Flower & Hayes’ cognitive model of writing

A reaction against stage models of the writing process

E.g.: Prewriting - Writing - Rewriting

They model the growth of the product; do not explain how writers move from one stage to the next.

It is clear that writers plan, write and revise repeatedly, in a way which cannot be divided into clearcut stages.

Important question:

How do writers’ decisions and choices move the writing process forward?
A cognitive process model has the following properties:

Describes the main parts which make up the process of writing

Explains how these parts interact

How information is transferred between processes in the writers’ mind, and sources of information external to the writer

Can be used as a basis for forming new research questions and hypotheses

How can a cognitive process model be formed?

How can the data about the writing process be collected?

Much of the writing process is mental

Think-aloud protocol analysis: a method developed for problem-solving research

Creates a lot of data (appr. 20 pages for an hour session)

Transcribed sessions are coded to correspond to cognitive processes

Example
Components of the model

- The task environment
  
  Includes everything outside of the writer which contributes to shape the writing process

  The “rhetorical problem” (the writing assignment)
    
    Writing is an act of communication, happening in a social context
    
    Who are the readers? What do they know?
    
    Who has formulated the writing task?
    
    What kind of text genre is it?

  The goals set up by the writer

  The text that has been produced so far
    
    Its content and linguistic form poses restrictions on what can be written
      
      The title or heading
      
      The first sentence of the paragraph
      
      The first words of a sentence
      
      etc.

  This is often a reason not to use complete sentences (to translate ideas) in the beginning stages of writing
    
    When the writing is incoherent, the text has had too little influence
• The long-term memory, including all of the writer’s knowledge
  
  Knowledge about the topic
  Knowledge about the audience
  Knowledge about writing tasks and plans
  External knowledge, e.g. written material to be used in the task

Problems:

  1) how to get the knowledge out of the memory; to find the appropriate knowledge
  2) how to adapt the knowledge to the writing task

“Writer-based prose”: the writer has used existing knowledge without adapting it to the reader
The writing processes

Planning

(building a representation of knowledge that will be used in writing)

Generating ideas from memory

Sometimes ideas are so well developed and organised that the writer can formulate them directly in English (or Swedish!)

At other times, the ideas are thought fragments with little organization, and represented in various ways

Organising

1) To group ideas and develop overall categories

   Subordinate ideas are searched for which develop the topic

   Superordinate ideas are searched for which contain the current topic

2) Finding an order of presentation of the written text
Goal-setting

The goals are developed by the writer

Some are taken directly from memory (previously existing goals)

Some are developed during writing

This goes on through the whole writing process (can be seen from think-aloud protocols)

The ability to define a rhetorical problem and set goals seems to distinguish good and poor writers
Translating

Requires the writer to work under all of the constraints imposed by language

Many levels

pragmatic: how can a certain expression be used?

semantic: what are the meanings of expressions?

syntactic: how can words be combined to sentences?

lexical: how can an adequate word be found?

spelling

motor activity

This may put too much pressure on memory

E.g. for children, sentence formulation and spelling can interfere with global planning

Two possible strategies in this case:

Ignore language rules ---> language errors

Ignore planning ---> good sentences; poor global plan
Reviewing

Consists of evaluating and Revising

- Reviewing can affect both ideas and text
- Reviewing can occur both as a conscious, planned action, and suddenly, interrupting generating or translating

NOTE: The earliest model by Hayes & Flower (1980) included two different reviewing processes:

(p. 18) “We distinguish between REVIEWING and EDITING as two distinct modes of behavior. On the one hand, EDITING is triggered automatically and may occur in brief episodes interrupting other processes. REVIEWING, on the other hand, is not a spur-of-the-moment activity but rather one in which the writer decides to devote a period of time to systematic examination and improvement of the text. It occurs typically when the writer has finished a translation process rather than as an interruption to that process.”
• The monitor

This is the function which allows the writer to move between processes; responding to the needs of the task.

Significant individual differences (writing styles)

The writing processes can be seen as tools to be “orchestrated” by the writer.

Hayes & Flower’s production rule model of the monitor
The organization of the writing process

The subprocesses are hierarchically organized

The overall process is recursive: it may invoke an instance of itself (whole or parts)

“For instance, a writer trying to construct a sentence (that is, a writer in the act of translating) may run into a problem and call in a condensed version of the entire writing process to help her out (e.g., she might generate and organize a new set of ideas, express them in standard writing English, and review this new alternative, all in order to further her current goal of translating.”

....”However, it is much more common for writers to simply embed individual processes as needed - to call upon them as sub-routines to help carry out the task at hand.”

An economy aspect: the model explains that the writer can do with few processes, which are always available
The development of writing goals

During composing, the writer creates a network of goals on various levels, which are continuously refined and developed.

How can writing be both explorative and goal-directed?

Goals are continuously revised in the light of new insights

Once lower-level goals have been achieved, they are often forgotten

Two kinds of goals:

Process goals: how to manage the process

Typical of mature writers

Content goals: what to include in the essay

The highest goals are often rather general and routinely formed, whereas intermediate level goals are more specific and constructive (telling what to do to achieve a certain purpose)

(p. 379) “Therefore, one might predict that an important difference between good and poor writers will be in both the quantity and the quality of the middle range goals they create. These middle-range goals, which lie between intention and actual prose (cf. “give a brief history” in Figure 3), give substance and direction to more abstract goals (such as “appealing to the audience”) and they give breadth and coherence to local decisions about what to say next.”
Writing can be a struggle with conflicting constraints

(p. 380) One could easily imagine these three forces constituting a sort of eternal triangle in which the writer’s goals, knowledge, and current text struggle for influence. (See example!)

In such situations, the processes of generate and evaluate may interrupt the other processes. This may result in a revision of goals.

Terminology

(Flower & Hayes, p. 385) A note on terminology: in order to focus on the overall structure of goals and sub-goals in a writer’s thinking, we have treated the writer’s plans and strategies all as sub-goals or operational definitions of the larger goals.

Hayes & Flower: “goals are criteria by which to judge the text”

Ex. “Better keep it simple”, “I need to write a transition here”
Questions

Are there any aspects of the writing process which you think are insufficiently described in the cognitive process model?

Which consequences can be drawn from the model for the design of computer support for the writing process?