

How Do Agricultural Journalists Write? Social And Cognitive Behaviors Of A Specialized Writing Process

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A lack of theory, models, and methods in the agricultural science news writing process spurred the initial investigation of this specialized writing process.

Data were collected via process-tracing methods of a minute-by-minute observation of a farm magazine writer's writing process. The researcher used a protocol chart to record the nature and duration of the social-cognitive behaviors of the five stories.

Results showed these cognitive behaviors dominated the writing process: organize, generate, compose, finalize, and edit language. The peak of cognitive behaviors occurred during the middle time period. The social-individual category showed a predominance of talking with associates while the social-organizational category showed a predominance of consulting documents. Cognition is the hub activity, significantly following social-individual and social-organizational behaviors. A potential model of the agricultural science news writing process was developed.

The Problem

The agricultural journalist occupies a pivotal position to move information from research experts, politicians, and agricultural specialists to the farmer/agribusiness professional. The writer reports on a complex industry and the agricultural industry changes rapidly.

Each year, as agricultural journalism professors turn toward their bookshelves and files to determine what resources, texts, and teaching materials they can use to teach their agricultural news writing courses, their heads shake in dismay. Most professors either opt for the traditional but outdated textbooks, or a

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more modern approach from technical writing texts. While the technical writing texts are more state-of-the-art, they do not address specific agricultural specialties such as market news and research results stories. A few professors attempt to choose a hybrid compromise between the two choices.

The problem burgeons as one notes the lack of models and methods in relevant writing literature that can support an investigation into agricultural science news writing. Although it is a specialty writing area, no one has developed the fundamental theoretical framework for researching the agricultural writing process.

Organizing information, interviewing scientific sources, composing stories, and editing copy are all vital behaviors in the writing process for specialized agricultural stories. But how are agricultural stories written? What is involved in the intricate weaving together of social and cognitive behaviors that occur in this specialized writing process?

Objectives

With a lack of appropriate theoretical models and methodologies to guide the research inquiry, it is not a surprise that few guidelines have been developed for novice agricultural science writers. Based on these problems, the objective of this study is to understand social-cognitive behaviors of an expert agricultural writer and to develop a tentative model of the agricultural science writing process. One major theoretical question guided the inquiry - do cognitive and social behaviors influence each other in the process of writing an agricultural science news story? Related questions ask: What behaviors follow other behaviors? Is there a pattern to the agricultural

science news writing process?

Methods

The data was collected during a six week investigation of the social and cognitive behaviors of the writing process of a writer for *The Farmer* magazine of Webb Publishing in St. Paul, Minnesota. Each day the researcher sat with the writer in the Webb Publishing office or traveled with him to interviews or field days. The subject was chosen for his membership and leadership in the American Agricultural Editor's Association (AAEA), as well as his twelve year career in the agricultural writing field.

To record behaviors, the observational charting of social behaviors was interspersed with cognitive writing behavior observations as they happened. Following the lead of cognitive researchers (Flower & Hayes' Problem Solving Model of Writing, Scardamalia & Bereiter's Model of Knowledge Telling and Beaugrande's Parallel Stage Interaction Model), this method uses a protocol chart that records the nature and duration of behaviors of a writer. However, both social and cognitive behaviors are coded. Each observable behavior that occurs during composing is coded, then recorded on a chart. The charting records a process as it unfolds and lays out movements in behavior so that patterns are apparent. Retrospective interviews with the writer clarified the codification of social-cognitive behaviors.

Limitation

The limitation of this study is that it includes one individual case study. However, this limitation does provide an advantage, also, of an in-depth investigation of writing. The data analysis is actually performed on the many minute-by-minute

behavioral events. This research method is used often by researchers of composition.

Data Analysis & Results

In order to compare stories on a relative basis, the five agricultural stories were divided into deciles of time. The amount of time devoted to the three major social-cognitive behaviors was determined for each story, as well as the percentage of time occupied by each behavior in each story. These story proportions were then averaged to obtain the average proportion of time devoted to each behavior for a composite of the five stories. Social behaviors were defined as individual one-on-one behaviors with associates, editors, and sources of information. Organizational behaviors were the consultation of documents, observation of news, and verification of information (Burkett, 1986, and Dunwoody, 1979).

A vertical bar chart shows a shared pattern of social-cognitive behaviors among the ten deciles of the five stories (see Figure 1). The

bar chart shows a dominance of cognitive behaviors, with the peak of cognitive behaviors generally occurring in the middle of the story (between the fifth to the eighth decile).

Ordered Patterns.

To determine the patterns of behaviors in the agricultural science writing process, the percentages of the social-cognitive component behaviors for each story were calculated. These percentages were then averaged across all stories and ordered according to their frequency of occurrence (see Figure 2).

The ordered pattern for the five-story average shows a predominance of the cognitive behaviors of: organizing, composing, finalizing, editing language, and generating ideas. However, the second highest behavior that occurred was the social-individual behavior of talking with associates.

Transitional Analysis

Transitional analysis allows a further in-depth look at the sequential patterns of observed data. The understanding of a tentative pattern was further enriched by determining

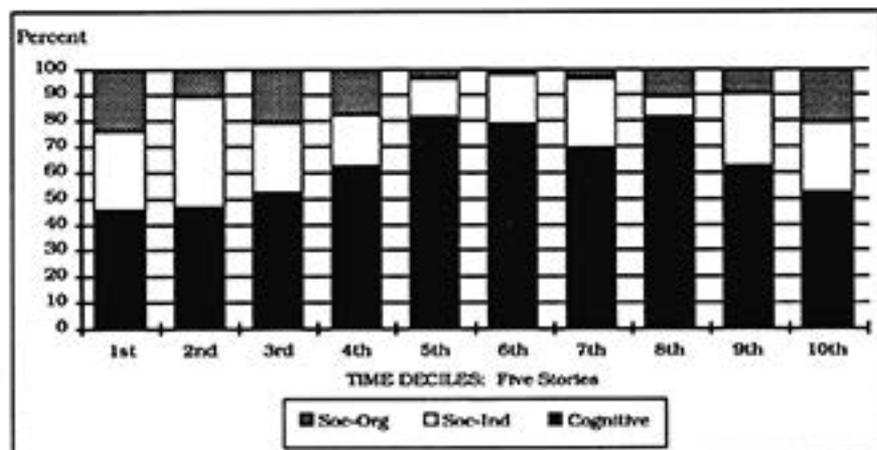


Figure 1: Composite Proportion of Social-Cognitive Behaviors by Deciles; Story Production

what behaviors followed other behaviors in significant transitions (see Figure 3).

In this exploratory study, the "what follows what" analysis is a general interpretation of the overall transition of behaviors. It provides knowledge of what general behaviors follow other general behaviors.

Results showed that cognition was the hub activity. The writer returned from social-individual and social-organizational behaviors to cognition at a significantly greater amount of time than predicted probabilities. Social-individual to cognitive transition occurred 92 percent of the time while the social-organizational to cognitive interaction occurred 84 percent of the time.

In contrast, the social-individual and social-organizational behaviors interacted significantly less than probabilities predicted. Social-individual to social-organizational transition occurred 8 percent of the time while the social-organizational to

social-individual interaction occurred 16 percent of the time.

Discussion & Conclusions

It is evident that social and cognitive writing behaviors influence each other in the writing process. Sequences of writing behaviors showed a predominance of cognitive behaviors. Cognition occurred for 63.5 percent of the time for the expert in this study, with social behaviors occurring 36.5 percent of the time. Cognition predominates in every time sequence of writing behavior, from the beginning through the middle and to the end of the writing process.

Gleaned from these results of the study are tentative conclusions about the writing process that are presented in a potential model of the agricultural science news writing process (see Figure 4). The model was developed to represent the reality of the social-cognitive writing process.

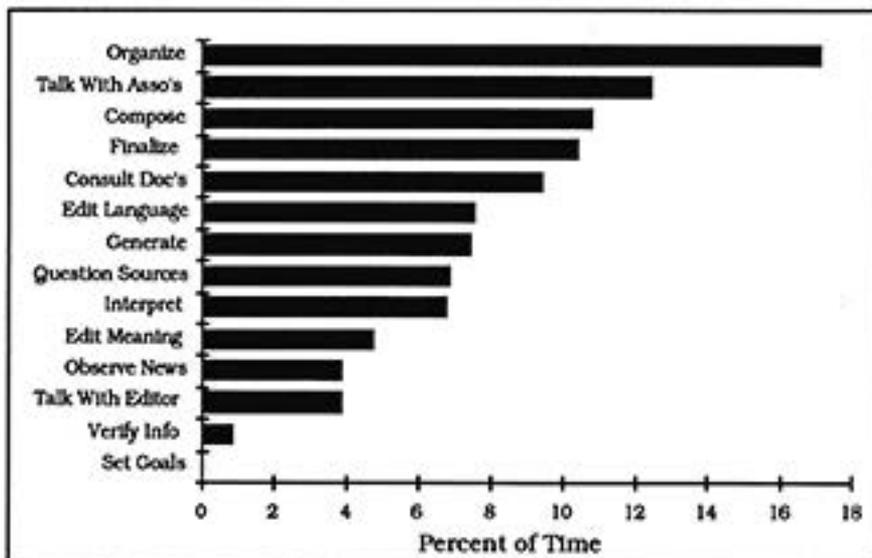


Figure 2: Ordered Patterns, Social-Cognitive Behaviors in Agricultural Science News Writing Process, 5-Story Average.

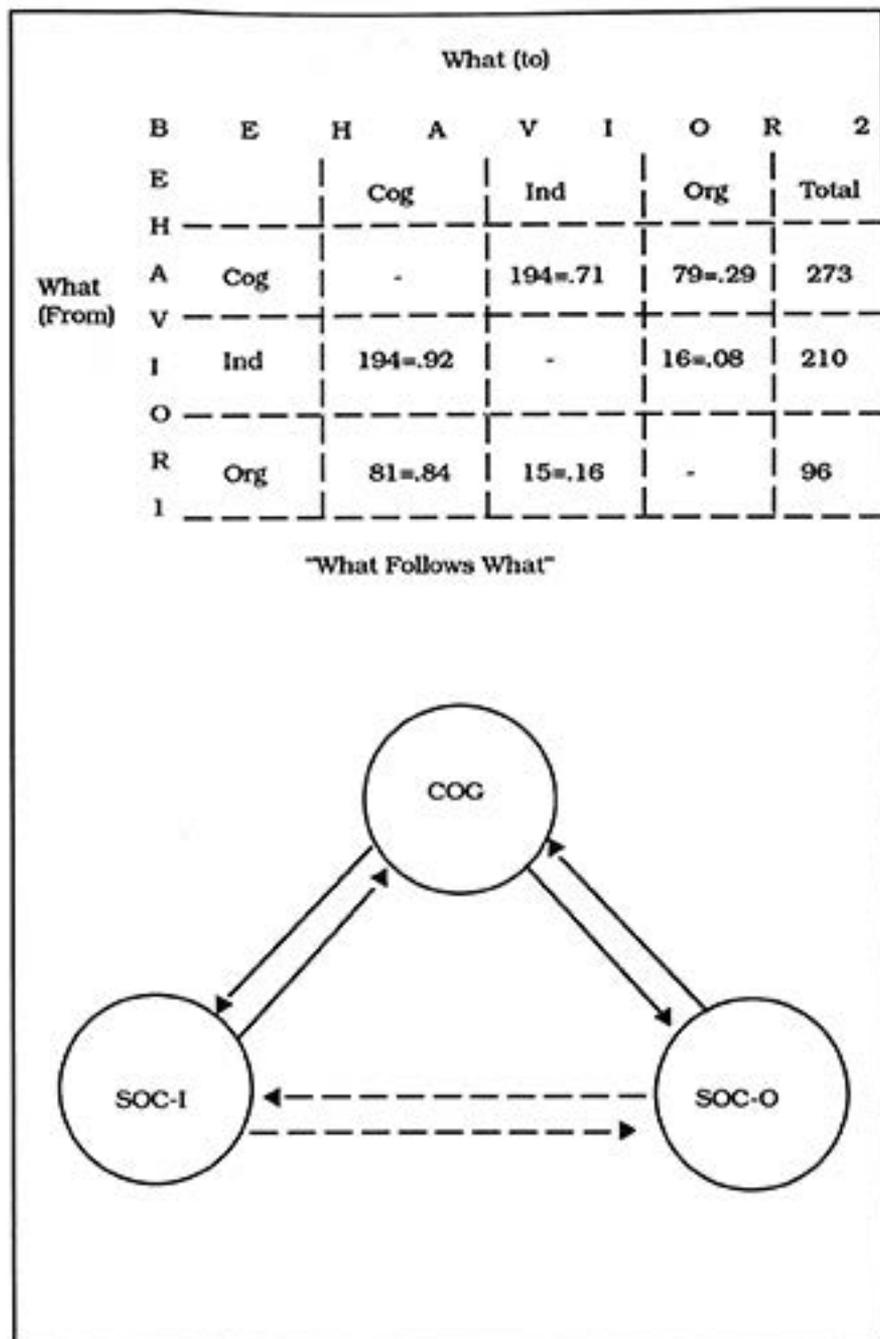


Figure 3: Transitional Frequency & Transitional Probability Matrices & State Transition Diagrams: Composite of Five Stories.

A major contribution that the model makes is to recognize the role of the social context in the writing process. Prior research has focused on the role of cognitive behaviors in its emphasis on writing as a process. This model concentrated on linking the social and cognitive aspects of the writing process. It focused on the elements that an agricultural science writer confronts in the social context of the professional writing situation. Individual and organizational behaviors drove the writing process as the environment that comprised a professional writing situation.

This study found the social-individual behavior of interrogation included not only dealing with sources, but also with colleagues and editors. Interrogation takes on a relational aspect that is capable of explaining the workings and associations of the social-individual aspect of the social task environment. Interrogation of sources involved questions asked about people, timing, location, reasons, situation, attributes, and finances.

Another social-individual behavior that occurred in addition to the source-writer relationship was the colleague-writer relationship. An interrogation among professionals occurred. Just as Dunwoody (1980) found an "inner club" of science writers relied collectively on their peers, so, too, agricultural science writers work together in a similar matter.

Conversations with editors involved many questions the writer asked the editor in regards to the story to be written. Questions revolved around what angle to pursue, which aspects to emphasize, and what contacts to make, etc.

On the social-organizational level, documentation, observation, and verification, inspired by Burkett (1986), were the observed behaviors. Documentation came in the form of the writer's consultation with books, maps, periodicals, press releases, research papers, government papers, tapes, and press conferences.

Observation was the act of watching a particular agricultural

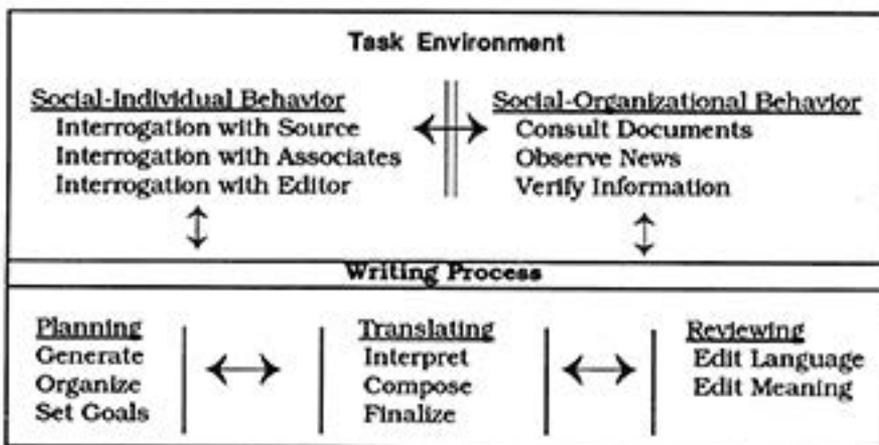


Figure 4: Social-Cognitive Framework for the Agricultural Science Writing Process

science phenomenon. Observation occurred in an organizational setting such as a field day or an agricultural program.

Verification is the contact made to people or to documented materials. These contacts were made for the purpose of ascertaining the truth or authenticity of a specific piece of gathered information.

Thus, interrogation, documentation, observation, and verification are the social behaviors that comprise the social task environment.

Building on the cognitive writing process of Flower and Hayes has been more direct than developing the social task environment. The expert writing process is clearly delineated in three distinct, yet recursive, cognitive stages: planning, translating, and reviewing. The planning stages involved tasks of generating ideas, organizing writing tasks, and setting goals. The translating stage involved interpretation of information, composing the story, and finalizing the writing process. Reviewing the writing required editing for language and editing for meaning.

Implications of the Research: Theoretical Considerations

Six major theoretical considerations arise from observing the writing process.

1) The worlds of cognition and social context are juxtaposed in the model (as they are in reality) for deeper understanding and interpretation of the writing process. The tentative model of the agricultural science writing process builds primarily on the problem posing model of writing as developed by Flower and Hayes. The model includes the social task environment, split into two social level behavioral

components; the model also includes the cognitive writing process, divided between three cognitive behaviors.

Never before have cognition and social context been juxtaposed in this way. The intent of designing this theoretical combination is to more truly reflect the reality of the journalist's world. The established cognitive writing components from Flower and Hayes: planning, translating, and to a lesser extent, reviewing, depend on a social task environment.

Further directions for research would be to continue to study the juxtaposition of the worlds of cognition and social context. The focus of this research was exploratory. However, a greater in-depth investigation could uncover more understanding of the specific interconnections between cognition and social context.

2) The social context plays an important role in the writing process. The major contribution this model makes is to recognize the role of the social context in the writing process. Prior research focused on the role of cognitive behaviors in its emphasis on writing as a process. This was done as a reaction against the previous paradigm of research that simply taught writing as a product with little consideration as to the complex process that led to the finished written product.

However, the process approach dwelt long enough on cognition. These findings represent that social context also plays a major role that is part of the fundamental writing processes. Part of the cognitive process of writing is inspired by the social-individual and social-organizational behaviors, as explained in the model.

3) Cognitive behaviors predominate in the observed work of this agricultural science writer.

Cognitive behaviors occupied 63.5 percent of the time spent in the writing process for the expert in the study. The investigation of patterns showed an emerging trend of dominant proportions of time spent in these components of cognitive behaviors: organize, compose, finalize, generate, and edit language. In the allocation of time, the peak of cognitive behaviors occurred in the middle of the story production time.

Cognition appears to be the hub behavior, with social-individual and social-organizational behaviors centering around the cognitive activity. Social behaviors occur, but then the writer returns to cognition to sort out those social activities. The writer attempts to make sense of them and moves on to composing and finalizing the story.

4) The social context and cognition influence each other throughout the writing process. Cognition predominates the writing process as it occurs in three distinct phases: organizing and generating, composing, and finalizing and editing.

Although cognition is the focus, social behaviors occur. And when social behaviors of interrogating, consulting, observing, and verifying happen, the writer returns to cognition to sort out those social activities.

5) The nature of the writing task changes the writer's strategies. Evidence showed that the traditional stories in agriculture, the advice stories, the research story, and the news story held a similar pattern. However, the public relations story held a different configuration that showed a differing writing strategy for that story. The overall strategy, as shown in Figure 1 showed a dominance of cognitive behaviors with a steady influence of both social-individual and social-or-

ganizational behaviors throughout story production. The dominance of cognitive behaviors occurred in the middle.

All of the stories followed the structure as indicated, except the Farmfest story. The public relations story showed that cognitive behaviors did not predominate throughout the story. Instead, there was a dominance of social-individual behaviors in the beginning, followed by a dominance of social-organizational behaviors. Cognitive behaviors predominated in the mid-section as the traditional structure shows. Then social-organizational behaviors dominated toward the end of the story.

6) Writing is not linear, but flows from process to process within the bounds of a logical pattern. Whereas Freedman, Dyson, Flower, and Chafe (1987) summarized a general trend that writing is not linear, but moves from process to process, they emphasized the lack of pattern in writing. This research found a similar recursive process, and also a logical pattern of organizing, composing, and finalizing. The pattern falls within the larger cognitive structure of planning, translating, and reviewing. Although there is a great deal of recursiveness within the pattern, with organizing occurring even at the end, there is a logical writing structure, arranged according to cognitive process.

Further research could replicate the study of another professional agricultural science writer and could determine the type of recursive pattern. Further investigation could compare student writers with professional writers to determine their recursive social-cognitive behaviors throughout the writing process. Which behaviors do students dwell on versus professionals?

Are they the same or are they different? If differences are found, how can the professor bridge the gap?

References

- Burkett, W. (1986) *News Reporting: Science, Medicine, and High Technology*. (Ames, IA: The Iowa State University Press).
- Beaugrande, R. (1984). *Text Production: Toward a Science of Composition, Vol. 2 of Advances in Discourse Processes*. Norwood, N.J.: Ablex.
- Dunwoody, S. (1979). News Gathering Behaviors of Specialty Reporters: A Two-Level Comparison of Mass Media Decision-Making. *Newspaper Research Journal*. November, 1979, pp. 29-41.
- Dunwoody, S. (1980). The Science Writing Inner Club: A Communication Link Between Science & Lay Public. *Science, Technology, & Human Values* 5. (Winter, 1980): 14-22.
- Flower, L.S. & Hayes, J.R. (1977). Problem-Solving Strategies and the Writing Process. *College English*, 39, 4, 449-461.
- Flower, L.S. & Hayes, J.R. (1980) The Dynamics of Composing: Making Plans and Juggling Constraints. In Gregg, L.W. & Steinberg, E.R. (Eds.). *Cognitive Processes in Writing*. Hillsdale, N.J.: Erlbaum Associates.
- Flower, L.S. & Hayes, J.R. (1981). A Cognitive Process Theory of Writing. *College Composition and Communication*, 32 (4), 365-388.
- Flower, L.S. & Hayes, J.R. (1984). Images, Plans, and Prose: The Presentation of Meaning in Writing. *Written Communication*.
- Freedman, S.W., Dyson, A.H., Flower, L.S., Chafe, W. (1987). Research in Writing: Past, Present, and Future. *Technical Report #1, Center for the Study of Writing*.
- Scardamalia, M. & Bereiter, C. (1986). Research on Written Composition. In Wittrock, M.C. (Ed.) *Handbook of Research on Teaching*, (778-803). NY, NY: MacMillan Publishing.