

WRITING: THINKING AND LEARNING WITH THE AID OF TEXTS

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The claim has often been made that it is through writing, in particular, that we exploit the full potential of literacy, using it, as Bruner put it, as a technology for the empowerment of mind. Because of the need to make the meaning of our text clear and explicit for an audience who will have no other access to our thinking, we have a strong incentive to try to become clear for ourselves about what it is we think. And because we are released from the pressure to get it right first time, which is both the spur and the limitation to thinking in the context of face-to-face interaction, we can adopt a more reflective and reflexive stance, rethinking and rewriting ourselves towards an increased state of understanding. Writing, it has been argued, can thus provide a particularly effective opportunity for learning.

In this paper I am going to try to substantiate this claim by exploring one piece of writing in detail, describing both the processes involved and the learning that resulted. The text I have chosen to examine in this way is the one that you are currently reading. I should start, therefore, by explaining how and why I came to undertake this task.

A Writer Writes about Writing

As with most of the papers that I have written, the composition of this text has extended over a considerable period of time. In fact, it started, not as a written paper, but as a talk to be given at a conference on writing. The title to which I had undertaken to speak was 'Writing: Inquiring and Communicating'. In choosing this title, my intention had been to talk about the dual role of writing: its function as a means of coming to know as well as that of communicating what one knows. Then, as the date of the conference approached and I began to prepare my talk, it occurred to me that it might be interesting to approach this topic by examining one writing task that I myself had recently undertaken. However, the decision to make this very paper the one that I focused on was not taken until the day before the actual presentation, at which time it did not exist as a written text at all. In its first form, therefore, this text was composed orally on the basis of an outline written down in point form. Of what I actually said on that occasion, I have no distinct memory at all. However that is no loss, since I have learned from experience that a text created in the act of speaking is

only distantly related to a similar text created in the act of writing: transcripts of talks cannot easily be converted into their written counterparts.

It may seem strange, nevertheless, that I decided to embark on an exploration of the processes involved in the writing of a particular text when the text to be examined did not actually exist in written form. And indeed, if writing were confined to the activity of inscribing conventional symbols on the page, that would certainly be the case. However, as I intended to argue, there is a great deal more to writing than that, and the fact that I did not need to have reached the stage of having a completed written draft in order to be able to talk about many of the processes involved would, I thought, only serve to underline my point. In any event, since the final written text records the outcome of the activity of writing, and not the processes by which it is brought into existence, its 'virtual', as opposed to its 'actual', status was no handicap on that occasion.

Now, however, the situation appears to be different. In order to communicate to you, an audience of readers, my text must indeed be written. But the paradox is that, on the one hand, in order to write about the actual writing of the text, it must still remain to be written; yet, on the other hand, if I try to write about the part of the text that I am currently producing, and about the processes in which I am engaged in doing so, I shall find myself in the predicament of the proverbial centipede: unable, because my attention is focused on which foot to move next, to take a single step.

There may, nevertheless, be a solution. As I have already suggested, there is much more to writing than setting the words of a particular sentence down on the page - even though this may be, in some sense, the central activity. From this central moment of inscription, however, it is possible to look in both directions: retrospectively, at the events that have led up to this moment and, prospectively, at what still remains to be done. This, then, is the strategy I have decided upon. I shall write mainly about the journey I have already taken, looking as it were over my shoulder whilst my thoughts and feet continue in a forward direction. In this way I hope to avoid the danger of immobilization and finally to reach my goal at the same moment as the paper ends.

Getting Started

When I first began to think in a sustained way about this paper, I did what I usually do, which is to sit down with a paper and pencil and jot down ideas for possible inclusion. Of course, this was not the beginning of the process as, from the day I agreed to give the talk, I had thought about it from time to time. I had probably also devoted some attention to

the problem at an unconscious level, too, when asleep or as I went about my other affairs. So, when I finally gave my full attention to the task, a variety of ideas surfaced quite quickly. And, within a few minutes, I had sketched an outline for my talk, which looked something like what appears in table 1.

Table 1. The Components of the Writing Task

PLANNING

Goal Setting

1. In the light of the external task demands, review knowledge of topic and characteristics of audience to:
 - decide on probable genre
 - generate candidate points for inclusion
 - determine what further information is required
2. Collect further information, as seems necessary
3. Establish tentative goals for writing

Organizational Planning

1. In the light of goals set, and of the text so far:
 - plan overall structure
 - plan next section of text

COMPOSING

1. In the light of goals and specific plans, and of the text so far:
 - generate candidate sentences
 - transcribe selected sentence according to linguistic conventions
2. Continue this process until the draft of the text is completed.

REVIEWING

1. Consider what has been achieved so far (goals/plans/text):
 - to discover what it means
 - to evaluate it against task demands/goals/plans
2. Revise, as appropriate

Reflecting on this process later, I realized that the idea of looking at the activity of writing in terms of a small number of interrelated components had come immediately to mind, as if this was something that I had already decided upon in that period of 'incubation', as Britton et al. (1975) call it, before anything is written down. I also knew that I wanted to discuss the idea that different types of learning are associated with each of these components. But, before I could do that, I 'had to decide how many components to distinguish, what to call them, and what to say about each of them. I subsequently realized that I would also have to consider how these components were related to each other.

As I continued to work at these questions, writing down single words or phrases, using these to suggest further ideas, and intermittently ordering them and then deleting some or drawing arrows to suggest alternative orderings, I became aware that two other sets of questions were shaping my plans, in addition to my concern with the topic. The first of these concerned the audience that I would be addressing: What knowledge and attitudes could I expect them to have already about learning through writing, and what would they most likely expect from me on this occasion? My answers to those questions would obviously influence both what I would choose to say and how I would choose to say it.

At this conference on writing, I could expect a gathering of a hundred or more people interested in, writing, but educators rather than cognitive scientists or literary scholars. Such an audience, I assumed, would be most interested in issues to do with the learning and teaching of writing in the classroom and the role of writing as a means of learning in relation to different areas of the school or college curriculum. This assessment of the audience, I now realized, had already significantly affected my planning so far, for it had led me quite deliberately to select the term 'components' to talk about the processes involved in writing.

In other contexts, I might have preferred to talk about the different 'phases' of writing. However, I was mindful of the model most frequently cited by teachers, which proposes that writing be seen in terms of three stages: 'pre-writing', 'writing', and 'rewriting'. Since this has led to a mechanical, lock-step approach to writing in many classrooms, I chose the word 'component' in order to avoid conveying the impression that, when writing, authors proceed through a series of steps in a predetermined temporal sequence. At the same time, however, I wanted to distinguish between the rather different types of activity that one moves between in the course of carrying out the overall task. It seemed, therefore, that, for my purposes on this occasion, it would be most helpful to talk in terms of three components. These I tentatively labeled 'Planning', 'Composing' and 'Reviewing'. It was only later that I further subdivided Planning into 'Goal Setting' and 'Organizational Planning'.

The second criterion that was shaping my thinking was the matter of form or, in more technical terms, the choice of an appropriate generic structure. Not only do candidate ideas for inclusion have to be relevant to the topic, they also have to fit together coherently in an overall rhetorical structure in order to make a particular point. And this point should be one that is appropriate for the anticipated audience. In fact, for me, the design of what might be called the architecture of a text is one of the most challenging - and when successfully achieved - most satisfying aspects of writing.

But what was the point of my paper to be? Only rarely do I know the answer to this question before I start to write and, when I do, it is usually because the writing task is a highly conventionalized one, such as a business letter or a routine report on research in progress. More commonly, the point emerges in the course of writing, as some aspect of the topic takes hold of my imagination and I begin to focus in on it and then to consider it in relation to the beliefs and values I attribute to my anticipated audience. It is at this stage in the writing, whether early or late in the complete process, that the specific choice of generic form occurs, as a solution to the problem of how to make this point in an interesting and effective way for the readers I hope will engage with it.

Nevertheless, although the final answers to the questions of point and genre often only emerge quite late in the day, the questions themselves demand attention from the beginning. In fact, I find it is usually quite difficult to make much progress with the more detailed planning of the text until I have arrived at some provisional answers. At this early stage in my writing, therefore, I was trying to integrate provisional answers to the three questions of 'What?', 'Who to?', and 'How?' in order to come up with a specification of the goals for the paper that I was going to write. And the solution that I first came up with was to present a straightforward exposition, organized in terms of the three components of planning, composing and reviewing and to discuss the sorts of learning that are likely to occur in relation to each component. However, when I began to explore the possibilities opened up by the new idea of writing about the writing of this paper, the ideas that I had tentatively collected under the main section headings began to detach themselves and recombine in a variety of more complex configurations. The outline in table 1, too, rather than serving as a simple specification for the content of what I would write, began to appear as a hypothesis to be tested against the procedures that I was actually engaging in in this particular act of writing. So, feeling a little disoriented by this metamorphosis of my original plan and as yet unable to see exactly how to proceed, I decided to follow my own advice and to "determine what further information [was] required" (see table 1).

What came to mind, however, as I took stock of the situation, was not specific questions to be researched but, rather, a general uneasiness about the oversimplistic account of writing that my outline seemed to imply. Obviously, I needed to

do some more thinking, so I decided to spend some time reviewing what other people had written about writing, both from a theoretical point of view and from the point of view of writing in school.

Reading to Write

Reading serves two rather different functions for me, when I am writing. Sometimes, I am aware of specific information that I need to take into account in developing my argument, such as the findings from a particular piece of research, which I have heard about but have not yet read myself. Sometimes, too, I want to check on what I recall someone else as having written, either because I want to be sure to represent correctly the views of my source, or because I want to quote a passage to support or illustrate a point I am making. This sort of reading serves to reactivate or amplify information accumulated on previous occasions when I was reading with other purposes in mind, such as working on a different task or keeping abreast of developments in the field.

But there is another sort of reading that I find important, which might, by way of contrast, be described as 'priming the pump'. Here my purpose is to be reminded - or made aware - of aspects of the topic that I haven't so far considered in relation to the writing task on which I am currently engaged. When I read in this way, I am not gathering information so much as engaging in a 'conversation' with others who have contributed to this field of discourse. I read in order to be prompted to respond: 'Yes, I think so too', or 'That's an interesting idea', or 'I certainly don't agree with that'. And, following that first reaction, I go on to try to develop my own ideas on the issue in question.

Reading in this way, as an engagement in an ongoing discourse, is a normal and natural way to engage with a text. As Bakhtin (1981) has suggested, this sort of incipient response is a necessary part of the act of comprehending. Furthermore, it is a natural continuation of the process whereby the text one is reading came into being. For every text has a cultural and historical context; it does not emerge, *ab initio*, from the mind of its author, but is prompted by the author's interactions with others, particularly with the texts of other writers that he or she has read.

The idea that texts invite two sorts of reading is one that has been taken up by Lotman, another Russian semiotician. In a recent paper (1988), he suggests that, "in an overall cultural system, texts fulfill at least two basic functions: to convey meanings adequately and to generate new meanings" (p. 34). The two types of reading that I have just described seem to correspond quite closely to these two functions. In the mode of reading called for by the first, or what Lotman calls the "univocal", function, texts are treated as if they were conduits, which convey information that remains

constant between sender and receiver; each text is assumed to have one, correct, interpretation, which all readers are expected to be able to construct. This possibility is a fiction, of course, as work on readers' responses to texts has shown (e.g. Fish, 1980; Rosenblatt, 1978). However, it does point to one important function of written language, which is to provide "a common memory for the group" (p.35), that is to say to contribute to the maintenance of cultural cohesion and consensus.

However, it is reading in the other mode, corresponding to what Lotman calls the "dialogic" function, that enables the text to act as what he calls "a thinking device". For it is in considering what it could mean and how to respond to it that the text becomes for the reader "a generator of meaning" (p. 40).¹ But for a text to function for a reader in this way, he or she must recognize that more than one interpretation of it is possible and that no one of these should be treated as the final and authoritative statement on the topic.

In schools and other educational institutions generally, we have tended, unfortunately, to emphasize the univocal function of texts, putting a premium on reading and writing for purposes of information transfer in the interests of cultural reproduction and the maintenance of the status quo. However, if we are to help students to become independent and innovative thinkers and problem-solvers, it is the dialogic function of texts, and the social and intellectual practices through which this function is realized, that need to be given the greater emphasis so that a proper balance can be achieved between conveying 'established' meanings and generating new ones.

Both ways of reading have played a part in the writing of this paper. References to the works of others and specific citations in my text indicate points at which my reading was of a univocal nature. However, it was in the dialogic mode that I did most of my reading. And, as I read, I realized that there were a number of important issues which, in my initial thinking, I had failed to take into account. I intend to interrupt the account of the writing of the paper at this point, therefore, in order to discuss those that seemed to me to be most in need of inclusion. However, at another level, this digression can be seen as an enactment of the stage I had reached in the writing activity as a whole.

Motive and Purpose for Writing

As I looked along the shelves in my study, the first book that caught my eye was a small pamphlet by Peter Medway, entitled *Why Write?* (1973). This was a question that I hadn't really stopped to consider on this occasion, since my purpose for writing was, in some sense, given by my acceptance of the invitation to present a paper at the Writing

Conference. However, as Medway rightly points out, in an educational context it is a question that needs to be given very serious consideration, given the amount of time that is devoted to writing and learning to write in the school curriculum.

The answer that is most frequently given to this question is that students need to write in school in 'order to master the skills that they will require to be able effectively to perform the writing tasks that they will have to undertake in the world beyond the school. To my mind, however, this is a very unsatisfactory answer. First, the writing demands that the majority of students will meet after they leave school are likely to be limited to a narrow range of purposes, falling largely within the categories that I suggested call for a 'functional mode of engagement'. Some, it is true, will be required to write business letters and technical memos and reports of various kinds, usually in conformity with specifications implicitly or explicitly laid down by their employing institution. However, it is not these types of text that are given attention in school so, if direct preparation for the workplace is the justification for spending time on writing in school, there is a serious mismatch between putative goals and teachers' actual practices.

However, there is another reason for emphasizing writing, which seems to me to be much easier to justify. And that is the one that I offered earlier when discussing the potential that writing offers as a technology for the empowerment of mind. Through writing, we create a world of meaning that represents what we believe and feel about the topic we choose to write about. And often, in order to create this world, we are forced to interrogate our thoughts and feelings in order to understand them more fully. Frequently, we also find, that in order to write, we have to gather further information, by reading, observing and experimenting. In effect, in various ways, writing provides both an incentive and a means for learning. Viewed from this perspective, the justification for devoting time to writing is not as a preparation for tasks that may be encountered in the future but because of its intrinsic value in the present.

A corollary of this perspective is that writing is undertaken, not to 'practice' a particular genre, or the conventions of grammar and punctuation, nor as a means whereby the learning about a topic that has taken place by other means can be evaluated, but rather as an activity that is, in itself, part of the learning process and simultaneously worthwhile as a contribution to the emerging discourse in the domain with which it is concerned. Of course, the stories, reports, poems, arguments and so on that are written in this way will, incidentally, provide occasions for developing greater competence with the genres selected by the writers; they will also provide evidence of what their authors understand about the topics they select. But they will have these pedagogically desirable side-effects precisely because they are 'real' writing; that is to say because they are written by authors who are writing about a topic they care about, to an

audience that they wish to influence, and who have selected a generic form that they believe will enable them to achieve their purpose.

The importance of the writer being personally involved in the topic about which he or she is writing needs constantly to be reemphasized, particularly in those areas of the curriculum which typically give rise to what Britton et al. (1975) described as "transactional" writing. As Harrison reminds us, even writing which is concerned with factual content or the logic of argument "should have strong roots in, and never be cut off or unduly distanced from the language of feelings and values" (1983, p.19). For, as a ten-year-old observed to his teacher, who had just been stressing the importance of only selecting a topic to research or write about if it was one that was personally significant: "if you don't care about it, it probably won't make sense".

Genre Choice: Selection or Construction?

Harrison's reference to one of the major categories of writing distinguished by Britton and his colleagues in their survey of student writing led me naturally into a second area of reading - that to do with the distinctions that have been made between different types, or genres, of writing, and the implications of this work for the teaching of writing. Since the work of Britton and his colleagues has been seminal in this area, I decided to reread the relevant parts of their study before reviewing some of the more recent contributions to this debate.

In order to classify several thousand samples of secondary school students' writing, Britton et al. (1975) developed a taxonomy of types of writing based on the notion of a text's dominant function. From the matrix category of relatively undifferentiated "expressive" writing ("language close to the self"), they proposed that writing of a more public kind tended to one or other end of a continuum defined by the categories of "poetic" and "transactional" writing. Of the former category, they write: "Poetic writing uses language as an art medium. A piece of poetic writing is a verbal construct, an 'object' made out of language" (p.90).

Transactional writing, on the other hand, is "language to get things done" (p.88). By contrast with poetic writing, which is defined as an immediate end in itself, it serves as a means to an end. "The form it takes, the way it is organized is dictated primarily by the desire to achieve the end efficiently" (p.93). Further sub-categories were then proposed within each of these major categories.

Despite its seminal and productive contribution to the field of English teaching, this model has always disturbed me, not least because it treats the poetic and the transactional modes as mutually exclusive, and denies what all texts have in common (at least those that are made public by their authors), namely that they are designed to serve as means to some end. Thus, although the ends served by lyric poems, for example on the one hand, and reports of scientific experiments, on the other, may belong to very different domains of cultural activity, they are both created to perform some function within a particular cultural community of writers and readers.²

A further disadvantage of this dichotomization is that it appears to ignore the fact that all texts are "verbal constructs" and hence to deny the 'creative' nature of any act of writing that requires the writer to grapple with the questions of 'what?', 'who to?' and 'how?'. Furthermore, as one of the original authors of this model has subsequently recognized (Rosen, 1984), it is not only in 'literature' that authors create objects out of language: philosophers, historians and physicists, as well as novelists and dramatists, all construct the 'possible' worlds which their theories are designed to explain through a verbally mediated act of imagination, in which the written text is both means and outcome. Nor does engagement in what Britton et al. call transactional writing preclude a concern with language as an "art medium". Although their purposes for writing may be different, almost all writers who are concerned to draw their readers into the worlds they create through words consciously attempt to meet similar criteria of unity and internal coherence as well as those of aesthetically pleasing patterns of syntax and lexis.

In sum, whilst the model may have served adequately to classify the particular corpus of texts collected in secondary schools in the early 1970s, it is less satisfactory as a framework for thinking about writing more generally and, in particular, it provides an inadequate basis for those who are responsible for improving opportunities for student writing in the present. For the polarization of the two main categories of poetic and transactional writing sets the imaginative in opposition to the instrumental and the affective in opposition to the cognitive, rather than recognizing their mutual interdependence. As Harrison argues in his discussion of the place of writing in the school curriculum, "our poetic intentions and our life transactions should always be in the same direction, not towards opposite poles" (1983, p.18).

A further problem with this model, as with most taxonomies designed for use in quantitative research, is that it requires each text to be assigned uniquely to one or other of the categories in the proposed hierarchy, on the basis of its dominant function. In practice, however, many texts have more than one function, (as Lotman argued with respect to the univocal and dialogic functions), and their form, as a result, is not amenable to classification in terms of a single function or genre (Griffiths and Wells, 1983).

Many of these issues raised by the work of Britton et al. have once again achieved educational prominence, although in a somewhat different form, in connection with the work of a group of researchers and educators in Australia, who take as their point of departure the functionally oriented linguistic theory of Michael Halliday (Halliday, 1975, 1987; Halliday and Hasan, 1985; Hasan and Martin, 1989). In a recent collection of papers on "The Genre Debate" (ed. Reid, 1987), the view is put forward by several members of the group (in papers by Christie, Kress, and Martin and Rothery) that there is a small set of genres that students will be expected to use in the later years of schooling and that these should be identified, described and deliberately taught to children in the elementary years. In two of the remaining papers in the collection (by Dixon, and Sawyer and Watson), a number of strong reservations are expressed about this program. First, it is objected that, whilst the notion of genre has some heuristic value in allowing existing works to be classified for certain purposes, most significant pieces of writing do not fit neatly into a single category, neither is there reason to believe that they were written to conform to prescriptions for writing in a particular genre. Following from this, these authors argue that to construct algorithmic procedures for writing reports, descriptions, and so on and to teach these algorithms out of the context of a perceived need, on the part of the student, to write in the genre to be practiced, is to stifle creativity and to substitute learning about language for learning to exploit the resources of language to achieve one's communicative purposes.

As with most pedagogical debates of this kind, both sides have something important to contribute to our thinking about the way we approach writing in school. Certainly, as the advocates of genre-teaching argue, if children are only encouraged to write in a narrative mode, whether from personal experience or from imagination, they are unlikely to explore other genres - at least when they are writing in the classroom. An unthinking emphasis on 'stories' to the exclusion of other genres can also lead teachers to conclude that young children have no interest or ability with other types of writing. Yet, as a number of studies of emergent literacy have shown, given free choice and encouragement, some children attempt a wide variety of genres in their personal writing. However, as was emphasized above, they do so because they have a real purpose of their own for writing, whether to produce props for their play, to communicate with friends and relatives, or for the pleasure of expressing what they know and feel (Bissex, 1980; Britton, 1970; McKenzie, 1985).

The arguments for providing occasions for students, in both elementary and secondary schools, to develop mastery of a range of genres are therefore, to my mind, convincing. However, the warnings expressed by the opposing camp also have considerable force. Much depends on how the alternatives are presented and on the conditions under which students are expected to use them. To teach the stages of writing a report, for example, and then have all students write

a report of the same scientific experiment is not the only way of approaching report-writing, nor may it be the most effective.

A given topic can be written about in a variety of genres and, even within the same basic genre, many different approaches are possible. To take just one case, compare Donald Murray's opening presentation at this conference, in which he read a number of drafts of a poem he had written for the occasion, together with a commentary on how he had set about writing this poem, with Frank Smith's book, *Writing and the Writer* (1982), in which he expounds his theory of writing with reference to the writing of that book. Then compare either of these with [a literary author's account]. Although, in some ways, each of these texts is doing something very similar - namely giving an account of how a text gets written – each author has found his own way of presenting his understanding of the process in a form that is itself part of the message.

Or, to take a rather different example, one might look, as I recently did, at the books written for 9 and 10 year olds on exploring their natural environment. Quite a number of attractive and informative books have been written in the last few years, which children enjoy reading on their own but which are equally good as resources for classroom activities in science and environmental studies. What I found interesting was the variety of approaches the authors had adopted: in the use of illustrations, in the suggestions they offered of activities to carry out and in the way these suggestions were presented, and in the role of definitions and explanations. These books are clearly, at one level, all examples of the same genre, yet all differ from each other in certain important respects; each has its individual character and will probably appeal more to some readers rather than to others.

The implications, I think, are clear. With the exception of a limited number of genres, such as certain types of business communications which tend to be restricted in scope and designed for situations that are in most respects identical, most genres are defined by characteristics that are probabilistic rather than obligatory in nature, and few texts are written by adhering in any straightforward way to a formula. Instead, as suggested above, the author thinks about his or her topic and purpose, and about the intended audience, and develops a form for the text that he or she judges will be appropriate. Certainly, a number of 'generic choices' (Dixon, 1987) will be considered in this process, for example whether to start a narrative part-way through the chronological sequence of the plot or, more conventionally, with a description of the setting; or, in the case of an article on writing in the classroom, whether to start with a statement of abstract principles, with some actual examples of student writing, or with a description of the context of a particular writing assignment. Decisions of this kind, although taken within a generic framework, are not governed by

prescription but are the outcome of what Scardamalia and Bereiter (1985) refer to as an ongoing dialectic between the content space (what one has to say) and the rhetorical space (who one is saying it to and, one's purpose for so doing). And the result is a text that is a unique solution to the particular problem that the writer set for him or herself, which, after the event, may or may not be found to fit easily into a system of genre classification.

Ideally, it seems to me, therefore, students should approach the choice of genre in the same way: they should learn the function of the generic choices available, and the strategic means of realizing them, but they should do so in the context of tasks in which those choices are relevant to their writing goals. Texts produced by other writers, both established authors and fellow students, which illustrate these choices may certainly be helpful in providing 'models' for discussion and perhaps for emulation, but the emphasis should be on selecting the most appropriate strategy for the writer's purpose rather than on conforming to some pre-established framework.

Creativity in Writing

Solving the problem of the most appropriate generic structure for a text is, according to this argument, one of the most important ways in which a writer takes ownership of the 'writing activity'. Thus one of Dixon's (op. cit.) objections to the pedagogic proposals of the genre school is that teaching students to work within a small set of genres, each with its own staged organization of elements and recommended repertoire of lexico-grammatical resources, is likely to constrain the opportunities for students to create their own structures and to discover their own 'voices' as writers. In this respect the genre debate raises, in a particularly acute form, the more general issue of creativity. The question is: what does it mean to be creative in writing?

As I argued earlier in relation to the model proposed by Britton and his colleagues, every text is a verbal construct and therefore involves a creative act. However, the amount of creative effort involved is clearly a matter of degree and might, at first sight, appear to be in fairly direct, but inverse, proportion to the extent to which the task is -constrained by external requirements. Thus, giving students complete freedom to choose their own topics, the audience for whom they write, and the generic form in which they construct their text, might seem the best way to encourage creativity.

Rereading Flower and Hayes' (1981) well-known model of cognitive processes in writing with this issue in mind, I was struck by the fact that they see the 'rhetorical problem' - as they call this set of choices - as originating, not with the author, but in the task environment. At first sight, I took this to refer to typical classroom writing assignments, where

the task is externally imposed, and the topic is selected by the teacher, who will also read the resulting text. I could also see that such a characterization might be true of other occasions of writing, such as writing an article for a journal, for which there may be a clear indication of the genre that is required and also of the maximum permitted length. But this still seemed to ignore the vast majority of texts, to which no external constraints seemed to apply.

However, as I thought more about those occasions on which the writer seems to have greater freedom in deciding on the solution to the rhetorical problem, I realized that, here too, the decisions that are made are strongly influenced by the conventions of the literate community to which the writer belongs. For writing and reading are not purely individual activities, but social practices that have been shaped over generations by the purposes that they have been used to serve and by the solutions that previous writers have found to the particular rhetorical problems they have faced. Learning to be a writer thus involves learning the repertoire of structures and strategies, and the ways in which they are used to achieve particular rhetorical purposes, that are the 'tools' of the writer's craft. Viewed in this light, creativity is by no means to be equated with the total rejection of conventions nor with the search for novelty for its own sake. Rather, it is to be seen in the ways in which the writer exploits the prevailing conventions in the interests of creating the overall effect that he or she is trying to achieve. Even when writers are at liberty to define the task in whatever way they choose, therefore, they are most likely to be successful in creating an effective verbal construct when their choices are made in the light of this cultural inheritance.

For students to be able to make such choices, however, they clearly need the opportunity to discover and appropriate this repertoire through the experience of carrying out writing tasks in which they are given demonstrations of possible alternatives and guidance in selecting between them in the light of the purpose to be achieved. In recognizing the importance of such an 'apprenticeship', the proposals of the advocates of genre teaching are clearly to be welcomed, provided that they are interpreted as emphasizing that learning takes place through purposeful use and not through routine, teacher-directed, practice. For, as in other cases where the metaphor of apprenticeship is drawn upon to illuminate the learning-teaching relationship, it is important to bear in mind that the learner must remain an agent in the process. If the purpose for writing is not one which the writer has made his or her own - either on his or her own initiative or in negotiation with the teacher the teacher's suggestions are likely to be heard as prescriptions, and the task carried out as an exercise in conformity rather than as an act of creative problem-solving and construction.

Goal Setting: Creating a Specification for the Text

Although relevant to the writing process as a whole, the issues that I have just discussed all relate particularly to the component of planning and, more specifically, to what I earlier called goal-setting. It is this component that is concerned with deciding, at a rather general level, the purpose of the writing and, hence, the sort of text one wants to write, and also with the more specific decisions about what content to include, how to organize it, and what sort of language to use. Sometimes, as we have seen, certain parameters of this rhetorical problem are set by others but, even when they are not, the writer needs to be aware of the cultural conventions that the intended audience might expect to be followed.

However, despite the existence of what can be quite strong constraints on the content and form of the text to be created, the formulation of one's writing goals is not like entering values into an equation and then calculating the solution. It is, as Frank Smith (1982) puts it, much more like drawing up the specifications for the construction of a new home. Although there are limitations on what is feasible, given the topography of the site (one's knowledge about the topic), the materials available and their potential uses (the genres with which one is familiar), building regulations that have to be met (the needs and expectations of one's audience) and, not least important, the cost of materials and labor (the resources of time and energy one has available), there are also many possible solutions to the problem. The goal is therefore to construct a specification which both realizes one's intentions and also takes account of the constraints, and which does so in a manner which one judges to be functionally effective and also aesthetically satisfying.

Furthermore, as in most building projects, the final solution is rarely arrived at in a single attempt, prior to the commencement of construction. Instead, as different parts of the plan are developed in greater detail, their impact leads to a reassessment and modification of the overall specification. In addition, as the written text itself begins to take shape, new possibilities, not apparent until that point, may be perceived and further modifications made in order to exploit them. In an important sense, therefore, goal specification is ongoing throughout the writing task and only achieves its final form at the moment when the writer decides that the task has been completed.

The architectural metaphor Smith uses here is one that I find fruitful, for it emphasizes the importance of the overall structure in the creation of an effective text. The gradually emergent nature of the final specification is also a feature of his account that I would want to stress. As I have already intimated, it is this complex and continuing interplay of brainstorming to activate existing, potentially relevant, knowledge, reading to amplify and refine it, and critical

reflection and discussion with others to discover what structure of meaning one wants to create, that is, for me, the most challenging part of writing. When carried through to a successful conclusion it is also the most rewarding.

Nevertheless, my impression is that, despite its critical role in the total activity of text creation - and, as I shall argue later, in its contribution to learning - this component receives a very small proportion of the time and effort that is devoted to the teaching of writing in schools. Perhaps the reason is that, when the main parameters of the task are set by the teacher, they are judged to be in need of no further discussion, and when they are left to the inspiration of the writer, the teacher does not wish to interfere in the creative process. Or perhaps, with the increased emphasis on 'conferencing' as the preferred medium of instruction (Graves, 1983), the teacher tends to place the emphasis on providing guidance and feedback at the stage when there is a draft of the text to respond to. Whatever the reason, it is my experience that, apart from the occasional brainstorming session, usually conducted with the whole class, to generate 'good' vocabulary items to include when a particular topic has been assigned, very little time is spent in helping individual students to formulate their goals for writing and to develop more detailed specification of the means for achieving them. Yet it is only when the writer is able, consciously, to create these superordinate goals for the text as a whole that he or she will be able to engage effectively in the more strategic and local goal-setting that guides the composing of the actual text. When considering ways to improve opportunities for writing and learning to write in school, this is, in my view, a matter that needs to be given much greater attention.

Planning, Composing and Reviewing

The need to engage in further reading, which in turn led to the reflections developed at some length in the preceding section, was itself prompted by my dissatisfaction with the account I was giving of the writing process. In particular, I wanted to be able to be more informative about the relationship between what I had called the main components of planning, composing and reviewing. I had argued that it is both inaccurate and unhelpful to characterize this relationship in terms of a simple linear sequence. However, I felt that, if teachers are to be helped to provide an orderly framework within which their students can develop proficiency as writers, they need to be offered something more than denunciations of the traditional account.

An alternative that I have found particularly helpful in this respect is the model proposed by Smith (1982). I have already referred to his characterization of planning as the development of progressively more detailed specifications for the text that one intends to write. Here is how he describes the outcome of this component:

The specification may be sketchy, but it will include some general expectations or intentions for what the finished text will be like, and possibly some guidelines about its form. Some parts of the specification may be quite detailed and specific ... But, in general, many details... may be left to the actual moment of writing. And many aspects of the specification may be changed in some ways, not only for what has been written but for what is yet to be written. (p.113)

The second component, composing - or simply "writing" as Smith calls it - is concerned with the actual construction of the text: the creation of a structure of words, sentences and paragraphs to meet those specifications. "In one sense the specification lays out the writer's problem, and the text is a solution to that problem if it conforms to the specifications, if it meets the writer's intentions and expectations" (op. cit.p.113). Composing is thus a different component from planning in that it is concerned with generating actual text, whereas planning is concerned .with generating the intentions that specify what the text will be like. However, although different, these components stand in a dynamic, ongoing relationship to each other, each influencing and being influenced by the other.

The third component, which Smith calls "rewriting", follows naturally as "the writer's own response to what has been written". Like Murray (1982), who distinguishes between "internal" and "external" revision, Smith divides rewriting into two separate activities: "the *revision* or reworking of a text as the writer finds elements that require or warrant modification or elaboration in some way, and the *editing* or polishing of the text to make it appropriate for a reader" (op. cit. p.127). Whilst it may occur at any time if flaws are noticed, editing is most appropriately carried out when the draft is completed. Revision, on the other hand, may occur at the end of any burst of writing, however short, as the writer reads what he or she has written and decides that it does not fully realize his or her intentions or recognizes that the intention itself was inappropriate in terms of the specifications for the text as a whole.

As Smith puts it:

Revision confronts writers with the text they have produced. It may be regarded as an occasion of dual reorganization: reorganization of the text as the writer responds to it as a reader, and reorganization of the specification of the text in the writer's mind. As I have said, ideas arise and develop in the original course of composition, both in the text and in the author's mind. When the author subsequently reviews the text there is the possibility of new developments among the ideas the writer now finds in the text and in the author's mind.

The interaction now resumes, but now with a new and substantial basis - the structure and content of the text itself. (op. cit. p.128)

Reading the text, then, and revising it if this seems called for, completes the cycle of planning, composing and reviewing with respect to any act of writing. This may apply to the whole text. And certainly authors do read through the whole draft when they have completed it to get the sense of the text as a whole, both to discover what it means, as Murray (1982) puts it, and to evaluate how far it matches their specifications. But, as the previous paragraph makes clear, the writing cycle can operate on much smaller units of text - a paragraph, a sentence, or even a unit as small as a phrase or word. In fact, it might be more appropriate to think of cycles concerned with the smaller units being nested within cycles applying to larger units of text. At any moment, therefore, the composing of one section of a text may be proceeding concurrently with the revising of the preceding section and the planning of the next.

Testing the Model: The Evidence from This Text

My interpretation of Smith's account of the way in which the various components of writing interact with each other in the creation of a text is, in fact, a hypothesis that can be tested against the evidence derived from particular writing events. It seems appropriate at this point, therefore, to ask how far it is confirmed or disconfirmed by what has been happening in the writing of this paper. In order not to let this get out of proportion, however, I shall confine my review of the evidence to that which is relevant to the writing of this section.

The decision to adopt this reflexive stance to what I had already written was arrived at quite late in the total process, at the point when I was about to embark on the paragraphs on reviewing. As a possibility for consideration, however, it arose not from thinking forward but from reviewing what I had written up to that point. In fact, in a still earlier plan, this section as a whole had had a very different specification from the one that has now emerged. My intention - not written down, but formulated in my mind - was to contrast two or more models of the act of writing. At the point when I revised this plan, I had already written several paragraphs describing the model proposed by Flower and Hayes (1981), based on the cognitive science metaphor of the mind as a computer, and I had followed this with an account of the first two components, as described in Smith's rather different model.

At that point, my intention was to consider only the relationship between planning and composing. However, as I reviewed the last sentence I had written (in the first instance to decide how to proceed). I saw that I had a problem. I

was arguing that "these components stand in a dynamic, ongoing relationship to each other, each influencing and being influenced by the other". But, I realized, I should want to say later that the same is true of reviewing in relation to both planning and composing. It did not make sense, therefore, to treat only the relationship between planning and composing in this section. I should also include reviewing.

With that macro level revision to my plan (a major change in the specifications for this section), the idea occurred to me to do what I am doing now: to follow the account of reviewing in relation to the other two components with a reflection on what had been involved in the writing of this section. With that in mind, I reviewed the balance of the section as a whole, and decided that the comparison between several models was an unnecessary complication, which would only distract from the main point I now saw I wanted to make. This was that the component activities of planning, composing and reviewing are in a constant interaction with each other, as the author works in a generally "forward" direction to create the text as a whole, but with a sort of cyclical or looping movement that involves these same processes in relation to the smaller chunks of text that are created in each burst of writing.

Having taken this decision, I deleted the paragraphs on the Flower and Hayes model and modified what I had written about the first two components as conceived within the Smith model. I then proceeded to write the paragraphs about reviewing, knowing that I was going to continue with a description of the writing of this section to illustrate the way in which the components function in interaction with each other in the writing process as a whole. Some weeks later, when a draft already existed for the paper as a whole, I had the idea that the account of the way in which this section came to be written could function as a test for the descriptive model derived from Smith's work. With this intention in mind, I returned to this section and began to further revise it accordingly. It was in the fairly substantial rewriting that occurred as a result that I became aware of the essentially cyclical nature of the process, and decided to try to emphasize it in the new version I was currently writing.

However, even this account fails to do justice to the complexity of the activity in which I have been involved. For I have only described the highest level - my planning, composing and reviewing of the section as a whole. But similar processes have also been involved at lower levels. In the paragraph before last, for example,³ I made several false starts and erased what I had written and started again. The last sentence, in particular, gave me considerable trouble. It was too long, and needed to be broken into at least two simpler sentences. But I couldn't see how to achieve the effect I intended. And I was having difficulty putting into words the various images I had in my mind of the activity as a

whole: images of coils in a rope, of chinese boxes, one nested inside another, or of working one's way through a maze, with many dead-ends requiring backtracking and restarting in a different direction.

But perhaps the most important discovery to have emerged from this reflexive review is that this cycle of planning, composing, and reviewing applies, not only to the creation of the text as a whole, but also to the component activities by means of which it is constructed. That is to say, I compose and review my plans as well as my text, and I also plan and compose my revisions. And in stating this discovery in the preceding sentences, I have also significantly revised the model which I set out to test, on the basis of the evidence that emerged from this retrospective review.

Writing, then, like any problem-solving activity, consists of a large number of actions taken towards the achievement of an ultimate objective. Each of these actions is planned, executed and evaluated with its own immediate goal in view but, at the same time, it is seen in relation to the whole, of which it is a constituent part. At the same time - lest this account should appear too mechanical - it should also be emphasized that creativity and discovery are of the essence of human problem solving. Both the form the solution should take and the means to be taken to arrive at it are frequently not known in advance but are invented and developed in the course of working towards it. The destination is only known at the end of the journey. Then one must decide whether this is indeed a solution to the problem with which one started or, perhaps, a solution to a different problem, but one which it is equally satisfying to have solved.

Learning through Writing

In the writing of this paper so far, I have focused on the activity of writing itself. By giving an account of the various actions in which I have engaged (or at least some of them), I have tried to demonstrate the complex interrelationship among the component processes that are involved in the creation of any text. In giving this account, I have also discussed a number of issues of a more general nature - issues that I think would need to be taken into account in any comprehensive treatment of the place of writing in school and of the conditions under which it takes place.

Now, however, I want to review this activity from a different perspective, namely that of the relationship between writing and learning. As I said at the outset, one of the chief values of writing is that it provides both an occasion and an incentive for learning. And one of my chief goals in writing this paper is to explore this relationship in action. What, then, have I learned?

In one sense, this text is itself the answer to the question, for it is a representation of the understanding I have achieved in writing it. At the same time, it is only one possible representation, and an incomplete one at that. For there are some aspects of the topic which I think I have come to understand better which do not figure in the current version of the text because, in the end, I judged they were not relevant to the argument as I have constructed it here. But this is also only a partial answer. For the text is a representation of the outcome of learning not of the learning itself. To get a sense of the latter, it is necessary to consider once more the component processes of writing, but this time from the perspective of the writer's interrogation of his or her initial understanding and the steps he or she takes to deal with gaps, confusions and inconsistencies.

Perhaps the most obvious kind of learning is that which follows from the writer's first review of what he or she knows about the topic to be written about. At this point, having identified aspects of the topic about which insufficient is known, he or she may engage in a variety of information-gathering activities, including reading, observing, experimenting and discussing this information with others. In the process, new dimensions of the topic may be discovered or familiar ones seen from a new perspective. In the writing of the present paper, this type of learning most obviously took place in relation to the issues that arose from my reading, which are discussed in an earlier section.

In my own experience, however, it is at the point of trying to shape this information into the meaning-structure of the text that the most important learning occurs. For it is at this point that the greatest understanding is achieved, in the effort to forge connections between the various items of information that have been mentally assembled, and to find ways of articulating these connections in words that will clearly communicate this understanding to others. For example, I am aware now that I had never really understood the relationship between genre as described by linguists and rhetoricians, and genre as experienced by the writer in the act of composing, until I struggled with the paragraphs in which I tried to explain my understanding of this relationship.

From the earlier discussion of the interrelationship between the components of writing, it will be clear, however, that I am not suggesting that one type of learning occurs while planning, another while composing, and yet another while reviewing. If there is a distinction, it is one of scope and focus rather than of kind. Before starting to compose the text, when reviewing the completed draft, and at various points in between, a writer must be concerned with the larger picture - both the macro knowledge structures to be represented in the text and the overall structure of the text itself, by means of which this knowledge is to be represented. Does it make sense to me: is it accurate, complete and coherent?

Does the structure work with the content effectively to achieve the overall purpose? Will it make sense for the intended audience? And will they be convinced by it?

These same concerns operate, too, in relation to the segments of text that are composed in each burst of writing. The only difference is that, at paragraph, sentence or phrase level, the focus is on specific details of phrasing and choice of vocabulary. However, it "is only by getting each detail right, both in itself and in relation to the larger picture of which it is a part, that coherence is achieved in the text as a whole. In this sense, it might equally be argued that it is in what Britton (1982) calls "shaping at the point of utterance" that the most important learning occurs.

So far, we have considered only the learning that can take place with respect to the topic being written about. The outcome of this learning we might refer to as content, or domain, knowledge. However, there is another type of knowledge that may be enhanced through writing, and that is knowledge about how to engage in the activity of writing itself, including the thinking that is a part of writing. With most activities, practice, in the sense of engaging in the activity in a purposeful manner, can lead to improved performance. And writing, seen as a complex problem-solving activity, is no exception. By considering alternative solutions to the problems of selection, organization, expression, and so on, that arise in the course of planning, composing and reviewing the text, one not only develops one's understanding of the topic, but also becomes more skilful at solving problems of this kind. And, insofar as these skills of thinking apply to other activities, writing may provide an opportunity for learning to think more generally. This sort of 'how-to' knowledge we can call procedural knowledge.

Furthermore, because the thinking that is involved in writing gives rise to a permanent record in the form of a resulting text, reviewing the text and reflecting on the processes involved in its production enables one to develop a further type of knowledge, which may be deliberately accessed to monitor and direct one's writing on future occasions. This conscious awareness and deliberate deployment of strategies in problem-solving situations is referred to as meta-knowledge or metacognition.

Because I chose to write about the activity of writing and to engage in systematic reflection on the processes involved, the writing of this paper has been a particularly rich opportunity for metacognitive learning, allowing me to discover more about the ways in which I orchestrate the three components of writing. But learning of this kind can take place, whatever the topic, whenever the writer pauses to reflect on how he or she is tackling the problems that are encountered in any writing task. Helping writers to reflect in this way should be one of the chief functions of conferencing with

them about their developing texts. For once they have become conscious of the strategies that are available to them, they can deliberately engage in what one child called "conferencing with myself" (Calkins, 1983) in order to consider the alternatives and select the most appropriate for the current task. In this way, they gradually take over control of the whole task and no longer require others to formulate the problems to be addressed and to suggest solutions for them. In a word, they become independent and intentional problem-solvers and learners (Bereiter and Scardamalia, 1983), which is - or should be - the goal of all teaching.

Learning and the Construction of Knowledge

In the preceding discussion, the terms 'learning' and 'knowledge' have been used as if their individual meanings and the relationship between them were self-evident and therefore a matter of universal agreement. In fact, this is very far from being the case, for educators differ quite radically amongst themselves on how these terms are to be understood. In the following paragraphs, therefore, I wish to state quite explicitly the assumptions that underlie my use of these terms in the claims that I have made about the importance of writing as a tool for learning.

First, I want to make it clear that any notion of learning as the accumulation of discrete bits of information or isolatable sub-skills is quite foreign to the sort of learning that I believe to occur in the course of writing. Indeed, I would go further and argue that such a notion is foreign to learning in most other contexts as well. Psychology textbooks, it is true, frequently discuss learning as if the paradigm case were the acquisition of isolated bits of information, such as when learning the names of capital cities or the dates of important historical events. However, such a view of learning has its roots in laboratory experiments involving the training of rats and pigeons or the memorization of nonsense syllables by humans under conditions controlled by a researcher. Outside the laboratory, by contrast, this sort of decontextualized and purposeless accumulation of 'facts' is the exception rather than the rule.

A much better understanding of what is typically involved in learning, I believe, can be obtained by thinking of it in terms of 'coming to know', that is to say as a complex process of incorporating new information into one's existing mental model of the world, making connections between what is new and what is already known and, on many occasions, modifying and reorganizing that model to accommodate the new information. Rather than thinking of learning as passive accumulation, therefore, we should see it as a much more active and constructive process whereby, gradually, with the introduction of each new piece in the jigsaw, new connections are discovered in the immediately surrounding pattern and the whole picture takes on a slightly different meaning.

It follows from this that any conception of knowledge must be rejected which sees it as an entity that exists, in some disembodied sense, in textbooks, curricular materials, or other artifacts, waiting to be 'delivered' as the teacher 'implements' the prescribed curriculum. Despite what is implied by these metaphors, knowledge cannot be transmitted from one person to another, whether through face-to-face interaction or through the medium of the written text. On the contrary, it must be thought of as the achieved understanding of individual learners and knowers, created in the act of making sense of new information in the attempt to solve some problem.

It is therefore important to emphasize that the most effective learning occurs in the context of purposeful activities to which it is instrumentally relevant. Of course it is possible, with considerable effort, to 'learn' information that is completely unrelated to any situation in which one can conceive of it being useful, but what is learned in this way is quickly forgotten, for it is disconnected from the motives that direct one's activities in other contexts. By contrast, knowledge which is constructed through the incorporation of information into one's mental model in the course of goal-directed action that is self-motivated is much more robust and long-lasting. This is what lies behind the current emphasis on 'active learning' in an increasing number of schools. It is also the justification for Barnes's (1976) plea that school knowledge should be converted into action knowledge so that it can become of some value in the daily lives of students outside school.

Finally, most learning is not a purely individual activity, undertaken in isolation from other people, nor is the knowledge that is constructed in the process a purely individual achievement. On the contrary, both are inherently social in nature and occur through the mediation of social interaction. That this should be so is a necessary consequence of the view of learning as occurring in the course of purposeful activity, for such activity is always set within a social context and is very frequently also socially oriented. From this perspective, then, the move from whole-class, transmissional teaching to individualized instruction, whereby students are assigned seat-work to be carried out independently and without collaboration with others, is simply the exchange of one misguided practice for another. For, under both conditions, learning is mistakenly seen as a purely 'intramental' activity, in which the individual simply receives or works upon input delivered by a teacher or a text.

All of these characteristics of learning are brought together and integrated in the theory of learning developed by Vygotsky and his followers (Vygotsky, 1978; Leont'ev, 1981; Rogoff, 1990; Wertsch, 1985; Wood, 1988). In this theory, the individual's knowledge, and the learning through which it is gradually constructed, are seen to be social in two senses (Wertsch et al., 1984). First, the mental functions, such as remembering, planning, evaluating, and so on, as

well as the semiotic tools, such as speech and writing, which are used in performing those functions, are first encountered by the individual in goal-directed activities which are socio-culturally defined and performed in collaboration with other members of the culture. Secondly, the learner's appropriation and internalization of those functions and associated tools occurs through active participation in tasks, the satisfactory completion of which is a shared responsibility, and in which the learner is enabled, with help, to perform more of the task than he or she would be able to manage alone. In this way, by working in what Newman and colleagues (1989) call 'the construction zone' with peers and others who are more expert, learners are recruited into membership of the cultural community and take over its goals and the procedures for achieving them. But, by the same token, as they appropriate and internalize these goals and procedures in their own individual ways, they each develop a unique personal repertoire of cultural resources to bring to the activities in which they engage. And, as they attempt to solve the problems they encounter, both alone and in collaboration with others, they draw on this cultural inheritance, but in creative ways that can change and extend it.

Writing and Learning

The socio-cultural theory of learning has the power to illuminate all aspects of an investigation of the role of writing in education. And it has this power by virtue of its conceptualization of writing as a semiotic tool which is used to bring about cognitive change, both through the interpersonal dialogue that is sustained through the writing and reading of texts and through the intrapersonal dialogue in which a writer engages in the construction of a text. With its conceptualization of learning as a cultural apprenticeship, this theory also has valuable suggestions to make about the pedagogical practices that would help students to master the use of this tool.

In this paper, I have tried to describe, in considerable detail, the processes in which one writer engaged in the creation of one particular text. As I have shown, these involve a complex interplay between three component types of activity: arriving at a mental specification of what one intends to say, composing a verbal structure to realize this intention, and reviewing what has been said to evaluate whether it achieves the intention, making revisions as necessary. Trying to think of analogies to describe this process, I have drawn on Frank Smith's (1982) metaphor of house-building. As I have already noted, there is, for me, an important architectural dimension to writing, as one attempts to create a verbal structure which is both functionally effective and aesthetically satisfying. But this metaphor has another significant dimension, particularly in an age in which buildings are modularly constructed from prefabricated parts. In writing, one does not have to start each time from scratch. As a member of a literate community, one already has a stock of

readymade materials, in the form of the meaning potential of the language code (Halliday and Hasan, 1985); one also has a wide variety of exemplars, in the form of other writers' texts, on which to draw in designing one's own unique structure. Equipped with this cultural inheritance, one can devote one's creative efforts to discovering what sort of structure best realizes one's overall purpose, knowing that this purpose will itself be developed and clarified as one engages in what T.S. Eliot, in *East Coker* (1944) despairingly called "the intolerable wrestle with words and meanings". This has certainly been my experience in working on this particular structure of meaning.

The ultimate purpose of writing is, in a very general sense, to contribute to social discourse in some area of activity that is of importance to the writer. From this perspective, it is the finished text - the product of the activity of writing - which is to be thought of as a tool. Its function, as Lotman (op cit) emphasizes, is twofold: to convey the author's representation of the topic to potential readers so that they may utilize the information for their own purposes, and to invite potential readers to continue the dialogue by formulating their own response to the text, either internally or in the form of a further text. Which function dominates in the reader's engagement with the text will depend in part upon the type of text and the social context in which the transaction between writer and reader occurs, and in part upon the reader's purpose and the general expectations that he or she brings to the act of reading. From our vantage point in a post-modernist age, we can see that the tendency of past generations has been to give too great an emphasis to the first function, that of information transmission. With the recognition that there is no objective standpoint from which to judge the truth on any issue, it is now more widely recognized that it is in the dialectic of continuing discourse that the best hope of progress is to be found (Bereiter, 1991). It is for this reason that I have emphasized the second, dialogic, function that a text can serve, for the writer as well as the reader.

And it is precisely when the writing of a text is conceived in this way, I believe, that its creation functions for the writer as a tool for thinking and learning. For, in this mode, it is incumbent on the writer to try to clarify his or her own understanding so that it may be clear and intelligible to the anticipated audience. By the same token, the writer must also try to understand the contributions of previous contributors, both in order to learn from them - and thus to enrich his or her own understanding - and also in order to shape the current contribution to be strategically appropriate to the ongoing discourse. As I intimated earlier, the writing of this paper most clearly served this instrumental function for me with respect to the debate about the role of genre in writing and learning to write.

From this brief review, it will be clear that there are a number of ways of considering the tool-like nature of written language. In fact, the various intellectual and linguistic processes involved in carrying on the discourse with its aid,

internally as well as externally, make writing - and the reading which is its complement - a form of technology as potentially empowering for the intellectual development of a culture and its individual members as the invention of the wheel was for material development. This being so, it is right that a major function of schooling should be to provide an apprenticeship in the use of this technology.

It has not been my aim in this paper to explore in detail the form this apprenticeship might optimally take. But I have suggested one very general principle that follows from viewing writing as a tool. That is that, in order to learn how to exploit this technology and use it for the various functions it can perform, occasions of instruction and practice must be set within contexts where the creation of the text serves a purpose that is meaningful for the learner. This necessarily also involves recruiting or creating a variety of audiences who are genuinely interested in reading - and responding to - the texts that are written, whether in speech or in further writing. For it is only when the text is a contribution to a meaningful inter-personal discourse that the writer will feel that it is worth learning to work on his or her text to make it achieve the intended effect. And it is only in engaging in the recursive processes necessary to achieve this goal that writing will become a mode of intrapersonal discourse and function as a tool for increasing the writer's understanding.

In recent years, there has been a surge of interest in the learning and teaching of writing, which has led to quite radical changes in classroom practices, particularly in elementary schools, and to vigorous debate about the value of different approaches. Until quite recently, however, this has not included an equal interest in exploring the potential of writing as a tool for learning. As a consequence, outside the English classroom, secondary schools have been largely unaffected by these developments; writing still plays a minor role in the work of students in most other subjects (Langer and Applebee, 1987) and, according to many critics, many of them leave school still 'unable to write'.

In this context, the purpose of this paper - only fully discovered in the course of writing it - has been to argue, and also to test my belief, that learning to write and writing to learn are two, reciprocal, aspects of a larger cultural apprenticeship, the goal of which is to enable learners to engage in the various discourses by means of which understanding, their own and that of the society of which they are members, is extended and advanced. It goes without saying, therefore, that this paper is intended as a contribution to such a discourse. Based, as it is, on one writer/learner's reflections on the writing of one particular text, it cannot pretend to generality. Nevertheless, if it prompts a dialogic response from its readers, it will have served its dual purpose.

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¹ Lotman's distinction between the "univocal" and "dialogic" functions of a text also seems to correspond to the distinction I made in paper 7 between the "informational" and "epistemic" modes of engaging with a text.

² For a further discussion of texts seen as semiotic tools that mediate interpersonal activity, see the works by Bakhtin and Lotman cited above.

³ It was the 'previous' paragraph when I first wrote this present paragraph. Since then, however, I have made the revision described in the last paragraph, which involved adding the paragraph to describe it!