

7 Relational grammar: Hjelmslev, Lamb, Reich

Language, Saussure said (1916, p. 113) is 'a form, not a substance'. The only 'things' that have any concrete existence in connection with language are, on the one hand, speech-sound – which is not part of a given language, but a physical phenomenon exploited in different ways by the various languages of the world; and on the other hand, perhaps, meaning: the ideas, concepts, and/or outside-world objects and properties which languages are used to express and to denote, and which may be claimed also to exist independently of individual languages (we shall not pursue this latter, highly controversial point here). The realms of speech-sound and of meaning are inherently formless, unstructured; a given language imposes a particular structure on each, but the structural elements of a language are not independent 'things' so much as labels for relationships between bits of sound and/or bits of meaning. No English-speaker ever utters the phoneme / l /. He sometimes utters the sound [l], sometimes the sound [l^w], and sometimes other sounds; to speak of the English phoneme / l / is an abbreviated way of referring to the fact that the sounds [l] and [l^w] are in complementary distribution in English, and that the two sounds between them contrast with the other sounds uttered by English-speakers. And the question of what particular extra-linguistic meanings or sounds occur as terminals of the system of relationships which make up a language is irrelevant to the identity of that language: English is still English whether spoken, written, or transmitted in Morse, just as chess played with marked pieces of paper instead of wooden men is still the same game. 'Initially the concept is nothing, that is only a value determined by its relations with other similar values, and ... without them the signification would not exist'; 'phonemes are characterized not ... by their own positive quality but simply by the fact that they are distinct ... [they are]

opposing, relative, and negative entities' (Saussure 1916, pp. 117, 119).

Yet linguistics as it developed in practice in the decades after Saussure did hypostatize large numbers of theoretical entities of diverse categories which languages were said to contain. Indeed, traditional approaches to language had always done so: the idea that a language contained phonemes, morphemes, and perhaps some other 'emes' was new, but the idea that it contained words, for instance, was very old. Was there not a contradiction between the claim that a language consisted purely of relationships between 'things' that themselves lay outside the language, and the notion that languages were to be described as systems of thousands of 'things' of various sorts?

One scholar who felt that there was a contradiction here was the Dane, Louis Hjelmslev (1899–1965). I turn to his ideas at this point in the book because they have led in recent years to what is perhaps the most interesting radical alternative on the contemporary linguistic scene to Chomsky's theory of language.¹

According to Hjelmslev, language manifests two distinctions, form v. substance and content v. expression (the latter pair of terms refers to the opposition between meaning and speech-sound-or-writing-or-Morse . . .); and these distinctions intersect one another to produce four 'strata', namely content-substance, content-form, expression-form, and expression-substance, of which the middle two belong to language proper and the first and last are the external realities which it is the task of a language to link with one another. A language consists purely of relationships: 'external' relationships between elements in different strata, and 'internal' relationships between the elements in one stratum, but, except for the sounds and meanings in the two outer strata, the 'elements' between which these relationships obtain *are themselves relationships* – there is nothing else. A truly general, pure theory of language will discuss only the various possible categories of relationship which may obtain in language, ignoring the properties of extralinguistic 'substance'.

All this is highly abstruse, not to say airy-fairy, in a way that seems characteristic of a certain style of Continental scholarship; the empirical-minded English-speaking reader will feel that the proof of the pudding lies in the eating, and will wait to see what Hjelmslev's ideas imply in practice for the analysis of actual

languages. It must be said at once that, as far as Hjelmslev's own work is concerned, his wait will be in vain. Hjelmslev did not develop his theory by applying it to any serious extent to the description of concrete linguistic facts, but rather by elaborating a highly complex, sparsely illustrated terminology for describing hypothetical relationships of various kinds (see e.g. Hjelmslev 1943), while his collaborator Uldall worked out an equally or more abstruse system of algebraic symbolism for the same purpose (Uldall 1957). There does exist one book-length linguistic description whose author see himself as working within the Hjelmslevian framework, namely Knud Togeby's *Structure immanente de la langue française* (1951), but apart from a few pieces of jargon there is little in Togeby's account that could not have been written by a linguist of another school. Hjelmslev himself seems to have felt about the real world rather as some people feel about alcohol, that while it might be all right in its place he personally had little time for it; consider, for instance, the claim he makes at one point – with no suggestion of deliberate paradox – that there may well in the past have existed languages which never had any speakers (1963, p. 84). All in all, it is difficult not to read a heavy irony into Hjelmslev's criticism of his predecessors' work in linguistics as 'dilettantish and aprioristic theorizing' (1943, p. 7).

Much more interesting than Hjelmslev's own work is the development it received at the hands of the American Sydney Lamb (b. 1929), formerly of the University of California at Berkeley and since 1964 at Yale, and of Lamb's follower Peter Reich, of the University of Toronto.

Lamb (see Lamb 1966; Lockwood 1972) begins by listing a few simple, common types of relationship that obtain between units in a language. One relation is that of *alternation*, where a given unit at a 'higher' (nearer meaning) level is realized (either indifferently, or depending on circumstances) as one of several alternative elements at a 'lower' (nearer sound) level; if we accept that *go* and *move* are close synonyms, then we may say that a single 'meaning-unit' LOCOMOTE is realized alternately as the lexical item *go* or the lexical item *move*. (The notion of 'meaning-unit' or, in Lamb's terminology, 'sememe', symbolized here by small capitals, is of course philosophically speaking very naïve and crude; and indeed the whole notion of a stratum of 'content-substance' is highly questionable – cf. Uldall 1957,

pp. 26–7; Lyons 1962. I prefer to pass over this point here, however, since Lamb's treatment of meaning is no worse, though it is no better, than Chomsky's or almost any other linguist's, and I wish to concentrate on the more positive, worthwhile aspects of Lamb's work.) Similarly, the units *under* and *beneath* might be viewed as alternative realizations of a semantic unit LOWER THAN. The opposite of alternation is *neutralization*, in which a single lower-level unit represents either of two or more higher-level units. Thus the lexical item *move* may represent the meaning-unit LOCOMOTE, but it may alternatively stand for the specialized meaning which it has in *I move that these minutes be accepted* – say, PUT A MOTION. Alternation and neutralization are both what Lamb calls 'or-relations': element A at one level corresponds to element B or element C or element D at another level. 'Or-relations' contrast with 'and-relations'. Thus, in *composite realization*, one higher-level unit is realized as a sequence or set of lower-level units. For instance, the simple meaning-unit UNDERGO is realized in English as the morpheme *under* followed by the morpheme *go*, although the meanings which these units have as independent lexical items have little or nothing to do with the meaning of the combination; one can tell that *undergo* consists of two morphemes, rather than constituting a single morpheme parts of which happen to resemble other morphemes, from the fact that it conjugates irregularly: *undergo/underwent* parallel to *go/went*. The morpheme *under*, in its turn, is realized compositely as a sequence of phonemes / ʌ /, / n /, / d /, / ə /; and the phoneme / d / is realized as the set of phonetic features Alveolar, Stop, and Voiced. The converse of composite realization is *portmanteau realization*, where two higher-level units are jointly realized as a single lower-level unit; thus when the root morpheme *go*, normally / gəʊ /, is followed by the past-tense morpheme which otherwise appears as / d /, the two are represented by the single morph / went /.

Lamb diagrams these relations, using a triangle for 'and', a square bracket for 'or': thus, the examples just given might in the first instance be diagrammed as in Figure 5 (page 170).

Once we have the diagrams, however, we no longer need the labels for units such as phonemes, morphemes, lexical items, and the like. The 'morpheme' *under* is simply the element which occurs as one of the two unordered lower terminals of relation

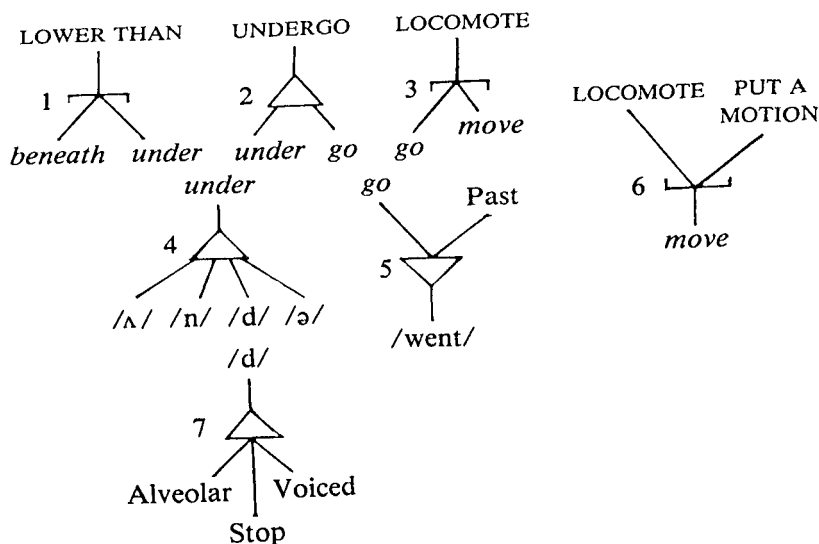


Figure 5

1, as the first lower terminal of relation 2, and as the upper terminal of relation 4; to say which relations this element enters into is to define it completely, and to call it 'the morpheme *under*' adds nothing to our knowledge. Similarly, the 'phoneme */d/*' is simply the element which occurs as upper terminal of relation 7 and as third lower terminal of relation 4 (and as a lower terminal of thousands of other and-relations, in a complete description of English). Therefore we may as well drop the labels for elements internal to the language, and show its structure more directly by linking the relation-terminals as appropriate (see Figure 6).

Here the and-nodes and or-nodes numbered 1 to 7 are identical to those with the same numbers in the previous diagram, but five further nodes have been added to represent facts left inexplicit in that diagram. Node 8 shows that the morpheme *under* neutralizes (stands for each of) the semantic unit LOWER THAN and the first portion of the lexical item *undergo*; node 9 shows that the morpheme *go* plays a similar dual role; node 10 shows that the morpheme *go* has alternative allomorphs – it has

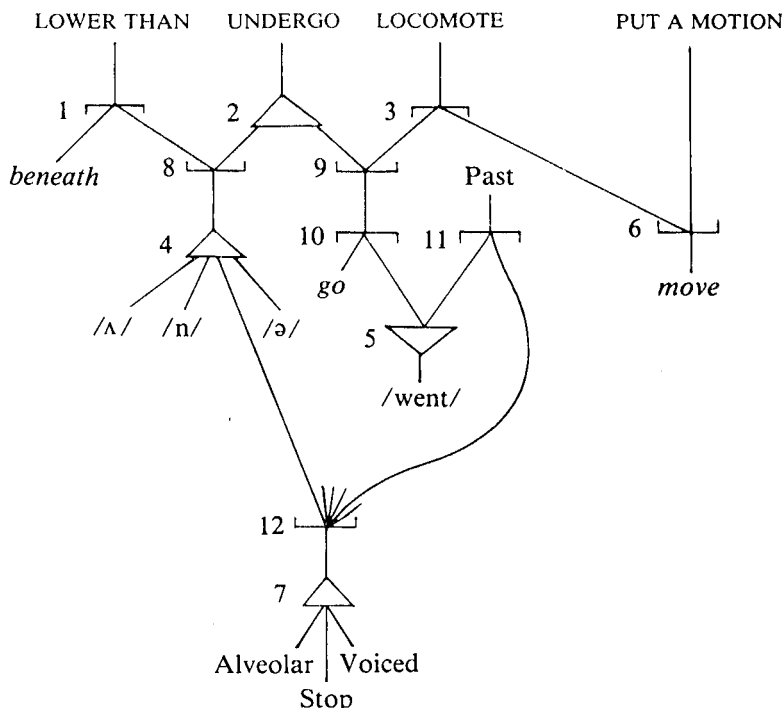


Figure 6

a portmanteau representation with the past-tense suffix, but is represented by a morph of its own (pronounced /gəʊ/, although this is not shown) in other environments; node 11 shows that the past-tense suffix likewise has alternative representations, and node 12 shows that the non-portmanteau alternative for the past-tense suffix (in a complete description of English this would be just one of the non-portmanteau alternatives) is identical to the third element in the realization of the morpheme *under*. (Node 12 has further lines sprouting from the top to suggest that, in a more complete description of the language, there will be many other morphs realized partly by the phoneme /d/.)

The numbers in the diagram serve only for ease of reference in discussing the diagram, and they can be eliminated without

changing what the diagram tells us about the English language. Similarly, the remaining labels for linguistic units, such as *beneath*, / \wedge /, etc., can be eliminated by adding further lines and nodes showing how those elements are realized. Thus it ought ultimately to be possible to represent all the realizational relations in a language as a whole in terms of a (very complex) network having labels for semantic units at the top, labels for phonetic features at the bottom, and nothing in between but nodes representing relationships and lines linking those relationships. In this context, 'entities' such as phonemes and morphemes really are nothing more than convenient but inessential mnemonic devices for talking about the relationships: thus the 'morpheme *under*' is just a name for the line linking nodes 8 and 4, 'phoneme / d /' is a name for the line linking nodes 12 and 7, and the lines and nodes are what they are irrespective of whether one gives them names or not.²

What virtues are there in charting languages as networks of pure relationships in this way? Quite a number.³

In the first place, as a general theory of language Lambian grammar scores heavily over its rivals in terms of simplicity. All sciences aim to reduce complex observed phenomena to simple, elegant theories. To say that Lamb's theory is 'simple' in this sense does not mean that a Lambian grammar is easy for a newcomer to understand, or anything of that sort; in fact the tangled skeins of lines and nodes that Lamb uses to represent the structures of a language are at least as baffling, to the non-initiate, as the sequences of quasi-mathematical formulae which occur in a Chomskyan grammar, but Lamb, like Chomsky, quite rightly regards this as irrelevant to the scientific status of his theory. Rather, the simplicity we look for in a scientific theory is something like fewness of elementary concepts employed; and in this respect Lamb beats Chomsky hands down. Chomskyan linguistic theory uses many diverse theoretical concepts at different points: 'constituency rule', 'transformational rule', 'phonological rule', 'constituency-marker', 'phonetic feature matrix', 'lexical entry' are only a few of the more obvious, and most of these – 'transformational rule' being a particularly clear case in point – are themselves complex ideas which have ultimately to be spelled out in terms of numerous more basic concepts. Lamb, on the other hand, defines only a few very elementary kinds of

relationship which occur at all linguistic levels, as represented by the differently shaped nodes (there are more types of node than mentioned above, but not many more – perhaps half a dozen or so in all) together with the simple notion of linking relationship-terminals with one another and with extra-linguistic features of sound and meaning; and this is *all* the theoretical apparatus Lamb uses to define the entire structure of a language, including semantics, syntax, and phonology.

Moreover, this simplicity in his general theory gives Lamb a large advantage in connection with another aspect of simplicity: that of defining a formal criterion for choosing between alternative analyses of particular linguistic data. Chomsky has stressed that 'simplicity' in this sense is not an intuitive concept but rather a property which must be investigated empirically (Chomsky 1965, pp. 37 ff.). The limited data about his parents' language available to an infant will always be compatible with many different grammars, so children must have some built-in 'evaluation measure' for selecting among the alternatives, and part of the job of linguistics is to discover just what evaluation measure would lead children to acquire the particular grammars they do acquire. (What Chomsky says on this subject is in fact rather muddled – see Sampson 1976; but let us leave that point aside here.) Although Chomsky stresses the need for a formal measure of simplicity of grammars, ironically enough Chomskyan grammars do not lend themselves at all naturally to the definition of such a measure (and Chomsky makes no concrete suggestions about what the measure might look like). For instance, within the Chomskyan framework one often has the option of reducing the number of constituency rules at the cost of introducing an extra transformation; one can only decide whether the option should be taken in any given case by weighing the relative 'cost' of the transformation against that of the constituency rules, but these two categories of rule are formally so different that one does not see how to define any 'rate of exchange' between them. Lamb grammars, by contrast, are highly homogeneous, having elements of the same type at all levels. In a Lamb grammar, a quantity such as the number of lines (i.e. links between nodes) is both easy to count and very plausible as a measure of the overall complexity of the grammar. With such a well defined simplicity criterion, old chestnuts such as the question whether English *ch* is one

phoneme or two can be answered straightforwardly; one draws networks corresponding to the alternative analyses, counts lines, and the analysis with the lowest score wins. (See Lamb 1966, pp. 52–4, for a worked-out example.)

Lamb's theory also captures in a neat way a property of language which has proved resistant to explanation within Chomsky's system: namely, the existence of independent principles of patterning at different linguistic levels.

A Chomskyan grammar contains a set of rules which define a range of allowable structures at one level of the grammar – the constituency 'base' component; and all the other rules in the grammar are rules for *altering* the structures defined by the base component in order to turn them into surface syntactic structures and, ultimately, phonetic representations on the one hand, or into 'semantic representations' on the other. The theory gives us no reason to expect to find any patterning in, say, the range of surface structures of a language, other than patterning which is imposed on deep structures by the base component and which happens not to be destroyed by the operation of transformations. But such independent patterning commonly is found; to take a simple example, English does not tolerate sequences of two present participles (e.g. **It is continuing raining*), and this is a rule about surface rather than deep syntactic patterning, since present participles have various syntactic sources in a Chomskyan grammar and it would be impossible to state the rule in a general form in terms of deep structure (cf. Ross 1972). Both in syntax and in phonology, Chomskyan linguists have been forced to recognize the existence of what have been called 'conspiracies', in the sense that the outputs of a given bloc of rules manifest patterning which is present neither in the inputs to that bloc of rules nor in the rules themselves (Perlmutter 1970; Kisseberth 1970); given Chomsky's theory, the occurrence of conspiracies is quite arbitrary and unexpected.

Lamb's theory, on the other hand, predicts it. So far, we have discussed only how Lamb grammars represent the relationships between units at different linguistic levels – the 'external relationships', in Hjelmslev's terms. In cases of alternation, however, unless the alternants are in free variation (which, as we have seen, is uncommon), the grammar must somehow tell us which alternant is used in given circumstances: thus the

morpheme *good* must be realized as the morph /bet/ before -er but as /gud/ in most other circumstances; the phoneme /l/ is a plain lateral before a vowel but velarized otherwise, and so forth. This sort of information is included in a Lamb grammar in the shape of a *tactic pattern*, which is a statement of the possible combinations of units at a given linguistic level – a statement of the ‘internal relations’ of a stratum. (Lamb uses Hjelmslev’s term ‘stratum’, although he does not limit himself to just four strata, and the identity of Lamb’s strata is determined empirically rather than by *a priori* conceptual analysis.) Lamb’s diagrammatic notation is readily adapted to the representation of internal relations; thus the Chomskyan constituency rules of Figure 3 (page 136) would translate into Lamb’s notation as shown in Figure 7 (page 176).

A tactic pattern of this kind, when complete, is ‘hooked up’ to the realization network discussed earlier by linking the lowest lines of the tactic pattern to corresponding lines at the appropriate level of the realization pattern; the tactic pattern just illustrated deals with ‘internal relations’ among words (Lamb’s ‘lexemes’), so for example the line labelled *boy* will be joined to a line at the word level in the realization pattern (a line which will perhaps be in an and-relation with semantic units YOUNG, MALE, HUMAN at a higher level, and with the phonemes /b/, /o/, /i/ at a lower level). Again, once the connections are made in the diagram, the labels of the tactic pattern become redundant. But it is essential to Lamb’s theory that the grammar contain not just one tactic pattern but several, at different levels: choices are continually introduced by or-nodes as one moves upwards or downwards in the realization pattern, and these choices are decided by looking to see which alternatives are compatible with the next tactic pattern. The tactic pattern which organizes words into sentences will rule out sequences of present participles; the tactic pattern which combines morphemes into words will select /bet/ rather than /gud/ before -er; the tactic pattern which combines phonetic features into well-formed syllables will decide whether a given lateral should be velarized. On Lamb’s theory, a language not only may but *must* display independent patterning at various levels.

One aspect of linguistic structure in which this concept of ‘independent patterning’ is relatively obvious is that of derivational morphology. (‘Derivational morphology’ refers to

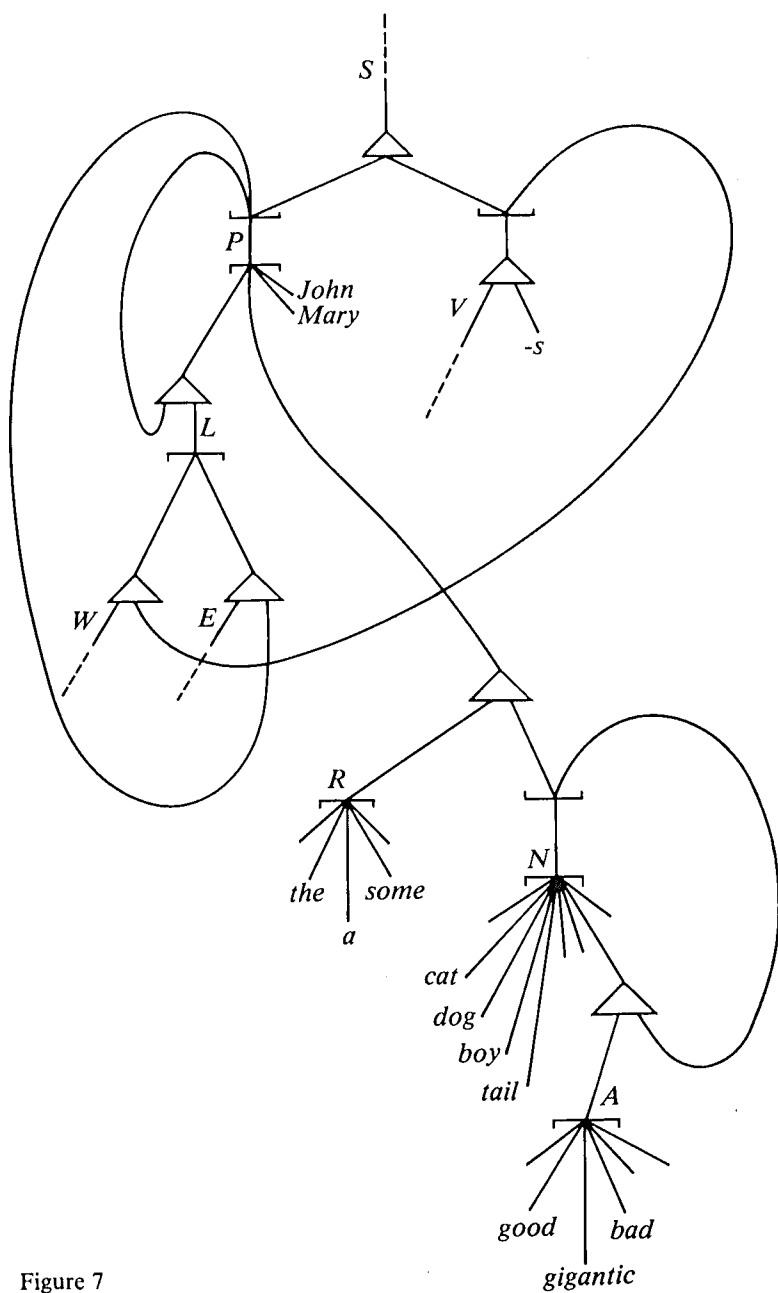


Figure 7

the construction of complex vocabulary items from simple roots – e.g. *king-ly*, *reg-al* – as against ‘inflexional morphology’ which concerns the varying grammatical forms of words – *smoke*, *smoke-s*, *smok-ing*.) We have seen that Morris Halle was right to say that morphology had not been much studied *within the Chomskyan school*, and there is a good reason for that. The Chomskyan principle that relative length of grammar reflects relative naturalness of a language for human users implies that, if the Chomskyan canonical notation permits alternative grammars of different length for the same language, the shortest is the only one with any scientific status. (Any grammar can easily be made gratuitously complex, so that it would be nonsense to suggest that a language was ‘unnatural’ just because it was *possible* to construct an inordinately long grammar for it.) Now, in a Chomskyan grammar, statements about derivational patterns (e.g. that the adjective-forming suffix *-ly* normally occurs on Germanic noun roots while *-al* applies to Latin roots) are redundant, in the sense that they do not affect the identity of the language generated by the rest of the grammar. Such regularities are not ‘productive’ – one cannot affix *-ly* to *any* Germanic noun-root, e.g. the adjective from *book* is *bookish* rather than **bookly*, and *tree* gives neither **treely* nor **treeish*; that means that those compound words which do occur in the language must be listed individually in the ‘lexicon’ of a Chomskyan grammar, and if that is so then statements of morphological regularities have no job left to do in generating the class of grammatical sentences. Halle’s morphological rules ought to be eliminated by the methodological criteria to which Halle himself subscribes. On the other hand, these morphological regularities do exist and a linguistic description which fails to record them seems to be missing something about the language; in a Lamb grammar they find a natural place in the tactic pattern of the morphemic stratum.

All these somewhat technical considerations do not yet touch on the real reason for the appeal of Lambian grammar, however. The chief attraction of the system is that it is much more plausible than its rivals as a model of how speakers and hearers actually operate. Lamb and Chomsky agree in seeing a language as linking ‘semantic representations’ – messages – with ‘phonetic representations’ – pronunciations. If that is an appropriate way of thinking about language, then presumably

someone who speaks converts a semantic structure constituting the message he wishes to convey into a corresponding phonetic structure or pronunciation, and a hearer performs the opposite conversion process. Yet Chomskyan theory does not show how this two-way conversion process is carried out, but rather aims merely to enumerate the semantic/phonetic pairings without suggesting machinery whereby one can be recovered from the other. Chomsky *asserts* that a successful speaker/hearer model will incorporate a generative grammar in his sense (1965, p. 9), but he gives us no reason to believe this assertion, and it seems rather implausible. For one thing, it is a characteristic of Chomskyan grammar-rules that they go only in one direction. Thus, we might perhaps suppose that a speaker 'thinks in deep structures' which he then converts into pronounceable sequences by applying transformational and phonological rules; but there is no way of 'throwing transformational rules into reverse' and using them to recover deep structures from surface structures, so, if we tried in this way to interpret a Chomskyan grammar as a model of the speaker, it would appear to predict that the hearer's task in dealing with syntax is either much more difficult than the speaker's or else uses some quite separate machinery – both of which may seem unreasonable conclusions.

A Lamb grammar, on the other hand, is perfectly symmetrical as between speaker's and hearer's viewpoints, and the processes of conversion between sound and meaning and *vice versa* are central to Lamb grammars, with tactic patterns functioning merely as adjuncts to the realization pattern in facilitating conversion in either direction – unlike Chomskyan grammars, in which the 'unnatural' task of enumerating all-and-only the well formed sentences is central, and semantic and phonetic rules are seen as merely 'interpreting' the products of the base component. A Lamb grammar permits one to 'feed in' semantic units at the top and get the corresponding pronunciation out at the bottom, or *vice versa*, and in either case the same network is being used in the same general way. These processes of 'encoding' and 'decoding' in a Lamb grammar can be simulated on a computer (Reich 1970b). The diagrammatic notation is reminiscent of microphotographs of neurons and their synaptic interconnections; Lamb (who is not a timid man) firmly believes that when the neurophysiologists eventually succeed, in their plodding fashion, in discovering the details of how the brain

works, they will come up with 'circuit diagrams' identical to those he draws.

That may sound unrealistically optimistic. However, there is a measure of support for it. When Peter Reich uses simulation techniques to explore the behaviour of Lamb grammars interpreted as networks of pathways along which impulses are propagated and nodes at which the impulses interact, he discovers effects that had not been foreseen by Lamb, but which accurately reflect aspects of human language behaviour that Chomsky does not attempt to cope with. The most striking of these has to do with the syntactic phenomenon of 'self-embedding'. It is well known that speakers of any language find it markedly difficult to deal with (to utter or to understand) sentences in which a constituent of a given category is part of a larger constituent of the same category which is in turn part of a yet larger constituent of the same category, provided that in each case the included element occurs in the middle rather than at the beginning or end of the constituent which includes it. Thus the sentence:

NP[NP[NP[NP[John]'s wife]'s aunt]'s house] is listed Grade II.

presents no special problems, because although nominal phrases ('NPs') are embedded within nominal phrases to a depth of four the lower nominal phrase is in each case at the beginning of the containing nominal phrase; and likewise, in:

This is NP[the dog that chased NP[the cat that killed
NP[the rat that ate NP[the malt]]]]

the contained nominal phrase is always at the end of the nominal phrase which includes it. On the other hand, a sentence like:

NP[The man that NP[the girl that NP[my wife] taught]
married] writes thrillers.

is in practice virtually unusable, although its degree of embedding is only three: each nominal phrase is in the middle of the next-larger nominal phrase. Chomsky is well aware of the phenomenon, and dismisses it as a 'performance' effect. But while it is legitimate for Chomsky to ignore, under the rubric of

'performance', the fact that (for example) million-word sentences are never uttered (because we know independently of linguistics that humans cannot successfully execute such lengthy behaviour-patterns, and we do not need linguistics to repeat facts which we know without its help), the case of self-embedding is rather different: this phenomenon seems to concern language specifically, lacking any analogue in other categories of behaviour, so that the linguist rather than anyone else owes us an explanation of it. The real reason why Chomsky ignores the phenomenon of self-embedding is that he is unable to explain it: within his theoretical framework constituency rules rewrite symbols such as 'NP' without regard to the larger structure in which they occur, and, although Chomsky could certainly modify his theory so as to forbid self-embedding, this would be a purely *ad hoc* manoeuvre which would explain nothing. Reich shows, however, that within a relational-network grammar exactly the phenomena observed in connection with self-embedding in human languages (which are in fact even more complex than reported here) can be *predicted* to occur: Reich's theory would have to be modified in an *ad hoc* way if these phenomena were *not* observed (Reich 1969). Reich's development of Lamb's relational-network theory was not designed in order to achieve this result; the prohibition of self-embedding is an unexpected bonus of a theory which was worked out with quite different considerations in mind. That prohibition is therefore a very notable success for relational as against transformational grammar. Another respect in which relational grammar offers potential as a model of the speaker/hearer is that, it has been claimed, various known symptoms of aphasic speech can be simulated by excising specific portions of a Lamb grammar (Fleming 1967).

All this is very promising. However, Lamb's theory lays itself open to serious criticisms: it is simply not clear that relational networks are capable of representing some of the commonest phenomena that occur in human language. One of the *prima facie* attractions of Lamb's system as against Chomsky's is that the former is an 'item-and-arrangement' rather than 'item-and-process' system (cf. Chapter 3). A Chomskyan grammar is full of rules which *change* underlying representations of sentences into other representations: the deep structure of a sentence contains certain morphemes grouped into a certain

hierarchical structure, but the transformational rules eliminate or modify some morphemes, introduce others, and remodel the structure; words are stored in the lexicon in a given phonetic shape, but this may be very different from the pronunciation they possess on emerging from the phonological rules (on this latter point see Chapter 8 below). The picture is of sentences being processed into their finished form like products on a factory conveyor-belt; and this picture has seemed hopelessly unrealistic as an account of how speakers actually operate even to linguists who acknowledge that 'process' statements about language are convenient as descriptive fictions. Bloomfield, for instance, discussing the alternation in the shape of the English plural suffix between [z] after voiced and [s] after voiceless sounds, points out that it is handy to treat irregular plurals such as *knives* [naivz] by saying that the root [naif] 'first' becomes [naiv] and 'then' takes what is now the expected form [z] of the suffix; but he adds (1933, p. 213):

the descriptive order . . . is a fiction and results simply from our method of describing the forms; it goes without saying . . . that the speaker who says *knives*, does not 'first' replace [f] by [v] and 'then' add [-z], but merely utters a form (*knives*) which in certain features resembles and in certain features differs from a certain other form (namely, *knife*).

To someone who shares the assumptions revealed in this quotation, Lamb grammars are very reassuring: nothing ever *changes* into anything else, and the network of relationships merely states the complex *arrangements* in which semantic and phonetic units actually occur in sentences as we know them in practice. However, Chomsky uses process rules not because he happens to enjoy thinking in conveyor-belt terms, but because, when one investigates syntax more deeply than Bloomfield did, one finds the data to be such that, arguably, only process rules can handle them. Process rules are so indispensable that it becomes difficult to dismiss them as convenient descriptive tricks: they seem to correspond to some genuine property of natural language. The syntactic phenomena that most clearly demand to be treated in process terms are phenomena which appear highly resistant to handling in terms of Lambian networks.

Consider, for instance, the relative clause in English. A relative clause is a constituent which resembles an independent

sentence, differing principally in that a relative clause is short of one nominal phrase as compared to a full sentence. The missing phrase may (and in some cases must) be represented by a relative pronoun, which will appear at the beginning of the clause. Thus

The man [John left the book by an old cupboard] is bent

is not a possible sentence, because the constituent which ought to be a relative clause has all the nominal phrases of a full sentence; and

The man [(who) left the book by] is bent

is equally bad (with or without the relative pronoun *who*) because *two* nominal phrases are missing; but each of the following are well formed in English:

The man [who left the book by an old cupboard] is bent

The man [(whom) John left by an old cupboard] is bent

The man [John left the book by] is bent.

The obvious way of stating the facts is to say that relative clauses are formed from normal sentences by deleting one of their nominal phrases, or by replacing it with a relative pronoun; relative pronouns are subsequently moved to the front of their clause. These are just the kinds of process which transformational notation is designed to handle: such rules operate on the elements of a sentence in ways which *depend on the underlying structure of the sentence as a whole*. The realization pattern of a Lamb grammar, on the other hand, which states what different material at other linguistic levels may stand for a given unit at any one level, treats each elementary form separately and in isolation from the structure in which the form occurs. Thus it would be easy enough for a realization pattern to state that the individual unit *John* may be realized as zero, but there is no obvious way in which the realization pattern could allow *the book* or *an old cupboard* to be deleted *en bloc*. Furthermore, while a tactic pattern might be designed so as to allow zero as an option at each nominal-phrase position in a relative clause, it seems impossible within Lamb's notation to prevent the zero option being chosen more (or less) than once in a single clause. This is not merely a question of failure by the present writer to see how to achieve the

desired result within the system; the small sample grammar of English presented in Lamb's own published outline of his theory treats relative clauses as if they were identical to independent sentences (Lamb 1966, p. 80).

Lamb has clarified his disagreement with Chomsky on this issue by drawing an analogy with eating in a cafeteria (see Parret 1974, p. 195). One walks along a cafeteria counter and chooses the elements of a meal in the order in which they happen to be arranged on the counter: perhaps dessert first, then the main course, then soup and then coffee. One goes to a table and proceeds to eat and drink these items in a quite different order. Now, Lamb suggests, the Chomskyan approach to this phenomenon, in terms of transformational rules, would be to say that one derived the sequence for eating by applying an operation to the sequence in which one had collected the items – say, '1 2 3 4 \Rightarrow 3 2 1 4' to get the correct order 'soup – main-course – dessert – coffee'. This would seem to imply that if, say, a woman let her escort collect the meal (so that she did not know the collection-sequence) she would have no way of working out the proper eating-sequence, and that if the cafeteria re-arranged the sequence of items on its counter the customers would automatically rearrange their eating-sequence. But of course that does not happen. The sequence for eating is governed by its own pattern, which is entirely independent of the pattern of food on the counter (or, for that matter, of the pattern of food-preparation in the cafeteria kitchen, and so on).

This analogy succeeds admirably in making Lamb's position clear. However, one of the points which the analogy highlights is that there is an important structural difference between arranging words into a sentence and eating lunch. Given a plate of sausages and chips, a helping of treacle tart, and a bowl of Brown Windsor, there is only one way to arrange them into a 'well-formed' meal; but out of the words *John*, *Mary*, and *loves* we can construct two different sentences. Meals normally contain only one example of any given 'category' of food, but sentences regularly contain multiple nominal phrases, multiple adjectival phrases, and so on. True, a greedy person might take two puddings, but then it would presumably not matter which order they were eaten in. It makes all the difference in the world, on the other hand, whether we say *John loves Mary* or *Mary loves John*. In order to get the sequencing right at the

syntactic lunch-table, we need to know the positions occupied by the elements on the semantic cafeteria-counter; Lamb appears to be deliberately ruling this out.

That example has nothing to do with the phenomena for which Chomsky uses transformations, but when we introduce these the situation becomes even worse. The point I made about relative clauses resembling main clauses from which any one nominal phrase has been dropped was designed to show that what counts as a well-formed relative clause is not a question that can be answered by reference purely to the surface grammar of the language (or at least, an answer in such terms will be perversely complex) – rather, the simple way to answer is in terms of an underlying ‘logical form’, identical to a main clause, to which an operation is applied to derive the surface form. Returning to the gastronomic analogy, what counts as a well formed meal here is a function of what is on offer at the counter (unlike in real cafeterias, where these two questions are quite independent and mismatches are entirely possible).

Certainly, it may be that Chomskyan transformations are the wrong way to handle such phenomena; I would be prepared to argue that myself. But Lamb has done little to show that he has a better way (indeed, *any* way) of dealing with such cases. Lamb’s inability to handle structure-dependent syntactic processes is a particularly grave shortcoming in his theory because these phenomena play a central role in Chomsky’s theorizing, and Chomsky’s theory was first in the field. When a novel theory is brought forward to challenge established belief it is good to hear that it solves problems that were shelved by the proponents of the older doctrine, but it is surely at least equally important to know that the new theory can match its rival on the terrain where the latter has been particularly successful. Lamb addresses himself to the task of winning over a scholarly community which has been almost wholly converted to Chomsky’s views, but he shows no sign that he is aware of the need to meet Chomsky on Chomsky’s ground. Peter Reich has been more responsible in this respect (see Reich 1970a); but, although the cited work makes a promising start at the job of demonstrating that relational networks can cope with the sort of syntactic phenomena discussed by Chomsky, they do not go very far, and in the last few years Reich appears to have given up publishing on this subject. That might be because Reich’s

interests have changed rather than because the job cannot be done; but a theory is judged by its concrete achievements rather than by the gleam in its inventor's eye, and as things stand the verdict on relational grammar must surely be that it was a good idea which has turned out not to work.

The foregoing perhaps suffices as a criticism of relational grammar. There is one further point, however, that deserves making because of its general interest. We have seen that the Danish relational grammarians set great store by the notion that a theory of language – of *langue* rather than *parole*, in Saussure's terms – should concern itself purely with formal structure, and not allow itself to be contaminated by considerations of the substance which realizes that structure. The trouble about this elegant logical principle is that, if we abstract too far away from the concrete realities of speech, we risk ending up with a theory that tells us little about even the formal aspects of language; and it seems that the 'glossematicians' fell into this trap. Thus, Eli Fischer-Jørgensen (1967, p. x) says that 'For Uldall glossematics [i.e. what I am calling "relational grammar"] is a formal theory, which is not defined by any specific material, but designed explicitly to be used for *all* human activity' (my italics). Lamb, similarly, regards it as a strong point of his system that it can represent the 'grammars' of phenomena such as baseball and Indian dancing as readily as those of languages in the ordinary sense (cf. Lockwood 1972, pp. 283 ff.). But, while flexibility in a notation system is an excellent thing, the concept of an infinitely adaptable formal notation system is a contradiction in terms. The only kind of description system which can be adapted to describe *anything whatsoever* is a natural language itself, the semantics of which is extended creatively by its speakers rather than regimented by formal rules. Any formal notation system must make assumptions about the subject-matter to which it is applied: the system of contour-lines used by map-makers is adaptable to a great diversity of terrain, but it could hardly be used to represent the structures of organic molecules or the distribution of incomes in a society, for instance. If one's notation system is invented in deliberate disregard of the contingent properties of the material to be described, then (since it must make *some* theoretical assumptions) it will just embody some false theory about that material, and hence will

be both unhelpful to the descriptive worker and misleading to the theoretician.

The lesson we should draw, surely, is that the aprioristic decision to consider language as pure form, divorced from the substance that realizes it, is mistaken; linguistic substance largely determines linguistic form. Our languages are the way they are in large part because they are spoken; any attempt to ignore the medium of speech and to analyse the nature of language in the light of pure logic alone is doomed to sterility.