Lecture 12 - Systemic Grammar

Systemic grammar is a theory developed primarily by Michael Halliday and his colleagues while he was at the University of London. There is no easily readable source completely describing it. Halliday's paper in *New Horizons in Linguistics* is a good short introduction, and his most recent book, *Explorations in the Functions of Language* gives more detail and relates the syntactic ideas to socio-linguistic and literary analysis. It conveys much of the spirit of systemic grammar, without giving "an account of the theory" which would be satisfying to most grammarians. The theory has never been developed to the extent of transformational grammar, and there is no "gospel" as to how the details should be worked out. What I will present here is my own interpretation, and you should note that much of this will differ from anyone else's (including Halliday's).

The major difference between systemic grammar and other theories lies at a different level than questions of what form syntactic rules should take. In both the knowledge structures and the assigned structures it emphasizes a type of structuring which is different from the syntax trees of most theories.

Functional Analysis of Structure

The concept of function plays a large role in systemic grammar's approach to the question "What structures can be assigned to best describe a sentence?" If we look at any complex object, the way in which its parts fit together is closely related to the functions they are designed to serve, and the most useful description is often one which emphasizes this organization.

The biology of sentences

As an analogy, we might consider the problem of writing a "grammar for animals" -- a set of formalisms which help us to describe how animals are made: what the pieces are and how they fit together. In doing this, biologists immediately begin looking for functional systems -- the skeletal system, the muscular system, the circulatory system, etc. Individual structures are then described in the context of these different systems and the roles they play in them. Indeed we could study anatomy without any reference to this "physiological" level of description. We could see the animal as a complex interweaving of cords, tubes, bones, fibers, etc. But to do so would make the structure seem impossibly complex and arbitrary. The complexity of the structure comes from the need to carry out in a single organism a combination of many functions necessary to sustain life. To understand it we must look at those functions.

Systemic grammar looks at the utterances of a language in much the same way as a biologist might look at individual organisms. Each sentence is designed (by the speaker) to carry out a combination of communicative functions, and syntactic complexity comes from the need to embody them together in a single linear string of sounds. Our understanding of syntactic structures has to be related to an understanding of what they are there for, and of how the interaction of separate functions shapes the detail. In some sense we could look at the mathematical paradigm for syntax (embodied currently in transformational grammar) as an attempt to find anatomical rules without any reference to the fact that the thing being studied is something other than a physical conglomeration of pieces.

Communicative functions

Halliday distinguishes three major communicative functions in normal adult language, the ideational, interpersonal, and textual. We can think of these as different functions which a sentence is serving in a system of human communication. Most sentences are serving all of these functions simultaneously.

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The ideational function is the one which is hallowed by most naive views of meaning. At this level, an utterance can be thought of as "saying something about the world". It involves some fact, whether to state it, question it, or request it. The fact can involve propositions about objects and states in which they could find themselves.

The interpersonal function involves why the utterance is there -- it is to communicate a fact, request an action, express a reaction, or just to indicate to the listener that the speaker is still communicating according to the conventions their society imposes. Much of the structure of language comes from the need to combine this "what for" message with the simple "what" message.

The textual function is the additional glue which holds communication together. It is based on the need to indicate to the hearer how the information is connected -- what is new and what he is expected to already know, what is important and what is secondary, what is the "topic" which will structure the choice of what to say next.

The duality of function and system

Halliday calls these macro-functions, and it is important to note the difference between this level of how an utterance functions in a communicative system and the more specific functional analysis of how a word or structure functions within a larger structure. It only makes sense to talk of "functioning" in the context of a larger system in which the object doing the functioning is a part, and notions of function must always be relative to notions of system.

Returning to the biological metaphor, we can understand a good deal about how animals are built by relating their internal structure to the macro-functions they serve -- those interactions with an external system (the eco-system) which maintain life and the species. An animal must continue to get the necessary metabolites to keep the protoplasm going, to avoid danger, to combat threats which cannot be avoided, and to propagate the species. The organs and structures can be understood in terms of the way they contribute to one or more of these macro-functions (which have been succinctly characterized as "feeding, fleeing, fighting, and reproduction"). However there is another level at which we can talk about the function of an organ or structure in a specific internal system like the circulatory or respiratory system.

This same multiplicity of levels in language can lead to confusion in discussions of "function". We can talk about the function of a sentence in a conversation, and the way that certain mechanisms (e.g. the ability to form questions of a particular sort) serve this function. We can also talk about the function of a NG in a clause as its SUBJECT or the function of a phrase in a sentence as its THEME. We must also be careful not to try lumping together these syntactic functions with those traditionally called "semantic". The function of conveying a particular aspect of ideational structure ("meaning") is correlated with, but not identified with certain syntactic functions. This multiplicity of ways of looking at function has been one of the most confusing aspects of systemic grammar, and hopefully the detailed descriptions of the next few lectures will make it clearer to you.

Much of the effort in systemic grammar has gone into this internal functional description, looking at different ways to describe what different parts of a structure are doing in terms of its organization. If we take a simple sentence like This candle was made by my boyfriend, we can describe its structure in terms of several different systems:

[Topic: this candle Comment: was made by my boyfriend]

[Subject: this candle Verb: was made Modifiers: by my boyfriend]

[Finite element(tense and agreement bearer): was Main verb: made]
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[Actor: my boyfriend  Action: made  Result: this candle]
[New: by my boyfriend  Given: this candle was made]
[Head: candle  Determiner: this]

We will discuss these terms in more detail in the next few lectures.

The duality of function and form

In the previous section we have pointed out why a functional perspective gives us an interesting way to look at language, but haven't really explained why it should be a part of syntax. It might seem that perhaps the two should be separated. We could analyze the syntax in strictly "anatomical" terms, then talk about how these structures function.

Systemic grammar takes a very different view, based on the close relation between function and form. The form an object takes is closely related to the functions it serves, and this is as true for syntactic objects as for tools and furniture. The explicit analysis of the functions which phrases can serve in other phrases gives us the best grip on relating the structures of individual phrases to the structures in which they appear -- which is exactly what syntax is about.

Functionally Relevant Units -- Word, Group, Clause

One of the obvious superficial difference between the structures assigned by a systemic grammar and those we are familiar with is the use of functionally relevant units in building the structure. Rather than having a notion of "node" and "word" (terminal and non-terminal symbols) as the only structures, we observe that every language has a vocabulary of basic structures, each with a certain degree of internal complexity, and with a coherent set of uses (functions they can serve in other structures). In English, we can best describe the syntax in terms of three levels of structure: the clause, the group, and the word. Sentences are clauses of a particular form, but have most of their structure in common with other sorts of clauses. Note that in transformational grammar, the word "sentence" (or the symbol "S") is used for both traditional "complete" sentences and for embedded sentences. I will tend to use the term "clause" instead, since there is less tendency to confuse it with the notion of sentence as a function in discourse (the one grammar teachers refer to as "expressing a complete idea").

There are a number of issues in deciding just what constitutes a unit, and here I will only point to them, rather than going into the more subtle points. In general, a unit will correspond to a particular set of roles or functions (like the old distributional criteria of structural linguistics) and will also have a kind of semantic coherence, in presenting a single description, or proposition, or fact. In addition, although there will be a variety of possible structures for a single unit, they will have much more in common with each other than with the structures of different units. None of these criteria are formally rigorous, but in any actual language, there seem to be rather clear divisions, and the borderline cases can go either way without major change to the grammar.

A typical systemic description of a sentence might be:
There is no restriction to binary branching, and also it makes sense to talk about constituents which have only a single element in their structure. In the sentence:

```
Clause
   | Verb Group
   |   | Verb
   |   | Duck!

Two foolish children were avidly gobbling hot fresh eggplant pancakes.
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It makes sense to talk of there being an entire clause, since the functions which a clause can play in communication are being served, and the structural description of a clause includes a variety of options, one combination of which leads to having nothing but the verb.

**Rankshift**

Obviously the simple notion of levels of units doesn't work. A clause isn't always made up of groups which are in turn made up of words. Clauses can be parts of groups, groups parts of other groups, words directly part of clauses, and so on. The point of distinguishing the units isn't to impose a straightforward three-layer structure on every sentence, but to provide a way of talking about the similarities and differences between the basic units of which structures are built. The term rankshift was coined to indicate the use of a unit as part of a "lower level" unit. It does not represent some action of "shifting", but simply makes explicit note of the fact that the rank of a unit as clause, group, or word, does not immediately determine the size of the units in which it can take part.

A more complex sentence than the one on the previous page might be assigned the structure:
Classification and choice-systems

One of the fundamental tools we use in thinking is the ability to classify a potentially infinite set of objects into a small number of distinct categories, and to associate general information and modes of behavior with the categories instead of with individual examples. This is perhaps too basic a point to expand on (although we will do so at length next quarter), but has some direct consequences for the way we look at syntax.

We can look at the units of structure in an utterance, and classify them along various dimensions. If they formed a "natural" class (like shapes of clouds) we might expect the classification to tell us nothing about their actual structure and role. However in a cognitive system (or in an evolutionary one, like the set of animals), there is an underlying basis for this classification which has much more reality. In information theory, we are told that meaning is really just the selection between choices. The recipient of information has a number of things to select between, and the message gives him some basis for that selection. The amount of information is determined by the degree to which the message increases his selectivity. This model is too simple to account for much of meaning, but there is a direct way in which it applies.

A language contains a set of meaning choices for each communicative function, and our knowledge of these choices enables us to view any actual sentence as "triggering" the right choice. We know that an utterance will be a statement, a question, or a command, or that a certain sentence structure will convey a focus on either the object being described or the action in which it takes part, and so on.

This same notion of choice applies to other levels of function than the macro-functions. We can describe the structure of a sentence in terms of the units of which it is built, and the choices which were represented in building them. Our knowledge structure includes a set of choice-systems outlining the potential features a structure can exhibit.
As a simple example, we can think of paradigmatic rules as being choice systems which apply to units at the word level. A verb can be described as "selecting" a set of features from choice systems for number, tense, and aspect, while a noun chooses from choice systems for number, gender, and case. At a larger level of units, we can think of a clause as selecting features from a choice system which includes statement, question, and command.

The knowledge structures corresponding to these choices are called system networks, and can be thought of either as classification trees or as structured sets of features. (These are the same, since we can think simultaneously of "assigning the feature X to an object" or of "assigning the object to the class X". One of the basic observations of systemic grammar is that much of language structure can be described in terms of a rather small number of systems, each involving a limited number of features.

As with any classification system, we can choose our level of delicacy of description. Assigning a specific species feature to an animal is a more "delicate" description than simply assigning a genus or phylum. The delicacy of the description we assign will determine the degree to which we can explain the details of structure.

System Network Notations

Choice systems are represented in a simple graphic notation, which indicates the ways in which sets of choices can depend on each other. In particular, we can represent a set of mutually exclusive choices as:

Choice of single member from set \{a b c\}

```
  a
  b or
  c
```

Often, the existence of a choice depends on some more global choice (the obvious analogy is to species, dependent on genus, depends on group,...). We say that a choice set has an entry condition, the simplest of which is the presence of another feature (or, thinking the other way, the assignment of the structure to some class which contains all the subclasses represented by the choice system). This is represented by horizontal connections of choice systems:

Choice between \{a b c\} operates only if d is selected:

```
  a
  d ---- b
    e ---- c
      f
```
Often, there are two orthogonal sets of choices to be made (e.g. what species is it, and is it male or female) both depending on the same larger classification:

Choice of d allows simultaneous choices in two systems:

```
    a
   /|
  b / |
 /  |  
 d /   |
/     |   
g /     |
|       |  h
|       |   i
```

In other cases, a particular choice is operative only if two other classes are selected simultaneously (your political party registration can be specified only if you are over 18 and a citizen and registered...)

Choice between \{j k l\} operates only if both b and g are selected:

```
    a
   /|
  b / |
 /  |  
 d /   |
/     |   
g /     |
|       |  h
|       |   i
```

Finally, (to complete the possible logical set) there is a notation indicating that two different classifications lead to the same set of choices:
Choice between \{j \atop k \atop l\} operates only if either b or g is selected:

\[
\begin{array}{cccc}
  & a & j \\
  \downarrow & \downarrow & \downarrow \\
  b & c & \quad k \\
  \downarrow & \downarrow & \downarrow \\
  d & g & \quad l \\
  \downarrow & \downarrow & \downarrow \\
  e & h & \quad i \\
  \downarrow & \downarrow & \downarrow \\
  f & & \\
\end{array}
\]

One network for the clause

As a sample (and over-simplified) application of these notions to syntax, the following network describes some of the options for a clause in English.

\[
\begin{array}{cccc}
  & \text{Secondary} & \text{Declarative} & \text{Polar} \\
  \downarrow & \downarrow & \downarrow & \downarrow \\
  \text{Major} & \text{Indicative} & \text{Interrogative} & \text{\textit{Wh}} \\
  \downarrow & \downarrow & \downarrow & \downarrow \\
  \text{Imperative} & \text{Benefactive} & \text{ } & \text{ } \\
  \downarrow & \downarrow & \downarrow & \downarrow \\
  \text{Transitive} & \text{Active} & \text{ } & \text{ } \\
  \downarrow & \downarrow & \downarrow & \downarrow \\
  \text{Intransitive} & \text{Passive} & \text{ } & \text{ } \\
\end{array}
\]

(to be filled in more for next time)

Realization rules

Overlapping choice systems -- the Polysystemic viewpoint

Structures assigned by a systemic analysis

Interaction of multiple systems