

FROM SCHEMES TO THEMES: IMPLICATIONS OF SCHEMA THEORY FOR TEACHING WRITING

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The teaching of writing has traditionally taken place within the academic confines of English departments and has focused on such concerns as style, usage, appropriateness, rhetoric, and literary criticism. Yet any human process as rich and complex as writing involves much more than these concerns can hope to tell us. Consequently, a great deal of heuristic value can be gained from a more multi-disciplinary approach to the composing process, one that looks to other fields for new insights. Within reading and cognitive psychology, for example, one current perspective — schema theory — has raised new questions vital to a fuller understanding of the processes writers use to store, organize, retrieve, and manipulate knowledge and experience. In the following pages, we would like to explore some applications of this new theory for the teaching of writing.

Several characteristics of schema theory make it an especially appropriate tool for the writing teacher. First of all, it focuses on how the structures of thought are incorporated into the structures of language. Rather than assume that these structures are identical, schema theory maintains that much of the data we use in speech and

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writing is originally non-linguistic, something long suspected by composition teachers, whose students year after year tell them, "I knew what I wanted to say, but I just couldn't put it into words." Schema theorists do not all agree on what non-linguistic form data is stored in, but there is a general consensus on the ways in which such data is organized, and teachers can use this information to design writing tasks aimed at helping students tap into this organization. Exercises that help make students conscious of the way they organize knowledge in their own minds can also be instrumental in making them conscious of the role others play in the communication process. Since schema theory emphasizes the dynamic nature of our knowledge, as well as the important role played by our world knowledge and prior experience in their construction, it views every person's schemas as necessarily different. By actively manipulating and responding to others' ideas, and seeing their own ideas manipulated and responded to, students can gain a clearer understanding of what their readers can and cannot be assumed to know.

Second, schema theory provides us with a set of concepts and a terminology which can be used to present and discuss writing in a productive way. Rather than saying to ourselves (or to our students), "These kids need to learn to write for their audience," we can ask students to show us how they are organizing their information and what they expect a reader to know; we can also demonstrate for them the ways in which other people's knowledge structures differ from their own. This sort of response will give students a clearer understanding of what changes they will have to make in their prose if their audience is going to understand them in the way they want to be understood.

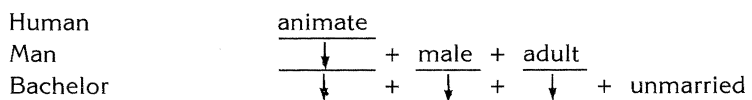
A final important and widely acknowledged tenet of schema theory concerns the function of "prior knowledge" in comprehension. Some theories of reading, for example, view the reader as one who "plods through the sentence, letter by letter, word by word" (Gough, 1972). Schema theory, however, prefers a more interactive model of reading. In this model, "meaning" does not reside in the text; rather, the text provides a blueprint to guide and constrain the creation of meaning (Spiro, 1980). Most competent readers, for instance, can read a difficult text out loud quite well, but if they lack adequate knowledge of its topic, the text may remain completely meaningless. In

schema theory, this relatively simple distinction between the activity of reading (or writing) and the process of understanding takes on special significance, for it involves the interaction of two kinds of structures: those that organize knowledge of the world, and those that organize knowledge of language. Since writing involves interacting schemas, we should expect to find cases among inexperienced writers in which one level of schema has influenced another. The writer may, for example, write thirty clear, grammatical sentences about an experience which together make little sense, or compose a logical, well-ordered process description in a single, poorly-phrased paragraph. Problems such as these arise when a writer's schemas at different levels are not working together; one part of the system is getting too much attention, as when young children spend all of their energy figuring out each word of a passage at the cost of ignoring its meaning.

All of these basic characteristics of schema theory have far-reaching consequences for teaching reading and writing. Before we explore in more detail the implications of these characteristics, however, we would like to provide the reader with a general background to schema theory.

A Short Introduction to Schema Theory

Schema theory is a theory of how knowledge is represented in the mind. As early as the 1930's, psychologists were able to demonstrate that this knowledge is always organized in some fashion. The specific nature of that organization was not the object of much inquiry until the 1960's, when it became a central question in artificial intelligence studies, a branch of computer science that deals with the problem of creating computers that can operate in the same way as does the human mind (Schank and Abelson, 1977). An early answer to this question was frame theory, one of the first unified approaches to the problem of describing the representation of knowledge. Frames are, in Minsky's words, "named collections of slots that form the semantic definition of a concept" (Minsky, 1975). These slots are arranged in an "inheritance hierarchy" — an extremely efficient way of storing knowledge:



In such a system, generic knowledge is stored at high levels and is automatically shared by connected frames at lower levels. Each frame must specify only the new distinguishing characteristics.

When linguists, psychologists, and educators began to investigate frame theory for its possible applications to the question of how the human mind works, an insurmountable problem became evident immediately: frames are static entities. As such, they have only limited power to handle new information, or old information in new contexts; further, the theory provides no description of how the different levels interact. Humans are continually presented with, and produce, new information. Therefore, no static model can describe how the human mind organizes knowledge. A new model — prototype theory — was introduced by artificial intelligence researchers to counter this objection. Prototypes are stereotypical situations that are stored in the mind and can be compared with real situations. This comparison process is crucial, since even situations that are familiar to us are never identical to previous experiences. According to prototype theory, we store what *is* identical in all similar situations, leaving room for details to differ. These prototypes provide a basis for expectations and predictions, and thus focus the search for new information. When faced with incoming information, we use a “best-fit” matching process to produce a temporary “current best hypothesis” about what will happen next. For example, if an opening paragraph of a student’s paper begins, “In this paper I will argue that eighteen-year-olds should not have to register for the draft,” we make the assumption that we are reading an argumentative paper; thus, in the body of the paper we expect to find arguments for and against the stated position, as well as evidence to support these arguments. A real paper may, of course, deviate from our stereotypical model: it may not present the opposing arguments, may not present supporting evidence, or may wander from the topic and end up calling for a freeze on nuclear weapons. It is significant that teachers usually consider these deviations to be failures on the part of the student — failures to meet the expectations we have about the structure and content of an argumentative paper. Our expectations about what will come next in any communicative situation — oral or written — operate on a

sentence level, of course, but even more significantly on higher levels. We not only make predictions about the concepts a text is going to include, but about the contexts in which certain concepts will appear. Our predictive abilities are the very basis for our understanding language.

Although prototype theory was more successful than frame theory at representing contexts, it suffers from many of the weaknesses of the earlier model because prototypes cannot be modified by new information. Bartlett's schema theory, originally developed in 1932, provided a way to deal with this limitation. For Bartlett, human memory is reconstructive in nature; memory does *not* consist of the storage of all previously-received information. Instead, our past is represented in schemas: active, organized masses of information that are constantly developing. This dynamic aspect of schema theory gives it its explanatory power, since it focuses on what people are doing as they read or listen, speak or write (Anderson, 1977).

Schemas are best understood as relational concepts, not sequences of events. All events and objects in our experience are stored in relation to each other in the form of expectations. According to this theory, when we receive new information, we get general impressions of it, and then construct the probable details based on schemas we have built up from previous experiences. This ability is especially important in reading and writing, for texts tend to leave out a great deal of information, assuming that readers will supply the details from their own schemas. For example, if we read, "John went to a restaurant, enjoyed a fine meal, and left," we assume, among other things, that he paid for the meal in some way. If later we read that the cook, the waiter, and the owner chase after him, waving his bill in the air, we have to modify our original schema to *ACCOMMODATE* some new information — customers do not always pay their bills at restaurants, and if they do not, certain other consequences are likely to follow. Schemas are automatic processes whenever possible — that is, as long as our expectations are met. Only when they are not are we forced to backtrack and question. Schemas, then, are cumulative, holistic blends of information into which new information is continually entered and which are continually readjusted to take this new information into account. Schemas are shaped by experience and in turn guide our perceptions of experience.

How then can schemas be recognized? Rumelhart and Ortony (1976) have characterized them as follows: First, each schema contains variables. In a restaurant schema, for example, the variables include *waitress*, *menu*, *customers*, and *food*. These variables have different values in different contexts. In a fine restaurant, the printed menu is brought to the customer, or the selections may be recited by the waitress. In a fast-food restaurant, the selections may be listed on a board hung from the ceiling. Constraints on the values tell us what sorts of objects might be bound to each variable, though these variables are not absolute. By providing these variables for situations, schemas predict that certain aspects exist in them. When the assignment of a specific variable is made, the schema is said to be instantiated.

Second, schemes are embedded in each other. Their organization is hierarchical and the structure of a schema can only be realistically given in terms of its relationship to other schemas. A Chinese restaurant schema will share some of its variables (*waiter*, *menu*) with all restaurant schemas; other variables, such as the option of eating with chopsticks, will be exclusive to it.

Third, schemas exist at all levels of abstraction. There are very high-level schemas that account for our ability to organize knowledge — for example, a narrative schema that provides us with information on how to tell a story. There are also many low-level, more detailed schemas that help us understand the more detailed processes of daily life.

Finally, schemas represent knowledge, not definitions. They are not necessarily linguistic. They represent those aspects of a situation that normally or typically occur, not what is true of necessity. They can tolerate deviations and thus can be applied to a number of situations.

Schema theorists claim that the bulk of the comprehension process consists in finding those previously-constructed schemas that best account for the greatest amount of incoming information. Thus, for educators, the ways in which schemas are acquired and modified is a crucial issue.

Schema Theory in the Classroom

In writing, as in other mental activities, the mind uses non-linguistic information. It is this implication that has yet to be fully considered by writing theorists. If the mind thinks

in linguistic and non-linguistic ways, then it can no longer be assumed that invention is a matter of generating ideas which only then need to be put on paper. We need, then, to revise our thinking about invention, abandoning the notion that generating ideas is synonymous with generating language. We must consider the possibility of ideas being generated without language.

This implication provides us with a valuable guideline for determining the ways we can approach writing in the classroom. We should provide students with alternate, non-linguistic means for developing and handling their ideas. The planning strategies suggested, for instance, by Linda Flower in *Problem-Solving Strategies for Writing* (Flower, 1981) provide students with alternate ways of representing their ideas — as sketches, rather than written statements.

Of course, these nonlinguistic place-holders of ideas must eventually be turned into language. However, schema theory suggests that the process of turning ideas into language need not, and should not, be carried out in isolation. One other important implication of schema theory concerns, then, the role played by others in the writing process. Writing has been traditionally seen as action carried out in isolation. Writing, however, involves accessing, changing, and communicating the way we think about the world; that is, the way we “chunk” or schematize the world. Because we have incorporated many of the schemas common to our culture, and because we use these schemas when we write, we are constantly engaged in writing as an inherently social process. But, because more specific knowledge from individual experience is also involved, writers must constantly make judgments about what in their experience is common and what is unique. The process of communicating through writing requires understanding the way readers chunk the world. Since the lines between common and unique chunks are seldom very sharp, the ability to judge them must be acquired, usually by trial and error. Audience cannot be viewed as something separate from the writer, nor can audience be viewed as an important factor only in the late “stages” of writing. We have to be able to account for the presence of audience from the very moment the writer conceives of writing — even earlier, since by implication, most thinking is social. Audience saturates writing because audience saturates thinking.

Our second guideline, then, is that our strategies need

to provide students with access to others' schemas, or ways of chunking the world and experience. Only with this understanding of how other people might possibly see the world will students begin to learn to distinguish common from unique chunks, enabling them to make more functional choices about what is essential, unusual, interesting, or questionable in writing. Without this access to other people's schemas, students can make only their best estimates about what is required in order to communicate with a reader. In essence, the maxim "know your audience" can only be realized by interacting with them.

Keeping in mind the criteria of alternating modes of communication and increasing the role of others in the writing process, we can design a variety of strategies. The one we want to discuss here, the Writing Round, emphasizes the importance of involving other people in the writing process (the handout explaining this strategy to students is provided in the Appendix).

Before students engage in a Writing Round, the instructor provides a demonstration of the writing process she wishes her students to acquire. For example, the class might be concentrating on the process of coming to a thesis statement. Once it is demonstrated, the student has a chance to engage in the process.

In a Writing Round, each student writes his or her idea at the top of a blank sheet of paper. Then each student passes his paper around in a group of three to five students. The instructor may or may not suggest how students should respond. The first respondent reads the initial statement and comments appropriately. After five or ten minutes, the paper is handed to the second respondent in each group. Each successive respondent replies to the initial statement, with the option of incorporating other students' responses as well. When the student's own statement has made a complete round of the group, she is given a chance to look over the reactions and clarify any responses or raise any new questions. Until this time, students are discouraged from talking among themselves, simply because they are trying to learn how their written ideas are being understood.

In half an hour, each student has a chance to get three or four different reactions to her ideas, engage in the demonstrated process, and see something of how other people engage in the same process.

Many interesting insights into our students' composing processes emerge from this strategy. In the example to follow, the process demonstrated was the formulation of a problem statement stemming from a variety of readings under the heading "Living in the Nuclear Age."

SAMPLE WRITING ROUND WITH BRAD,
TYLER, AND BARBARA

- Brad 3 conflicts of nuclear power and arms
1. Health effects of radiation
 2. Psychological effects
 3. Life and death
1. This generation and the next

Nuclear bombs and power have a great impact on this world. First of all, the health effects of radiation can cause immense pain and suffering. Secondly, psychological effects can also have adverse effects on the lives of everyone. Thirdly, the life and death of most every person can be involved by the explosion of a bomb or melt down of a reactor at a power plant. Thus, these three conflicts towards nuclear power and arms support one view towards the dangers of nuclear fussion.

Tyler I don't see a problem in the paragraph above. It seems more like statements about or reactions of nuclear bombs or power. I can see where you could obtain a question or problem by including something such as, with effects like these why would anyone be for something so dangerous? I just don't see the problem.

Barbara The problem here is how nuclear energy and bombs decrease or harm to all living things. This paragraph discusses the effects, both physical and mental, that nuclear energy has on the world.

[When Brad's paper had been returned to him, he pencilled in the margin, beside Tyler's comment: "The problem's compiled up from 1, 2 and 3." Then, beside Tyler's suggestion about how it might become a problem, Brad wrote, "Yes."

In response to Barbara's comment, Brad simply put a "?" and wrote "Good or bad."]

From a practical standpoint, the students involved in this Writing Round are raising questions that a reader would raise, and presumably questions an instructor would raise as well. For instance, if Brad had handed his problem statement to his instructor, his instructor probably would have said, "I don't see the problem here." Of course, Brad would have interpreted such a comment to be an "English teacher response," meaning that his instructor was not genuinely trying to see the problem Brad had discovered. But when Tyler says the very same thing that the instructor might have said, the statement "I don't see what you mean" has a much more powerful impact.

Moreover, Tyler has explained why he does not see a problem: "It seems more like statements about or reactions of nuclear bombs or power." In other words, what Brad has called his definition of a problem is really no more than a list; it is presented as a list in a sketchy outline, and presented again as a list a second time, even though it is in paragraph form. Brad sees this as a problem because he has made connections between the elements on the list, and he expects his reader to make the same connections. We can almost see the look of frustration on Brad's face as he tries to tell Tyler, "The problem's compiled up from 1, 2 and 3." With that remark we can see the wheels beginning to turn: Brad feels the frustration of not having communicated; he reads on and discovers what Tyler needs in order to call the problem a problem; he needs "something such as, with effects like these why would anyone be for something so dangerous?" With that, Brad scribbles, "Yes." Tyler has helped him identify his problem. With such a transaction taking place between Brad and Tyler, it seems no wonder that Brad is disappointed by Barbara's response — a response that seems reluctant to take a stand. Like Brad, we are not sure either whether it is "Good or bad."

Clearly, with strategies such as Writing Round, students are able to learn from one another. Even if they do not completely understand the process being studied, they are able to help one another through aspects that they do understand. Moreover, the interaction between peers is often more conducive to learning than the interaction between student and instructor.

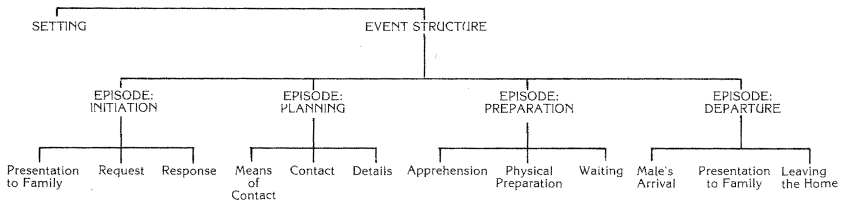
We should also point out that the results we see from this and similar strategies provide important evidence about the nature of the writing process. When students are engaged in a Writing Round, they are learning what experienced writers already understand: that writers must adapt what they have to say for a reader. In the Writing Round, we see writers making revisions in their texts even before they have been written, a process that experienced writers have internalized. As a result, we must conclude that models of the writing process expressed in "stages," even as recursive processes, ignore the variety of writing processes that occur simultaneously. Revision and invention, for instance, can often take place at the same time, as they do in a Writing Round. We suggest that this is an important consideration for future research in composition.

Schema Theory and Evaluation

In addition to giving us insight into learning behaviors and thus helping us to develop effective teaching strategies, schema theory also provides some new ways of responding to students' writing. Because it deepens our understanding of how the structures of thought become transformed into the structures of language, the theory can make us wiser, more skillful advisors in our students' explorations with and eventual command of prose. In this section, we will examine some uses of schema theory for evaluating writing.

Consider, for example, an essay assignment asking students to recount their first or most memorable date. In our culture, certain conventional procedures for dating exist, though these may vary among people of different background, region, and age. To complete the assignment, then, a writer usually assumes that the reader shares with her a common dating schema, and this will guide many of the decisions about what should be included in the essay. The extent to which the empty "slots" in this general, skeletal schema are filled with unusual or unique details in many ways determines how interesting or informative the resulting essay will be.

Below, we have illustrated one possible schema for dating, from the point of view of a contemporary teenager.



The schema consists of a *setting* (unspecified) and an *event structure* made up of several *episodes*. We will be concerned only with the first part of the dating schema, from the time the two participants greet each other to the moment when they leave on the date itself. A full dating schema

might conclude, for instance, after the conventional good-night kiss on the young woman's porch steps.

For lack of a better term, we have called the first episode the *initiation*. This includes the male's approach, his request, and the female's response. In the second episode, *planning*, the male gets from the female a means of contact (e.g., a phone number) so he can convey to her the details of the date: what time he will pick her up, where they will go, and so on. The third episode, *preparation*, includes some apprehension about the date, the physical preparation (showering, washing hair, choosing clothes, etc.), and usually some waiting. Finally, the couple *departs*; this episode includes the male's arrival, a presentation to the family for scrutiny (or, if he is already well-known, a few minutes of pleasant discussion), and the couple's leaving the home.

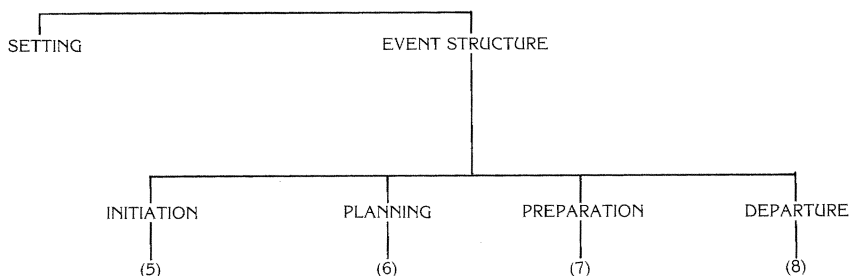
Most dates involve the four episodes here as a bare minimum. Variations in this structure may occur; for example, some of the *planning* may be worked out in the *initiation* episode. Consequently, decisions about what should fill the slots in the linguistic schema influence and are influenced by what should fill the slots (here, episodes) in the schema for dating. Differences in the procedure show up as instantiations of real details in the skeletal structure.

Let us now examine a writer's response to a task involving the dating schema we have described. The essay below was written by a young college student (Brenda) enrolled in a remedial section of freshman composition:

(1) I was a freshman in high school when I was asked to go on my first date. (2) I have been out with men before this but they didn't mean anything to me like this one did. (3) I was at my locker getting my books and this man behind me kept looking at me but I was playing it off like I didn't know he was looking at me. (4) I knew who it was because he played basketball for the school. (5) So finally he came up to me and said what's your name I said Brenda what yours he said Tony then I said nice to meet you, then he said what are you doing tomorrow night I said I have no plans, he said would you like to go to the show or something with me I said yes! (6) Then he asked for my telephone number I gave it to him and he called that night and said I will pick you up at 8 o'clock I said that will be fine. (7) I was so nervous and self-conscious I really didn't know how to act or what to wear it took me about four hours to get dressed, I kept changing clothes. (8) So finally it was time for him to come and get me the doorbell rang I ran back in my bedroom and my sister said Brenda you have company so I came out and introduced him to my family and then he said you ready to go I said yes, so we left and went to the show.

From an evaluative point of view, we are struck first by the number of fused or run-on sentences in this short essay. Our reaction as teachers might focus on Brenda's need to break up independent clauses with semi-colons or periods. We might schedule a conference with her and work on identifying full sentences, distinguishing nouns from verbs, or learning when to subordinate and when to begin a new sentence. We might ask her to do some sentence-combining exercises or re-write her dating essay with several paragraphs and half as many "ands." Yet we are not sure exactly why Brenda had made this kind of error and not another. We may succeed in raising her awareness of her own sentence patterns, but because we are focusing on the linguistic rather than the conceptual aspects of her thinking as she wrote the essay, we find it rather difficult to give her any advice (other than some standard "tricks" of grammar) that she can use in her next composing experience.

The schema for dating, on the other hand, shifts our attention from the linguistic features of Brenda's prose to the subject of her essay. This shift allows us to focus on the source of her sentences rather than on the sentences themselves. We have represented the eight sentences in Brenda's essay in a modified version of the four basic episodes of the dating schema.



We notice immediately that, after the *setting*, each of the sentences in (5)-(8) corresponds to one of the four episodes in the schema. The periods between one sentence and another occur at the junctures between episodes, each episode itself containing the run-ons and comma splices and stylistically unappealing coordinations that beg to be corrected or commented on in the essay's margins. From this evidence, it seems as if Brenda arranged her essay syntactically in terms of her knowledge of dating. Each

episode became for her a single, “holistic” thought which she poured out in a stream of language. Her further work confirmed this tendency, so that in tutorial sessions her teacher focused not on the error itself but on its conceptual origins. The problem disappeared quickly once Brenda became aware of her own composing process.

More can be said, however, about the dating schema and its representation in Brenda’s essay from a communicative point of view. Put simply, her narrative says very little; it fills the open slots in the dating schema with rather uninteresting, mundane details. Brenda could be any college or high-school student in any American town. Her essay smacks of the typical classroom theme, perhaps because she has taken the easy way out in completing the assignment; she has simply supplied the reader with the framework of the dating schema and no more. Most writing teachers will no doubt reach this conclusion intuitively; but the dating schema has the advantage of specifying somewhat more clearly what sort of information might be included in a narrative about a date, what sort of information the writer has opted to include, and what sort of information is universally appealing and can be profitably fleshed out in more detail (e.g., Brenda’s frenzied changing of clothes or the tension of introducing her escort to the family). The schema does not *supply* anything, however; it only shows in a very rough way where and what kind of information can be supplied and then lets the writer do the rest. Thus, instead of advising Brenda to “use more concrete details” or “show rather than tell,” we can help her to discover parts of her experience that were important or memorable. Because these events are only important or memorable to the extent that they give new meaning to — or particularize in an interesting way — the empty slots in the schema, we can be reasonably sure that filling them in will paint a more colorful picture for the reader.

Sometimes, however, a young writer in the process of discovering or developing a new schema for some event in the real world will not be aware that his readers may already have a full schema or set of schemas for that event. Too often we complain that even our best students’ papers do not tell us anything that we do not already know. The following short essay, also written by a seventeen-year-old college freshman (Bobby) in the first week of his remedial

writing course, is a case in point. The students had been asked to describe a process to their classmates.

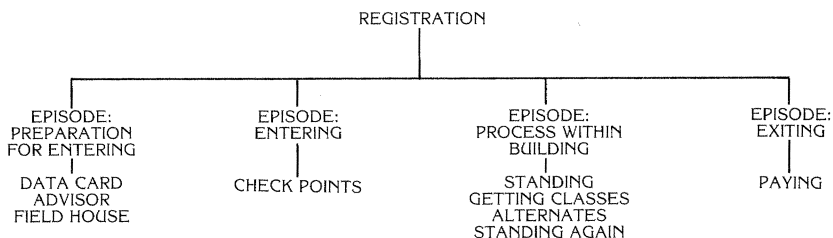
Registration can be hard, if you didn't get all the material for registration. Every student is suppose to have a registration card and a student data card. If by chance you didn't get one in the mail, You had to go find out where your's was at or you had to start fresh. In order to get a registration card you had to go to the field house the day that you register and fill out alot of forms and stand in long lines.

Once the student had his registration materials he got to start the process of registration. The first that to him was trying to pass through all the cheeck points.

Once the student got through the cheeck points. He started the long process of getting the classes he wanted. This meant standing in long line's and having the class be filled up when it got to be his turn. If this happen then the student had to try and pick a class that would fit in the same space.

Once he had all the classes he wanted, then came the choice of how to pay for the classes. If he was lucky he would have financial aid that would pay for them. If he had no financial aid then got to pay for them. But in all registration is an experience that no one else would understand unless they been through it once, and just think we get to go through it all next semester.

Like Brenda's essay, Bobby's description of registration suggests an organizational plan based on his conceptual schema. Clearly, this schema influences Bobby's paragraph divisions instead of his sentence structure. We might depict this schema in the following way:



We can only hypothesize very generally what Bobby's conceptual structure looks like; still, we notice that he has subsumed the events of his experience not under a schema for registration as a whole but under a mental image of the building in which it takes place. The four paragraphs establish the pre-requisites for going to the building, entering it, doing things within it, and leaving it. Typical of

newly-acquired schemas, Bobby's picture of registration at a large university includes only its immediate context — a context in which his own actions and feelings are so central that in spite of his attempts to objectify them ("the student"), he must finally let his description of the process collapse on itself in a renunciation of the essay's purpose ("no one else will understand what I have said without living through it, but please pity those of us who know what it is like"). We might predict that Bobby's argumentative essay on the same topic would include ways to make his and others' ordeal within the building less odious, but not improvements for the entire system or concessions to the administrators responsible for its present design. We cannot blame Bobby, however, for centering on his own experience within what is after all only a part of all that registration involves, for he is in the process of building new schemas for his environment. What we *can* do is support his efforts at describing the process, pointing out at the same time that readers very familiar with registration will expect to be shown something new, while those unfamiliar with it will expect to learn how best to go through the process without confusion. In its present form, the essay tries to do both and succeeds at neither. Of course, we don't need schema theory to recognize that Bobby's paragraph structure exposes the way he has organized his experience conceptually. But not all students' essays delineate so clearly their authors' conceptualization. Schema theory allows us to compare *possible* organizational plans with *actual* ones, making evaluation a constructive process rather than a purely critical one.

Some Limitations of Schema Theory

While schema theory adds dimension to what many writing teachers know already (from both experience and experimental evidence), it does not answer all our biggest questions about the nature of our students' composing processes or how best to help them become better writers. In many ways, the application of schema theory to composition is in its infancy, and a great deal more experimental investigation of its parameters needs to be conducted. Especially troubling, for instance, is schema theory's focus on all that is "logical" or rational in discourse, and its general neglect of or inability to deal with the more affective domain of language use (see, for example, Spiro,

1982). Schema theory also has been shown to have more muscle than it can use with precision, for its generality allows just about any cognitive structure to find a place in its rubric and gain legitimacy (Thorndyke and Yekovich, 1980). Finally, schema theory does not provide already overburdened teachers with any methods (either for designing class activities or evaluating students' writing) that will lessen the time and effort it takes to help students become better writers; if anything, it suggests more attention to what *can't* be made into rules and formulas. We have said nothing, for instance, about students' schemas for education, for "composition class," for teachers' expectations, for peers' reactions, for the functions of discourse beyond the schools, or for the "general audience." Presumably, classroom instruction in composition involves all of these schemas — and a great deal more.

Despite these limitations, however, schema theory has the advantage of shifting our attention to all that is vital and interesting in writing, and that alone may be enough to make the endeavors of both teacher and student a little less like a task and a little more like an enjoyable challenge.

APPENDIX

WRITING ROUND

Concept:

Writing and thinking are complex social processes which develop through interaction with other people and other texts. An idea newly discovered or beginning to be explored may not develop if you remain in isolation. All writers need the opportunity, early in the writing process, to test out their ideas, through written or oral discussion, in order to compare their thoughts with the thoughts of others. With some preliminary reactions, you can develop your ideas more fully; other people's ideas may be added to your own; opposing ideas may be refuted and in the process clarify your own thinking; or you may discover early that other people don't think the same way you do — they may take your idea and go in a completely different direction. You can, then, decide if you want to let your readers take those directions; if you don't, you can decide the best way to help them follow your thought and ideas.

Materials needed: a blank sheet of paper.

Procedure:

1. When you are ready for some preliminary reactions to an idea, or if you have an idea that you are having trouble developing, summarize the idea as clearly as you can in two or three sentences at the top of the paper. Provide enough detail to give your respondents a good grasp of your thinking.

2. In a group of 3 to 5 students, hand the paper to the classmate to your right.

3. When you receive a paper like this from someone next to you, read the first entry, and write your reactions. Your goal is to offer your complete thought about the idea, whatever it may be. When you are finished writing, hand the paper to the next groupmember. As the paper is handed from person to person, the ideas and reactions will grow. Always begin with the first entry, but be sure to read the reactions as well. You can comment on any of the reactions, but always make your reactions relevant to the first idea.

4. When your idea comes back to you, read the reactions. If any comment is unclear to you or you would like to discuss the reaction in more detail, feel free to ask the respondent to talk about it. Otherwise, you are free to use and respond to anything in whichever way you choose.

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Further Reading in Schema Theory

The literature in schema theory is exhaustive, and a working bibliography is far beyond the scope of this article to supply. However, for readers interested in a good introduction to schema theory, we call to their attention the collection by Anderson, et al. (1977) which in turn will lead to dozens of further works in the psychology of reading, learning, and cognition.

