies have worked under the title of *functionalism*. They have oriented themselves toward the notions of "function," "communication," and "meaning," in a way that may be summed up as a default proposition:

(1)   The function of language is for the speaker (or writer) to communicate meaning to the listener (or reader).

The concept of "meaning" here is usually narrower than the concept used in information theory, but broader than that used in truth-definitional semantics. In general, discussions of functional effect refer to the need to represent *states of affairs* with propositions that will succeed in distinguishing what are true states from those that are not, along with their extensions into the interrogative, imperative, and other moods. In addition, such discussions have come to include various ways of calling attention to parts of the sentence, or withdrawing attention, as indicated by such terms as *focusing* and *defocusing*, *topicalization*, *foregrounding*, and *backgrounding*. But these discussions of functional effects usually do not include the function of representing the emotional state of the speaker, the social relations between speaker and addressee, or the facilitation of speech and communication by condensation, abbreviation, or mechanical means.

The range of linguists who devote their efforts to explaining language structure by the need to communicate is quite broad, and might include in diverse ways such major contributors as Martinet, Halliday, Kuno, Kiparsky, and Givón. The Parasession on Functionalism at the Chicago Linguistic Society's 1975 meeting gave full representation to functional views. The great majority of papers argued in favor of functional explanations, though at least two were skeptical.

One does not have to look far to find linguists who avoid "function" and functional explanations. Chomsky has shown a thoroughgoing skepticism in regard to functional explanations of language structure. In defending the autonomy of syntax, he concedes that the needs of communication may have influenced the structure of language as it evolved in human prehistory, but he argues that very little can be concluded from this observation (1975:56–60). Pursuing a biological analogy, he says:

There is no doubt that the physiologist, studying the heart, will pay attention to the fact that it pumps blood. But he will also study the structure of the heart, and the origin of this structure in the individual and the species, making no dogmatic assumptions about the possibility of "explaining" this structure in functional terms. (p. 57)[1]

Chomsky's negative view of functional explanations is certainly related to his position that the study of language use is quite distinct from the study of language structure, and possibly not very important to linguists; that

[1] This is certainly an extreme position, one not likely to evoke a sympathetic response from most physiologists, who have profited from their functional orientation since the time of Harvey.

syntax is autonomous and can be studied apart from semantics; and that the language faculty is an innate structure isolated from social interaction. Since those who investigate language in its social context do not usually hold any of these positions, one might expect that work in this area would fall into the functional camp. Yet over the past ten years, I and others who observe language in use have become increasingly doubtful of arguments for the controlling effect of meaning on language and language change. It is often asserted that speakers take the information state of their addressee into account as they speak, and that given a choice of two alternatives, they favor the one that will put across their meaning in the most efficient and effective way. But in what follows, we will see that quantitative studies of the use of language fail to confirm this assertion.

Functional arguments are not easily discouraged. *Communication* and *meaning* appear there as elements that are inherently good; a linguistic device is considered better if it communicates more information, and worse if it does not. I find myself inherently suspicious of anything that is inherently good.

What we might call naive or teleological functionalism has been tried in other fields and been found wanting. Merton points out that the structural-functionalism of sociology looks to the structural *consequences* of behaviors or institutions, not their motivations. In his discussion of functions and dysfunctions, he points out two types of confusion in his own field:

"the tendency to confine sociological observations to the *positive* contributions of a sociological item to the social or cultural system in which it is implicated; and the tendency to confuse the subjective category of *motive* with the objective category of *function*." (1957:51)

This description might equally well be applied to linguists who have resonated to Jakobson's call for teleological thinking in linguistic analysis, under the program that the structure of language can only be understood as an implementation of speakers' intentions (Caton 1987). At the level of speech acts, one can appreciate the position of Searle and Grice that to understand the meaning of an utterance is to understand the intentions of the person who uttered it.[2] Yet I think we must be skeptical of all arguments that claim to explain linguistic changes through the speaker's desires or intentions to communicate a given message. There is no reason to think that our notions of what we intend or the intentions we attribute to others are very accurate, or that we have any way of knowing whether they are

[2] Searle 1970:43–4. Searle disagrees with Grice only in claiming that it is the illocutionary intention that must be grasped rather than the perlocutionary intention.

accurate.[3] Granted that the interpretation of utterances involves the attribution of intentions, attributing those intentions to others is not the same as saying that we have grasped their actual motivations. Even if we knew precisely what those motivations were, this would not mean that such motivations actively determined a speaker's choice of one linguistic variant or another. If functional theories of language change and variation are theories of intentions, they will be leading us down a very slippery path indeed.

Many functional arguments are aimed at the explication of invariant structures. In recent years, the same type of argument has been freely applied to the variable elements in language structure, and in particular to constraints on variable rules. In the functionalist milieu, these arguments seem almost self-evident. One might ask, if the communication of information does not determine the shape of linguistic variation and change, what does? Most linguists of the 19th century were clear on this point. Sound change, the major mechanism of linguistic change, was seen to operate in a mechanical fashion, without regard to meaning or the communicative needs of society. There is good reason to think that this is still the most common type of change. If this is so, we can expect that much synchronic variation is also unresponsive to the need to communicate information. In the discussion to follow, we will encounter ample evidence that morphological and syntactic variation is controlled by a tendency to preserve parallel structures in successive sentences. Other variants are the result of the arbitrary social evaluation of alternative ways of saying the same thing, the chance by-products of geographic contact. Some variation must be seen as historical residue, without any vestige of communicative function (Baugh 1983; Houston 1985). This is not to say that functional arguments are illusions. Rather, we will see that the need to preserve information is relatively weak, and can be overridden by a variety of other factors.

On the other hand, we find that, with certain losses, languages do adjust to preserve their capacity to transmit meaning. If speakers do not take meaning into account in their choice of linguistic variants, how does this adjustment come about? This is the major puzzle that chapter 20 is intended to resolve. I hope to show that we can come to a more balanced view of functional arguments by following the principle of accountability (paying attention to all the available data, rather than just those utterances that favor the ideas in view) and by using multivariate analysis that takes into account the operation of several influences that jointly determine the end result.

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[3] See also Chomsky 1975:76. In addition to assessing functionalism negatively in general, as in the earlier quotation, Chomsky expresses a thoroughgoing skepticism of his own intuitions about his intentions in speaking, which as he sees it may not turn out to be directed toward the communication of information at all.

19.2   Functional explanations of sound change

A full consideration of functional arguments must certainly include the explanation of sound change. The chain shifting of vowels and consonants that we considered in part B has always been considered a major instance of functional behavior. Such coordinated changes have the effect of avoiding merger and the loss of the distinctions that are used to encode meaning (Martinet 1955; Haudricourt and Juilland 1949). It is well known that such arguments fail to deal in an accountable way with the fact that mergers are even more common than chain shifts, and that massive mergers do take place, with a concomitant increase in homonymy. Though it is often argued that the mergers that lose the least information are favored, part C gave many examples of unconditioned mergers that are hard to reconcile with this point of view.

Even where chain shifting does occur, it appears that functional arguments are often arbitrary. Chain shifts are only one kind of coordinated vowel change: the other is parallel movement, which is generally considered an example of rule generalization that leads (in terms of features) to simpler statements. Such simplifications can be said to facilitate the work of the speaker in producing language or the hearer in understanding it. This can be argued to be the function of the change, and such parallel shifts are sometimes given as instances of functional behavior. But the entire discussion will quickly become vacuous if we lump together explanations based on the facilitation of speech with those that are based on the preservation of meaning. Lenition processes that wear away forms, destroy inflectional contrasts, and confuse paradigms may be thought of as the result of a kind of functional facilitation, following a principle of least effort. In all that follows, "functional arguments" will be limited to those that are based on a tendency to preserve meaning in the course of linguistic variation and change.

In many cases, parallel or generalized sound changes turn out to alternate in an unpredictable manner with chain shifts. One of the clearest examples of parallelism is the fronting of (uw) and (ow) in Philadelphia (see figure 3.6 for the community means). The parallelism is never complete: it is normal for one vowel to lead, and the generalization appears in the gradual completion of the change in the slower member. In Philadelphia, as elsewhere, (uw) leads (ow).[4] Now, however, consider the London vowel system of Marie Colville, in figure 6.3. Here /uw/ has moved to the front and /ow/ has moved down to low back position, parallel with the

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[4] Chapter 8 proposed that all such frontings of (ow) are forms of parallel movement rather than chain shifts, and that the fronting of mid vowels is not an inherent part of the general principles of vowel shifting.

lowering of /ey/ in front. There is no clear relation between the fronting of /uw/ and the lowering of /ow/. But there is a relation between the fronting of /aw/ and the lowering of /ow/: it is a chain shift, which eliminates the possibility of a merger of /aw/ and /ow/.

(2)   /ow/ → /aw/ →

In the central Texas vowel system of Jerry Thrasher in figure 6.4, the same chaining relationship of /ow/ and /aw/ can be observed. However, we cannot say that either one of these patterns – chain shift or parallel shift – is characteristic of Philadelphia, London, and Texas. Many London speakers do show a perfectly parallel arrangement of /uw/ and /ow/ – for example, the oldest London speaker reported by LYS, 83 years old (LYS:fig. 29). The same variations are found in Birmingham and Texas. In general, the height of (ow) is a sociolinguistic variable independent of fronting. The lower unrounded variants are characteristic of extreme working-class styles. Thus vernacular Cockney [ʌu] is parallel to the most advanced forms of (ey), [aɪ]. On the other hand, a very close fronted and rounded (ow) is associated with a clergyman's overrefined pronunciation, [øʊ]. As a result of this sociolinguistic variation, one can find idiosyncratic fluctuation within the community between a chain shift and a parallel shift analysis of the sound changes involved, with many indeterminate cases. This is an implausible consequence, and leads to the conclusion that if the difference between a functional and a nonfunctional structure is so malleable, there cannot be very much substance in it.

Even more basic to functional thinking about phonology is the belief that phonological oppositions are entirely determined by contrastive function: that speakers and listeners can hear only those differences in sound that signal distinctive differences in meaning. But chapters 12–14 have shown that this is not so: in near-mergers, speakers produce reliable and stable distinctions that neither they nor other listeners can use to distinguish one meaning from another. There is no doubt that phonemes do function to distinguish meaning; but the historical development of the system of phonemes is not narrowly controlled by that communicative function.

19.3   Constraints on morphological variation

Consonant cluster simplification in English

The first internal constraints on linguistic variation to be studied systematically concerned the simplification of final clusters in the African-American Vernacular English and then in many other dialects. The major focus has been on the deletion of final /t/ or /d/ in words such as *fist, hand, past, kept,*

and *walked*. Two major factor groups emerged as general to almost all English speakers, as shown in figure 19.1.

One basic constraint on *-t,d* deletion is phonological: the effect of the following segment. A following consonant favors deletion more than a following vowel, as indicated by relations *a* and *b* in figure 19.1, and within this major division, greater sonority (and the possibility of resyllabification) favors deletion. One might argue, as Kiparsky has done (1971, 1982), that this kind of variation need not be entered into a grammar, since it can be predicted by universal considerations of markedness in syllable structure that facilitate articulation. The second constraint is independent of the first and more abstract in the sense defined in chapter 18: clusters formed by past tense inflections, as in *walked*, are less likely to be simplified than monomorphemic clusters, as in *fact* and *fist*, as indicated by relations *c* and *d* in figure 19.1.

A variable rule that records these and other facts about this process is given in (3).

(3)   t,d → <Ø> / <−str> <+cons> [+cons] <Ø> __ ## <−syl>

This may be read as follows: /t/ or /d/ is variably reduced after another consonant before a word boundary, and this happens more often in unstressed syllables than in stressed ones, more often when a third consonant precedes, as in *next*, more often when there is no grammatical boundary before the final consonant, and more often when a syllabic segment does not follow.

It is true enough that if all the stable constraints on variation were to be assigned to universal principles, there would be no need to represent variation in the grammars of particular languages. To this end, Kiparsky
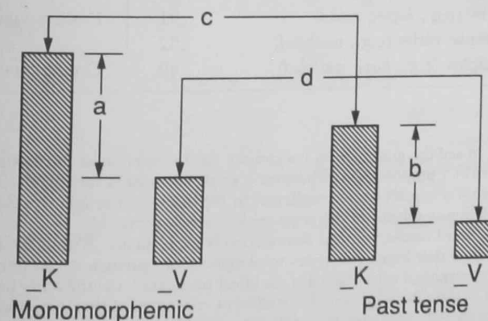

Figure 19.1.   Two basic constraints on *-t,d* deletion in English

has consistently argued that the grammatical constraint on *-t,d* deletion be subsumed under a universal "functional" principle:[5]

[T]here is a tendency for semantically relevant information to be retained in surface structure . . . . It characteristically originates as a blocking of rules in environments in which their free application would wipe out morphological distinctions on the surface.[6] (1982:87)

Confidence in this universal lasted only until the next language was investigated. In Ma and Herasimchuk's (1968) study of Puerto Rican Spanish in Jersey City, it was found that final /s/ was deleted *less* often in monomorphemic words like *más* and *tres*, and *more* often when it was a grammatical inflection as in *padres*. Many other studies of Spanish and Portuguese, to be reviewed below, confirm this finding. But the limitations of a functional explanation also appeared in the study of English *-t,d*. The most extensive study of this variable is Guy 1980, an examination of *-t,d* deletion by 26 white Philadelphians and New Yorkers. In his extensive review of functional explanations of variation, Guy demonstrates that each individual mirrors the pattern of the group, and that the past tense constraint is acquired early in life by all speakers of the language. In a later application of these facts to functional explanations, he points to the data given in table 19.1. As usual, the most favoring factor is the monomorphemic status of the cluster. Regular past tense clusters are considerably

Table 19.1 Grammatical constraints on *-t,d* deletion for 19 Philadelphia speakers

Context	Varbrul weight	
Monomorphemic words (e.g., *west*)	1.00	
Semiweak verbs (e.g., *kep+t, tol+d*)	.91	FUNCTIONAL
Regular past tense verbs (e.g., *walk#ed*)	.52	
Regular participles (e.g., *have walk#ed*)	.49	COUNTERFUNCTIONAL

[5] The tendency to see the grammatical constraints on *-t,d* deletion as functional is a natural one. In Labov 1971 I proposed that whenever a single segment is variably deleted, it will be deleted less often if it is a separate morpheme. In the discussion to follow, it will be evident that this formulation is subject to the same criticism as Kiparsky's.

[6] The use of the word *tendency* in this formulation is problematic. Within the framework of the categorical view that limits rule types to obligatory or optional, it can only refer to the frequency of occurrence of rules that have the effect postulated. On the other hand, Kiparsky was responding to data from quantitative studies of consonant cluster simplification, so that we might interpret his constraint as a principle of universal grammar that applies to the distribution of tokens in spontaneous speech.

lower, at .52, as we would expect. The semiweak verbs are ambiguous in their grammatical status: some speakers appear to analyze the derivational *+t* suffix as a past tense signal, while others do not. The mean value of .91 is therefore intermediate, and the treatment of the semiweak verbs is not inconsistent with the functional explanation of the behavior of past tense forms.[7]

However, Guy (1991) points out that a functional explanation would predict that *-ed* in the present perfect *have walked* would be deleted much more often than *-ed* in the regular past tense, since the present perfect is marked primarily by the auxiliary *have*, and the /t/ or /d/ is redundant. This is not what we find, however. The treatment of this *-ed* suffix is not significantly different from that of the regular past tense *-ed*, and this is accordingly a counterfunctional effect.

It is reasonable to ask, if functional effects do not explain the *-t,d* grammatical pattern, what does? Guy has recently pursued this question within the structural framework of lexical phonology. The exponential hypothesis (Guy 1991) predicts that the actual numerical relations between monomorphemic, semiweak, and preterit forms will be in the ratios $x^3:x^2:x$ as a result of the fact that they have been affected by the *-t,d* deletion rule three times, twice, and once respectively: monomorphemic within the base morpheme; monomorphemic and semiweak forms after level 1 affixation and bracket erasure; and, after level 2 affixation and bracket erasure, all three types. Both preterit and past participle morphemes are level 2 affixes, and this treatment is thus perfectly consistent with the fact that the preterit and the past participle share the same values of *-t,d* retention. At this point, a number of issues remain to be resolved: what other languages show this effect (and why Ladakhi does not); whether the exponential relation fits the data better than other mathematical models; whether the stress constraint shows the effect of such iterative application, and so on. But the exponential hypothesis fits in with the general pattern found throughout this chapter: that variable morphological constraints are accounted for by mechanical and structural factors rather than functional tendencies to preserve information.

The perfect (s) of Ladakhi

An opportunity to test the generality of functional effects on the deletion of grammatical segments appeared in Koshal's sociolinguistic study of Ladakhi, a Sino-Tibetan language spoken in the Himalayan region of northwestern India. Ladakhi has final clusters ending in /s/ where the /s/ is variably deleted in a process that affects initial clusters as well. In final

[7] This intermediate value ultimately turned out to mask a wide range of individual values, correlated primarily with age, since the actual value assigned to the ambiguous class depends upon the developing grammatical analysis of the speaker (Guy and Boyd 1990).

position, the /s/ is sometimes a part of the stem, and sometimes the perfect marker. When the /s/ disappears, the perfect is then unmarked and opposed to many other tenses that are marked with suffixes. But the imperative is also unmarked, and it is not difficult to construct sentences that are ambiguous between imperative and perfect if the /s/ is missing. Thus the sentence *Khyo-rang-ngi pene khyer-s* is heard as 'You took the money' with a perfect indicative meaning. But when the perfect /s/ is deleted after the verb, it becomes *Khyo-rang-ngi pene khyer*, homonymous with the imperative 'Take the money'. An even more pernicious collapse of distinctions occurs when the /s/ is deleted before the participial suffix *-kan. Tang-s-kan* means 'something given'. But when the /s/ is deleted, one can no longer distinguish this participial construction from the result of adding *-kan* directly to the verbal root, where it functions as a noun-forming suffix. Thus *tang-kan* can mean either 'something given' with a deleted perfect /s/, or 'one who gives, a giver', with no /s/ understood.

The situation is quite parallel to English *-t,d* deletion, and offers an excellent opportunity to examine the generality of the functional hypothesis. Koshal's preliminary analysis, carried out at the Linguistics Laboratory of the University of Pennsylvania, made a distinction between lexical clusters and grammatical clusters. Men's and women's speech was analyzed separately, with the results shown in table 19.2. In neither case is there a significant difference between lexical and grammatical clusters. There appears to be no functional differentiation with respect to the deletion of Ladakhi /s/.

The deletion of plural /s/ in Spanish

The most intensively studied variable of this type is final /s/ in Spanish, which undergoes aspiration and deletion in a variety of European and Latin American dialects. Terrell (1981) summarizes a wide range of studies and shows that in the extreme case of the Dominican Republic, /s/ can no longer be considered a base form. The most careful exploration of func-

Table 19.2 Grammatical constraint on /s/ deletion in Ladakhi for men and women

| | VARBRUL WEIGHT FOR /s/ DELETION | |
	Lexical	Grammatical
Men	.50	.50
Women	.53	.47

tional effects on this process is found in the work of Poplack (1979, 1980, 1981). In her study of Puerto Rican Spanish in Philadelphia, Poplack considered many sources of information besides the plural inflection itself: morphological, syntactic, semantic, and cultural factors. The data to follow are drawn from Poplack 1980, to illustrate the relations between functional and counterfunctional effects, considering the deletion of both the variable (s) in the plural of noun phrases and the variable (n) in the third person plural of verbs.[8] To underline the application of the data to functional explanations, I will mark each data set as FUNCTIONAL or COUNTERFUNCTIONAL.

To begin with, Poplack replicated the earlier finding of Ma and Herasimchuk (1968) that the relationship between monomorphemic and grammatical forms reversed the English situation (see table 19.3). She then carried out an extensive variable rule analysis, simultaneously examining the effects of phonological, syntactic, morphological, and cultural factors on the realization of Spanish /s/. Each of the tables to follow is an extract from that single analysis, showing the constraints on deletion by the weights assigned to each possibility in a factor group.

The plural inflection /s/ can appear on several elements of the Spanish noun phrase. For example, there can be a determiner, a noun, and an adjective, as in (4).

(4)   las cosas bonitas

Poplack accordingly examined the effect of grammatical role in the noun

Table 19.3 Effect of grammatical status on deletion of /s/ and /n/ in Puerto Rican Spanish

| | % deletion | | |
Grammatical status	(s)	(n)	
Inflectional	68	9	COUNTERFUNCTIONAL
Monomorphemic	54	1	

[8] Poplack studied the aspiration and deletion of the variable (s), and the nasalization, weakening, and deletion of (n). The tables to follow will present only the constraints on the deletion of these inflections. Aspiration and nasal weakening would not be subject to any functional constraint, since they leave some phonetic substance that can identify the inflection.

Table 19.4   Effect of grammatical category within the noun phrase on /s/ deletion

Grammatical category	Varbrul weight for /s/ deletion	
Determiner	.26	
Noun	.57	FUNCTIONAL?
Adjective	.69	

phrase in the factor group shown in table 19.4. For this factor group I have inserted FUNCTIONAL? with a question mark. To be sure, it is often argued that it is a functional effect for necessary information to be presented first, and not later, since it would then be redundant. Here the *-s* inflection is present most often with the determiner, in initial position, less often with the noun that follows, and still less often with the adjective that follows next. But this assumes that listeners process the information in each word of a phrase in the order in which they received it. This is a dubious assumption, and there is much psycholinguistic evidence against it. Furthermore, Guy points out that if we do accept this argument, we must then accept the idea that the English language is massively counterfunctional, for in English, the plural marker normally appears on the last element of the noun phrase:

(5)   the beautiful thing**s**

Poplack explored in more detail the effect of the position of the /s/ inflection in the linear order of the Spanish noun phrase, and her results have since been replicated by others. Consider first the case of the third element in three-element strings. As table 19.5 illustrates, there are four possible realizations of the inflections in the first two elements (where S represents the presence of /s/, and 0 its absence). These can be divided into two

Table 19.5   /s/ and 0 in three-element Spanish noun phrases

POSITION			
1	*2*	*3*	
S	S	—	las cosas bonita-
S	0	—	las cosa bonita-
0	S	—	la cosas bonita-
0	0	—	la cosa bonita-

relevant sets. In the first three cases, there is at least one preceding /s/, and so the plural information is preserved; in the fourth case, 00__, there is no such plural information, and the morphological plural information depends on an inflection in the third element alone. A functional theory must predict a lower probability of deletion in the 00__ case, but as table 19.6 shows, this is not what Poplack found. The same situation prevails with two-element strings.

In both cases, we see the tendency of a speaker to continue the pattern set at the beginning of the noun phrase: an /s/ tends to produce an /s/, and a zero tends to produce a zero. We may refer to this as *perseverance* or *concord*. Poplack relates this concordial tendency to a principle of least effort at the grammatical level, an extension of the principle of least effort at the phonetic level first articulated by Martinet (1961).

In the same factor group, there remains only one case to be examined in table 19.6: noun phrases that have a single member. If there is no supporting information in the noun phrase, there is the least tendency to delete the plural /s/, and we have what seems to be a clear functional effect. We will consider this case in more detail below.

Spanish sentences also show the plural by an /n/ inflection on the verb:

(6)   a.   La reina manda.   'The queen commands.'
        b.   Las reinas mandan.   'The queens command.'
(7)   a.   La reina es bonita.   'The queen is beautiful.'
        b.   Las reinas son bonitas.   'The queens are beautiful.'

The contrast between (6a) and (6b) shows the most common situation. Just as the /s/ is the sole indicator of the plural in the feminine noun phrase, so the /n/ is the sole indicator of the plural in the third person verb. But in (7a) and (7b), with the irregular verb *ser* 'to be', /n/ is not the only

Table 19.6   Effect of serial ordering in the noun phrase on deletion of plural /s/

	Varbrul weight for /s/ deletion	
Three-element string		
/s/ preceding [SS__, S0__, 0S__]	.44	COUNTERFUNCTIONAL
No /s/ preceding [00__]	.73	
Two-element string		
/s/ preceding [S__]	.44	COUNTERFUNCTIONAL
No /s/ preceding [0__]	.52	
Single noun phrase	.24	FUNCTIONAL

indicator of plurality in the verb. A functional theory would therefore predict a higher rate of deletion of the (n) in (6b) than in (7b). However, as table 19.7 shows, Poplack's analysis reveals the opposite.

This result parallels the pattern found in Brazilian Portuguese, termed the *principle of salience* by Lemle and Naro (1977). According to this principle, the more prominent the inflectional marking is, the more phonetic substance associated with it, the greater the tendency to retain the inflection (see also Guy 1981). The effect of salience has been demonstrated by a fine-grained correlation with phonetic substance. In Portuguese, as in Spanish, the results are the reverse of what a functional theory would predict.

Poplack also considered the position of the subject noun phrase with respect to the verb. A functional argument would predict that if the subject noun phrase occurs before the verb, and the noun carries plural marking, the /n/ of the verb is less likely to be needed; but if the subject noun phrase occurs after the verb, plural information on the verb is more likely to be needed. But table 19.7 also shows that these predictions are not borne out.

The great majority of Poplack's findings are therefore counterfunctional in nature, and call the generality of the functional hypothesis into question. But so far we have considered only inflectional information. Poplack explored many other sources of information that might support a plural interpretation:

(8)   a.   un grupo de plantas   'a group of plants'
        b.   Hablan con muertos.   'They talk with the dead.'
        c.   arroz con habichuelas   'rice with beans'
        d.   Yo mis hijos les digo.   'I tell my kids.'

In (8a), the lexical item *grupo* lets us know that the speaker is referring to more than one plant, irrespective of the presence of the /s/. In (8b), syntactic structure tells us that 'dead' refers to more than one spirit: Spanish

Table 19.7 Constraints on the deletion of verbal /n/ in Puerto Rican Spanish

	Varbrul weight for /n/ deletion	
Regular verb	.78	
Irregular verb	.22	COUNTERFUNCTIONAL
NP after verb	.69	
NP before and after	.42	COUNTERFUNCTIONAL
NP before verb	.38	

never omits the article in the singular. In (8c), cultural knowledge defines the beans as more than one bean, whether or not the /s/ is realized. And in (8d), the listener's awareness of the speaker's family situation indicates that the speaker is referring to more than one child, even if the three /s/'s are deleted.

Poplack considered the effect of the presence of such morphological and syntactic information, along with pragmatic information, on the deletion of plural /s/ in two factor groups; her results are displayed in table 19.8.

These are relatively weak effects compared to the counterfunctional effects noted above. But the most powerful functional argument of all appeared when Poplack considered sentences containing no disambiguating information at all – neither morphological nor pragmatic nor cultural. Here plural /s/ and /n/ were never deleted. But as Guy (1981) points out, and Poplack (1981) emphasizes, this cannot be taken as evidence for a functional account. It is not possible for a listener to know that a speaker has signaled a plural inflection if the inflection does not appear and there is no other information telling the listener that it is a plural. Therefore, in a study like Poplack's, the coder doing the linguistic analysis will automatically classify such utterances as singular. Guy's study of parallel phenomena in Brazilian Portuguese shows that the analytical problem is not limited to the extreme case of no supporting information. The overestimation of functionalism is a more general process, a regular result of misclassifying sentences as singular instead of plural.

The loss of the plural in Portuguese

Guy's (1981) study of the deletion of /s/ in Brazilian Portuguese focused on a large body of data collected by MOBRAL, a research project concerned with increasing literacy among adults in Rio de Janeiro. In his exposition of the functional problem, Guy begins with 5,247 tokens of noun

Table 19.8 Comparative effects of morphological and nonmorphological information on the deletion of Puerto Rican Spanish plural /s/

	Varbrul weight for deletion of /s/	
Morphological disambiguating information		
Present	.57	
Not present	.43	FUNCTIONAL
Nonmorphological disambiguating information		
Present	.59	
Not present	.41	FUNCTIONAL

phrases consisting solely of a noun, where there is no opportunity for supporting inflections. As table 19.9 shows, the tendency to preserve the /s/ inflection in these cases is even greater than in Spanish: 95.4% /s/ and only 4.6% zero. With two-element noun phrases, the usual procedure is to focus on the possibility of deleting /s/ on the second element, and the effect of an inflection on the first element on such a deletion. Table 19.9 shows that there is a strong functional effect.

If we now turn our attention to the first element of these two-element noun phrases, we would expect to find the same percentage with zero inflections (hereafter, zeroes) as in one-element noun phrases, namely 4.6%. Nothing in a functional argument would predict otherwise, since this first element is not affected by any inflections before it, realized as zero or /s/.[9] Guy found 2,799 such two-element phrases in his data. One would accordingly expect 128 with zeroes, or 4.6%, but there were only 70, or 2.5%.

(9)   *Calculation of missing zeroes*

     Total two-element NPs [= 2,729 + 70]   2,799

     Zeroes expected from table 19.9 [= .046 * 2,799]   128

     Zeroes found in table 19.9 [= 7 + 63]   70

     Zeroes missing   58

What happened to the other 58 tokens? It stands to reason that they were tokens with a zero preceding a zero, since these are the type that are most likely to be classified as singulars instead of plurals. If we follow that logic

Table 19.9   Functional effects in plural marking of Brazilian Portuguese noun phrases

	0	/s/	Total	% deletion	
One-element noun phrases	241	5,201	5,247	4.6	
Second element of two-element noun phrase					
/s/ inflection preceding	2,046	683	2,729	75.0	} FUNCTIONAL
No /s/ preceding	7	63	70	10.0	

[9] Before we finish with the argument, however, we will consider the consequences of not making this assumption.

in replacing them, we obtain the revised figures shown in the top half of table 19.10.

The functional effect has shrunk considerably. Yet in all probability, it is still considerably overstated. Let us continue Guy's original argument by returning to the figure of 95.4% /s/ in single-element noun phrases. These instances of /s/ have no morphological support from other sites within the noun phrase, and their identification as plurals must depend on the various other sorts of information discussed above. It is inevitable that listeners would misinterpret a number of these plurals as singulars, just as they do with two-element noun phrases. Let us assume, as a first approximation, that the proportion of single-noun plurals misinterpreted as singulars is comparable to the proportion of two-element noun phrases misinterpreted as singulars. There we had to increase the number of zeroes by 82%. If we do the same for the single-element noun phrases, we obtain the revised figures shown in the bottom half of table 19.10. If 7.7% is a more correct estimate of the number of /s/'s deleted in single-noun plurals, then phrases intended as plurals will have no disambiguating support, and will consequently be heard as singulars. If that is so, the calculation of missing zeroes in (9) must also be revised:

(10)   *Calculation of missing zeroes (revised)*

     Total two-element NPs   2,799

     Zeroes expected from table 19.10 [= .077 * 2,799]   215

     Zeroes found in table 19.9   70

     Zeroes missing   145

Next we must again revise the calculation for two-element noun phrases that was used to estimate the functional effect; the results appear in table 19.11.

At this point, the functional effect has disappeared. This particular mode of calculation is recursive, and would force the estimates for one- and two-

Table 19.10   Functional effects in plural marking of Brazilian Portuguese noun phrases: Revised estimate

	0	/s/	Total	% deletion	
Second element of two-element noun phrase					
/s/ inflection preceding	2,046	683	2,729	75.0	} FUNCTIONAL
No /s/ preceding	63	65	128	49.2	
One-element noun phrases	438	5,201	5,639	7.77	
	[= 1.82 * 241]				

Table 19.11 Functional effects in plural marking of Brazilian Portuguese noun phrases: Second revision

	0	/s/	Total	% deletion
Second element of two-element noun phrase				
/s/ inflection preceding	2,046	683	2,729	75.0
No /s/ preceding	152	65	217	70.0

element noun phrases to readjust each other in an upwardly mounting spiral. In any case, it seems clear that the true percentage of deletion is higher than we would first estimate from the reported frequency of zeroes with single noun phrases, and the functional effect is accordingly smaller than the 75%–49% differential derived from the first calculation.

REEXAMINING THE ORIGINAL ASSUMPTION
These calculations were based on the assumption that the percentage of deletion for the first element of two-element noun phrases was the same as that for single noun phrases. Now let us consider the consequences if this assumption is not valid.

- If the rate of deletion for two-element noun phrases were actually *higher* than for single noun phrases, then the effect of these calculations would be increased: there would be more missing zeroes.
- If the rate of deletion for two-element noun phrases were actually *lower* than for single noun phrases, this in itself would be a counterfunctional argument. Since speakers have two opportunities rather than one to convey the plural information, a functional theory would predict more deletion when a second element follows than when one does not.

A functional theory therefore could not in principle adopt such an assumption.

We thus come to the conclusion, following Guy's elegant quantitative argument, that many of the functional effects in the literature are the result of loss of data in coding that leads to a systematic underestimation of the extent of deletion whenever a sentence contains less supporting information. The result is a systematic overestimation of functional arguments.

WHERE ARE THE MISSING ZEROES?
The critical reader must certainly have long since asked the question, "Where are the missing zeroes?" If there is so much misinterpretation of

plurals as singulars in Brazilian Portuguese, why have these problems of communication not been reported? Would the frequency of misinterpretations be greater or lesser in actual conversation than in the linguistic coding? What would happen if the interview materials were meticulously reexamined for possible errors or ambiguities of number?

I do not have a complete answer to these questions, but some hints are available from the results of the CDC project in the United States.

Several chapters in this volume have drawn upon the CDC study of natural misunderstandings to make inferences about the effects of misunderstanding upon language change. The same study has demonstrated that the actual number of misunderstandings in everyday life is much greater than casual observations lead us to believe. If we ask someone to write down the misunderstandings that occur in the course of a day, we will receive a half dozen or so at the end of a week. If we don't succeed in getting people to write these events down, they will of course not remember the details. But it is surprising to find that people will not remember that any misunderstandings occurred at all.

The actual misunderstandings recorded are heavily concentrated among those that are quickly detected because they do not fit the pragmatics of the immediate situation. A smaller number are detected by accident. For 613 examples whose mode of detection was established, table 19.12 shows the percentages of the various modes.

The smallest categories are made up of errors that are detected only accidentally, or never. These are the most important, from several points of view: they represent a much larger number of errors that cause misunderstanding, but are never detected. How large the number is would be difficult to say, but it is not unlikely that it would be of the same order of magnitude as the missing zeroes in the Brazilian Portuguese situation. Here is an example of a naturally occurring misunderstanding of the last category. It took place at a dinner table in South Philadelphia, where I was a guest. The wife came out of the kitchen, saying, "All right, everybody to the table!"

Table 19.12 Modes of detection of naturally occurring misunderstandings

	%
Corrected by listener before the utterance was finished	13
Correction elicited by immediate inquiry of the listener	48
Inferred from later utterances in the conversation	27
Corrected from events that followed accidentally	10
Never corrected by hearer or listener [observed by a third person]	2

(11) WL [to wife]:   You run a tight ship.
     Husband: She makes us slaves.
     Wife [puzzled]:   Why would I want you to leave?
     Husband [irritated]: One day, we'll explain it all to R____ [her name].

The misunderstanding here is the direct result of one of the new and vigorous changes in Philadelphia, the raising of checked (ey) from mid to high, overlapping with /iy/. The vowel of *slave* is pronounced close to [i:]; the initial /s/ of *slave* is neutralized by the preceding /s/ of *us*.

(12) She makes us slaves.   [šime⊥ksʌsliⲧ:vz]
     She makes us leave.   [šime⊥ksʌsli:v]

The wife heard her husband's utterance as *She makes us leave*. She thus heard from her husband a bad-tempered, even insulting utterance *makes us leave*, instead of the intended joking remark, *She makes us slaves*. The resulting irritation between husband and wife was not resolved.

The frequency of this type of misunderstanding is difficult to estimate, since in principle, the great majority of such events will escape observation. It is interesting to note that in this case a plural inflection on *slaves* that might have prevented the misunderstanding was not detected, even though there is no variation in the use of the plural in this South Philadelphia dialect. It stands to reason that a variable inflection would be associated with many more cases of misinterpretation.

Subject-verb concord in Portuguese

Poplack's study of Puerto Rican Spanish in Philadelphia showed a powerful and consistent effect of concord, in that a preceding zero favored a following zero, and a preceding /s/ favored a following /s/. The comparable phenomenon in the Portuguese verbal system has been subjected to a penetrating study by Scherre and Naro (1991). Like Spanish, Portuguese shows variation of plural marking in the verb phrase as well as the noun phrase. Thus the utterance in (13) is possible, where all three parenthesized plural marks can be present or absent.

(13) A(s) pessoa(s) não   pode(m) chegar.
     people   [neg] can   get there

Some verbs are marked with a simple nasal consonant (realized as nasality of the vowel), while in other cases more phonetic substance is involved in marking the plural. Scherre and Naro's study is not concerned with any one form of plural marking, but with whether the plural is marked at all.

In this case, the strings did not consist of juxtaposed elements, but of successive finite verbs with the same plural subject. These were generally discontinuous: sometimes clauses were successive, but sometimes they were separated by a number of other clauses. The sequences that Scherre and Naro coded were defined as verbs with the same plural subject in continuous utterances of the same speaker, separated by no more than 10 other clauses.[10] Reviewing Poplack's findings, they raised the question whether a verb that was marked for plurality would be more likely to be followed by a verb unmarked for plurality, as the functionalist hypothesis would predict, or by a marked verb, as Poplack's noun phrase results would predict. The sample consisted of 64 speakers from Rio de Janeiro, stratified for sex, age, and education. From this data set, Scherre and Naro derived 4,073 tokens for subject-verb agreement. Table 19.13 shows the counterfunctional character of their basic findings. Scherre and Naro point out that isolated or first-of-a-series verbs show no effect at all: their frequency of marking is the same as the mean for the entire corpus. But when a plural-marked verb precedes, the probability of marking rises, and when an unmarked verb precedes, the probability of marking falls dramatically. These results then replicate the principle of concords shown by the Spanish noun phrase: marks beget marks, and zeroes beget zeroes.

This effect is remarkably robust. Since Portuguese is a pro-drop language, there are many verbs whose subjects are ambiguous. Scherre and Naro calculated the same figures with all ambiguous cases dropped, with the same result. They found identical patterns for sequences of predicate adjectives. Within the clause, they examined the relationship between the verbal plural marking, and whether the last element of the subject had an /s/ inflection or not. The results are shown in table 19.14. Again, similar results were found for predicate adjectives, in relation to the subject, and

Table 19.13 Marking of verbs at discourse level according to marking of preceding verb in Brazilian Portuguese

	N	% marked	Varbrul weight
Verb preceded by marked verb	1,671	84	.66
Verb preceded by unmarked verb	608	35	.18
Isolated or first of a series	1,794	73	.48
Total	4,073	72	

[10] The length of discourse over which this effect operates might seem surprising, but it is not atypical of other priming effects in syntax (Estival 1985). Chapter 20 will present data on the priming of passive constructions.

in relation to the mark on the preceding verb. Scherre and Naro's results leave no doubt that the dominant constraint on variation in the marking of Portuguese verbs is not a functional one. From the standpoint of the traditional functional argument, what we are seeing is not a tendency to preserve semantic information on the surface, but rather a tendency to use marks where they are least needed, and omit them where they are most needed. That is not to say that this parallelism of structure is without its contribution to the economy of the language. Rather, it joins the study of variation in inflections to the general study of concord in language, an area where it has long been recognized that functional arguments are very difficult to sustain.

Table 19.14   Marking of verbs at clausal level according to marking of preceding verb in Brazilian Portuguese

	N	% marked	Varbrul weight
/s/ present on last element	2,134	84	.56
0 present on last element	322	48	.18

19.4   Conclusion

The results of this chapter show an extraordinary consistency. Given phonological and morphological variation, the functional hypothesis predicts a tendency for speakers to choose one variant or the other in a fashion that will preserve information. Most of the results cited show the opposite: in the stream of speech, one variant or the other is chosen without regard to the maximization of information. On the contrary, the major effects that determine such choices are mechanical: phonetic conditioning and simple repetition of the preceding structure.

So far, the results favor the Neogrammarian view that language change is phonetically determined and mechanical. However, we have not yet looked at change: all of the cases considered here are examples of stable variation. When language changes, its information-carrying capacity is often threatened; but in the long run, most languages do preserve their means of conveying information, more or less, by one route or another. Though speakers may not behave wisely and thoughtfully as they choose one variant or the other, somehow the system does react. Chapter 20 will present some evidence of such reactions, and construct a model that suggests how they come about.

20
The Maintenance of Meaning

The developments of chapter 19 called into question the validity of most arguments for functional constraints on linguistic variation. Though most of the discussion considered stable variables, it would be hard to posit a functionally controlled process of change if there were no synchronic mechanism that allows functional constraints to emerge. Yet there is no doubt that in some way or other, linguistic systems respond to change in ways that maintain meaning – more or less.

A typical case is the radical reduction of final consonants in French. One of the results of this process was the elimination of the final /s/ that marked plural inflections in the noun phrase in the same way as the final /s/ in Portuguese and Spanish. French originally signaled the feminine plural of the article as *las* (vs. singular *la*), just as Spanish does. The /s/ is preserved in the underlying form of the article, since it is realized phonetically when the next word begins with a vowel. This does not of course satisfy the functional hypothesis, since liaison does not convey any plural information in the majority of cases, when the next word does not begin with a vowel. Through some process of systemic readjustment that is yet to be understood, the feminine plural is now consistently signaled by an opposition of vowel quality, opposing /le pɔm/ 'the apples' to /la pɔm/ 'the apple'. The readjustment is far from complete, since there are forms of the determiner that do not show such vowel change. This is illustrated in a sentence from one of de Gaulle's speeches:

(1)   Je m'addresse aux peuples – *au pluriel.*
       'I address myself to the peoples – in the plural.'

The metaremark *au pluriel* was required since here the loss of final sibilants in the noun is not compensated for by vowel change in the determiner. The morphophonemic contraction of (2a) is not distinguished from the contraction of (2b) when a vowel does not follow.

(2)   a.   à   le   → au   b.   à   les   → aux
          /a   lə/   → /o/   /a   le/   → /o/
          'to   the [sg]'   'to   the [pl]'