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## THE ESL STUDENT AND THE REVISION PROCESS: SOME INSIGHTS FROM SCHEMA THEORY

An increasing number of immigrant, bilingual, and international students are enrolled in college and university basic writing classrooms across the United States. Though at some universities, non-native students are assigned exclusively to ESL classes; at others, most are enrolled in classes designed for native-speakers of English, either because they are too advanced for ESL classes or because there is an insufficient number of ESL classes to accommodate them. At San Diego State University, for instance, nearly 50 percent of the students in the second semester basic writing course do not speak English in their homes (Johns, "Academic Skills").

When these students appear in native-speaker basic writing classes, their instructors are faced with new challenges; for these students, barriers to proficient writing often differ considerably from those faced by their English-speaking classmates. Since much of these students' ESL instruction may have been focused on sentence-level errors, they have not produced much English discourse. Because of this, teachers find that at the discourse level these students often have difficulties producing writing which is considered coherent by English-speaking readers, i.e., text which meets English-speaker expectations for topic organization and development (Carrell, "Cohesion" and Ulijn). These coherence problems may

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be difficult for the teachers to address, for they involve reader expectations which are seldom discussed in textbooks; and, for the students, meeting readers' expectations often involves abandoning the structures for organizing content which are basic to their first languages and therefore central to the manner in which they develop ideas (see, e.g., Kaplan "Contrastive Grammar" and Walters).

To enable ESL students to produce English text which is "reader-considerate," which meets the expectations of speakers of English (Armbruster & Anderson "Producing"), it is necessary to work with their writing at the discourse level, and to discuss with them the expectations of English readers. The focus, then, is upon the interaction between reader and text, and upon the students' understanding that audiences speaking different languages may require different approaches to topic development and organization.

Useful in developing instruction which focuses upon reader-text interaction are the insights and pedagogical strategies of schema-theoretical approaches, based upon the notion that "what we [as readers] understand of something is a function of our past experience or background knowledge" (Carrell, "Role of Schemata" and Miller & Kintsch).

## SCHEMA THEORY

The term "schema" was first used by the cognitive psychologist, Bartlett, in 1932, to describe "an active principle in our memory which organizes elements of recall into structural wholes" (15). Rumelhart, drawing on the substantial consensus that has arisen in the field of cognitive science, in the past fifty years, has recently spoken of a schema theory in this way:

A schema theory is basically a theory about knowledge—a theory about how knowledge is represented and about how that representation facilitates the use of knowledge in particular ways. According to schema theories, all knowledge is packaged into units. These units are the schemata. Embedded in these packets of knowledge, in addition to knowledge itself, is information about how this knowledge is to be used. A schema, then, is a data structure for representing our knowledge about all concepts. ...Perhaps the central function of schemata is in the construction of an interpretation of an event, object or situation.... The total set of schemata we have available for interpreting our world in a sense constitutes our private theory of the nature of reality. The total set of schemata instantiated at a particular moment in time constitutes our internal model of the situation we face at that moment in time or, in the case of reading a text, a model of the situation depicted by the text (23).

The "knowledge units" of which Rumelhart speaks are also referred to as "topic types" or "conceptual frames." These units consist of content

slots, “for each constituent element in the knowledge structure” (Anderson and Bower 369). The slots “consistently co-occur over a wide range of different topics” (Johns & Davies 9). Schema-theorists believe, then, that there are canonical knowledge units with predictable content slots that reflect the expectations of the native-speaker reader. For example, in a text in which the knowledge unit is Physical Structure, readers expect content slots for *part*, *location*, *property*, and *function* to be filled with information from this discourse, not once, but several times (Johns & Davies). A newspaper article of the Accident Type (the knowledge unit) has seven slots (not all of which are obligatory), including *the nature of the accident*, *the setting*, *the cause*, *victims*, *comparison with other accidents*, *comments on the accident*, *public figures involved* (Zuck & Zuck).

Schema theorists posit that when a person begins to read a text, one or several sets of schemata, consisting of knowledge units, their content slots and the networks of which they are a part (Anderson & Bower), are instantiated. The reader mentally revises—or discards—this set to accommodate the content and the structure of the text (Minsky) and uses the set to organize and store information from the text in memory (Meyer, Schank & Abelson).

The degree to which readers grasp intended meaning from and remember text depends, to a large extent, upon whether the reader-selected schemata are consistent with those of the text writer. If the reader lacks the necessary schema set, or if s/he selects an alternative set, s/he will have difficulty appropriately processing and recalling the discourse. If, for example, a Chinese writer of English develops a topic using the “eight-legged essay form,” common in traditional Chinese rhetoric (Kaplan), then the English reader may not have appropriate schema set to process the text. Therefore, the text may be incoherent to the reader.

Most of the work in schema theory research and model building has been done on the knowledge units of stories (Mandler & Johnson). From “story grammar” work have come some valuable contributions to classroom teaching (Mavrogenes, Rand). Recently, however, there has been research completed to discover knowledge units and their slots as reflected in written scientific texts (Johns & Davies) and history texts (Armbruster & Anderson).

## READER EXPECTATIONS AND REVISION

In this paper, discussion of the application of schema-theoretical approaches to ESL writing will focus on the first revision of an essay by a Chinese-speaking student, a sophomore enrolled in a second-semester basic writing class at San Diego State University. This student, whom I will call “You-min,” completed this draft on the topic “Discuss a problem in Your Community” during a two-hour class period.

In assigning this essay, I followed a consistent approach in my classes—that of asking students to produce writing without prior instruc-

tion in form. This approach is followed because it is important to focus upon the generation of ideas and the establishment of meaning before the imposition of structure (Murray). Like Zamel, I believe that:

As students continue to develop their ideas in writing, considerations of organization and logical development come into play. The question, then, is not of choosing to attend to organization or not, but of when and how to do so (154).

This particular essay, by You-min, was selected for several reasons. First, though it contains sentence-level errors, it is at the discourse level where English-speaker reader expectations are not fulfilled, i.e., where coherence breaks down. Second, it was chosen because an increasing number of refugee and international students enrolled in colleges in this country are from the Orient. Many of these students are of Chinese origin (including some Vietnamese and Laotians) or influenced by Chinese culture (including Koreans and Japanese). Third, it was chosen because it seems to be characterized by the “Oriental circular development” described by Kaplan, which, though it may be consistent with the schema sets of Chinese speakers, is not consistent with those of the English readers for whom the student is writing. Kaplan notes that this type of development does not meet English reader expectation because:

There is a lot of seemingly unnecessary wandering around the topic. The papers are characterized by an inability to get to the point and stick with it: in the traditional sense (i.e., American rhetorical traditional), they lack unity and coherence (12).

In approaching the revision of this essay, I acted as English reader and text processor for You-min as we worked through the text. Using schema-theoretical concepts and aided by articles on prediction (Pearson & Johnson) and on modeling of the reading process (Davey), I demonstrated how the English-speaker might impose a schema set and then seek out organization and meaning from text.

I began by explaining reader expectations, and how these are established by the writer. To illustrate my point, I drew a tree diagram (Figure 1 in Appendix), simplified from those in artificial intelligence literature, to show how reader expectations are elicited by the writer text. These expectations are first elicited by the title and the introductory paragraph (Dooling & Lachman). We read You-min’s title, which is “How to Solve the Problem of Teenagers.” From my instantiated schemata, I predicted that the text would be of a Problem/Solution type. The title was recorded next to the Problem/Solution heading on the Expectation Chart. Also noted were the content slots to be filled: *situation*, *problem*, *causes* (often embedded in problem or situation), *responses or solutions*, and *evaluation* (Hoey).

With You-min, I then looked at the introduction:

In the past five years, juvenile delinquency increased to almost thirty percent of the overall crime in Hong-Kong. This remarkable increase put the police department to pay more attention to the teenagers. The delinquents were around twelve to eighteen years old and mostly involved in burglary, robbery and group fighting.

In this paragraph, three of the five content slots of Problem/Solution texts are alluded to: *situation*, *problem*, and *responses or solutions*. As reader, I asked myself (and You-min, the writer) the following questions: "What is the situation?" "What is the problem?" "What are the responses to the problem?" The answers, as prerevealed in this paragraph, are ones upon which You-min, the writer, and I agree. The *situation* is "Hong Kong in the past five years." The *problem* is "increase in juvenile delinquency." The *response* to the problem is "to pay more attention to the teenagers." As we answered each question, I continued to add to the Expectation Network of the Problem/Solution text, showing that from the reader's content slot predictions, established by the title and first paragraph, must stem all content included in the coherent text.

You-min and I then moved to the first internal paragraph and the lower nodes on the network chart:

Juvenile delinquency is an increasing problem in nowadays society around the world. Why is it increasing, is a controversial question to whether is the society, the parents, the education system or the teenagers themselves. Almost 90% of the arrested delinquents complained that they were either abused by their parents or did not feel any love in their family. There is always a generation gap between parents and adolescents, the one's who think that already grown up and mature, but their parents usually deny. Problems start to create from this point and things getting worse without the parents attention. Especially in Hong Kong is overpopulated, and modernized small city. They have not much time to pay attention to their children. Also, the education system derives a lot of pressure to the youngsters because of the limited number of universities and technical colleges in this small place. All this stress on those teenagers makes them either to face it or to escape from it—get into crime or dope. Nowadays the delinquents are sent to a special training center to teach them skills and make them to participate in recreation activities to bring back hope to them and become good citizen. Beside this, there are voluntary professional psychologists, socialist to from a non-profit organization to help solving their personal problems. More recreation centers and library were increasing by been built to give teenagers a place to spend their time meaningfully. In another way, law has been set up to let nobody under 21 is allowed to go into bar, dance rooms or any other place where alcohol or sex is involved. Group gather-

ing in public place is limited under police department permission to avoid any group fighting occur.

I asked You-min under which category or content slot the new information (in “nowaday society around the world”) in the first sentence of this paragraph should go. We decided that it should go under *situation*. Yet a different situation, “in Hong Kong in the past five years,” had already been established. She was able to see the first possibility for incoherence between text and reader, in her failure to keep her promise made in the introduction. I recorded this first breakdown in the network chart—as under “Situation” in Figure 2 in the Appendix.

We then moved to the second sentence in this paragraph, in which You-min first begins to fill the *causes* slot. Here, she mentions four causes, “the society, the parents, the education system, and the teenagers themselves.” I recorded these causes under the appropriate content slot, stating that as reader I expected each of them to be discussed. In fact, only two causes were mentioned in any detail, “the parents” and “the education system.” Again, You-min saw a possible breakdown in coherence as the expectations of the reader for all four causes were not fulfilled. We recorded this breakdown on Expectation Network.

I then turned as reader to the next content slot discussed in her essay, “Responses,” noting to You-min that the reader may expect a change in content slot to be signaled by indentation. We looked at the introduction and saw that the prerevealed response is “to put the police department to pay more attention to the teenagers”; yet in the text You-min has mentioned “special training centers, psychologists, socialists, recreation centers, and libraries,” in addition to the contributions of the police departments. We marked this on the network chart, again showing a possible breakdown in coherence due to confusion with the slot information which had been prerevealed in the introduction.

Because the Evaluation slot of the essay had not yet been filled, I, as reader, expected the final paragraph to be devoted to content in this slot:

The adolescents who are the most need care and love an away that they want the public looks at them as adults, create an increasing problem in society. This problem, people think, should gather the parents, the teachers, the socialists and the police effort to find out the solution.

As You-min and I read this part of the text, I speculated that she might be evaluating the responses by suggesting new ones, e.g., “gather the parents, the teacher, the socialists and the police.” This isn’t clear, however, since some of the solutions mentioned have been suggested previously in the text. Again, there is a possible breakdown in coherence between reader and text.

When I finished the reader-expectations processing of the essay and we examined the completed Expectation Network Chart (Figure 2 in Appendix), You-min could see exactly where the possible breakdowns between the reader's expectations and writer take place. We reviewed the questions about the content (e.g., "What is the situation?"), the answers for which should be placed in the higher nodes of the Expectation Network Chart and made revisions on the chart. Next, we made revisions on the chart so that what was prerevealed was actually mentioned in the essay. She was then ready to begin the "holistic revision" process, which, incidentally, was quite successful.

This approach, based upon the schema-theoretical concern for the interaction between writer and text, has become very important to revision instruction in my classrooms. My ESL students have benefited from the guidance which it provides and the freedom within the question constraints which it allows. I find this type of teacher intercession in the revision process superior to isolated comments in the margins, for the questions and the Expectation Network Charts give the writers assistance in revising in an organized manner from the top down.

However, this technique could become formulaic if employed incorrectly. Therefore it is necessary to mention its appropriate place in the revision process, noting what must proceed and follow it and emphasizing that allowances for writer meaning and reader interpretation must always be made. It must first be pointed out that You-min and I began to discuss the problem-solution categories and reader expectations only after she had completed her first draft and established a problem-solution structure for her discourse. It is she who imposed form upon her text. My responsibility was to assist her in making that form more coherent for the English reader, by suggesting the questions that must be answered and the types of answers to the questions that are expected, i.e., how the content slots should be filled to be consistent with what she had prerevealed in the title and the first paragraphs.

There are a number of activities which follow this exercise as well, all of which are devoted to increasing the writer's understanding of audience and of the variation in text which is possible, even within the problem-solution constraints. One such activity involves the distribution of copies of this essay to the class, who, individually or in groups, come up with a series of questions, prompted by what was prerevealed in the introduction and the initial sentences in the paragraphs (Johns, "Learning First"). This multiple-audience technique is particularly valuable in a class such as You-min's, in which the majority of her classmates are English speakers. After hearing these questions, You-min may attempt to answer some of them by revising the paper; or, as is often the case, she may find that her classmates' questions parallel mine since, as English speakers, we approach the text with similar schema sets. In further revisions, You-min is encouraged to experiment, exploring how various alternatives to topic development and other coherence features might satisfy her as writer as well as meet English readers' expectations. Sometimes

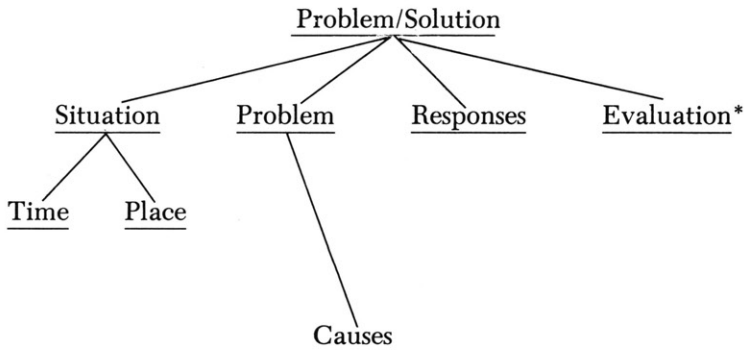
she is asked to write about the same subject to a variety of audiences (e.g., her sociology professor, her mother), predicting the questions they might ask and answering them within the text.

The aim of this technique, then, is to give students a systematic method for predicting audience expectations, for filling content slots of a particular type of data structure such as problem-solution. As basic writers increase their proficiency and their knowledge of audience becomes more complete, they no longer need this guidance. Their intended meaning, and a number of other features such as use of metadiscourse (Kopple), become more important to the development of an essay which satisfies the writer and meets reader expectations.

## Appendix

Figure 1

### Model Expectation Network Chart Knowledge Unit: Problem/Solution

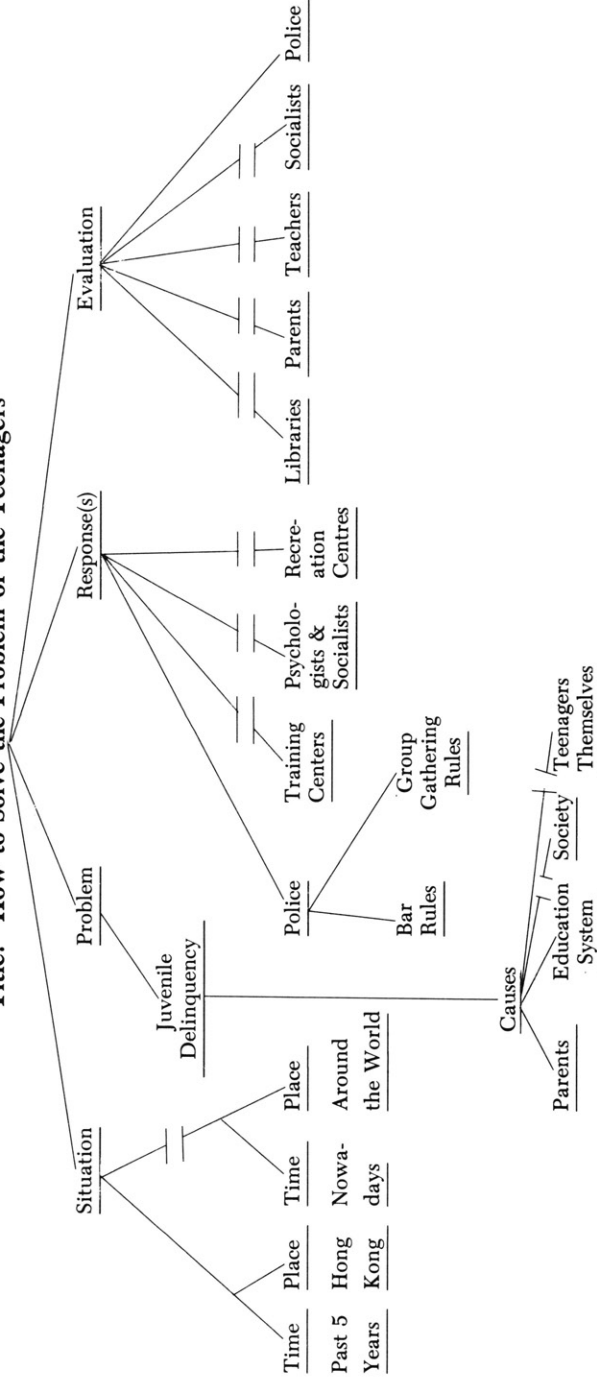


\*Nonobligatory.



Figure 2

Expectation Network Chart from “You-Min’s Essay”  
 Title: “How to Solve the Problem of the Teenagers”



= Indicates a breakdown between expectations of content and the manner in which slots have been filled.

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