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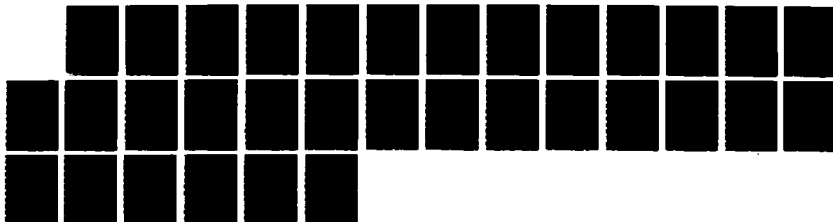
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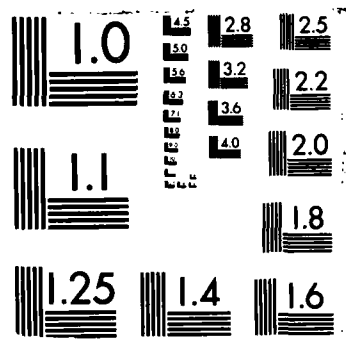
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Christian Matthiessen

Semantics for a Systemic Grammar:
The Chooser and Inquiry Framework

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Christian Matthiessen

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1 The task of the chooser and inquiry framework

One of the current research areas involving systemic linguistics is **text generation** (discourse production). Text generation is one way of studying text. It is text study by synthesis rather than by analysis; deconstruction and then reconstruction.¹ The basic question is: Given a communicative purpose (goal) in a natural context, how does the system of linguistic processes and resources work to produce a text? Or, how do we get from situation to text? The answer includes several levels (strata) of organization as well as the interaction between these levels: a specification of the goals (purposes) of the intended text, a specification of the relevant parts of the system's field of experience, text planning, grammatical expression, and so on. For an overview of some of the issues involved in text generation, see [Mann et al. 82], [McDonald 83]. For an early systemic text generation system, see [Davey 78].² At the Information Sciences Institute in Southern California, one particular text generation system, called **Penman**, is being designed and implemented (see [Mann 83a]). The grammar of this system is a large systemic grammar of English, the **Nigel grammar**. It is the result of a major ongoing research effort into systemic grammar in the context of text generation. First begun as a computational grammar in 1980, it still being expanded and revised. (For introductions to Nigel, see e.g. [Mann 83b], [Mann 83c], [Matthiessen 83a], and [Matthiessen 83b].)

The semantics of the Nigel grammar is a chooser and **inquiry semantics**, which is a new development intended to deal with *the problem of making purposeful grammatical choices* in response to a communicative situation. (A presentation of the framework can also be found in e.g. [Mann 83d] and [Mann 85].) Given a system of options like middle³ vs. effective, transitive vs. intransitive, or indicative vs. imperative, how is one option in the system to be chosen over another in a purposeful way?

¹Text generation is usually focused on the system rather than reconstructions of particular instantiations of the system.

²The computer has often been a tool in research on text generation. It is not a necessary component, but the computer makes the management of the various parts of the model (such as the grammar) much easier and it also makes it possible to test the whole model of the text generation system or parts of it. At the same time, the computer puts certain demands on the model. For example, all the details have to be made explicit; nothing can be left to the linguist to fill in.

³Grammatical features will be marked by underlining.

The term *semantics* may suggest other tasks in addition to or instead of what is presented in this paper. In Section 6, I will discuss different approaches to semantics and different tasks for semantics briefly.

The chooser-and-inquiry framework does not define a system network of semantic features at present. The framework addresses part of the task Robin Fawcett specifies for the Problem Solver of his model of communication:⁴ [Fawcett 80] (p. 63) describes the tasks of the Problem Solver as follows: "The decisions as to which semantic features are to be selected are taken in the light of the relevant knowledge of the universe ... The problem solver therefore not only has the task of deciding on the best general tactics to help solve the problem, but also of helping in the selection of actual semantic features."⁵

2 The chooser of a system asks an inquiry

In a discussion of transitivity in English ([Halliday 70a]), Halliday observes that there are two basic systems in English that "occur side by side", the transitive system (transitive vs. intransitive) and the ergative system (effective vs. middle). He characterizes the general semantic difference as follows, using questions:

The transitive system asks 'does the action extend beyond the active participant or not?'; the ergative, 'is the action caused by the affected participant or not?' (pp. 157-158)

In [Halliday 70a] the questions are used as a presentational technique. (For another illustration of the use of questions with systems, see e.g. [Halliday 85a], p. 58.) But in fact they illustrate the approach to the semantic task of making purposeful grammatical choices taken in the chooser and inquiry framework. An **inquiry** is the question asked, for example "is the action caused by the affected participant or not?". It demands the information needed to make a choice. The answers to these questions are called

⁴Fawcett's Problem Solver also deals with tasks other than those handled by the chooser and inquiry framework. For example, it assembles the referent situations to be expressed by the semantics. In general, the tasks of the Problem Solver are decomposed and distributed across more than one process in our model of text generation; cf. for example [Mann 83e].

⁵What Fawcett refers to as semantic features are grammatical features in Nigel.

responses. A **chooser** is the mechanism associated with a grammatical system that asks a question, i.e., presents an inquiry.⁶ The chooser starts its work, presenting inquiries, when the system it is associated with has been entered.

2.1 Branching inquiries: CommandQ

I will illustrate the chooser and inquiry framework with examples from the MOOD region and systems such as PRIMARY TENSE that are affected by MOOD choices, since this region is well-known and has been discussed elsewhere by systemic linguists. I will rely on Halliday's interpretation, and the examples can be read in the light of e.g. [Halliday 84] and [Halliday 85b]. The account encoded in the chooser and inquiry framework can be compared and contrasted with Butler's work ([Butler 82]), which could also have been encoded in the framework, in the way he and I have done with part of his account of modality in English. As an initial example, I will use the chooser of the MOOD TYPE system. It has two options, indicative vs. imperative. The system is represented in Figure 1.

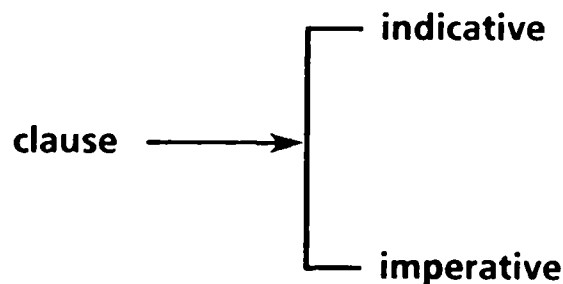


Figure 1: The MOOD TYPE system

⁶Another term we have sometimes used is *choice expert*. It suggests a little process (procedure) with a very limited domain of expertise, viz. how to make a purposeful choice in one system by asking relevant questions. The choice experts are oblivious of one another but achieve the right result collectively. I will discuss the issue of what responds to the inquiries presently, but for now we can think of it simply as strataly above semantics. It is important to note in this context that the responses to inquiries are based on presentational considerations and not (directly) on an examination of the so-called real world. For instance, the inquiry "is the action caused by the affected participant or not?" is not a question about the real world but a question about how a given (referent) situation is to be presented.

The inquiry used to obtain the information needed to choose between indicative and imperative asks whether the speech function is a command or not:

Is the speech function of the clause a command or not? -- set of responses:
command, non-command

Notice that it defines two **branches**, one for each response. (There can be more than two branches, if the inquiry is an alternative question instead of a simple yes/no question. Moreover, a chooser may contain more than one inquiry.) In Figure 2 a graphic representation is given of this kind of **branching inquiry**.

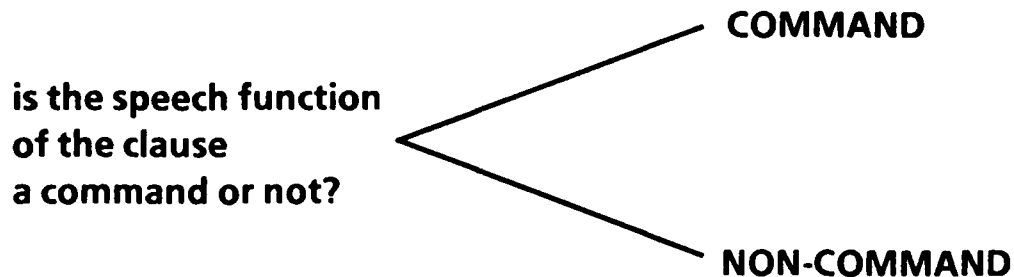


Figure 2: Branching inquiry in MOOD TYPE chooser

We will call this inquiry CommandQ; the Q-tag is used in all branching inquiries. (Instead of simply calling the responses *yes* and *no*, we give them labels that indicate the content specific to their inquiry; they can be viewed as semantic features.)

2.2 Identifying inquiries: MoodID

In the inquiry *Is the speech function of the clause a command or not?*, there is one nominal group with specific reference, *the speech function of the clause*. It represents the **parameter** of the inquiry whose referential identities change according to the context. Grammatically, the speech function will be expressed by the MOOD of the clause, and we can use the names of these grammatical functions as the names of the parameters: "is the speech function MOOD a command or not?"

We need a means of identifying the referents (values) of these parameters and we use **identifying inquiries** to accomplish this, one for each parameter that occurs in one of the inquiries. So, for example, MOOD can be identified by means of the following inquiry, called MoodID (all identifying inquiries are tagged -ID):

What is the identity of the speech function of the clause?

Identifying inquiries establish an identifying symbolic relation between a grammatical function like MOOD and a value. The value is defined at the stratum above the inquiry semantic stratum; cf. section 3.1 below.

To sum up, there are two types of inquiry, branching inquiries, which are like yes/no questions (or alternative questions), and identifying inquiries, which are like wh-questions.

2.3 The Choose operator; choice conditions

I have noted that a branching inquiry like CommandQ is asked so that the chooser can act on the response and choose the appropriate grammatical feature. This choice is a kind of preselection from the chooser (at the chooser and inquiry stratum) that is activated whenever the response to an inquiry motivates the selection of a grammatical feature (at the grammatical stratum). We call the operator **Choose** and use it as illustrated in the following example:

[if] COMMAND [then] (Choose imperative)

The Choose operator takes one operand, the grammatical feature to be selected; and the choice is conditional upon the response to a branching inquiry.⁷ A response is, then, the **choice condition** for a grammatical feature. One way of representing (one aspect

⁷There is another choice operator, **DefaultChoose**, which is used in choosers of systems where one feature is to be chosen unless another feature has been preselected by the grammar. Choosers of this kind do not contain any inquiries, since the appropriate choice is a grammar-internal matter. For example, the chooser of the system PRONOUN CASE, nominative vs. oblique, only contains "(DefaultChooser oblique)", which is over-ridden when a Subject is preselected to be nominative.

of) the meaning of a grammatical feature is to specify its choice condition(s).⁸ We can assume that the response NON-COMMAND is the choice condition for the selection of indicative:

[if] NON-COMMAND [then] (Choose indicative)

2.4 Choosers: The MOOD TYPE chooser

I have introduced some of the most important abstractions of the chooser and inquiry framework; we are now in a position to discuss the full chooser of the MOOD TYPE system.

First, let's return to CommandQ (the possible responses are given in parenthesis):

Is the speech function MOOD a command or not?

(COMMAND, NON-COMMAND)

The MOOD TYPE chooser contains only this inquiry, since the inquiry fully determines the possible choices in the system. If the response is COMMAND, the feature imperative is chosen, and if the response is NON-COMMAND, the feature indicative is chosen. We can abbreviate the inquiry as (CommandQ MOOD), which makes it easier to represent the chooser graphically in Figure 3.

2.5 Chooser-based typology of systems

Given the two choice conditions COMMAND and NON-COMMAND, we have a positive condition for choosing imperative and a negative one for choosing indicative, i.e., negative in the sense that we choose this latter feature when the response to CommandQ is the negative one. The distinction between positive and negative responses as choice conditions gives us a basis for a typology of grammatical systems. For example, as characterized here, MOOD TYPE is a privative system (to borrow Trubetzkoy's terminology for phonological oppositions). We could characterize it as equipollent, if the MOOD TYPE chooser contained an inquiry or set of inquiries

⁸Often the choice condition is a single response to one inquiry, but it is not uncommon for a choice condition to consist of a combination of responses to consecutively presented inquiries; see the discussion of the PRIMARY TENSE chooser below and e.g. [Mann 83c].

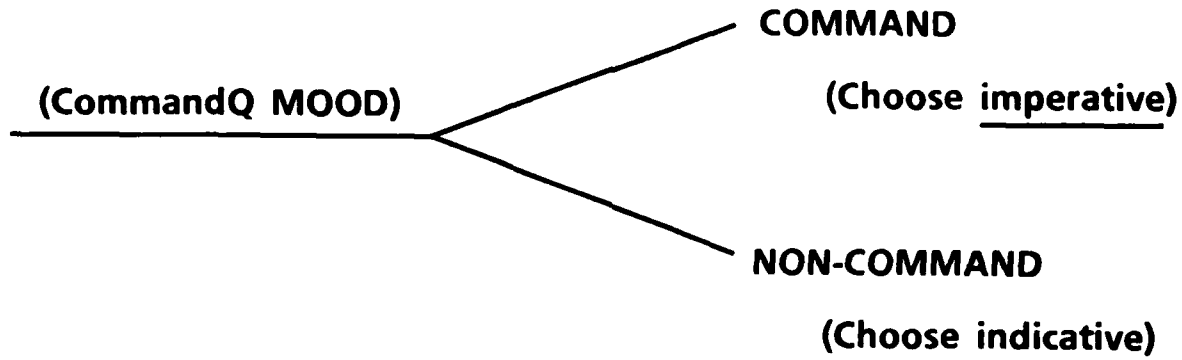


Figure 3: MOOD TYPE chooser

defining positive choice conditions for both features of the system. Space limitations prevent further discussion of the typology here, and I will just list the two types mentioned:⁹

1. **Privative systems:** A positive choice condition is defined only for one of the terms in a two-term system.
2. **Equipollent systems:** Positive choice conditions are defined for all the terms in the system.

2.6 Descriptive claims

Like all inquiries, CommandQ represents a claim about the semantics of the MOOD TYPE system that we can test and argue about. We may want to elaborate on the inquiry and make the notion of command more detailed and specific.

The chooser as a whole also represents a descriptive claim. For example, we may want to argue that there should be two positive choice conditions rather than just one or that the chooser should contain a disjunction of choice conditions for the choice of a feature (see below).

⁹The distinction between privative and equipollent systems based on chooser differences is often reflected in the feature names of the systems. Privative systems tend to have one term with *non-* in the name, e.g. *non-cause* vs. *cause*. The distinction is also reflected in realization statements. Privative systems usually only have a statement associated with the positive term. McCord gave graphic recognition to systems of this type in his revision of Hudson's systemic grammar ([McCord 75]).

3 Inter-stratal organization: Above & below inquiries

Figure 4 gives a diagrammatic summary of the MOOD TYPE system and chooser as a pair in grammar and semantics respectively. Note that only the system is part of a network. The inquiry CommandQ is part of the chooser of the MOOD TYPE system but it is not related to the inquiries of other choosers; see section 4 below.

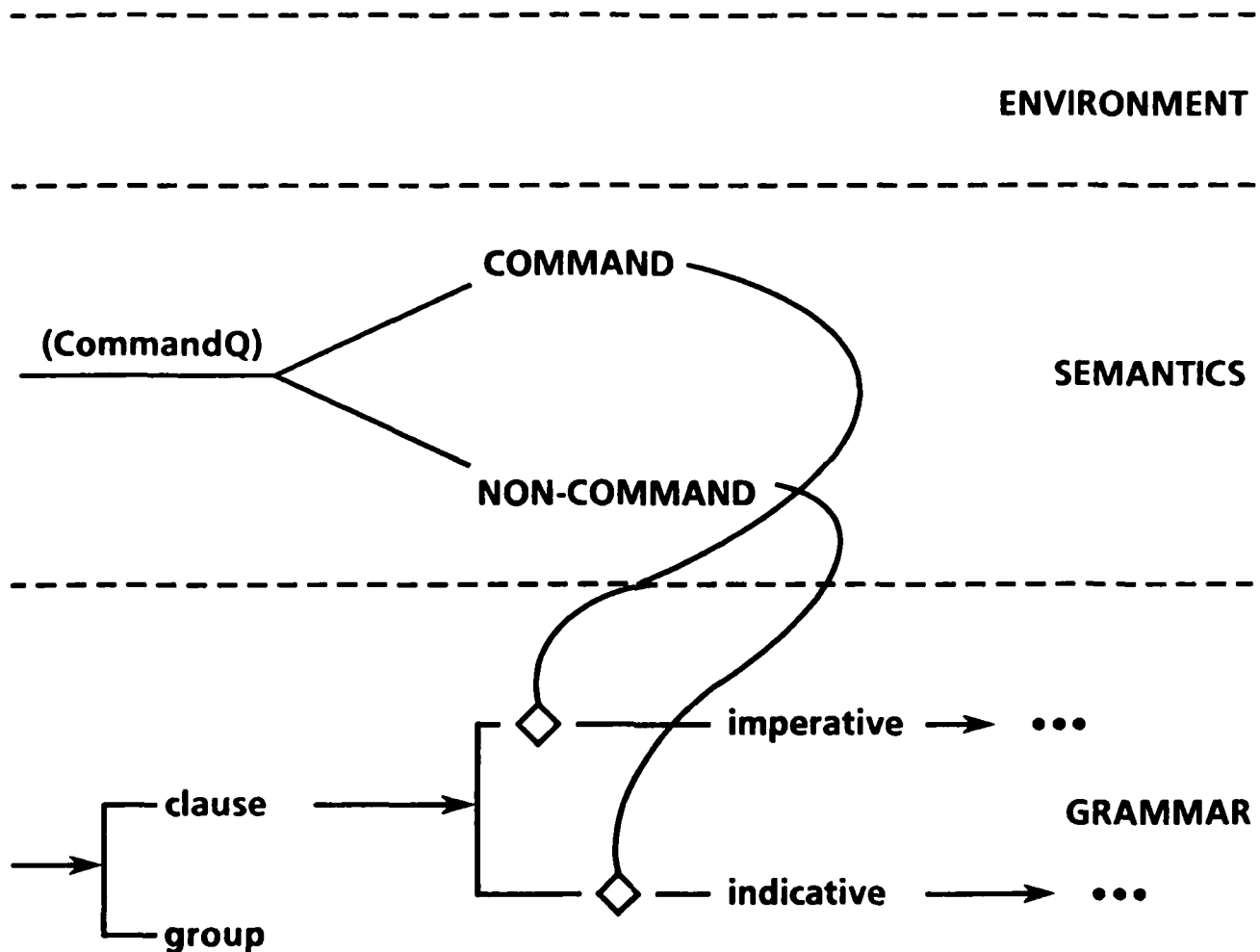


Figure 4: MOOD TYPE: system and its chooser

The stratum (level) below the inquiry stratum is the grammatical stratum. There is also a "stratum" above the semantic inquiry stratum, called Environment in the diagram. I will discuss it briefly below.

3.1 Above -- the environment: what inquiries are asked of

How do inquiries get answered; where do responses come from? What justifies the response COMMAND? There is a fairly short answer and a longer one. I will only sketch the short answer here.¹⁰

The Nigel component, the grammar with its chooser and inquiry semantics, is embedded in a text generation system. Among other things, the system contains a knowledge base representing the speaker's (i.e., the system's) domain/field of context¹¹ relevant for the creation of any given text and a detailed text plan (for any given text). These components are outside ("above") Nigel and are thus part of Nigel's environment. When Nigel presents inquiries, we can think of these inquiries as being presented to Nigel's environment. The knowledge base and the text plan are then the sources for the information used to determine the response the environment should return. For example, the level of social context Halliday identifies (see [Halliday 84], p. 12) in his model of dialogue can be represented in the environment and used to determine the appropriate response to an inquiry like CommandQ. So if the move is one of demanding goods-&-services, the response to CommandQ should be COMMAND.

Implemented inquiries. In the text-generation system, the environment is not represented in vernacular English. Rather, formal notations are used. An inquiry operator is said to be implemented if it is represented in terms of a formal notation in the environment rather than just glossed in English. What this means in practice is that the inquiry can be answered automatically from the environment rather than manually by somebody reading the English question.

For example, MoodID is implemented in such a way that it identifies a speech functional operator in a logical form. CommandQ can then be answered after an

¹⁰The longer answer to the question above would have to go into detail about exactly how the environment is organized and how the inquiries are interpreted by the environment and how the appropriate responses are calculated. It would also have to address how the inquiries we have met in the shape of English questions are represented in a more formal inquiry notation.

¹¹The term *domain* is used in computational linguistics to mean something like the systemic notion of field.

examination of the type for that operator.¹²

3.2 Below -- grammar

The operator Choose relates the branch of a branching inquiry (at the inquiry stratum) to a grammatical feature in a system (at the grammatical stratum). It is represented by a vertical link in the diagram above (Figure 4) to show its role as an inter-stratal realization operator.¹³ For example, COMMAND is linked to imperative.

There may be neutralization between the inquiry stratum and the grammar stratum. In particular, there may be different choice conditions for choosing one grammatical feature, a situation illustrated below for the PRIMARY TENSE chooser in Section 4.1.

4 Intra-stratal organization

I have only discussed an isolated inquiry, CommandQ. It is comparable to an isolated system. A system is just one part of the system network, the paradigmatic organization within the grammatical stratum. I will explore the paradigmatic organization of the inquiry stratum in two steps. First I will take a look at the organization within the chooser of a system. I have only discussed a one-inquiry chooser so far, but choosers often contain more than one inquiry. I will use the PRIMARY TENSE chooser as an example. Then, I will discuss the possibility of inquiry organization beyond the single chooser, the possibility of a network of inquiries.

¹²Implementation is necessary for automatic text-generation, but it also has other potential theoretical value. When I discuss inquiries here, I use English glosses; CommandQ means 'is the speech function MOOD a command or not?'. These glosses are very helpful when we try to think about the inquiries, but there is a very real problem in using English as its own metalanguage. For example, if 'command' is the inquiry gloss of the grammatical feature imperative, what is the gloss of 'command'? Similarly, what is the gloss of the feature plural or the feature past? The problem we face has been discussed by Halliday in his paper on the *ineffability* of grammatical categories ([Halliday 83]).

There are various ways of approaching the problem of ineffability and Halliday discusses several. For example, we can explore situation specific semantics as well as one highly generalized semantics. I will return to this topic briefly below. Another possible approach is to use a semiotic system other than English for the glosses. (The two approaches are not mutually exclusive.) This is one way in which an implemented version of the "environment" in Figure 4 becomes relevant.

¹³The comparable inter-rank operator is *Preselect* in Nigel.

4.1 Inquiry organization within a chooser: PRIMARY TENSE

We can start by locating the PRIMARY TENSE system in the system network. The system can only be reached in indicative clauses and then only if the clause is temporal rather than modal since a modal auxiliary does not normally show a primary tense distinction (see [Halliday 70b]). The relevant part of the system network is shown in Figure 5.

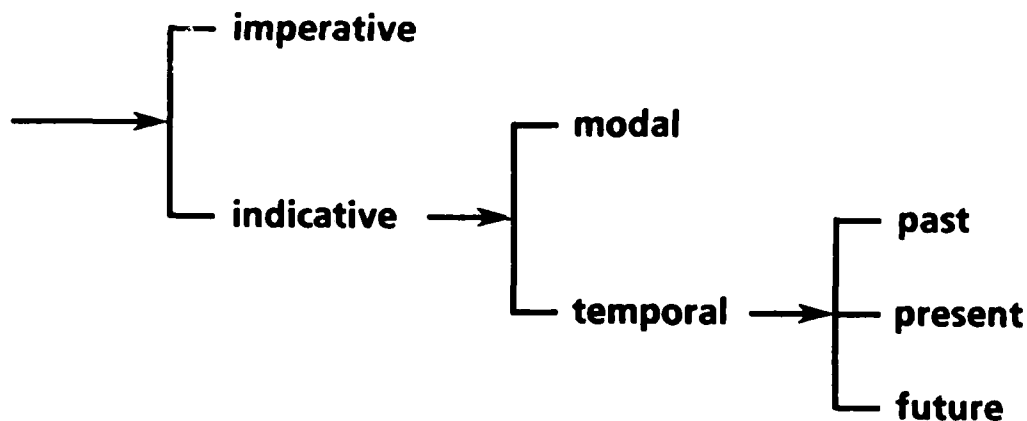


Figure 5: The PRIMARY TENSE system in the network

The PRIMARY TENSE system has three options, past vs. present vs. future. Interpreting the system as a three-term one rather than as a two term one has to be justified. The inquiries to be presented also have to be justified. I have done that elsewhere (e.g. [Matthiessen 83c]); here I will merely use the chooser as an illustration.

The selection of one of the PRIMARY TENSE features expresses the temporal relation between two times, T_0 and T_1 . The first one is 'now', the time of speaking. The second one may or may not be the time of the PROCESS of the clause, depending on SECONDARY TENSE selections (cf. [Halliday 76]). If T_1 temporally precedes T_0 , past is chosen.

If T_1 does not precede T_2 , there are two possibilities depending on whether a

logical/temporal condition is being expressed or not. If a condition is being expressed (resulting in e.g. a *when*- or an *if*-clause), the case in which T_1 does not precede T_0 leads to the selection of present (e.g. *When Henry gets a new job we will all celebrate*).

If no condition is being expressed, a further distinction of temporal precedence must be made. If T_0 precedes T_1 , future is chosen. If no precedence relation obtains between the two times, present is chosen.

How can we represent these cases in the chooser? We need one inquiry, call it PrecedeQ, that asks whether a precedence relation obtains between two times or not:

PrecedeQ: Does TIME-X temporally precede TIME-Y or not?

(PRECEDE, NON-PRECEDE)

PrecedeQ has two parameters, the two times whose temporal relation is under investigation. In the chooser we ask PrecedeQ twice, first for (T_1, T_0) and then (if the response is NON-PRECEDE) for (T_0, T_1) .

We also need an inquiry to find out whether a logical/temporal condition is being expressed, call it ConditionQ:

ConditionQ: Does the situation to be expressed constitute a logical or temporal condition on some process, i.e., does it set up logically or temporally the possible world in which this process is instantiated?

(CONDITION, NON-CONDITION)

For example, *when Henry gets a new job* is a temporal condition on the process of celebration in *we will all celebrate*. (The parameter ONUS represents all of the referent situation in Fawcett's terms.)

The organization of the PRIMARY TENSE chooser is set out in Figure 6. (I have turned the tree around simply for reasons of space.)

Inquiry presentation conditions. The response to (PrecedeQ T_1 T_0) is PRECEDE,

Figure 6: Chooser of PRIMARY TENSE

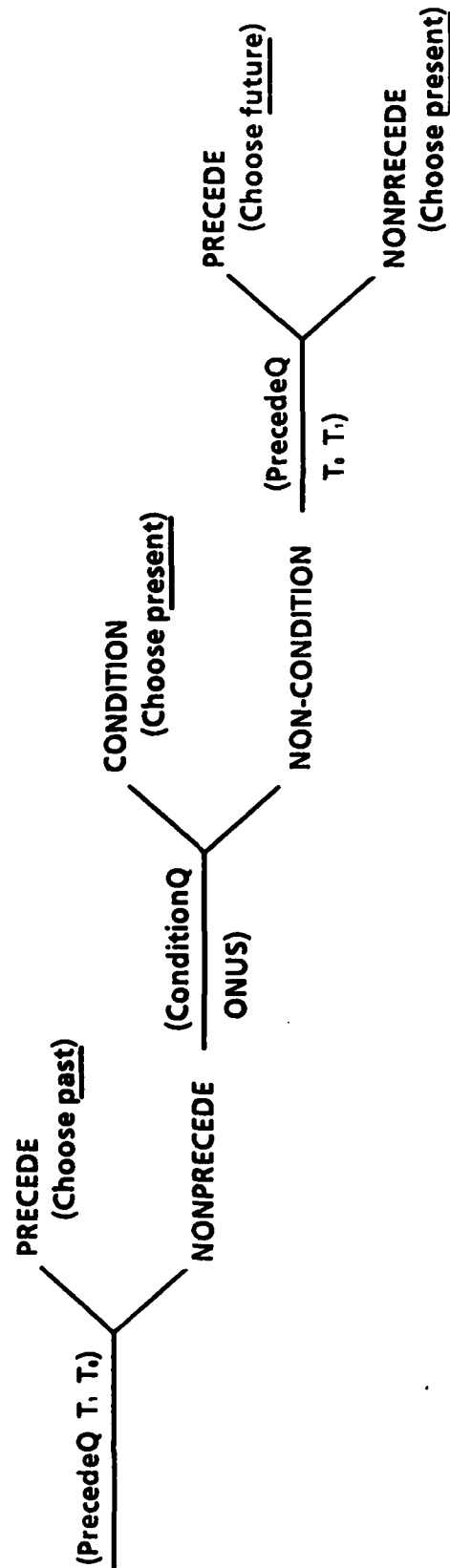


Figure 6: Chooser of PRIMARY TENSE

the feature past is selected. If it is NON-PRECEDE, the chooser asks ConditionQ. We can say that this second inquiry is dependent upon (embedded under) the NON-PRECEDE response from the first inquiry; it is only asked under the condition that NON-PRECEDE is the response. We can think of NON-PRECEDE as the **inquiry presentation condition** for the second inquiry. It is comparable to an entry condition of a grammatical system consisting of a single feature.

When the response to ConditionQ is CONDITION, present is chosen. NON-CONDITION is the inquiry presentation condition for a third inquiry in the chooser. PrecedeQ is used again, this time with the time parameters reversed: (PrecedeQ T_0 T_1).

The positive response to this third inquiry, PRECEDE, leads to the selection of future. The response NON-PRECEDE also leads to a choice, present. How is this justified? Our assumption is that the choice condition for present is that no precedence relation obtains between T_0 and T_1 and at this point in the chooser that is precisely the information we have obtained. The inquiry presentation condition for the second inquiry is NON-PRECEDE (i.e., T_1 does not precede T_0) and the response under which present is chosen is also NON-PRECEDE (i.e., T_0 does not precede T_1). In other words, the information accumulated at the point at which present is chosen is that no precedence relation obtains between the two times. This illustrates the importance of the inquiry presentation condition of an inquiry.

Notice furthermore that the fact that (PrecedeQ T_1 T_0) is the first inquiry about precedence (rather than (PrecedeQ T_0 T_1)) is significant: The choice reasons for choosing past (the PRECEDE response) is unaffected by the further distinctions made in the chooser. In contrast, the reasons for choosing present and future are not. Consequently, we want the reason for choosing past to be branched off initially in the chooser.

There are no complex inquiry presentation conditions in the present version of the inquiry framework. In other words, there can be no conjunction or disjunction of branches before an inquiry is presented. Conjunction can be simulated by accumulating

responses as the depth increases in the tree of inquiries. Disjunction can be simulated by using the same inquiry in more than place. The same techniques have sometimes been used in so-called "displayed system networks": see [Fawcett 87].

Neutralization. The PRIMARY TENSE chooser also illustrates how disjunctive choice conditions are handled. Notice that there are two "paths" leading to the choice of present. These are two alternative reasons for choosing the feature present. This disjunction of choice conditions is not represented explicitly in the chooser but can only be inferred from the repetition of "(Choose present)". In principle, this situation is comparable to an upward 'or' in stratificational theory (cf. for example [Lamb 71]).¹⁴

4.2 Organization beyond the chooser -- Inquiries and the network: the MOOD region

To explore some aspects of inquiry interaction beyond a single chooser like the PRIMARY TENSE chooser, we can consider the MOOD fragment of the clause system network in Figure 7. The interactions among inquiries I will point to are implicit rather than explicit as in the chooser tree of the PRIMARY TENSE chooser.

First, consider the flow of information involving identifying inquiries as we move from left to right in the network. As soon as the feature clause can be chosen, MoodID is

¹⁴The correlates of the inter-stratal connection types Lamb identifies are as follows:

interstratal relation	strat. theory	nigel
diversification	downward or	---
neutralization	upward or	repetition of <i>Choose-statement</i>
portmanteau realization	upward and	succession of inquiries followed by <i>Choose-</i> <i>statement</i>
composite realization	downward and	same inquiry in different choosers leading to different choices

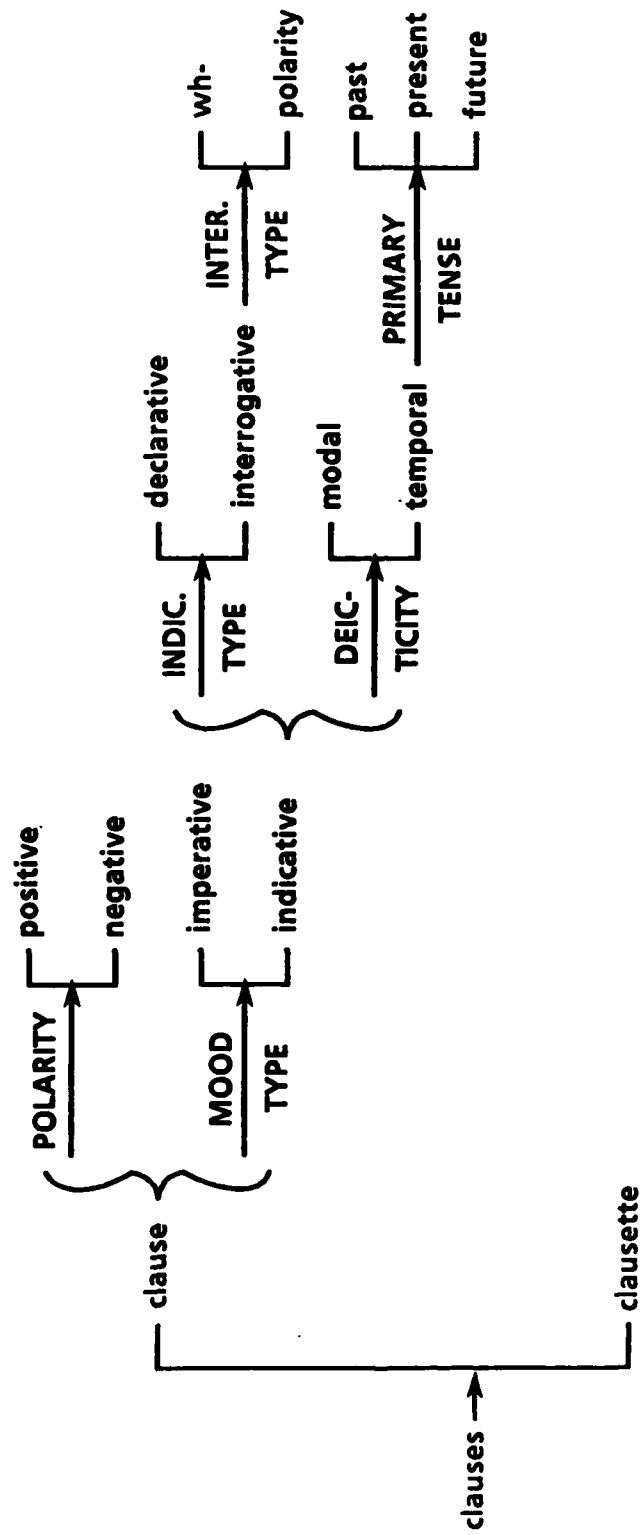


Figure 7: MOOD grammar: network

asked to identify MOOD. Consequently, the identity of MOOD has been established by the time the chooser of MOOD TYPE is reached and (CommandQ MOOD) is asked.

Second, the branching inquiry of one chooser may set up the context in which the branching inquiry of the chooser of a more delicate system can be asked sensibly. For example, inquiries distinguishing between statements and questions are only asked after it has been established that the speech function is not a command. The system network takes care of this sequence of asking inquiries, since the system INDICATIVE TYPE is dependent on the choice of indicative in the system MOOD TYPE. Similarly, the organization of the system network ensures that no inquiries about temporal relations are asked if the speech function is a command, since the PRIMARY TENSE system is only entered in indicative clauses (more particularly, temporal clauses) and not in imperative clauses.

4.3 A network of inquiries?: POLARITY

To sum up, there is an implicit organization of the inquiries beyond the individual choosers. It follows from the system network organization in the grammar. Is this organization sufficient or do we need an explicit inquiry network comparable to the explicit system network? I think there is reason to believe that an explicit inquiry network would be quite useful. For instance, the system POLARITY is simultaneous with the system MOOD TYPE, which is quite justified in terms of the grammatical network. However, the conditions under which negative is chosen are not the same for all speech functions. In particular, questions concerned with the value of the polarity itself, so-called polarity or yes/no questions, constitute a special context for choosing the value of POLARITY: the choice of negative indicates a biased assumption/expectation on the speaker's part about the value of the polarity; it is an interpersonal comment about assumption/expectation. (For example *Isn't Henry coming over this afternoon?* can mean 'I thought he was'.) Since there is no way at present of making the polarity inquiries explicitly dependent on the inquiry that establishes whether the speech function is a polarity question or not, that inquiry has to be asked in the POLARITY chooser as well as in the INTERROGATIVE TYPE chooser. This situation could be

avoided with an explicit inquiry network.¹⁵

There is another aspect of the use of inquiries which I will only mention in passing. Systemicists have used daggers and other symbols in system networks to indicate various dependencies between pairs of features that are not captured in the network organization itself. These conventions can be captured at the inquiry stratum e.g. by asking the same branching inquiry twice in two different choosers and then choosing the appropriate features for a given response.

5 Factoring of the framework

I have now introduced the whole chooser and inquiry framework and will summarize it and relate it to other work on systemic semantics. To summarize the framework, I will factor it into five design assumptions:

1. **Semantic features** like EXTERNALLY CAUSED, STATEMENT, POSITIVE, PRECEDE and so on can be used to specify the semantic distinctions correlating with grammatical distinctions.
2. Semantic feature labels are abbreviations of explicitly statable **choice conditions**, specified either in an informal English text or in a more formal notation.
3. Choice conditions can be viewed as the **responses to inquiries** presented to Nigel's environment. An inquiry defines a minimal decision tree with two or more branches.
4. Not only grammatical choices can be associated with the response branches in this tree, but also additional branching inquiries, giving more **tree** organization.
5. Inquiries come in **chooser "parcels"**, one parcel for each system. The inquiries of a chooser may be embedded under one another, but they are not related to the inquiries of other choosers in this fashion. A chooser starts its activity when its system is entered. As a result of the "chooser parcelling", choices are always local to the system whose chooser an inquiry is a part of.

¹⁵Notice that inquiry dependencies of this kind point to metafunctional organization that is not explicit in the system network since the MOOD TYPE and POLARITY systems are simultaneous. In other words, the use of inquiries can be used as evidence of the metafunctional groupings in a language. In the case of POLARITY, the inquiry dependency is a piece of evidence in favour of interpreting it as an interpersonal region.

The first design assumption shows how the chooser-and-inquiry framework is related to approaches that make use of **semantic features** or components, "componential semantics". There are differences, some reflected in the subsequent design assumptions and some having to do with the domain the frameworks are applied to. Componential analysis has typically been used as a tool in lexical semantics.¹⁶

The notion of **choice condition** is similar to Robin Fawcett's procedural felicity conditions; cf. [Fawcett 80], p. 253 and [Fawcett 83]. The explicit specification of choice conditions also suggest some relation to the notion of truth condition. The latter is of course a narrower notion, being grounded in truth, and is typically not part of a functional approach to semantics. Fawcett notes that linguists "are discovering that the specification of the meanings built into the code of language requires to be stated in complex terms of felicity conditions, truth conditions (which are really just a sub-category of felicity conditions), etc.; and moreover that these approaches to meaning can always be interpreted as a PROCEDURAL SEMANTICS that relates features of a language to knowledge of the universe." ([Fawcett 80], p. 253) The notion of choice condition is also related to the use of "semantic" conditions on the application of "syntactic rules" in various other approaches to generation; see for example [Sowa 83].

The third assumption, the view that choice conditions can be seen as **responses to inquiries**, determines the minimal organization of semantic features/choice conditions/responses into the paradigms defined by branching inquiries. This assumption brings out a similarity with the notion of the systemicization of features. The responses to a branching inquiry are disjunctive just as the output features of a system are disjunctive; in both cases the disjunction represents a minimal alternation.

The fourth assumption, that a branching inquiry can be **embedded** under the response to another inquiry, determines how inquiries can be organized into a decision tree with more than one branching point and thus more than minimal depth. It determines how inquiries can be related by dependency and vary in delicacy just as

¹⁶The chooser and inquiry framework is at present only used for what is called **grammatical semantics** in [Halliday 66]; lexical semantics is handled in a different way; cf. [Matthiessen 81].

systems can. It also determines the current restrictions on inquiry organization (within a chooser), since trees do not have double motherhood (conjunction) or alternative motherhood (disjunction).

The fifth assumption, the **chooser parcel** assumption, defines a limit on how inquiries can be inter-related (at present), since only inquiries within the chooser of one system can be related by embedding. This assumption suggests how a collection of inquiries differs from a collection of systems; the latter collection forms a huge network, the former only fragments corresponding to choosers.

The factoring of the framework helps us see how it is composed. It also helps us see how we can create variants of it. For example, we can change the last assumption and let inquiries depend on one another across the boundaries defined by the chooser of a particular system. We can also change the fourth assumption so that we allow disjunction in the embedding of an inquiry (not presently allowed).

8 Semantics and the consumer

There have been different approaches to semantics in systemic linguistics. They differ, I think, mainly in terms of what questions they took as the starting point in the development of semantics.

6.1 Chooser-inquiry semantics and the consumer

The present design of the chooser and inquiry framework should be understood in the context of the task it was created to perform. A few years ago, we said to ourselves: We are developing a large computational systemic grammar of English as part of a text-generation system. One key issue for the success of the grammar is that grammatical choice must be made in a purposeful way, in response to a given communicative situation. How can we control grammatical selection in a purposeful way? This was a consumer demand on (systemic) linguistics. In response to this demand, the chooser and inquiry framework was developed. Since we already had a grammar that had been organized to be sensitive to semantic distinctions, we took it as our starting point and created choosers for the grammatical systems. This approach seems similar to the one Robin Fawcett envisions; cf. the remarks on his Problem Solver in the introduction.

6.2 Sociological semantics

An alternative strategy is to take communicative goals as a starting point and write a semantics that is a strategy or set of strategies for pursuing those goals. Turner's work ([Turner 73]) can be described in that way. For example, if you are a mother and your goal is to control your child so that he or she does not do something undesirable, what are the meanings available to you to pursue this goal? This strategy for approaching semantics, let's call it sociological semantics (cf. [Halliday 73]), differs from the chooser and inquiry framework in a number of ways. In particular, sociological semantics is situation specific and is designed to control grammatical generation from the semantic stratum, e.g. by using preselection.

6.3 Compatibility of chooser-inquiry semantics & sociological semantics

However, it is not incompatible with that framework; rather, the two approach the problem of interfacing context and grammar from different angles:

1. Sociological semantics takes purposes (goals) as a starting point; chooser and inquiry semantics takes the grammatical choices to be made in purposeful way as a starting point.
2. As a result, it can be argued, the semantic unit of a sociological semantics is (a whole) text; the "domain" of chooser and inquiry semantics is whatever corresponds to a clause (complex) and so on down the grammatical rank scale.
3. Sociological semantics tends to be written for particular contexts; it is situation specific. As a result, the first step in the sociological semantics "programme" would be a collection of various particular semantics rather than one generalized semantics. In contrast, the work on the chooser and inquiry framework has been carried out under the assumption that inquiries address general distinctions, not situation specific distinctions. The result is one collection of choosers for the entire grammar, not different collections for different tasks.

There are obviously a number of ways to interpret these differences. I will not pursue them here, but will leave suggestions for another time.

Both sociological semantics and the chooser and inquiry framework are attempts at creating a functional kind of semantics. Both have the task of an **inter-level**. In

"Towards a sociological semantics", Halliday ([Halliday 73], p. 64) writes that semantics is an interface which relates non-language to language; it "represents the coding of the 'input' to the linguistic system"; "it is the strategy that is available for entering the language system". In a similar way, it is the task of the chooser and inquiry framework to relate grammar to expressive demands in the environment.

There are other tasks that semantic frameworks have been created to deal with. For example, formal semantics addresses issues having to do with inference and interpretation in a model. The chooser and inquiry framework does not deal with (semantic) inference at all. We should not see this as a failing of the framework. It was developed to deal with a specific task and inference is simply a different task. Inference is a different kind of "consumer need" and will lead to a different kind of semantics.

7 Conclusion

The fact that the chooser and inquiry framework was developed in the context of text-generation explains its origins. However, it does not restrict its range of uses. (The reason for this is fairly obvious: Text-generation is a natural task, something speakers (and writers) always engage in.) For example, once the chooser and inquiry framework had been developed it was possible to make very definite statements about the choice conditions of grammatical features. As a result, it is also possible to argue from choosers to systems: Arguments having to do with the content of inquiries and their arrangements in choosers are arguments 'from above' about the organization of grammar. In practical work, it is useful to imagine the inquiries for a system that would lead to appropriate choices of its features. If it is not possible to word these inquiries, it is quite likely that the grammar should and could be re-organized.

As an additional example, consider the reliance in one inquiry of a particular chooser on the previous identification of one or more of its parameters in an earlier chooser. This reliance represents an interdependence in terms of the flow of information. Such interdependences can, I think, be used as strong indications of factoring into meta-functions; they are interdependences over and above the grammatical interdependences represented in the grammatical network.

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