CHAPTER 1

ON THE ORIGINS, COMMUNICATIVE PARAMETERS AND PROCESSES OF WRITING

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INTRODUCTION

Gelb (1952) states that "the concept of the divine origin and character of writing is found everywhere, in both ancient and modern times, among civilized as well as among primitive peoples. In the main, it is due to a widespread belief in the magic powers of writing" (p. 230). Primitive people are known to be astonished and afraid of books and writing in general.

For writing to serve as a system and means of human interaction and communication, it was necessary to devise a system of conventional visible marks. Writing was, in all likelihood, invented to serve emerging new needs in communication. Gelb (1952) suggests that geographic, social and economic developments created a complex of conditions which could not function properly without writing. Thus he claims that writing could only exist in a civilization and a civilization could not exist without writing.

The earliest records of writing (clay tokens, bullas, and tablets) known to us go back some 5,000, perhaps even 10,000, years and were used in a primitive way of accounting and as bills of lading accompanying shipments of goods. Thus the function of documentation appears to have been the driving motivation for the invention of writing.

Before full writing systems were developed, meanings were conveyed by pictures or by some more conventionalized descriptive mnemonic devices. Full writing emerged when writing did not only convey meaning but expressed language. According to Gelb (1952), the development was from a word-syllabic writing (i.e., words are divided into component syllables) to an alphabetical writing (i.e., the letters of the alphabet express single sounds of speech).

IMPACT OF WRITING

Typically great claims have been made regarding spoken and written language. Thus it is often maintained that "no other species except our own has a language" (Hockett, 1963:14). Even after extensive studies of

chimpanzees trained to use symbols, it is generally held that human beings do have a special biologically based capacity for language (Slobin, 1979).

Writing is often seen as a landmark in human culture. Breasted (1926, quoted in Gelb) has claimed that "the invention of writing and of a convenient system of records on paper has had a greater influence in uplifting the human race than any other intellectual achievement in the career of man." In a similar vein, Olson (1976) has described the great impact of the technology of writing on human cognitive processes and on the style of expression. He develops the idea of performance being culturally conditioned by suggesting that technological changes have had a profound impact on mental processes.

Specifically, Olson has studied the effect of the invention of the phonetic writing system and that of extended prose statement (i.e., the essayist tradition) on the type and style of language use. He maintains that writing made language an instrument for formulating original statements whereas before that oral presentation transmitted traditional culture, and on account of heavy reliance on auditory memory, imposed a rhythmic syntax pattern on oral language. The written text had to convey meaning on its own without depending on shared prior knowledge or on the immediate situation. Not having to concentrate to remember what was said released cognitive capacity to pay attention to what the written statements imply. Olson (1976, p. 198) claims that "the essayist technique and written language generally in the process of formulating general statements from which true implications can be drawn have as a by-product created the abstract logical concepts that we who are so habituated to a literate culture tend to view as part of nature herself. Modern science, like 'rationality', is an indirect consequence of the invention of a particular technology" (i.e., the technology of writing).

Olson (1977) has also drawn attention to the dominant role that written language plays in the school systems of the world. He argues that in written prose rhetorical functions are subordinated to the logical functions and that the requirements for logical, descriptive, autonomous statements requires that the written language must be more explicit and conventionalized than "the mother tongue" (i.e., speech). Schools are tied to the specialized written language and to a specialized form of knowledge because they rely so heavily on written prose. Literacy is not only the main goal of schooling, but is considered necessary for the achievement of other goals as well.

FUNCTIONAL RELATIONSHIP BETWEEN SPOKEN AND WRITTEN LANGUAGE

Linguistic context

Traditionally, linguists have assigned writing or written language a secondary status in relation to speech. Thus the Swiss linguist, de Saussure (1916), stated that language and writing are two distinct systems of signs and that the only raison d'etre of writing is to represent language (i.e., spoken utterances). This point of view was strongly supported by most American linguists. Sapir (1921) described written forms as secondary symbols of the

spoken forms. Bloomfield (1933) stated categorically that "writing is not language, but merely a way of recording language by means of visible marks" (p. 21). He also pointed to an often-made observation that writing is not universal whereas speech is. More recently, Hockett (1958) has maintained that "speech and writing are merely two different manifestations of something fundamentally the same" (p. 4).

In spite of this very dominant view among linguists all over the world, there have been some linguists, especially in Europe, who have questioned the majority view. In particular, Josef Vachek of the Prague functional school of linguistics has tried to explore the relationship between what he calls "the spoken norm of the language" and "the written norm of the language."

Vachek also demonstrates how the structural correspondence between the spoken and written forms cannot be limited to the "basic level" only (phoneme-grapheme correspondence) but higher levels (morphemes and words) are also important. He also shows how, in English, traditional spelling rather than proposed, more "regularized" spellings allow easy recognition of morphological regularities for the *reader*. Thus the orthographical interests of the writer and the reader are not necessarily identical. That may partly explain the fact that spelling reforms in English have not been very successful in spite of many attempts during several centuries.

Educational Context

As Olson (1963; 1977) has shown, the written language has played a dominant role in school. It has typically been considered the school's central task to teach three R's, two of which refer to written language: reading and writing (not speaking and listening comprehension). Written language thus tends to be regarded as the norm. Halliday (1980a) has noted that the imagery we use in reference to language is visual rather than auditory: long words, long sentences.

There have been only relatively few attempts to teach reading and writing on the basis of earlier oral competence. The "Breakthrough to Literacy" project sponsored by the Schools Council in England and "Läsning på talets grund" (reading on the basis of speech) in Sweden are examples of systems where children build up their own reading material by constructing written discourse with the help of the teacher.

DIFFERENCES BETWEEN CONVERSATIONAL INTERACTIVITY AND WRITTEN COMPOSITION

Rubin (1980) has argued that it is unfounded to equate skilled reading with decoding skills plus oral comprehension. There are a number of factors related both to the medium and message of language experiences which suggest that there is no simple transformation from one modality to the other. It seems equally obvious that there are a number of points of divergence

when children move from conversational interaction to composing, especially expository writing.

A taxonomy of the characteristics of conversational interactivity (face-to-face conversation) and written composition is presented below. It draws mainly on the work by Bereiter (1980), Bereiter and Scardamalia (1981d), Dillon (1981), Freihoff and Takala (1973), Glinz (1971), Grice (1975), Hymes (1972), Krashen (1976), Markova (1977), Moffett (1968), Myers (1979), Rubin (1980), Shuy (1981), Steger (1967), Wunderlich (1972), and Vygotsky (1962).

WRITING AS AN ACT OF COMMUNICATION

Characteristics of Communicative Acts

Writing is commonly regarded as an act of communication between the writer and the reader(s) of the produced text. It is also increasingly recognized (e.g., Anderson, 1977; Bruce 1979; Spiro, 1980) that meaning is not simply transferred by the writer to the reader. Speakers and writers are not assumed to be able to communicate directly their intended meanings through languge. According to this view, they can, at best, provide clues that allow the audience to construct approximations to that meaning from their own prior knowledge. The reader's task is as complex as that of the writer, since meaning is really constructed by the reader and does not fully reside in the text. Thus reading requires creativity just as well as writing. If this assumption about the meaning being largely created by the reader is essentially correct, as latest research suggests, it raises some interesting questions for the evaluation of compositions written by students in a number of different countries and cultures.

In a genuine social interaction and communication, the writer pays careful attention to the audience, the person or persons to whom the item of communication is addressed. Collins and Gentner (1980) have identified four principles that form tacit objectives in communicative acts. These four principles are assumed to be generally applicable and they can be realized by different structures and devices at different levels of text. The four principles are:

1. *Comprehensibility*. It is generally considered desirable that the text is as easy as possible for the reader to understand. The writer ought to give the reader enough clues to construct the correct model of the text. Collins and Gentner suggest that comprehensibility can be enhanced by using examples to illustrate general principles, filling in intervening steps in arguments and using short, simple sentences.

2. *Enticingness*. If a reader quits a text before finishing it, its easy comprehensibility does not matter. Therefore, it is important to be able to catch and hold the reader's attention. Collings and Gentner recommend placing the most important information in the beginning to motivate the reader to keep on reading. They list a variety of devices

Table 1.1 A Taxonomy of the Characteristics of Conversational Interactivity
and Written Composition

Communication Framework Characteristics	Conversational Interactivity	Written Composition
A. Modality	Oral; allows the use of linguistic and para-linguistic devices (pause, stress, intonation).	Written; allows the use of some textual devices (punctuation, paragraphing, underlining, etc.).
B. Temporal Context	Shared time perspective ("now"); allows ready use of temporal deictic expressions; does not persist beyond the "now".	Not shared; writer's perspective decisive for interpretation; produces a permanent record.
C. Spatial Context	Shared spatial perspective ("here"); allows use of and reference to physical environment, kinesics, facial expressions, eye contact, proximity, postural expression, etc.	Not shared; writer's perspective decisive for interpretation.
D. Mode of Functioning	Verbal and nonverbal interactivity characterized by reciprocity and collaboration and a continuous feedback and cues exchanged between at least two people who alternate in the role of addressor and addressee.	Largely autonomous language production with a varying degree of reader interaction with text and feedback and cues from the text produced by writer. Influence on discourse of remote addressee derives from writer's anticipation of addressee or audience reactions.

Message Characteristics		
E. Content	Typically concrete and largely shared (familiar) information and experiences requiring relatively little effort in searching from long-term memory.	Typically less familiar information of more abstract nature requiring often extensive and sophisticated goal-directed searching from long-term memory.

Table 1.1 (cont.)

Message Characteristics	Conversational Interactivity	Written Composition
F. Structure	Typically more open and highly context-sensitive discourse structure allowing redundancy and associative communication.	Typically more closed and conventionalized structure requiring within-text (co-text) sensitivity.
G. Function	Typically social-emotional regulation of interpersonal relationships and ideational-informative exchange of ideas. In conversational interactivity the latter is always subject to some influence from the salience of the personal contact (me-centered, you-centered, us-centered: expressive, regulative, phatic functions).	Typically informative-ideational exchange of ideas and regulation of reader-text interaction. The latter can be focused on writer-text interaction (reflective, expressive) or text-remote audience interaction (create opportunities for interpretation, impressions and aesthetic experience).
H. Size of Expected Message	Typically a conversational turn, which normally is relatively short containing only a few context-relevant points or ideas.	Typically a self-contained whole containing all relevant points or ideas and resembling monologue rather than conversational turn.
I. Norms Related to Message	Cooperativeness, including informativeness, truthfulness, relevance and clarity. Social norms of tact underlie all conversational interactivity.	Cooperativeness including informativeness, truthfulness, relevance and clarity. Product-related norms of felicitous expression (style) apply to all writing.
Processing Characteristics		
J. Processing Load	Usually relatively easy to manage all constraints involved in conversational interactivity within available processing capacity.	Usually demanding all processing capacity and often overloading it, especially among inexperienced writers.

Table 1.1 (cont.)

Processing Characteristics	Conversational Interactivity	Written Composition
K. Mode of Processing	Largely automated and well coordinated processing at different levels due to routinized executive procedures and sub-routines included in familiar conversational schemata. Planning can often be local and serial (what next?), there are several acceptable organizational and wording alternatives and there is little need for reviewing.	Typically non-automatic processing requiring conscious attention to even such low-level processes as text generation and writing mechanics among inexperienced writers, allowing little or no spare capacity to attention to whole text planning, process monitoring and reviewing.

Developmental Characteristics

L. Mode of Learning	Informal, largely unconscious acquisition and self-generated learning.	Formal learning with a growing degree of conscious control of one's activities. Typically a school-based activity of learning.
M. Developmental	Normally a child's first language experiences as listener and speaker.	Normally follows after extensive experience with conversational interactivity with a tendency of the latter being partly transferred into the early stages of composition learning. Normally also is preceded by having first learned to read.

Table 1.1 (cont.)

Linguistic Characteristics	Conversational Interactivity	Written Composition
N. Language	Cooperativeness, the support of the context of situation, etc. make the linguistic code only one medium of conveying meaning. Therefore the language can be structurally loose and less well-formed, and use elliptical and deictical expressions. The grammar can sometimes be more complex than that of written language, but lexical density is typically lower than in written text.	Since the meaning of the text has to be constructed by the reader without the possibility of continuous cues and feedback from the writer and without the support of the immediate context (within-text, cotextual focus), the message has to assume a larger role than in conversational interactivity. Cues for the construction of meaning must be relatively well-formed both structurally and semantically to avoid misinterpretation. Syntax is sometimes simpler than in spoken language but lexical density is higher.

designed to accomplish this objective: using suspense, unexpected events and humor, encouraging the reader to identify with the characters, etc.

3. *Persuasiveness*. In writing, the goal is often not only to explain ideas or to tell a good story, etc., but also to convince the reader of the truth, importance, authenticity, etc., of what was written. There are a number of devices used to make texts more persuasive. Collins and Gentner suggest that among them are the argument form used in some texts, admission by the writer that there may be problems or limitations, citing authoritative opinion, or referring to commonly shared experiences.

4. *Memorability*. In order for the reader to be able to learn from texts, he should be able to hold the essential parts of the text in memory. Memorability goes beyond ease of understanding. A text can be easy to understand, but not very easy to remember. Collins and Gentner suggest the use of lists, tables, figures, hierarchical headings and explicit statements about the structure of the text. This is probably most useful in expository discourse.

The devices that were suggested to achieve the above-mentioned general objectives of writing are related to the structure, style and content of the texts produced.

Parameters of Written Communication

Rhetorical models that relate the writer to the reader have been presented by Brewer (1980), Britton (1975), Bruce (1979), Chatman (1978), D'Angelo

(1975), Kinneavy (1971), Moffett (1968), and reviewed by Kinneavy (1980). In the following table is presented the author's taxonomic classification of parameters assumed to play an important role in any writing situation and to constrain the writing process.

Table 1.2 Parameters of Writing Situation

I. Writer-Audience Relationship

   A. Identity of Writer (W) and Audience (A)

      1. W is identical with A (intrapersonal)
      2. W is not identical with A (interpersonal)

   B. Role of Writer

      1. Writes as self
      2. Assumes some role other than self

   C. If A2, what is the social status relationship between W and A?

      1. W higher than A
      2. W equal to A
      3. W lower than A

   D. If A2, what is the size and specificity of Audience?

      1. One specific person
      2. Small specific group
      3. Large specific audience
      4. Large unspecific audience

   E. If A2, what is the degree of publicity of the communication?

      1. Private/personal
      2. Semi-public/semi-official
      3. Public/official

   F. If A2, what is the attitude of W to A and vice versa?

      1. W to A positive/A to W positive
      2. W to A positive/A to W neutral
      3. W to A positive/A to W negative
      4. W to A neutral/A to W positive
      5. W to A neutral/ A to W neutral
      6. W to A neutral/ A to W negative
      7. W to A negative/A to W positive
      8. W to A negative/ A to W neutral
      9. W to A negative/ A to W negative

II. Feedback

   G. Expectation of external feedback

      1. Not expected
      2. Personal feedback expected
      3. Public feedback expected

III.   Purpose (Function)

   H.   Dominant purpose (function)

      1.   Documentative (produce a record)
      2.   Expressive (convey attitudes, emotions, mood, etc.)
      3.   Informative (convey information)
      4.   Persuasive/directive (convey intention)
      5.   Reflective (produce a structured cognitive account)
      6.   Artistic (produce an artistic structure)

IV.   Content (Topic)

   I.   Content identity

      1.   Units, entities, classes (descriptive)

         a.   W (about me)
         b.   A (about thou, you)
         c.   W and A (about us)
         d.   Other persons (he, she, they)
         e.   Things, elements, institutions (it)

      2.   Events, actions, processes (narrative) (it)

      3.   Relations, systems, notions, ideas, beliefs, norms, etc.
         (exposition, argumentative)

   J.   Content accessibility

      1.   Familiar content easily accessible from memory to both W and A
         (W and A both experts)
      2.   Familiar content easily accessible to W but not to A (W expert,
         A novice)
      3.   Content clues available in writing situation (W and A both
         novices)
      4.   Content clues available in writing situation (W novice, A expert)
      5.   Content less familiar and not easily accessible (W novice, A
         expert)
      6.   Content less familiar and not easily accessible (W and A both
         novices)

   K.   Attitude to content

      1.   W positive, A positive
      2.   W positive, A neutral
      3.   W positive, A negative
      4.   W neutral, A positive
      5.   W neutral, A neutral
      6.   W neutral, A negative
      7.   W negative, A positive
      8.   W negative, A neutral
      9.   W negative, A negative

   L.   Interest in content

      1.   W high, A high
      2.   W high, A medium
      3.   W high, A low
      4.   W medium, A high
      5.   W medium, A medium
      6.   W medium, A low
      7.   W low, A high
      8.   W low, A medium
      9.   W low, A low

V. Response

    M. Response complexity

        1. One or a few words (e.g., fill in)
        2. One or a few sentences (e.g., short answer)
        3. One paragraph
        4. Unified composition of several paragraphs

    N. Procedural accessibility

        1. Procedures and strategies familiar and easily accessible (high
            degree of automaticity)
        2. Procedural and strategic cues are available in the writing
            situation
        3. Procedures and strategies less familiar and not easily accessible

VI. Product

    O. Format specifications

        1. Format specifications are familiar (standardized format)
        2. Format specifications are available in writing situation
        3. Format specifications are not familiar

    P. Familiarity with criteria

        1. Product criteria are well-known
        2. Product criteria are specified in writing situation
        3. Product criteria are not well-known

The parameters of the writing situation can be used to characterize different writing tasks. Thus, for instance, a writing situation consisting of A1, G1, H1, I1e, J4, K1, L1, M2, N1, O1, and P1 would characterize written notes made for personal use. The parameters can be used in the same way to characterize a great variety of writing tasks, e.g., writing a letter of application, writing a personal letter to a friend, writing a complaint, and writing a non-guided expository essay in school. The parameters can also be used as a tentative guidance in assessing the difficulty of writing tasks.

WRITING AS A COGNITIVE PROCESS

Towards a Definition of Writing

Essay writing is a complex cognitive skill, which requires appropriate cognitive strategies, intellectual skills, verbal information as well as appropriate motivation (cf. Gagné and Briggs, 1979). In essay writing, the student generates a text by applying certain rules and conventions and by drawing on applicable information. In the Bloom taxonomy (Bloom, 1965), composition writing would fall into the category of "synthesis" being a "production of unique communication" in which the writer attempts to convey ideas, feelings and/or experience to others.

In writing a composition, the student carries out a variety of cognitive processing. These cognitive processes include executive control processes, which select and activate needed cognitive strategies. These, in turn, modify all other cognitive processes, including retrieval and search for information from the long-term memory to the working memory as well as response generation, which selects and organizes performance.

The above remarks can be summarized as follows: Writing is a multilevel, interactive and goal-directed process of constructing, encoding and communicating meaning by means of a conventional system of visible marks.

Models of Writing Process

General Models of Writing Processes. Just as reading comprehension is now often considered a non-hierarchical process of both top-down (conceptually-driven, knowledge-based) strategies and bottom-up (data-driven, text-based) strategies (e.g., Spiro, 1980), writing cannot be adequately described by fixed-order stage models (Flower and Hayes, 1977; Gould, 1980). Writing processes are interactive. Composing is iterative and recursive (Gould, 1980).

Daiute (1981) has suggested a psycholinguistic model of writing which combines cognitive behaviors with linguistic structure in the production of sentences. She maintains that it is useful to study writing as derivative of normal speaking processes. As in speech, sentences are assumed to be planned via set syntactic frames. Typically, clauses are planned and lexical items are fit into the frames. Long and complicated sentences are recoded semantically, which means that the syntax of the sentences may be disrupted. Thus when a potential perceptual clause (basic unit held in short-term memory containing the sentence relations required by the verb: subject, verb, object, complement) is recoded semantically, the writer may have some difficulty in completing the sentence, because important grammatical information from the prior clause has, in fact, faded. The writer then produces the subsequent clause utilizing the semantic information and whatever syntactic information he can remember. Similar overloading in rereading one's text may explain why writers often do not notice their grammatical errors.

According to Daiute (1981), it is important to account for the effects of memory on sentence production because writing involves many activities that occur in the short-term memory.   During composing "the writer is 1) generating ideas, 2) forming propositions, 3) accessing lexical items, 4) planning clauses and sentences, 5) translating from semantic and phonological representations to orthographic ones, and 6) planning subsequent units" (p. 9)

Collins and Gentner (1980) state that regarding writing as a process makes it possible to specify a number of sub-processes and their interrelationships. Their model of writing sees writing as a process of producing and editing text under constraints related to the a) structure, b) content, and c) purpose of writing.

At the highest level, the process of writing can be divided into a) the process of idea production, and b) producing text embodying those ideas. Collins and Gentner suggest that it is possible to teach writers to separate the sub-processes of the two high-level processes.   This enables writers to use effective generation strategies for each sub-process and helps them to ignore other constraints while working on any given sub-process.

According to Collins and Gentner, the processes of text production are assumed to be largely similar to those of idea generation.   The task is to impose text structures on the ideas produced and to observe the relevant structural constraints operating at the different levels of text (text, paragraph, sentence and word).

Separating the various steps in producing a text is claimed by Collins and Gentner to help the writer in at least two ways: 1) the number of constraints that have to be satisfied at one time is reduced, and thus 2) at the same time it increases the likelihood of satisfying any particular constraint successfully.

Collins and Gentner (1980, p. 66) suggest that a useful step-by-step procedure might be as follows:

1. Create a detailed outline of the text structure.
2. Apply text-level editing operators.
3. Create a semitext with all the ideas included in paragraphs, but not in finished sentences.
4. Apply paragraph-level editing operators.
5. Create finished sentence-level text.
6. Apply sentence-level editing operators.

Step-by-step procedure is assumed to help the writer because much of the editing can be done, in fact, before the text is produced.   It allows the writer to concentrate on the generation and editing of one aspect of the text at a time.   Collins and Gentner recognize that such an approach might, however, have the disadvantage of making the process of writing too inflexible for subsequent revisions and modifications.

Bereiter (1980) has suggested that it would be useful to attempt to develop a complete model of the writing process even if it will necessarily have to be a sketch at this point of research.   According to Bereiter, there is a high-level

actually produced up to that point of time and the representation of the intended text. The problem is diagnosed and some tactic is chosen to operate on the text to improve it. Children's ability to carry out the CRO process is described in Development of Evaluation and Revision Skills (below).

Model of Knowledge-Telling Strategy in Written Composition. Bereiter and Scardamalia (1980) have also proposed a model of Knowledge-Telling Strategy in Written Composition. It illustrates a stage in writing development where composing is characterized by a lack of a clear goal and lack of testing of content against the goals. The only goal is to write what the person knows about a certain topic. This can be done by selecting key descriptors from the assignment and by choosing a relevant discourse schema (Figure 1-3).

Bereiter and Scardamalia suggest that the model describes an immature stage in writing development. Yet, they recognize that it is adequate for many school-based writings (cf. also Applebee, 1981) and has some uses in the out-of-school context as well. Bereiter and Scardamalia maintain, however, that in spite of the fact that it "works" so well in school, it is an inadequate strategy in the long run. What it leads to is "inert knowledge." No new links are created between old and new knowledge elements. Since there is no need to use inventive and problem-solving strategies, no manipulation of
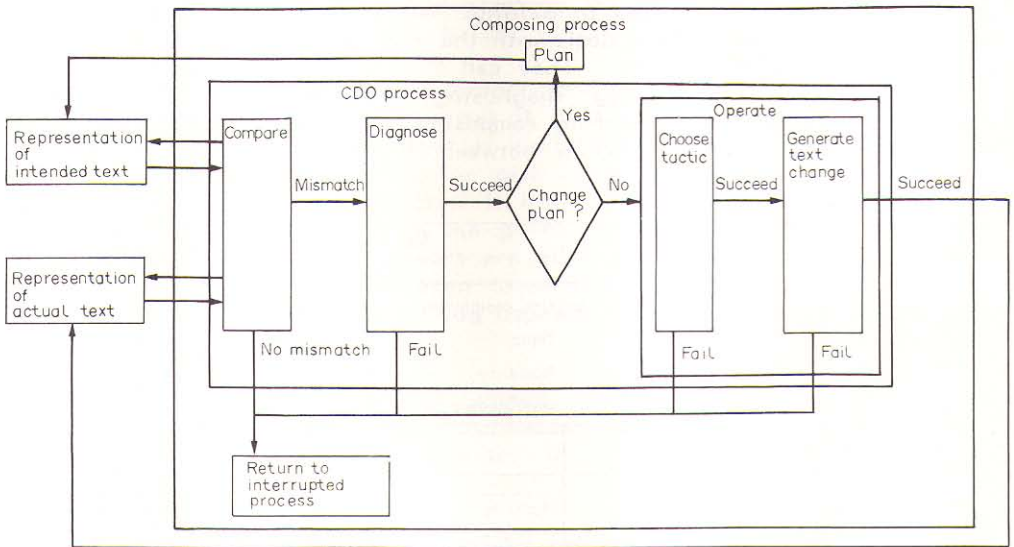

Figure 1.2 Model of the CDO (COMPARE, DIAGNOSE, OPERATE) Process in Composition (Bereiter and Scardamalia, 1981a).

information is really called for. Bereiter and Scardamalia suggest that the Knowledge-Telling Strategy should be limited to a minimum, since it does not foster "intentional cognition" which they (Bereiter and Scardamalia, 1981b) define as the "voluntary direction of mental effort." Students who are capable of directing their own mental activities are not merely passive "participant learners" but autonomous "intentional learners" who can construct

meaning and perceive meaningfulness in learning on their own. For participant learners , meaning and meaningfulness of learning has to be prepackaged by the school system. This means, however, that participant learners have not been able to take charge of their own minds.
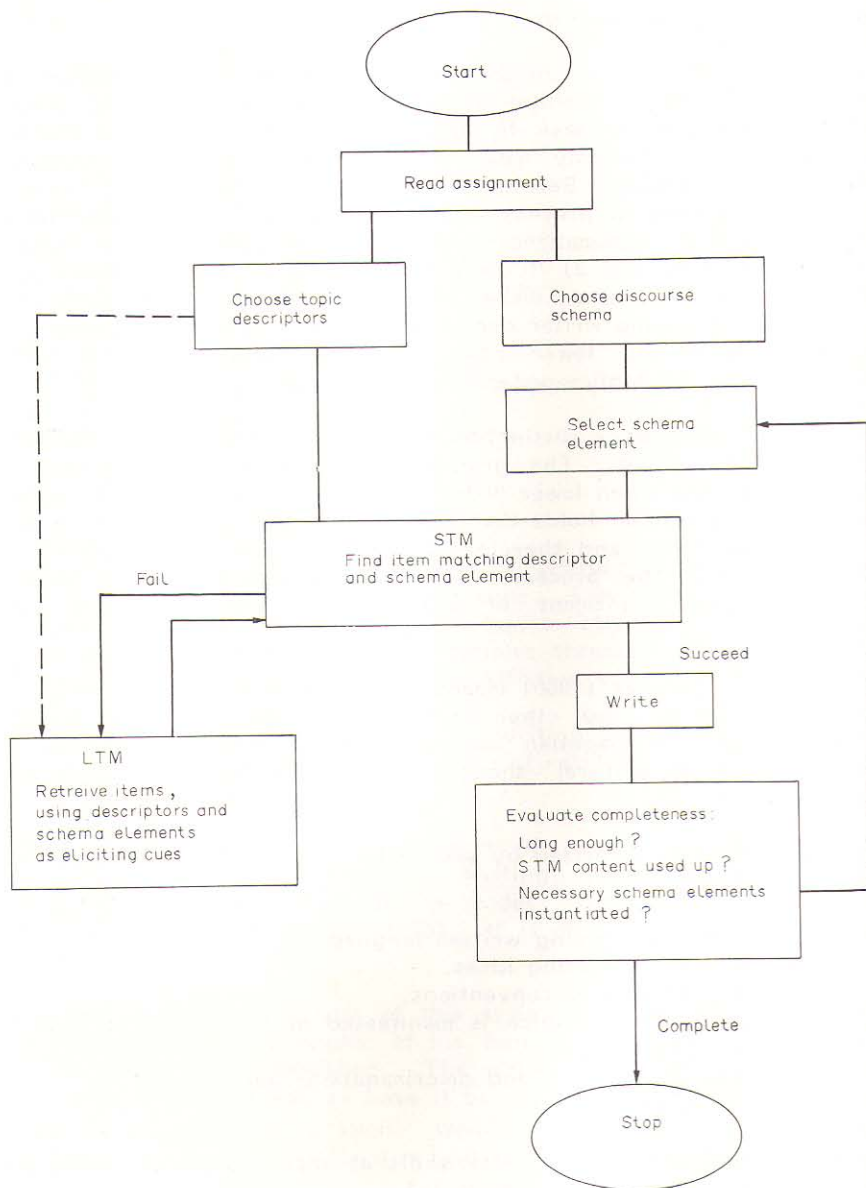
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                    ┌──────────────┐
                    │    Start     │
                    └──────┬───────┘
                           │
                    ┌──────┴───────┐
                    │ Read assignment │
                    └──────────────┘
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Choose topic descriptors

Choose discourse schema

Select schema element

STM
Find item matching descriptor and schema element

Fail

Succeed

Write

LTM
Retreive items, using descriptors and schema elements as eliciting cues

Evaluate completeness:
Long enough ?
STM content used up ?
Necessary schema elements instantiated ?

Complete

Stop

Figure 1.3 A Model of the Knowledge-Telling Strategy as Applied in Expository Writing (Bereiter and Scardamalia, 1980).

DEVELOPMENT OF WRITING

Stages in Writing Development

It will have emerged from the foregoing discussion that the number of things that must be managed simultaneously in writing is very great, even if the writer approached the task by going through the stages of planning and reviewing. This obviously means that the information processing load in writing is considerable. Bereiter (1980) suggests that writers can carry out such a great variety of processes simultaneously only if 1) many parts of the writing process are automatized so that little conscious attention is needed for carrying them out, and 2) if there is a highly skilled time-sharing, so that attention can range over a number of on-going tasks without serious lapses or interference. A young writer does not possess such complex processing skills and he uses mainly lower-order schemata, which are not sufficiently automatized to allow higher-order schemata to operate.

Bereiter (1980) makes a distinction between "gradualist" and "structuralist" conceptions of writing. The gradualist conception holds that higher-order skills can be used when lower-order skills are sufficiently automatized. The structuralist conception holds that the writing process, however it is carried out, has organization and therefore the incorporation of a new skill requires reorganization of the process. Thus there would not be only gradual elaborations and refinement of schemata, but more discrete stages of organization.

By a "stage", Bereiter (1980) means simply *"a form of organization"* that is preceded or followed by other forms. He wishes to avoid too close an association with the Piagetian idea of developmental stages. There seems, however, to be a "natural" though not necessarily universal or obligatory order.

Mature writing is caracterized by six systems of knowledge or skills according to Bereiter (1980):

1. fluency in producing written language,
2. fluency in generating ideas,
3. mastery of writing conventions,
4. social cognition, which is manifested in the ability to take the reader into account,
5. literary appreciation and discrimination, and
6. reflective thought.

Children cannot integrate all these skills at once. Skills are integrated in a hierarchical way as shown in Figure 1-4.
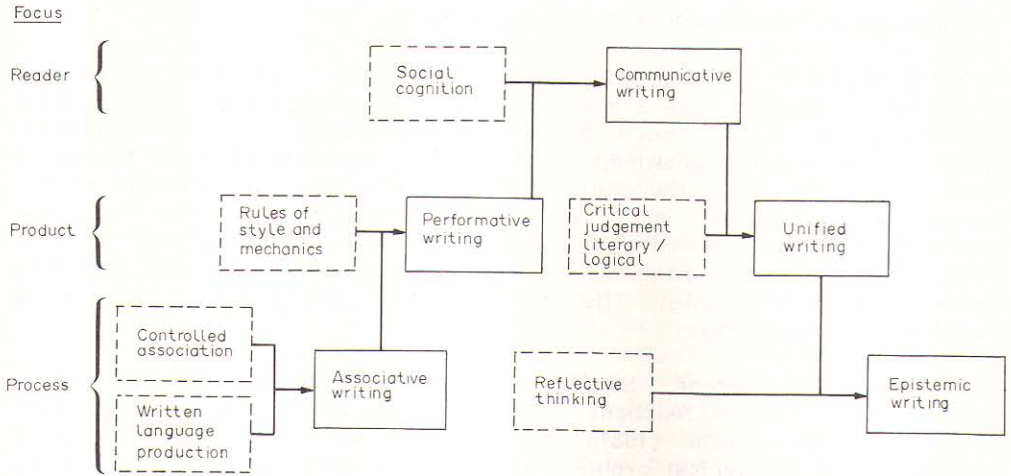
Focus

Figure 1.4 A Model of Skill Systems Integration in Writing Development (Bereiter, 1980).

1.   *Associative writing.*   This is the kind of writing in which ideational fluency is coupled with skills of written language. The writer puts on paper whatever comes to mind. Uninteresting topics often tend to produce associative writing. Associative writing resembles transcribed speech, and is close to what Britton calls expressive writing (Britton et al., 1975).

2.   *Performative writing.*   In this kind of writing, associative writing is integrated with knowledge and observance of stylistic conventions and mechanics.

3.   *Communicative writing.*   The integration of performative writing with social cognition results in communicative writing, in which the writer is attempting to have a certain effect on the reader. Britton calls this type of writing transactional (Britton et al., 1975). It is often also called expository writing.

4.   *Unified writing.*   Characteristic of this type of writing is that it takes account of the writer as the reader of his own product. This implies that there is a feedback loop established. The writer may wish to be satisfied with the piece of writing as well as have it be appealing to the other readers. The written product matters as such. Writing is not only an instrumental skill. Unified writing has similarities with Britton's category of poetic writing.

5.   *Epistemic writing.*   Because writing can be stored, reviewed and revised, this makes it possible to produce extended and complex patterns of thought, which is very difficult without writing (cf. Olson, 1976; 1977). Epistemic writing involves reflective thinking integrated with unified writing skills. Writing is no longer only a product of thought but an integral part of thought.

Development of Processes and Strategies in Writing

Research Methods. Bereiter and Scardamalia (1981c) have clearly shown that young school children have a much wider knowledge base than they typically demonstrate in a task such as written composition.   Their conceptual capabilities (concepts, knowledge, etc.) are in advance of their functional capabilities.   This led the authors to the idea that a technique called "procedural facilitation" might improve the utilization of the functional potential.   This is a method whereby some aspect of the executive process of writing is manipulated experimentally without giving any direct cues regarding content or form of writing.   The latter is called "substantive facilitation" by Bereiter and Scardamalia.

Active Search for Content.   Simple content-empty prompting (Go on!   Tell us more about it!)   and instructions to write as much as possible were shown by Bereiter and Scardamalia (1981c) to double or even triple the amount of writing.   Thus the typical problem, especially in early composing, of having nothing to write about is not only a function of the child's knowledge store but also of getting access to and giving order to what they know.   Bereiter and Scardamalia take this to be an indication of inadequate search strategies. They have shown that simple strategies such as giving children sentence openers (I think; For example; The main point; One reason; A second reason; The reason; Besides; Not all; But; etc.) and asking them to write down a list of words they thought might be used in the composition helped children to double the length of their essays.   Listing ideas did not, however, prove helpful for young children.

Shift from Local to Whole-Text Planning.   Children do not typically plan what they are going to write.   Expert writers, on the other hand, plan extensively before writing (Hayes and Flower, 1980).   Stallard (1974) has also shown that good student writers (12th grade) spend more time at prewriting activities than less proficient writers.   Bereiter and Scardamalia (1981c) have shown that children's planning is local, i.e., limited more or less to the immediate context.   They call this the "What next?" strategy of planning, which is characterized by a forward-looking, serial procedure.   In studying whether children had a potential for whole-text planning, which involves both backward-looking and forward-looking analysis, they found this to be the case.   Sentence openers did not prove helpful, however.   When children were given composition endings, they were found to be able to engage in a requisite means-end planning in building the composition towards the final outcome.

Children also had some knowledge of various discourse structures (story, opinion essay, giving directions).   When they were given some training in the use of various discourse elements (e.g., give a reason for an opinion, tell more about the reason, give an example), the quantity and variety of discourse elements in their compositions differed significantly from the compositions written by a control group.   Thus it seems possible to improve children's planning of discourse by helping them gain conscious access to rhetorical knowledge and by helping them develop executive procedures for using that knowledge as they compose.

Development of Evaluation and Revision Skills.   Murray (1978) claims that writing is rewriting.   Stallard (1974) found that good 12th grade writers

tended to be slower, stop more often to read what they had written, and do more revising. Several other studies (e.g., Emig, 1971; Gould, 1978) have shown that even high school and university students do not usually revise what they have written and do not like to do it. Murray (1978) suggests, however, that student unwillingness to revise may be an artifact of teaching rather than something inevitable. When children do revise their text, they usually limit it to small units of text (words, phrases, sentences).

It is often suggested that inexperienced writers are egocentric: they structure their writing in accordance with their memory and experience and pay little attention to the demands that such writing sets on the reader. Flower (1979) calls such writing "writer-based" as opposed to "reader-based" writing. Bereiter and Scardamalia (1981c) suggest, however, that "the problem might not be that children lack ability to evaluate but that they don't have an internal feedback system that allows evaluation to become part of the writing process" (p. 57). When children were given a list of evaluative phrases (e.g., I'm getting away from the main point; This doesn't sound quite right; People may not understand what I mean here), their ratings of their own sentences agreed quite well with those of an expert rater. Their diagnosis skills were not equally good, and the corrections they made after choosing a strategy from a set of directives (e.g., I'd better give an example; I'd better say more) were only slight improvements and did not improve the overall rated quality of the compositions. Children could recognize problems but had difficulties in diagnosing and overcoming them. Most changes were minor changes of words and phrases, and minor additions or deletions. Only six out of thirty instances were attempts to make major changes and two drastic reformulations were both obvious failures.

DISCUSSION

We have found that writing has had a great impact on human culture and human cognitive processing. Written language plays an important role in a literate culture and literacy is a central goal of schooling as well as a principal means of achieving other educational goals. Written composition differs from conversational interactivity in a number of ways. This means that when children are first introduced to written composition, they have to learn to take into account new constraints and requirements.

In the case of communicative writing, the writing situation consists of a number of parameters, which affect the writing process. The most salient parameters are writer-audience relationship, feedback, purpose, content, task scope and complexity, and familiarity with task.

Mature writing process is assumed to comprise three major processes: planning, translating plans into acceptable language, and reviewing. Each of these has sub-processes or sub-routines. Mature writing presupposes both knowledge and a number of skills. Children have to learn them but it has also been demonstrated that they can improve their compositions if they are given cues how to search for content, how to plan, and how to evaluate their own products.

It would appear that an adequate model of composing must have a strong structural component, since a text (e.g., a composition) is not just a linear sequence of words or sentences. Rather, it is a sequence of interrelated propositions (ideas, topics), a structure of meaning, serving some rhetorical function and exhibiting a conventional pattern of internal coherence and a flow of thematic and informational structure (cf. Halliday, 1980b).

In communicative writing, the initial stimulus is the writer's intention to communicate something to the reader. It is difficult to manipulate people's intentions directly. The study of writing is more difficult than the study of reading, because in reading it is easier to control the input and to measure the output. Writing also places more demands than speaking since the writer is obliged to try his best to convey the message in the text without being able to rely as much on contextual or situational feedback. This means that the writer must give more details and structure the presentation by overt syntactical and rhetorical markings. In addition to having structural clarity (i.e., easy for readers to decipher), the composition should be semantically clear and expressive.

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Guest Editors

Alan C. Purves
and
Sauli Takala

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