Part I
Theory

1 The meaning of features in systemic linguistics

James R. Martin
University of Sydney

This chapter is concerned with the ways in which paradigmatic relations are formalized in systemic descriptions of natural language. Central to this discussion will be the use of FEATURES in SYSTEM NETWORKS. A number of criteria will be established for motivating features and certain notational conventions will be proposed which mark features according to the type of meaning they encode.

1.1 SYSTEMIC LINGUISTICS AS AN ITEM AND PARADIGM MODEL

Hockett's classic article, 'Two models of grammatical description' (1954), outlined the two types of model which underlie most Bloomfieldian research, contrasting the ITEM AND ARRANGEMENT with the ITEM AND PROCESS approach. These two models, albeit soon to be formalized in a generative way by Lamb and Chomsky respectively, have continued to provide the basis for a large number of descriptions since that time. Significantly, Hockett remarks at the beginning of his article that one important descriptive tradition, the WORD AND PARADIGM model, would not be considered. It is this third model, more appropriately designated an ITEM AND PARADIGM model by Hudson (1973), which in fact is related to systemic linguistics in much the same way as the item and arrangement model gave birth to stratificational grammar and the item and process model to transformational grammar.

As is the case with many of the descriptive techniques used by linguists today, the first explicit formulation of an item and paradigm description is found in the work of Harris. In his 'A componential analysis of a Hebrew paradigm' (1948), Harris tackles the problem of describing portmanteau items lacking a constituency of their own. His distributional approach effected a componential analysis of a paradigm of the Hebrew verb. Harris's COMPONENTS would be referred to as FEATURES in systemic linguistics. In effect these 'components' or 'features' are the names placed on rows and columns in paradigms.

The results of Harris's analysis are presented systemically in Figure 1.1. Harris would of course have eschewed the names given to features in this

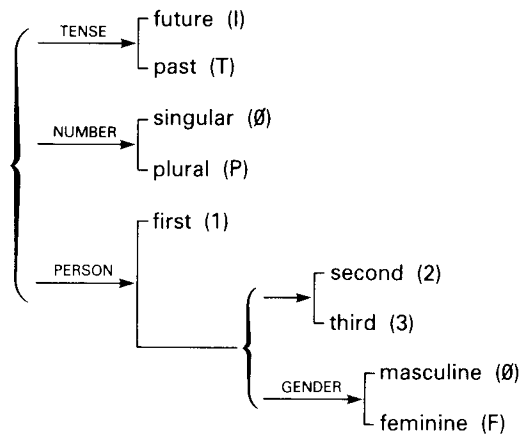

Figure 1.1 A systemic representation of Harris's analysis

network as an incursion of meaning into the analysis. His symbols for the components, in some cases not as abstract as one might expect, are given in brackets after the features to which they correspond. Figure 1.1 classifies the morphemes considered according to TENSE, NUMBER, PERSON and GENDER. The verbs Harris considers are either [future] or [past], either [singular] or [plural], either [first] or not, and if not, then either [second] or [third] and either [masculine] or [feminine]. (Note that features from system networks are by convention shown in running text by square brackets.) In Figure 1.2 the

[past, singular, first]	-ti	'I did'
[past, singular, second, masculine]	-ta	'you did'
[past, singular, second, feminine]	-t	'you did'
[past, singular, third, masculine]	Ø	'he did'
[past, singular, third, feminine]	-a	'she did'
[past, plural, first]	-nu	'we did'
[past, plural, second, masculine]	-tem	'you did'
[past, plural, second, feminine]	-ten	'you did'
[past, plural, third, masculine]	-u	'they did'
[past, plural, third, feminine]	-u	'they did'
[future, singular, first]	a-	'I will'
[future, singular, second, masculine]	t-	'you will'
[future, singular, second, feminine]	t . . . i	'you will'
[future, singular, third, masculine]	y-	'he will'
[future, singular, third, feminine]	t-	'she will'
[future, plural, first]	n-	'we will'
[future, plural, second, masculine]	t . . . u	'you will'
[future, plural, second, feminine]	t . . . na	'you will'
[future, plural, third, masculine]	y . . . u	'they will'
[future, plural, third, feminine]	t . . . na	'they will'
feature bundles	Hebrew morpheme	English gloss

Figure 1.2 The exponence of the network in Figure 1.1

items which realize the bundles of features generated by the network in Figure 1.1 are presented along with English glosses. Harris's article demonstrates that paradigmatic relations in language can be described with the same kind of distributional rigour as syntagmatic ones. Unfortunately, not all linguists have been as careful about motivating features in their descriptions.

1.2 THE FORMAL MEANING OF FEATURES

It is clear that if systemic grammars are to function as explicit generative models, then system networks must include at least those features necessary for generating well-formed structures in a given language. So one can begin exploring the meaning of features in systemic linguistics by establishing criteria which motivate these features in a given network. In other words, one is asking how the presence of features in a network designed to generate well-formed structures can be justified.

For reasons discussed below it is necessary to distinguish TERMINAL from NON-TERMINAL features. To begin, attention will be focused on non-terminal features. The most DELICATE features in the networks used as examples are neutral with respect to terminality unless they are specified as terminal: that is, the example networks are not necessarily exhaustive in delicacy unless so described.

The argumentation developed here is easiest to follow if a three term system like that in Figure 1.3 is presented, and attention is given to specifying those conditions under which a systemicist is justified in rewriting this system as the network in Figure 1.4, which contains two systems and an additional feature [x]. The transformational-looking arrow between figures is intended to capture a systemicist's generalizing inclinations.

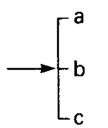

Figure 1.3

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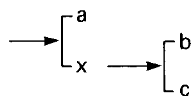


Figure 1.4

One of the central concerns in motivating a feature is that it have some REFLEX IN FORM (cf. Fawcett 1973/81: 157 and 1980: 101); that is, that it have some generative consequences when systems are related to syntagmatic patterns through REALIZATION RULES. Exactly how this 'renewal of connection', to use Firth's phrase, is effected varies according to the type of realization rule employed. Realization rules are of four general types (cf. Huddleston 1981 and Henrici 1981).

1. Rules which relate features on one RANK OR STRATUM to features on another rank or stratum, i.e. DAUGHTER DEPENDENCY RULES, if between ranks on the same stratum (cf. Hudson 1976). For example, [receptive] clauses require a [passive] verbal group (cf. Halliday 1967).
2. Rules which relate features of one constituent to features of one of its structural sisters, i.e. SISTER DEPENDENCY RULES (cf. Hudson 1976). For example, [factive] verbs can take a [fact] complement.
3. Rules by which features are realized through the insertion of GRAMMATICAL FUNCTIONS or ELEMENTS OF STRUCTURE, i.e. FUNCTION ASSIGNMENT RULES in Hudson 1971 or another type of daughter dependency rule in Halliday 1969; Hudson 1971; Berry 1977. For example, the clause feature [indicative] is realized by the insertion of the function Subject (cf. Halliday 1969).
4. Rules which sequence and conflate functions, bundles of features, or elements of structure, i.e. SEQUENCING RULES (cf. Hudson 1971 and 1976). For example, the clause feature [declarative] concatenates the functions Subject and Finite as Subject^Finite (cf. Halliday 1969).

Initially, then, a feature may be defined as having some reflex in form if it is mentioned in any of these four general types of realization rule.

We shall assume that features [a], [b] and [c] in Figure 1.3 each have a reflex in form, but in order to motivate [x], it must be additionally true that:

(i) [b] and [c] each PRESELECT the same feature in a subsequently entered network;
or (ii) [b] and [c] are mentioned disjunctively in a sister dependency rule;
or (iii) [b] and [c] each specify the insertion of the same constituent;
or (iv) [b] and [c] are mentioned disjunctively in a sequencing rule.

Conditions (i)–(iv) are represented in Figures 1.5, 1.6, 1.7 and 1.8 respectively. Should any of these conditions hold, feature [x] could be inserted to generalize the CONSTITUTIONAL or DISTRIBUTIONAL consequences [b] and [c] share. In effect, this generalization does not simplify the grammar as a whole. Disjunctions are avoided in the realization rules, but an extra feature and system are added to the network. This shift in descriptive responsibility is characteristic of systemic description where system networks form the creative and generalizing heart of the grammar.

[b] → [w]
[c] → [w]

Figure 1.5: A Daughter dependency rule

[b] v [c] → [w]

Figure 1.6: A Sister dependency rule

[b] ↘ +Jm
[c] ↘ +Jm

Figure 1.7: A Function insertion rule

[b] v [c] → [w]

Figure 1.8: A Sequencing rule

Criterion A in Figures 1.5–1.8 summarizes the motivation for features discussed above.

A. *A feature is motivated if it has some reflex in form*

It is criterion A which justifies writing the MOOD network for English as Figure 1.10 rather than Figure 1.9. The features [declarative] and [interrogative] in Figure 1.9 both specify the insertion of the function Subject, so the feature [indicative] can be inserted into Figure 1.10 to capture this generalization.

Features in systemic descriptions are realized either through STRUCTURES or LEXICAL ITEMS. The phrase 'reflex in form' is intended to embrace both types of formal exponence and must be interpreted accordingly.

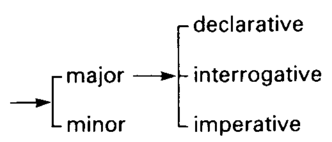


Figure 1.9

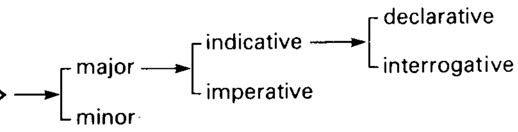


Figure 1.10

Hudson 1976 suggests that it is not enough for a feature to have a distributional or a constitutional reflex in form, but that only features having both types of reflex in form are justified. Constraining networks in this way makes necessary sister dependency rules which are not used in other versions of systemic grammar. Hudson's proposal entails a large shift in weak generative power away from system networks and into the realization rules. These ideas warrant serious consideration but will not be discussed further here. It is important to note in passing that the ways in which features are motivated in systemic descriptions have very significant ramifications for the shape of systemic grammars as a whole.

Criterion A motivates features with respect to their structural output in a systemic generative model. Next, a number of network internal motivations for features will be considered.

If both [b] and [c] act as an entry condition for some system containing the features [e] and [f], as in Figure 1.11, then it is possible to make a generalization in terms of the networks itself. In effect, the choice of [b] or [c] is simultaneous with the selection of [e] or [f]. In order to avoid presenting these

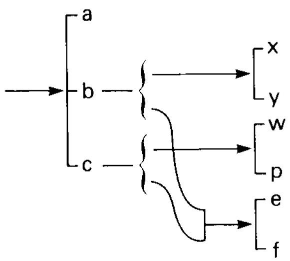


Figure 1.11

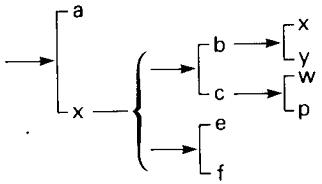


Figure 1.12

choices at different stages in delicacy, feature [x] can be inserted as an entry condition for the selection of either [b] or [c] and either [e] or [f] as in Figure 1.12. This sort of generalization is typical of systemic descriptions, and was incorporated in the systemic representation of Harris's analysis in Figure 1.1 above (cf. Fawcett, forthcoming, section 6). So a second criterion can be proposed.

B. *A feature is motivated if it acts as an entry condition for simultaneous systems*

Features will be described here as appearing in a CONJUNCTIVE ENVIRONMENT when both may be selected in a single derivation and as in a DISJUNCTIVE ENVIRONMENT when only one can be so selected. In Figure 1.13, features [b] and [c] can be interpreted as appearing in either a disjunctive or a conjunctive environment. By adding the features [x] and [y] as in Figure 1.14, a weak generalization can be incorporated in the grammar through a left-facing 'or' bracket. Because they in one sense neutralize less delicate options, such brackets are viewed with suspicion by some systemicists. Their absence from a network is at least a measure of its elegance. Hudson 1976 claims they are unnecessary in a grammar including sister dependency rules. However uneasy these brackets make systemicists feel, they are not always easy to avoid (cf. Fawcett, forthcoming, section 5; and Fawcett 1980: 144–5). Thus a further criterion is proposed.

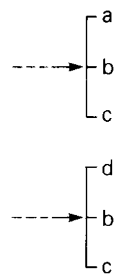


Figure 1.13

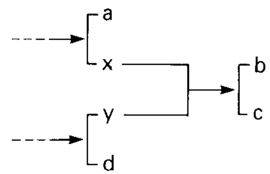


Figure 1.14

C. *A feature is motivated if it acts as part of a disjunctive entry condition for a more delicate system*

The need for a further criterion is illustrated in Figure 1.15. Here [x] and [y] appear in a conjunctive environment. If both are selected, they form a

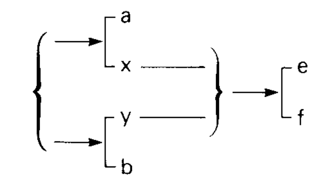


Figure 1.15

compound entry condition to the system containing [e] and [f]. So criterion D is proposed.

D. *A feature is motivated if it acts as part of a conjunctive entry condition to a more delicate system*

Paradigms in natural language are not always symmetrical. In light of this systemicists have employed a number of MARKEDNESS CONVENTIONS which condition networks internally and prevent them from generating bundles of features which have no realization. This markedness is indicated through the indexing of features in order to express what are effectively types of preselection within, rather than between, networks. Three types of markedness obtain in conjunctive environments: POSITIVE, NEGATIVE and CONDITIONAL.

An early example of NEGATIVE marking is found in Huddleston and Uren 1969. Figure 1.16 represents the kind of conditioning they placed on networks when discussing MOOD in French. Feature [f] can be selected only if [c] is not. Figure 1.16 generates the following bundles of features: [a, d], [a, e], [a, f], [b, d], [b, e], [b, f], [c, d], [c, e]; the bundle [c, f] is excluded.

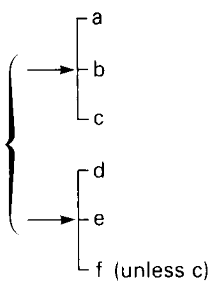


Figure 1.16 Negative marking (1)

Negative marking has not been used by other systemicists. This may be because it is unnecessary when the systems involved are binary ones. Positive marking, as developed by Halliday, could be used to re-express Figure 1.17 as Figure 1.18. The asterisk indicates that [d] is unmarked with respect to all environments—that is, if [a], then always [d]. POSITIVE marking can be illustrated with respect to the systems of nasality and voicing as they apply to plosive phonemes in English. There are no voiceless nasals in English, so the paradigm in Figure 1.19 has an empty box. This pattern can be expressed

Figure 1.17 Negative marking (2)   **Figure 1.18** Positive marking (1)

	nasal	non-nasal
voiced	/m,n,ŋ/	/b,d,g/
voiceless	—	/p,t,k/

Figure 1.19 Nasality and voice for English plosives

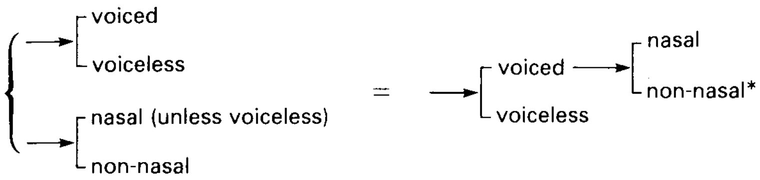


Figure 1.20 Negative marking (3)   **Figure 1.21** Positive marking (2)

systemically using either negative marking as in Figure 1.20 or positive marking as in Figure 1.21.

It is sometimes that case that there is more than a single tangential term in the superordinate systems associated with positive marking of this kind. This happens whenever there is a complex entry condition to a system, involving either disjunction or conjunction. In such cases, the tangential terms (i.e. [a] in Figure 1.18 or [voiceless] in Figure 1.19) may be in a different markedness relation to the starred feature. It thus becomes necessary to indicate which of the tangential terms is involved. This is achieved through paired symbols and is illustrated in Figure 1.22. This network states that [h] is unmarked with

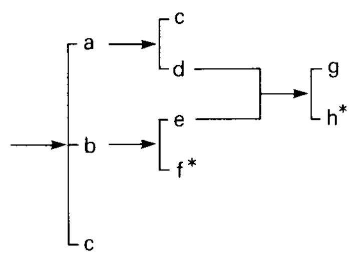


Figure 1.22 Positive marking with paired symbols

respect to [f]; in other words, if [f], then always [h]. Paired symbols are read off from left to right in delicacy: if 'the less delicate of the pair', then 'the more delicate'. A mnemonically clearer notation would involve the use of an 'if/then'-derived I/T notation. Figures 1.21 and 1.22 would be expressed as, using the notation of, Figures 1.23 and 1.24. The Is and Ts would have to be indexed (e.g. I1/T1, I2/T2, etc.) to clarify networks with more than one such markedness relation involved. For this notation to be equivalent to Halliday's positive marking it would have to be constrained so that Is can only be attached to tangential features in systems superordinate to features marked

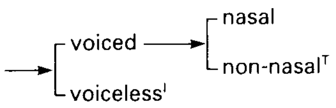


Figure 1.23 I/T version of Figure 1.21

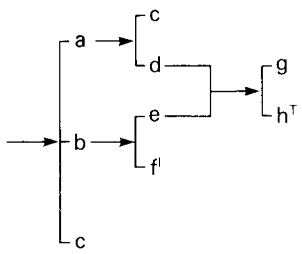
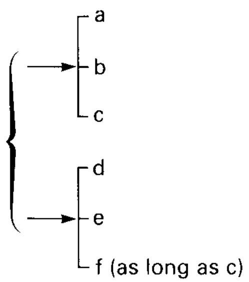


Figure 1.24 I/T version of Figure 1.22

with T. Were the I and T attached to simultaneous features, or were T less delicate than I, this would indicate an increase in the generative power of system networks. For this reason, some caution should be exercised before introducing the I/T notation for reasons of readability.

CONDITIONAL marking of simultaneous features is used by Hudson 1973 and is illustrated in Figure 1.25. Here the features involved are simultaneous, and [f] can be selected as long as [c] is too. Hudson's notation for this is presented in Figure 1.26, and the I/T alternative in Figure 1.27.



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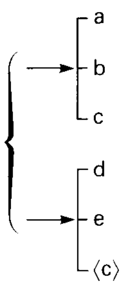

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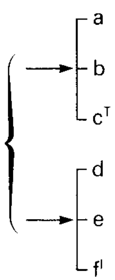
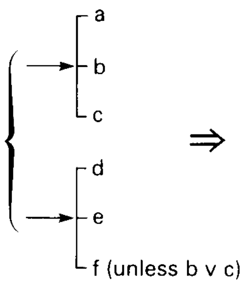


Figure 1.25 Conditional marking

Figure 1.26 Hudson's version of Figure 1.25

Figure 1.27 The I/T version of Figure 1.25

Given these marking conventions, one can imagine cases like those in Figures 1.28, 1.30 and 1.32 where, respectively: [f] can be selected unless [b] or [c] are; [f] is unmarked with respect to both [b] and [c]; and [f] can be selected as long as [b] or [c] are. Feature [x] could then be inserted to generalize this network internal conditioning as in Figures 1.29, 1.32 and 1.33.



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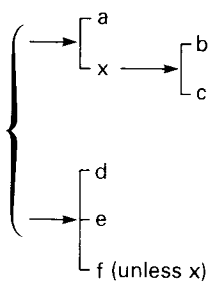
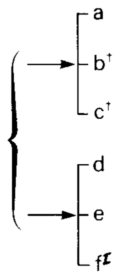


Figure 1.28

Figure 1.29



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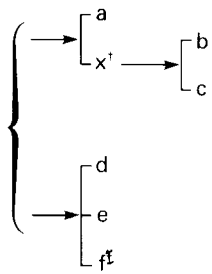
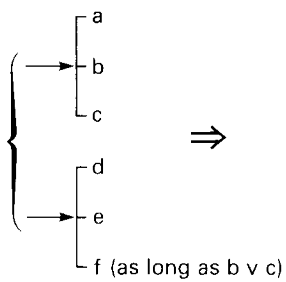


Figure 1.30

Figure 1.31



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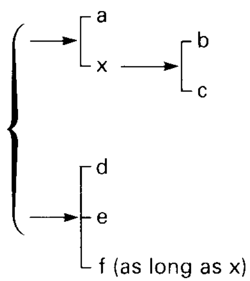

Figure 1.32

Figure 1.33

Up to this point, only markedness conventions which are NETWORK INTERNAL have been considered. There is one type of marking, however, which interacts with realization rules. Hudson 1974 has employed an asterisk beside a feature to indicate that it must be selected unless another feature in the system has been preselected by some realization rule. This type of marking will be referred to as DERIVATIONAL marking. In Figure 1.34, [c] must be selected unless [d] is preselected by such a rule. In Figure 1.35, either [b] or [c] may be selected unless [a] is preselected. So feature [x] can be inserted as in Figure 1.36 to capture this generalization. As long as systemicists continue to employ these four markedness conventions, a further criterion is necessary.

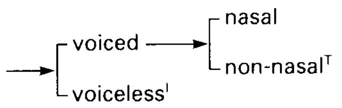

Figure 1.23 I/T version of Figure 1.21

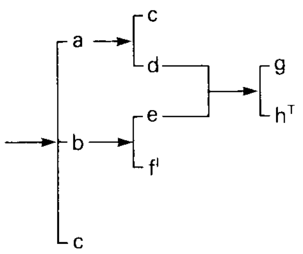

Figure 1.24 I/T version of Figure 1.22

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CONDITIONAL marking of simultaneous features is used by Hudson 1973 and is illustrated in Figure 1.25. Here the features involved are simultaneous, and [f] can be selected as long as [c] is too. Hudson's notation for this is presented in Figure 1.26, and the I/T alternative in Figure 1.27.

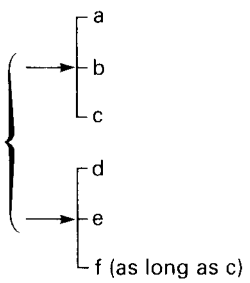

Figure 1.25 Conditional marking

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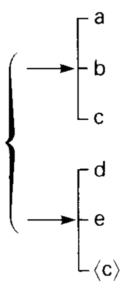

Figure 1.26 Hudson's version of Figure 1.25

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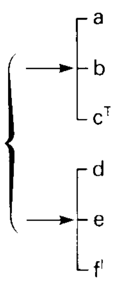

Figure 1.27 The I/T version of Figure 1.25

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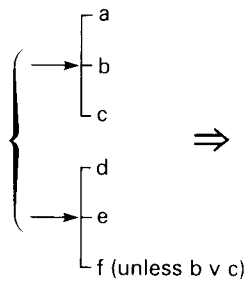

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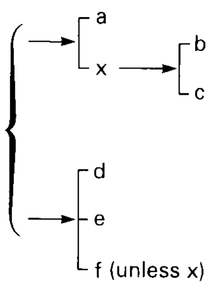

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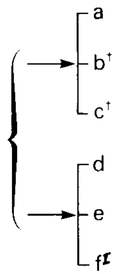

Figure 1.30

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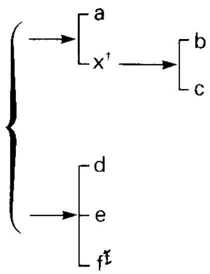

Figure 1.31

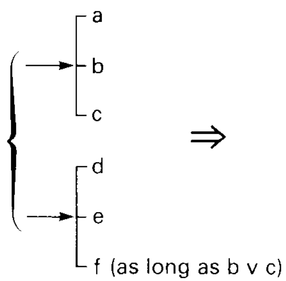

Figure 1.32

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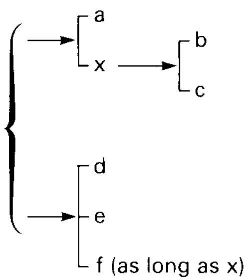

Figure 1.33

Up to this point, only markedness conventions which are NETWORK INTERNAL have been considered. There is one type of marking, however, which interacts with realization rules. Hudson 1974 has employed an asterisk beside a feature to indicate that it must be selected unless another feature in the system has been preselected by some realization rule. This type of marking will be referred to as DERIVATIONAL marking. In Figure 1.34, [c] must be selected unless [d] is preselected by such a rule. In Figure 1.35, either [b] or [c] may be selected unless [a] is preselected. So feature [x] can be inserted as in Figure 1.36 to capture this generalization. As long as systemicists continue to employ these four markedness conventions, a further criterion is necessary.

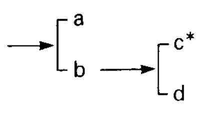

Figure 1.34

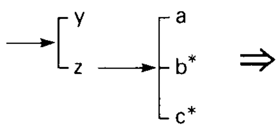

Figure 1.35

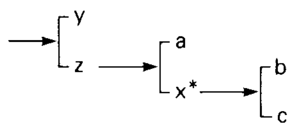

Figure 1.36

E. *A feature is motivated if it is associated with a positive, negative, conditional, or derivational markedness convention*

As indicated above, special consideration must be given to terminal features in light of criteria A through E. For example, given that features [a], [b] and [c] in Figure 1.37 are motivated by A through E but [d] is not, one cannot simply remove [d] from the description and be left with a well-formed system. As yet systemicists have not provided an interpretation for Figure 1.38 (see, however, the discussion of GATES below).

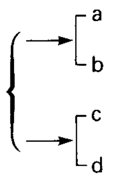

Figure 1.37

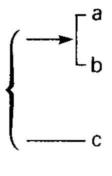

Figure 1.38

Similarly, terminal features in a disjunctive environment cannot simply be removed when unmotivated by A through E. Assuming that [a], [b] and [c] are so motivated in Figure 1.39, it is not possible to eliminate [d] and conflate [c] with [y], since the choice of not [a] or [b] or [c] would be lost. Figure 1.40 formalizes a different paradigm than Figure 1.37 (cf. Fawcett's discussion of zero realization, 1980: 112). Accordingly, a sixth criterion is proposed.

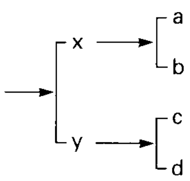

Figure 1.39

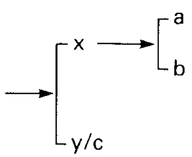

Figure 1.40

F. *A terminal feature unmotivated by A through F is justified if all other terms in its system are so motivated*

In the past, systemicists have approached the problem of motivating networks in terms of justifying systems rather than the features they contain. The

strongest published position appears in Hudson (1970: 226): '. . . that for every grammatical system there should be at least one formal property which is possible in items with one of the features, but not in items with the other.' If 'having a formal property' is interpreted as 'having a reflex in form', then Hudson's criterion justifies rewriting Figure 1.3 as Figure 1.4 in every case, whether [x] is independently motivated in any way or not, since all items having [a] will possess some formal property which those having [x] do not have.

Such a position makes it possible to take a given network and rewrite it as two networks. In one, configurations like that in Figure 1.3 are maintained, i.e. features unmotivated by A through F are removed. In the other, such configurations are expanded as in Figure 1.4. This latter network could contain nearly twice as many systems as the former and yet be saying the same thing about the linguistic patterns it describes. This ACCORDION GAMBIT makes system networks notoriously difficult to interpret since features motivated by A through F are mixed up with features not so motivated in an unprincipled way. Justifying systems when only one of their terms is motivated by A through F is an indefinitely weaker position than motivating individual features, and has no place in an explicit generative model.

Implicit in Hudson's position is the assumption that every system may be binary. This assumption may prove far less tenable if features themselves are individually motivated. An important related concern involves the expression of system networks as a list of SUB-CATEGORIZATION RULES (cf. Hudson 1976). Note that the network in Figure 1.41 cannot be written as a well-formed sub-categorization rule. The rule in Figure 1.42 is not well formed and must be written as Figure 1.43. But in network terms this involves rewriting Figure 1.41 as Figure 1.44.

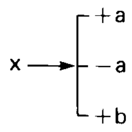

Figure 1.41

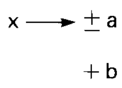

Figure 1.42

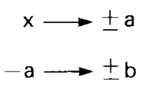

Figure 1.43

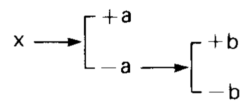

Figure 1.44

As Anderson 1969 has pointed out, the decision to express networks as sub-categorization rules entails that all systems are binary. Expressing networks as sub-categorization rules would thus involve adding a number of features and systems to grammars whose features are individually motivated by criteria A through F. In this sense system networks and sub-categorization rules differ in weak generative power and make different empirical claims about the nature of paradigmatic relations in language. It remains to be seen whether languages in fact contain systems with more than two features motivated by A through F.

Criteria A through F have been developed in this section from the point of view of motivating features in systemic descriptions. Another way of looking at

A through F is to describe them as specifying the FORMAL MEANING of features. Thus any feature justified by A though F can be said to encode formal meaning.

1.3 THE FORMAL MEANING OF FEATURES AND RELATIONAL NETWORK LINGUISTICS

The linguistic theory which takes most seriously the Hjemslevian conception of language as a network of relationships is stratificational linguistics (Lamb 1966). Through the use of network notation and a commitment to realizational as opposed to mutational descriptive strategies (Lamb 1974; Henrici 1981), stratificational and systemic theory share two critical perspectives on the representation of linguistic patterns. But a number of significant differences distinguish the two models. For one thing, stratificationalists have not formally recognized the concepts of RANK and META-FUNCTION, so that more than three strata are involved in many versions of the model (Lamb 1971). Also, since structures are generated and levels related by means of networks rather than realization rules, stratificational networks include ORDERED OR brackets to handle conditioned realization and ORDERED AND brackets for syntagmatic sequencing. And, perhaps most significantly, stratificational linguistics does not separate paradigmatic from syntagmatic relations as levels in its descriptions.

Aside from ordered notes, the most striking difference between a system network and stratificationalist's relational network is the absence of features from the latter. Lamb has argued that naming linguistic relationships, which is in fact what features encoding formal meaning do, has the danger of leading linguists to talk of these relationships as things. Thus a question arises as to why system networks contain features at all.

Taking first those features motivated by criterion A, it is clear that features which have a reflex in form are present in networks so that they can be referred to in realization rules. There is no way of eliminating them from networks other than rewriting a system network and its realization rules into relational network grammar.

Features motivated by criteria B though F, however, do not seem quite so essential in a systemic generative model. Features justified by B, C and D are present for purely network internal considerations. It is not at all difficult to reformulate Figures 1.45, 1.47 and 1.49 as Figures 1.46, 1.48 and 1.50, replacing features motivated solely by B, C and D with wiring.

NEGATIVE, POSITIVE and CONDITIONAL marking all effect paradigmatic conditioning within a network. The notation described above for signalling this conditioning can be replaced with wiring provided that the logic of the wiring is applied to individual features as well as to systems. The negative marking in Figure 1.51 could be re-expressed as Figure 1.52 were this allowed; similarly Figure 1.54 could re-express the positive marking of Figure 1.53 and Figure 1.56 the conditional marking of Figure 1.55. To date, in published work, systemicists have not assigned an interpretation to networks

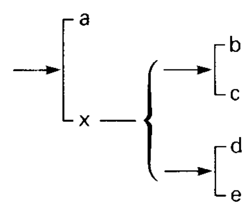

Figure 1.45

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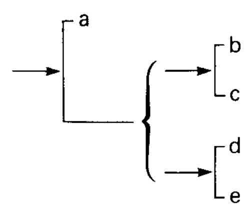

Figure 1.46 Figure 1.45 with a criterion B feature wired away

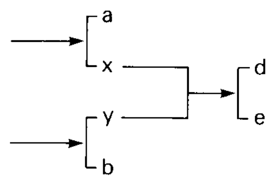

Figure 1.47

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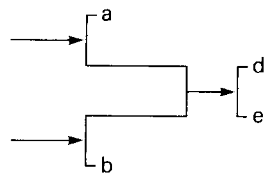

Figure 1.48 Figure 1.47 with a criterion C featured wired away

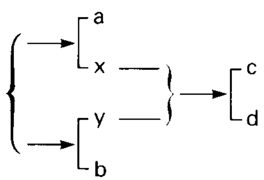

Figure 1.49

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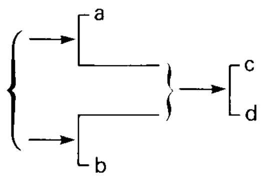

Figure 1.50 Figure 1.49 with a criterion D feature wired away

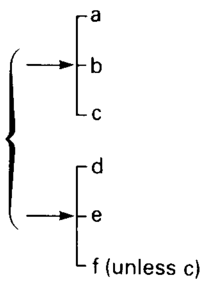

Figure 1.51 Negative indexing

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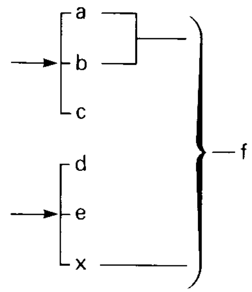

Figure 1.52 Figure 1.51 with a gate wiring away negative indexing

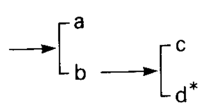

Figure 1.53 Positive indexing

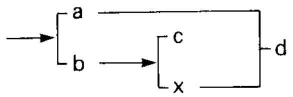

Figure 1.54 Figure 1.53 with a gate wiring away positive indexing

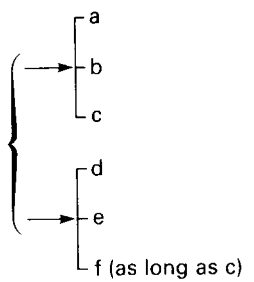

Figure 1.55 Conditional indexing

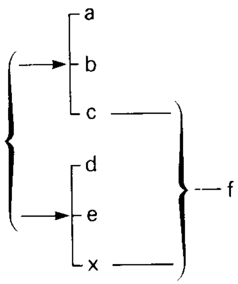

Figure 1.56 Figure 1.55 with a gate wiring away conditional indexing

of this kind. However, the research on text generation under the direction of W. C. Mann at the Information Sciences Institute has involved the development of such a notation. There, systems consisting of a single feature are referred to as GATES (Mann and Matthiessen 1985: 54; Mann 1985: 67).

The feature [x] which has been added to Figures 1.52, 1.54 and 1.56 to effect this wiring could itself be replaced with wiring since it functions solely as part of a disjunctive or conjunctive entry condition. The gated feature itself could be replaced with wiring if it similarly functions solely as an entry condition for more delicate systems; if it is a terminal feature, it could be replaced with a terminal wire (discussed below) if it has no realization of its own. It thus appears that gates could be used to wire away features whose sole justification is their participation in a markedness relation of the kinds described above.

DERIVATIONAL marking interacts with realization rules, and so features motivated by this convention, like those justified by criterion A, cannot be wired away within a systemic framework.

Features motivated by criterion F could be replaced with a TERMINAL WIRE which would serve to keep the option open in the network as adequately as a feature. Figure 1.59 is equivalent to Figure 1.58 given that [x], [y], [a], [b] and [c] are motivated by A through E but [d] is not.

A note on recursive systems is appropriate here. In Halliday's (1976) description of the English verbal group, TENSE is analysed as a recursive system with the terms [past], [present] and [future]. Halliday's notation for this recursive selection is found in Figure 1.59. The features [go] and [//] can be wired away as in Figure 1.60 since their only function is to make tense

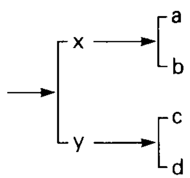

Figure 1.57

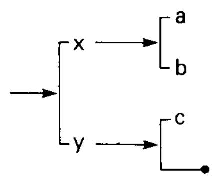

Figure 1.58 Figure 1.57 with an unmotivated terminal feature wired away

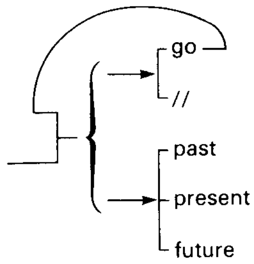

Figure 1.59 A recursion system

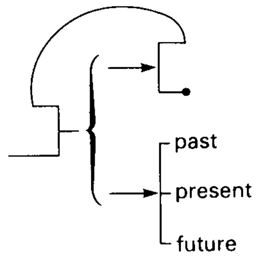

Figure 1.60 Figure 1.59 with a recursion feature wired away

selection recursive. This comparison of relational network and systemic notation points out a number of ways in which system networks can be simplified. Without increasing the weak generative power of system networks, features motivated by criteria B, C, D and F can be replaced with wiring. By introducing gates, the indexing associated with markedness can be eliminated; the features involved can then be wired away if their sole function in the network was their involvement in a markedness relation. It is doubtful, however, whether using gates in this way would do much to improve the readability of system networks, or to clarify the reasons why they have the shape they do.

As was outlined in section 1.2, as far as the formal meaning of features is concerned, features are included in system networks for a number of different reasons. This makes it rather difficult to interpret the formal meaning of features in any one description since so many different factors are involved. The purpose of eliminating certain kinds of features from system networks is simply to make them easier to read and interpret. The wires replacing features motivated by B, C, D and F encode explicitly all the formal meaning of the features they replace. Indexical marking conventions could be maintained for those features motivated by E. And the formal meaning of other features would be that they have some reflex in form. Such networks are both graphically plausible and practicable, as is clear from the work of Winograd 1972, who implicitly adopted these conventions. Linguists comparing Winograd's approach to the graphic formalization of paradigmatic relations with that of other systemicists may find his networks refreshingly easy to interpret. (However, Fawcett (1980: 117) suggests that to wire away features whose sole motivation is that they are entry conditions may actually reduce the readability of a network.)

1.4 THE NON-FORMAL MEANING OF FEATURES

In general, the network descriptions developed by systemicists contain more features than those justified by criteria A through F. In part, this is the result of systemicists' insistence on setting up a system when only one of its terms is motivated. But another important factor is the use of features to encode semantic distinctions whose realization is mediated in turn by more delicate features encoding formal meaning.

Halliday's unpublished description of DEIXIS (1968) in English serves to illustrate this point. (For an alternative formulation, see Kress 1976: 132.) His network is presented in Figure 1.61 along with the deictics through which its features are realized. In Figure 1.62 this network is simplified by means of 'and' and left-facing 'or' brackets. In Figure 1.63 the features in Figure 1.62 are listed and the kind of formal meaning they encode is noted.

Figure 1.63 reveals that two of the features in Halliday's DEIXIS network, [total] and [possessive], are unmotivated by criteria A through F. The formal meaning of the network in Figures 1.61 and 1.62 would be unaffected if these features were removed. Systems 1 and 2 and systems 7 and 11 could be conflated into three term systems in Figures 1.64 and 1.65 respectively.

Since the features [total] and [possessive] in Halliday's DEIXIS network are not encoding formal meaning, the question arises as to what kind of meaning they encode. It appears that both features have been included in order to capture semantic generalizations about the features through which they are realized. The deictics *all*, *both*, *each*, *every*, *neither*, *no*, *either* and *any* refer to the whole of the set of objects to which the nominal group including them applies. The deictics *whose*, *which* (e.g. *boy*)'*s* (e.g. (*John*)'*s* and *my*, *your*, *our*, etc. involve possession. So while the features [total] and [possessive] are not formally motivated in Halliday's description, they do encode NON-FORMAL MEANING which contributes to the analysis. A glance at other features in the DEIXIS network indicates that they too encode non-formal meaning. It is not possible to evaluate the description fully until this fact is taken into account. But the important point here, as far as this chapter is concerned, is that features can be used to encode formal or non-formal meaning or both in systemic linguistics.

In principle it is legitimate to motivate features either formally in terms of criteria A through F or non-formally in light of the semantic generalizations they involve. In practice, however, the presence of features encoding formal or non-formal meaning in a given network makes system networks difficult to interpret. There are two types of solution to this problem.

One solution is primarily notational. Features motivated by criteria A or E would be written in lower case letters (i.e. [feature]). Features motivated by

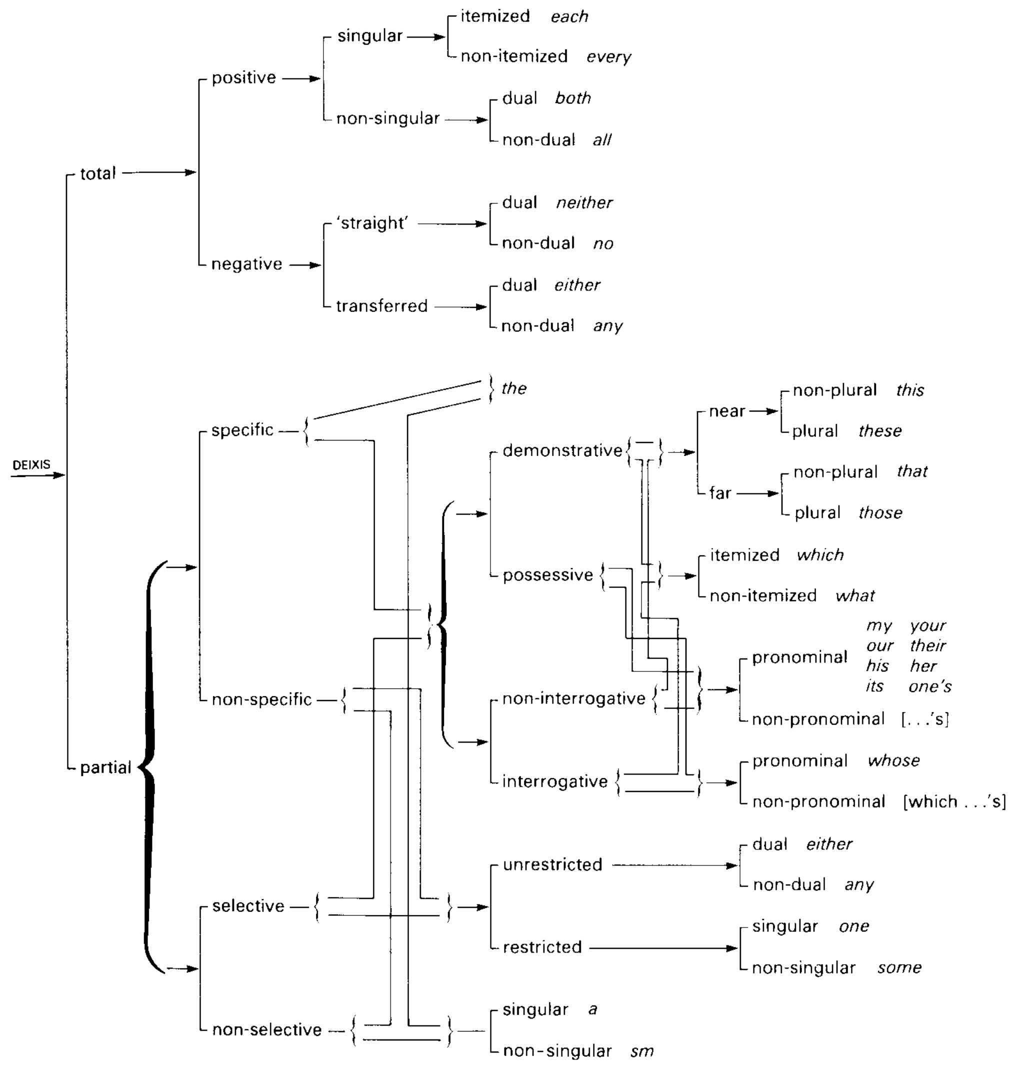

Figure 1.61 Halliday's DEIXIS network (1968)

criteria B, C, D or F would be replaced with wires. Non-formally motivated features would be written in upper case letters (i.e. [FEATURE]). As noted above, it is possible that a feature encode both formal and non-formal meaning. Features motivated by A through F which encode non-formal meaning as well could begin with a capital letter and continue in lower case (i.e. [Feature]). Upper-case letters have been used in the past by systemicists for the names of systems (e.g. TRANSITIVITY; MOOD). The names of grammatical functions have been written with an initial capital (e.g. Agent; Subject).

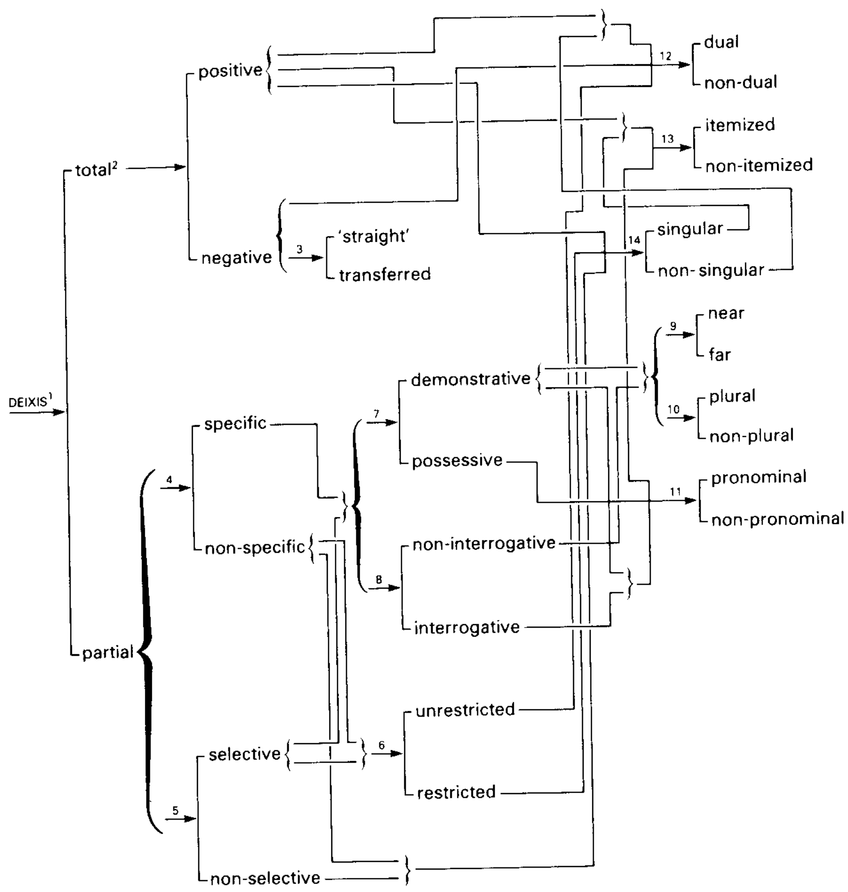

Figure 1.62 A simplified DEIXIS network

This should not prove confusing since the names of systems are written above the arrows leading to systems as in Figure 1.1 above and grammatical functions appear only in realization statements. By enclosing features in square brackets in written text, difficulties need not arise. These notational conventions would make the linguistic content of system networks much more accessible.

The second solution is to place formally motivated features in one network and non-formally motivated features in another. The semantic generalizations non-formally motivated features make about formally motivated ones would be specific through realization statements, whereby non-formally motivated features preselect formally motivated ones. This is in effect to propose stratification on the basis of how features are justified in systemic descriptions.

	Criteria: A	B	C	D	E	F
Features:						
total						
partial		x				
positive			x	x		
negative		x				
'straight'	x					
transferred	x					
specific	x			x		
non-specific				x		
selective				x		
non-selective				x		
restricted			x			
unrestricted			x			
demonstrative				x		
possessive						
near	x					
far	x					
plural	x					
non-plural	x					
pronominal	x					
non-pronominal	x					
dual	x					
non-dual	x					
itemized	x					
non-itemized	x					
singular	x			x		
non-singular	x			x		

Figure 1.63 Criteria motivating features in Halliday's DEIXIS network

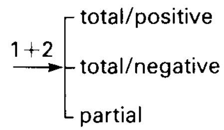

Figure 1.64 Systems 1 and 2 of Figure 1.62 collapsed

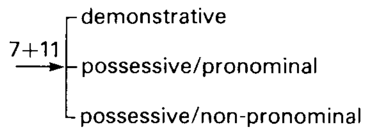

Figure 1.65 Systems 7 and 11 of Figure 1.62 collapsed

It seems prudent at present to treat stratification of this kind as a heuristic strategy. Should it turn out that most of the features and systems encoding semantic generalizations stand in a one-to-one relationship with formally motivated features and systems, then the two networks could be collapsed into a single network observing the notational proposals outlined above. If on the other hand it turned out that there was a good deal of alternation, neutralization and diversification between the networks, then one would conclude that in fact the simpler statement is achieved by not attempting to collapse the networks. In the 1970s the networks of certain systemicists (e.g. Hudson) became less and less semantic while those of others (e.g. Turner 1973) became increasingly abstract. It may be that the only way these developments can be incorporated into a descriptively adequate systemic model is through the stratification of non-phonological systems on the basis of criteria for motivating features.

1.5 SOCIO-SEMANTIC NETWORKS

In the past the focus of networks made up of non-formally motivated features has been on the process of socialization in parent/child interaction. The networks involved effect a very delicate analysis of illocutionary force, so delicate in fact as to be much more situationally specific than is common in linguistic descriptions. The systems in these networks are oriented to formalizing the options of control open to mothers in particular encounters with their children. An exemplary socio-semantic network appears in Figure 1.66 (Turner 1973: 155). The features in Figure 1.66 encode semantic distinctions which bear critically on the question of how language is structured to socialize a child. These features are realized through the preselection of lexicogrammatical and phonological options in a tri-stratal systemic model.

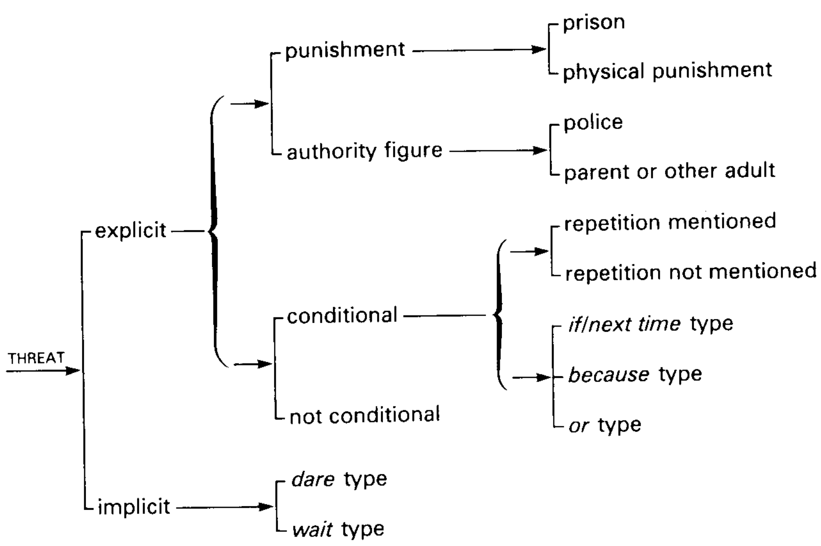

Figure 1.66 Turner's network for threat

Halliday has commented on the contextual specificity of socio-semantic networks as follows:

> It must be made clear, however, that the example chosen was a favourable instance. We would not be able to construct a socio-semantic network for highly intellectual discourse, and in general the more self-sufficient the language (the more it creates its own setting as we explained earlier) the less we should be able to say about it in these broadly sociological, or social, terms. [Halliday 1973: 92]

These remarks underline the fact that networks of non-formally motivated features were initially designed with very particular descriptive and explanatory goals in mind. Certain types of social intercourse are more relevant to the process of socialization than others. Consequently, socio-semantic networks are easier to formulate for certain situations than for others. The most favourable instance of all is that approached by Halliday and Turner, i.e. situations in which the process of socialization is being carried on. Encounters in which social reality is sustained rather than transmitted are much less transparent to an already socialized investigator (cf. Berger and Luckman 1971).

Halliday's remarks need not, however, be taken to preclude the development of contextually neutral networks of non-formally motivated features. Less sociologically oriented descriptive and explanatory goals will lead to networks which lack the situational specificity of socio-semantic features. It is important to emphasize the point that stratification is motivated in light of certain descriptive goals, and that non-formally motivated features will reflect these goals. The more general the goals, the less non-formally motivated features will be bound by situation.

1.6 SPEECH FUNCTION AND MOOD

The clearest example of stratification in terms of formal and non-formal meaning which is not situationally specific is found in Halliday 1984. Here Halliday proposes an analysis of speech function and MOOD involving two strata of networks. His semantic network appears in Figure 1.67. Its features encode non-formal meaning relevant to the assignment of speech roles by a speaker in some context of situation.

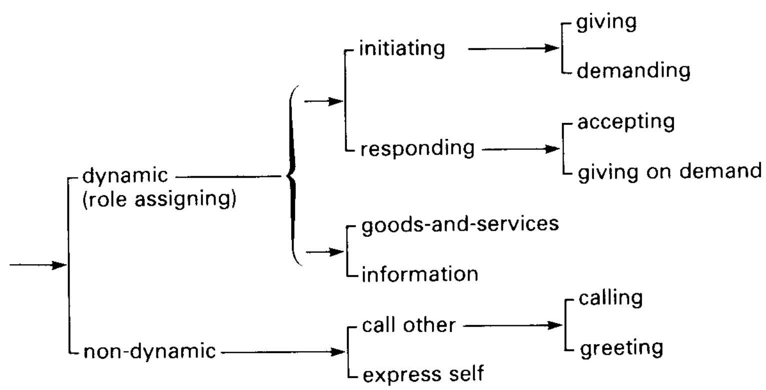

Figure 1.67 A semantic network for speech function

Options in Figure 1.67 are realized through the grammatical system of MOOD which appears in Figure 1.68. The features in Figure 1.68 are formally motivated; they in turn are realized in structures composed of the grammatical functions Finite, Subject, Predicate, Complement, and so on. The congruent interaction of the speech function and MOOD networks is outlined in Figure 1.69.

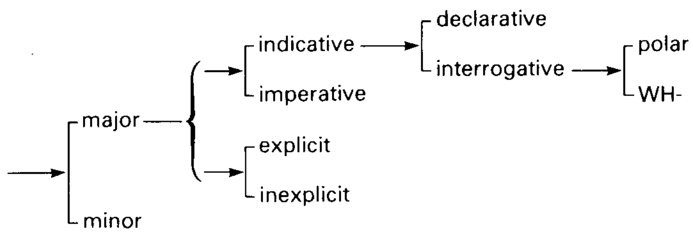

Figure 1.68 A MOOD network for English (partial)

speech function categories	↘ *MOOD categories*
dynamic	major clause
non-dynamic (call/greet/ exclaim)	minor clause
initiating (give/demand)	explicit
responding (accept/give)	inexplicit
offer	(various)
statement	declarative
command	imperative
question	interrogative

Figure 1.69 The exponence of speech function in MOOD

As Halliday points out, the two networks are oriented towards different types of description. The semantic network focuses on the speech situation and the grammar. The grammatical network looks towards the semantics and its own structural output. While the grammar of English has no exclusive structure encoding the giving of goods and services, this option is clearly present in the context of situation. On the other hand, the speech situation does not lead one to distinguish polar from WH-demands for information; but English structures these meanings very differently. Overall, the relation of formally to non-formally motivated features is not bi-unique. Giving goods and services is variously realized in the grammar. Accordingly, giving goods and services and giving information might be realized by the same structures. For example, the declarative structure 'There's some beer in the fridge' may be either an offer or a statement depending on the situation in which it is uttered. Interlocking diversification is present in Halliday's description and precludes the possibility of expressing the content of Figures 1.67 and 1.68 in a single network.

It is important to note the way in which Halliday's speech function network takes the non-formal meaning associated with his MOOD network, and reorganizes it in order to explain how English is structured to assign speech roles in any context of situation. Given the speech function network, features

in the MOOD network need not be interpreted as encoding both formal and non-formal meaning. Any non-formal meaning they might once have been considered to encode is now exhausted by the speech function network. This analysis of speech function and MOOD presents a good example of stratification on the basis of the way in which features are motivated in systemic descriptions.

1.7 CONCLUSIONS

In this chapter two types of meaning associated with features in systemic linguistics have been distinguished: formal and non-formal. The formal meaning of features is in effect their place in a network of linguistic relationships relating meaning to sound. The non-formal meaning of features is the semantic/pragmatic information a systemicist uses them to encode.

A set of six criteria have been proposed for defining the formal meaning of features in extant systemic descriptions:

A. having a reflex in form;
B. being an entry condition for simultaneous systems;
C. being a disjunctive entry condition for a more delicate system;
D. being a conjunctive entry condition for a more delicate system;
E. being associated with a markedness convention;
F. being terminal, with all other terms in the system motivated by A through E.

On the basis of these critera three types of system network can be distinguished:

FIRST LEVEL NETWORKS: it is necessary and sufficient that all features are justified by A through F;
SECOND LEVEL NETWORKS: it is necessary and sufficient that all features encode non-formal meaning;
MEDIATED NETWORKS: it is necessary and sufficient that all features encode either formal or non-formal meaning.

First level networks are typically used for describing syntactic patterns (cf. Hudson 1971, 1976). Second level networks are typically used to answer contextually oriented questions such as how language is structured to socialize a child (cf. Turner 1973) or how language is structured to assign speech roles (cf. Halliday 1984). Mediated networks are so named because the scale of delicacy tends to mediate the position of features so that non-formally motivated features make generalizations about more delicate, formally motivated ones through which they are realized. Many of Halliday's descriptions, for example, the DEIXIS network considered in section 1.4, are of this type; that is, they include features encoding both formal and non-formal meaning.

First level networks may include features with non-formal meaning and second level networks may include features with formal meaning, but in neither case does this justify their presence there. The distinction between first and second level networks could be used to demarcate the boundary between non-phonological strata in a tri-stratal systemic model. Second level networks would be semantic, first level networks grammatical in such a theory.

In order to mark out explicitly the different types of meaning which features encode, the following notational conventions are proposed:

1. features motivated by A or E will be written in lower case letters (i.e. [feature]);
2. features motivated solely by B, C, D or F will be replaced with wiring;
3. features encoding non-formal meaning will be written in upper case letters (i.e. [FEATURE]);
4. features encoding formal and non-formal meaning will begin with a capital and continue in lower case (i.e. [Feature]).

These conventions are designed to make the linguistic content of systemic descriptions more readily interpretable. If systemic grammars are to function as explicit generative models, then consideration must be given to the way in which features are motivated in networks and realization rules expressing the exponence of these features must be provided. It is appropriate that systemic notation reflect these concerns.

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Part II
Discourse

2 Is teacher an unanalysed concept?

Margaret Berry
University of Nottingham

2.1 INTRODUCTION

The strength of systemic linguistics, as I have said elsewhere (Berry 1980, 1982, forthcoming a), lies in the devotion which it has always shown to the goal of relating language to its social context, in its attempt to bring together linguistic insights and sociological insights.[1] The weakness of systemic linguistics, as I have also said in the earlier publications, lies in its argumentation, particularly in its failure to confront its theories with relevant facts.

The strength of the work of the Birmingham discourse analysts (e.g. Sinclair and Coulthard 1975), or at any rate one of the strengths, would seem to lie in the bringing to light of a number of interesting, but hitherto unnoticed, facts about different types of discourse and their relation to their social contexts. The weakness of this work is that there is no overall theory of the relations between language and social context which could account for the facts that have been discovered. I would probably be only slightly overstating my case if I said that systemic theory (e.g. Halliday 1978: 108–26) was currently an explanation in search of some facts, while the facts of the Birmingham discourse analysts were currently facts in search of an explanation.

Since Halliday's theory is a theory about the relations between language and social context and since the facts of the Birmingham discourse analysts are facts about an aspect of language (discourse structure) and its relation to social context, it would seem that the latter ought to be relevant to the former. My eventual aim is to bring these two together in such a way as to produce a well-formed adjacency pair of FACTS and EXPLANATION.

I must emphasize, however, that this is a long-term aim. In a paper addressed to the Seventh International Systemic Workshop (Berry 1980: especially 36–56), I outlined a major research programme likely to take very many years to complete.

In the present chapter I shall be able to make only the smallest of small beginnings to such work. I shall review some of the facts brought to light by Sinclair and Coulthard and their associates. I shall put forward hypotheses which could account for such facts and I shall consider methods of testing the