

## **UC Merced**

# **Proceedings of the Annual Meeting of the Cognitive Science Society**

### **Title**

Informal Reasoning and Literary Expertise

### **Permalink**

<https://escholarship.org/uc/item/52831957>

### **Journal**

Proceedings of the Annual Meeting of the Cognitive Science Society, 17(0)

### **Author**

Graves, Barbara

### **Publication Date**

1995

Peer reviewed

# Informal Reasoning and Literary Expertise

Barbara Graves  
Laboratory of Applied Cognitive Science  
3700 McTavish Street  
McGill University  
Montreal, Quebec, H3A 1Y2  
cxch@musica.mcgill.ca

## Abstract

This paper presents a psychological investigation of the informal reasoning of literary experts and students as they describe a fictional narrative. The literary situation is viewed as a communicative relation between readers and writers mediated by written text. This investigation used a task of text description and applied an explicit two-stage cognitive model of literary communication to analyze the readers' verbal protocols in terms of discursive patterns and reasoning strategies. Findings suggest that the model of the communicative context which literary experts construct for their reading is instrumental in their reasoning about the text. Students it seems are ambivalent about the author-text relationship.

## Informal Reasoning and Literary Expertise

This paper presents a psychological investigation of informal reasoning of literary experts and students and the role that authorial intentions play in their interpretive strategies. It draws on several areas of cognitive research: the study of expertise (Ericsson & Smith, 1991), the study of informal reasoning (Voss, Blais, Means, Greene, & Ahwesh, 1989), and the study of discourse representation and processing (Denhière & Rossi, 1991).

There has been an ongoing debate in literary studies regarding the role of an author's intentions in constraining a reader's interpretation. The argument has evolved from the position held at the beginning of the twentieth century, that understanding an author's intentions was strategically necessary for understanding the literary text and was the only means by which an interpretation could be validated. This was then replaced by the view that textual interpretation was to be derived solely from an examination of text properties and had no need of biographical information about the author or additional study of the historical period or cultural mores. The literary text was regarded as a free-standing aesthetic object which could be successfully interpreted in terms of its own structure and coherence and in this way marginalized the influence of the author in the interpretive process. In the 1960's the European structuralist movement set out to replace the interpretive paradigm altogether. Seeking to make the study of literature an exact science which would be explanatory rather than interpretive they achieved the demise of intentionalism and announced the "death of the author" (Barthes, 1966/77). Their interest was not on the meaning

or value of a work but rather on the devices which enabled it to be realized within a social context. Thus, within literary studies the emphasis shifted to the social construction of meaning in the production and reception of literary text. As a result, the author was marginalized in the establishment of meaning and the role of the reader greatly expanded. Then the questions pertaining to the limits of interpretation surfaced with theorists allowing readers unlimited possible readings. The instability of the text and the role of the reader in literary communication became important topics within critical theories about literature (Cullers, 1981; Eco, 1992; Fish, 1980). At this point the debate within literary theories as to what constrains interpretation is wide ranging and often unsettling from a psychological perspective.

Recently, psychologists interested in text processing have begun to consider the relationship between current cognitive discourse theories and literary reading, (Kintsch, 1993) and have undertaken research to investigate this activity (e.g., Britton & Eisenhart, 1993; Graves & Frederiksen, in press; Magliano & Graesser, 1991; Zwaan, 1992). While extending the existing experimental paradigm to investigate the processes associated with literary understanding, these psychologists relate their theoretical assumptions and empirical findings to very well grounded theories which have been established in the study of text comprehension.

The following psychological investigation is based on the assumption that the literary situation is a communicative relation between readers and writers mediated by written text and that successful communication hinges on shared understanding. To read successfully one must establish the appropriate context for the reading, and there is no hard and fast rule for accomplishing that since each text presents novel problems. In addition readers vary widely with respect to their general world knowledge and their literary knowledge. The context may be derived from multiple sources which include understanding the words, the events of the narrative, the plans and goals of the characters, as well as thematic information. At the same time the context also includes the communicative context which includes a model of the author, the reader and the text. Previous research has already identified the construction of an author model while reading as influencing the strategic behaviors of readers (Gibbs, Kushner, & Mills, 1991; Haas & Flower, 1988; Vipond & Hunt, 1984). It appears that literary experts construct multi-layered representations not only of the discourse structure, but also of the communicative decisions

of the writer, as well as the comprehension processes required by a reader to understand the text, and that even when the author's identity is unavailable, expert readers construct a hypothetical model of the author (Graves & Frederiksen, 1991). These psychological data suggest a more interactive view of the relationship between the literary reader, the author and the text than is commonly found within literary studies which privilege one aspect over another a priori.

### What do we mean by literary expertise?

The expertise in question is viewed as an acquired set of skills and knowledge resulting from specialized training over an extended period (Ericsson & Charness, 1994). Literary expertise includes both specific subject-matter expertise and a more general discourse expertise. Much of the cognitive research on expert performance has focused on specific subject-matter domains, (Chase & Simon, 1973; Chi, Feltovich, & Glaser, 1981) and has characterized expertise in problem-solving in terms of domain-specific knowledge representations and cognitive strategies. At the same time, another part of the discussion associated with reading, text comprehension, and writing has led to a consideration of discourse expertise as a more general expertise (Perfetti, 1989; Scardamalia & Bereiter, 1991). Unlike domain-specific expertise, discourse expertise is not associated with specific subject-matter knowledge and tasks, but rather is applicable across domains.

This research investigates literary expertise more as a discourse expertise (albeit quite specialized), than as a domain-specific expertise. Two experimental conditions support this: first, none of the experts involved is a subject-matter expert of the author or the period, and second, the verbal protocols are recorded during a first reading of the texts.

### A cognitive model of literary expertise

As cognitive science research in expertise suggests, two aspects of symbolic processing that need to be characterized are representations and the processes which act on those representations. This investigation used a task of text description and applied an explicit two-stage cognitive model of literary communication to analyze the readers' verbal protocols.

**Discursive patterns.** In the first stage of analysis a multi-level cognitive model of discursive patterns (Graves & Frederiksen, 1991) is applied to analyze the semantic units, in this case the propositions, in readers' description protocols. Each discursive pattern includes a text unit being described, and a point of reference for the description, that is, a *reader*, *author*, or *text* perspective. This model assumes that readers construct representations of the *linguistic* structures (style, lexicon, syntax, cohesion, topicalization, punctuation) the *propositional* structures (literal and figurative meaning, coherence, macro-structures, logical relations), and the *conceptual frames* of a text (descriptive, narrative, dialogue, and problem frames). An examination of the discursive patterns provides a picture of what aspects

of the text readers are describing and from which discourse perspective. It is also possible to infer some aspects of process if one examines the discursive patterns over the course of the reading. This level of analysis, however, does not provide information about how readers use those descriptions as they reason about the text.

**Informal reasoning.** In order to investigate how literary readers reason about the text, a model of informal reasoning is applied to the text descriptions with the discursive patterns constituting the input (Graves, 1993). The analysis of informal reasoning specifies a semantic net, built over time, where unit nodes are based on reasoning *operations* (claim, hypothesis, analogy, expectation, question, evaluation, and meta-statement), which are linked by *relations* (condition, elaboration, reiteration), and are situated at one of three reasoning *levels* (fact, local, global). This model draws on studies of reasoning carried out in the social sciences, (Voss, Blais, Means, Greene, & Ahwesh, 1989), in medical diagnosis (Patel & Groen, 1991), and in scientific discovery (Dunbar, 1993).

### Method

This study employed a text-description task in which six literary experts and six Honors' English students at the end of their undergraduate training were individually asked to produce a verbal description of a literary passage. The chosen excerpt was the opening of *The English Patient* (1992) by Michael Ondaatje. Three of the literary experts were faculty members of McGill University's English Department and three were published writers of English fiction. While all twelve participants were familiar with both the author and his writing, not one had read *The English Patient* at the time of the interview. Readers' verbal text descriptions were recorded and were analyzed in terms of the discursive patterns and reasoning strategies.

### Selected results and discussion

In analyzing the discursive patterns, the within subjects-measures were the specific levels of the discursive patterns and the three discourse perspectives. To analyze the reader's reasoning strategies the within-subjects measures were the reasoning categories, operations and levels. For both sets of analyses an additional within-subjects measure, the time course of the reading was operationalized as *sections* of the text.

**Expertise and text descriptions.** An examination of the developing models of text description revealed that for both student and expert readers the conceptual frame level descriptions of the text (mean = 164.0) predominates over linguistic (mean = 20.8) and propositional (mean = 22.4) descriptions across all three sections. In addition there is a significant interaction for frame level descriptions by sections read with amount of frame description increasing over the course of the reading  $F(2,20) = 4.68, p = 0.021$ . This is a very robust pattern for literary reading and reflects the reader's focus on the construction of a situation model of the text which include descriptive information pertaining to

setting, character identification etc., the sequence of events of the narrative, the plans and goals of the characters, as well as thematic information. The Honor's English students in this study resemble the literary experts with respect to the specific levels of text representation identified by the discursive patterns. The question that follows is given that they are talking about the same things, will they operate on these text descriptions and reason about text in the same way as the experts?

**Expertise and the communicative context.** It was stated earlier that all successful reading is a matter of identifying the relevant context and while this context can be described at multiple levels of the text, it also includes the communicative context pertaining to the writer's strategies and the reader's responses. While all readers generate significantly more descriptions from the text perspective (mean = 142.1) than either the author (mean= 39.82) or reader perspectives (mean = 20.41), it is only the expert readers who early in their reading generate almost as much description from the author perspective (mean = 25.67) as from the text perspective (mean = 34.16) (see Figure 1).

Expert readers also begin to construct a model of the reader very early in their reading. This suggests that the pragmatic context helps define the overall problem space for expert text descriptions. It would appear that the communicative context gets established before the situation model which requires much more additional information from the text. This is not to suggest that these readers are embarking on a quest for the author's meaning. Rather it is taken as recognition of the fact that the construction of the author and reader models reflects the explicit acknowledgment of the intentionality underlying the text.

Following is an extract from the protocol of a literary academic after reading the first sentence of the text which gives a sense of how important the communicative context is for expert readers and how it provides an immediate

framework for the ensuing interpretation:

*She stands up in the garden where she has been working and looks into the distance.*(sentence #1 from the novel, *The English patient*.)

"Well again you know the beginning is obviously sort of designed to grab your attention by a kind of disorientation. You don't know who the hell this 'she' is, where the garden is, what she's doing. And one of the jobs that you're going to have to do is figure it all out as the text unfolds: the relationships between these different elements and the background. You're given very much a focus on the foreground, but beyond that all of the context and the literal landscape is not there."

Having read only the first sentence of the novel, this literary academic begins immediately with a global claim which is made up of three discursive patterns from both the author and reader perspectives. This extract is particularly interesting since much psychological text research has privileged text features over all other variables and in this instance this expert reader is identifying what is not present in the text. This is a common strategy of expert literary reasoning and suggests that a text gets described not only on its own merits but by comparisons, explicit or not, to other texts and writers.

**Reasoning levels and links.** The identification of reasoning levels is meant to provide some measure of the scope of readers' reasoning strategies. At the *fact* level are paraphrased or verbatim text expressions which are usually cited as evidence for reasoning operations other the other two levels. At the *local* level the reasoning operations refer to what has just been read but include some inferential processing. Reasoning operations at the *global* level include integrative inferences which are broad in scope.

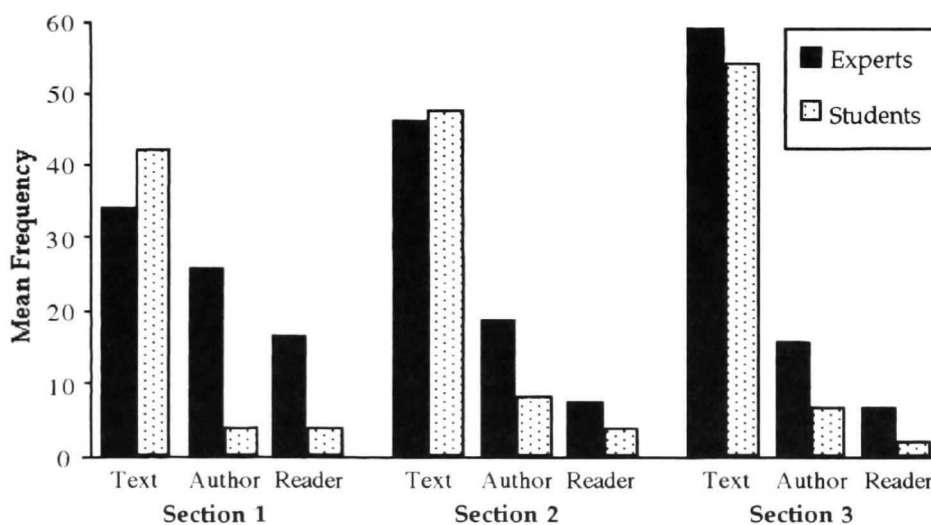
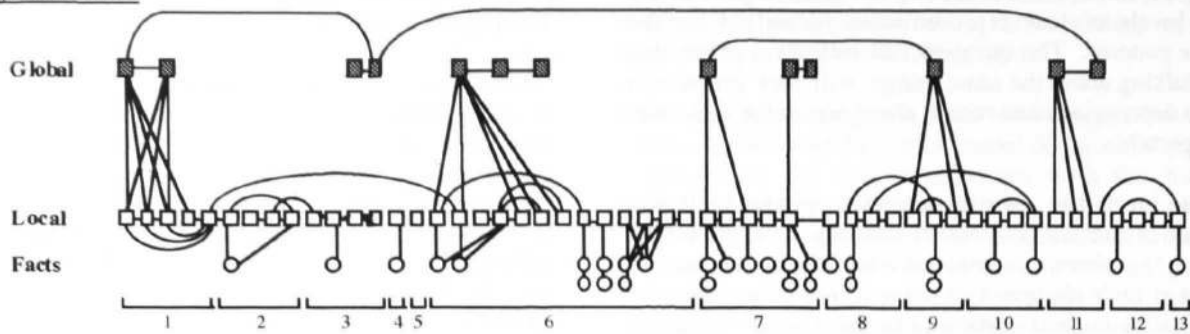


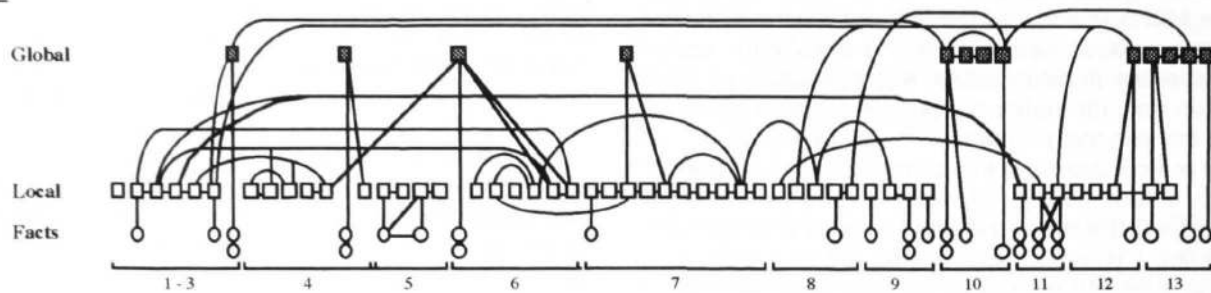
Figure 1. Discourse perspectives by expertise over sections.

## Reasoning Path for Literary Readers

### Literary academic



### Writer



### Student

#### Global

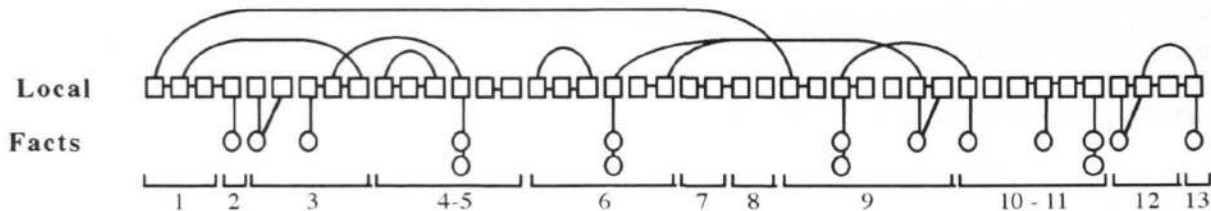


Figure 2. Reasoning path of three readers for the first thirteen sentences

The identification of reasoning links is meant to give a sense of the coherence of the reader's reasoning. Overall the most common links are conditions which occur when readers provide evidence for their statements. The links between reasoning operations at the local level often consist of elaborations and sometimes conditions. The links among operations at the global level are most often elaborations and reiterations.

The quantitative results of the reasoning analyses reveal a difference between students and experts with regard to the scope of their reasoning. The within-subjects contrast between statements occurring at the fact and local levels is statistically significant,  $F(1,10) = 56.70$ ,  $p < 0.001$ , as is the contrast between information occurring at the local and global levels,  $F(1,10) = 67.43$ ,  $p < 0.001$ . All readers carried out more reasoning operations at the local level

(mean = 95.92), followed by the fact (mean = 48.83), and global levels (mean = 10.5). There was, however, a statistically significant between-groups effect for the global level only,  $F(1,10) = 6.34$ ,  $p = 0.031$ , with the literary experts generating more global reasoning operations (mean = 17.0) than the students (mean = 4.0). Figure 2 provides a schematic representation of the reasoning paths for one literary academic, one writer, and one student reader.

An analysis of the reasoning links reveals that the within-subjects contrast between statements linked by conditions and elaborations is statistically significant,  $F(1,10) = 23.84$ ,  $p < 0.001$  as is the contrast between elaboration and reiteration links  $F(1,10) = 62.66$ ,  $p < 0.000$ . Looking at the means reveals it is clear that readers generate more than twice as many conditional links (mean = 86.75), as elaborations (mean = 41.00). Reiterations occur least often



(mean = 8.00). With respect to level of expertise, however, there is a statistically significant between-groups effect for reiterations,  $F(1,10) = 5.25, p = 0.045$ . An examination of the means shows that the expert readers generated more reiteration links (mean = 10.67) than student readers (mean = 5.33).

While all readers provided coherent descriptions of the text, the structure of the coherence is very different for the two groups. This reasoning network generated by the student in Figure 2 is coherent since the reasoning operations do not stand in isolation but are linked by elaborations, re-iterations or conditions. The scope of the reasoning, however, is much more local and neither the claims at the local level nor the text-based facts are used as evidence for a more encompassing framework.

**Directionality of reasoning.** Literary experts rely on both forward and backward reasoning as they work their way through a text. The directionality of the representation in this type of a task follows the semantics of the links and nodes and should not be understood to represent the directionality of the reasoning. While directionality has been an important issue in some studies of reasoning such as medical diagnosis where there is an agreed upon end-state, namely correct diagnosis, it is not possible to pin it down in the context of the text-description task of this research. When a reader provides evidence to support a reasoning operation this does not necessarily specify the directionality of the underlying reasoning as from text instance to claim since the reader may have elaborated a specific schema and then be simply looking for instances to confirm it.

**The unique problem space of literary experts.** It is at the global level that the expert readers appear to set up individual tasks for themselves which are in the nature of puzzles requiring solutions. The reading that each gives at this level is specific to each reader; it's as if each sets up a unique problem space. It is at this level that the multiple interpretations are developed which correspond to the idea that "the creative text is always an Open Work" (Eco, 1992). For example, the literary academic cited above focuses on the postmodern theme of relationships- the relation between art and nature, between the natural and the artificial, sexual relations between men and women including the role of a modern day Adam and Eve. In her own words: "What's the relationship and where's the snake?"

The literary writer, by comparison, develops an in depth stylistic analysis of the musical structure of the text, comparing it to a sonata and drawing on all levels of text description to elaborate his view. His description explains just how the text was built up and examines in considerable detail the effect of certain linguistic choices made by the author at the same time evaluating those techniques.

In each case, these readers make claims and hypotheses based on specific textual evidence in conjunction with their literary knowledge, their more general world knowledge, and their goals for reading. They then continue to look for evidence to confirm or disconfirm. This accounts for the multiple reiteration and elaboration links evident in their reasoning at the global level. At the local level and the fact

level there is a great deal of overlap among readers because it is here that they are using textual evidence to support their remarks. At this level there is no doubt that all readers are understanding the same text.

In discussing the limits and range of interpretation, the expert performance strongly suggests establishment of the author model comprises an important component of the interpretive process. Expert readers appear to be clear on this issue. As one expert puts it, "You can't use language at all if you don't identify what the source of this information is and start guessing about the mind that's behind it." Another expert explains, "I go from the premise that the text is something that a person has put together and one of the things that interests me is why have they done it this way." This premise has important consequences for how experts reason about incoming text information. For example, consider the role of anomalies in most reasoning tasks. Coming upon anomalous information when building theories about the world, often leads to a reinterpretation or restructuring of information. In literary reading, however, anomalies are viewed as deliberate and are incorporated into the developing model of the text.

Students, in contrast, seem ambivalent when expressing their views about the author-text relationship. While able to acknowledge the agency underlying the text, "Common sense tells me of course that the text and the person who is writing the text are linked," one student goes on to say, "For me it's a mistake to read a text knowing everything about the author." Students seem to be caught between a commonsense acceptance of the intentional aspects of human communication and fear of committing the intentional fallacy.

## References

- Barthes, R. (1977). Introduction to the structural analysis of narrative. In S. Heath (Ed. and Trans.), *Image, Music, Text*. New York: Hill and Wang. (Original work published 1966).
- Britton, B. K., & Eisenhart, J. F., (1993). Expertise, text coherence, and constraint satisfaction: Effects on harmony and settling rate. In Proceedings of The Fifteenth Annual Conference of the Cognitive Science Society. Hillsdale NJ: Erlbaum.
- Chase, W., & Simon, H. (1973). The mind's eye in chess. In W. G. Chase (Ed.), *Visual information processing* (pp. 215-281). New York: Academic Press.
- Chi, M. T., Feltovich, P., & Glaser, R. (1981). Categorization and representation of physics problems by experts and novices. *Cognitive Science*, 5, 121-152.
- Cullers, J. (1981). *The pursuit of signs: Semiotics, literature, deconstruction*. Ithaca, N.Y.: Cornell University Press.
- Denhière, G., & Rossi, J.-P. (Eds.). (1991). *Text and text processing*. Amsterdam: North Holland.

- Dunbar, K. (1993). How scientists really reason: Scientific reasoning in real-world laboratories. In R. J. Sternberg & J. Davidson (Eds.), *Mechanisms of insight*. Cambridge MA: MIT Press.
- Eco, U. (1992). *Interpretation and overinterpretation*. Cambridge University Press.
- Ericsson, K. A., & Charness, N. (1994). Expert performance: Its structure and acquisition. *American Psychologist*, 49 (8), 725-747.
- Flower, L. (1988). The construction of purpose in writing and reading. *College English*, 50, 528-550.
- Gibbs, R. W. Jr., Kushner, J. M., & Mills, W.R. (1991). Authorial intentions and metaphor comprehension. *Journal of Psycholinguistic Research*, 20, 11-30. New York: Plenum Press.
- Graves, B. (June, 1993). *The communicative context of literary experts*. Paper presented at the Society for Text and Discourse. Boulder, CO.
- Graves, B., & Frederiksen, C. H. (1991). Literary expertise in the description of a fictional narrative. *Poetics*, 20, 1-26.
- Haas, C., & Flower, L. (1988). Rhetorical reading strategies and the construction of meaning. *College Composition & Communication*, 39, 167-183.
- Ondaatje, M. (1992). *The English Patient*. Toronto: McClelland & Stewart.
- Patel, V., & Groen, G. J. (1991). The general and specific nature of medical expertise: A critical look. In K. A. Ericsson & J. Smith (Eds.), *Toward a general theory of expertise* (pp. 93-125). New York: Cambridge University Press.
- Perfetti, C. A. (1989). There are generalized abilities and reading is one of them. In L. B. Resnick (Ed.), *Knowing, learning, and instruction: Essays in honor of Robert Glaser* (pp. 307-336). Hillsdale, NJ: Erlbaum.
- Scardamalia, M., & Bereiter, C. (1991). Literate expertise. In K. A. Ericsson and J. Smith (Eds.), *Toward a general theory of expertise* (pp. 172-194). New York: Cambridge University Press.
- Vipond, D., & Hunt, R. A. (1984). Point-driven understanding: Pragmatic and cognitive dimensions of literary reading. *Poetics*, 13, 261-277.
- Voss, J. F., Blais, J., Means, M. L., Greene, T. R., & Ahwesh, E. (1989). Informal reasoning and subject matter knowledge in the solving of economics problems by naive and novice individuals. In L. B. Resnick (Ed.), *Knowing, learning, and instruction: Essays in honor of Robert Glaser* (pp. 217-249). Hillsdale, NJ: Erlbaum.
- Wimsaat, W. & Beardsley, M. (1954). The intentional fallacy. In W. Wimsaat & M. Beardsley (Eds.) *The verbal icon: Studies in the meaning of poetry*. Lexington: University of Kentucky Press.