Updating Situation Models during Narrative Comprehension

DANIEL G. MORROW AND GORDON H. BOWER
Stanford University

AND

STEVEN L. GREENSPAN
Consultant at AT&T Bell Laboratories, Naperville

The present study examines whether readers of narratives focus on information relevant to the protagonist’s perspective even when this information is implied rather than explicitly stated in the narrative. It also examines whether the protagonist’s perspective is associated with this character’s mental as well as physical location. We investigated these issues by conducting experiments in which subjects memorized a building layout and then read narratives that described a protagonist moving through the building while following a plan. Accessibility of object locations during reading was probed by interrupting the narrative and presenting the names of two objects from the building. Subjects indicated whether the objects were from the same room or from different rooms of the building. Experiment 1 investigated accessibility immediately after sentences that described the character moving from one room into another via a known but unmentioned path room. Readers answered questions about objects at the protagonist’s current location (the goal room) more quickly than questions about objects in other rooms. Importantly, objects in the unmentioned path room were more accessible than those in mentioned but less relevant rooms. This finding shows that readers focus on information that is relevant to the protagonist by implication even if it is not mentioned. Experiments 2 and 3 show that the inferencing found in the first experiment depended more on the situational relevance of the implicit information than on other properties of the narratives or on the probe task. Experiment 2 also showed that the protagonist’s location was less accessible than another location that the protagonist was thinking about. Thus, readers focused on the protagonist’s “mental location” more than the physical location. Experiment 3 showed that the location room remained accessible so long as it was relevant to the protagonist’s actions. Thus, the dynamics of accessibility during comprehension reflects the relevance of information to the current actions of the protagonist.

While conducting this research, Daniel Morrow was supported by National Institute of Mental Health postdoctoral training grant MH 15157-08, Gordon Bower was supported by NIMH Grant 13950-16, and Steven Greenspan was supported by NIH postdoctoral training grant T32 NS-07134-06 and by Grant NIH NS-12179 to Indiana University. We thank Marcel Just, James Voss, and an anonymous reviewer for their comments on the paper. We also thank Jacqueline Knowko, Douglas Jones, and Diane Perez for technical assistance. Send reprint requests to Daniel Morrow, Department of Psychiatry & Behavioral Sciences, TD114, Stanford University Medical Center, Stanford, CA 94305; or to Gordon Bower, Department of Psychology, Stanford University, Stanford, CA 94305.

Narrative comprehension often results in several kinds of mental representation. Researchers have suggested that readers construct a text model that represents the linguistic text itself, a propositional text base that represents the meaning conveyed by the text, and a situation model that represents the situations described by the text (e.g., van Dijk & Kintsch, 1983; Johnson-Laird, 1983). The situation model integrates information mentioned in the text with knowledge about the referent situation. It is often investigated after comprehension,

Copyright (c) 2000 Bell & Howell Information and Learning Company
Copyright (c) Academic Press
when it is fully elaborated in memory (e.g., Bransford, Barclay, & Franks, 1972; Perrig & Kintsch, 1985; Johnson-Laird, 1983). The present study, like others before it (see Just & Carpenter, 1987), investigates how the situation model is updated as the narrative unfolds.

To update their situation model, readers must focus on the appropriate information, making it highly active in working memory and accessible for interpreting new information (Kintsch & van Dijk, 1978; Sanford & Garrod, 1981). Updating the model is facilitated by focusing on information that is relevant to the described situations and to the task that the reader is required to perform. Because many narratives are organized around the protagonist, or main character of the narrative, relevance is often defined in terms of the protagonist’s perspective, at least when people read narratives with the goal of constructing an accurate situation model (Marslen-Wilson, Levy, & Tyler, 1982; Bower, 1978). Previous research has found that readers focus on information relevant to the protagonist, so that it is highly accessible from the situation model (Anderson, Sanford, & Garrod, 1983; Morrow, 1985a; Morrow, Greenspan, & Bower, 1987). The present study has two goals. First, it examines whether readers focus on information relevant to the protagonist even when this information is implied rather than explicitly stated in the narrative. That is, do readers infer information relevant to the protagonist during comprehension? Second, it examines more closely the role of the protagonist’s perspective in narrative comprehension by testing whether accessibility of information depends on the perspective associated with the protagonist’s mental location as well as his physical location.

Previous research has examined what kinds of inferences are drawn during comprehension. These studies suggest that inferences are most likely to be drawn when they are necessary for integrating explicitly mentioned information into a referentially coherent propositional text base (McKoon & Ratcliff, 1986; Potts, Keenan, & Golding, 1988). For example, bridging inferences are drawn in order to relate anaphors back to previously mentioned antecedents (Carpenter & Just, 1977; Haviland & Clark, 1974). Causal inferences are also drawn in order to relate explicitly mentioned events into a coherent text base (Keenan, Baillet, & Brown, 1986).

The situation model approach predicts in addition that readers will draw inferences to integrate explicit text information with knowledge of the referent situation in order to construct a situation model (van Dijk & Kintsch, 1983). Readers are most likely to draw these situation-based inferences when they assume the writer intended implicit information to be relevant to the described situations, so that it is a salient part of the common ground between writer and reader (Clark, 1983).

In Experiment 1, we examine whether readers draw spatial inferences that are relevant to narrative protagonists even though these inferences are not required for referential coherence. According to our previous research (Morrow et al., 1987), explicitly mentioned spatial information is highly accessible when it is relevant to the protagonist. Protagonists are central to the narrative topic, and their actions advance the narrative plot, or foreground (van Dijk, 1979; Hopper, 1979; Labov, 1972; Omanson, 1982). The protagonist’s location in the described situations usually defines the Here/Now point of the narrative, that is, the location of the perspective and the present moment of the unfolding plot (this is the present moment of the narrative action rather than the moment of speaking; for a discussion of this distinction, see Chatman, 1978). The Here/Now serves as a reference point for interpreting the situations and thus for constructing the situation model (Chatman, 1978; Morrow et al., 1987; Segal, Bruder, & Daniels, 1985). Information that is relevant to the Here/Now point becomes highly accessible during
comprehension (Morrow, 1985b; Morrow et al., 1987). In Morrow et al., (1987), subjects first memorized a building layout and then read narratives that described actions taking place in the building. Each narrative described a protagonist moving through the building in order to accomplish a goal. The protagonist’s tour was described by a series of sentences moving the character from a source into a goal room. Thus, each critical sentence clearly advanced the narrative Here/Now point. For example, a sentence like Wilbur walked from the experiment room into the reception room advances the Here/Now point to the reception room. To measure accessibility of object-locations, each critical motion sentence was followed by a probe question naming two objects from the building, and subjects answered whether the objects were from the same room or from different rooms. Subjects responded most quickly when the objects were from the protagonist’s current location (the reception room in the example), even when the goal room was not most recent (last mentioned) in the sentence (e.g., Wilbur walked into the reception room from the experiment room).

The present study uses the same technique to examine whether information relevant to the Here/Now point is highly accessible even when this information is not mentioned in the narrative. For example, in Wilbur walked from the conference room into the laboratory (where the library connects the conference room and laboratory, see Fig. 1), readers may infer that Wilbur passed through the library to reach the laboratory. Note that this inference is not needed to created a referentially coherent text base. First, readers know which two rooms the sentence refers to. Second, the inference is not needed to integrate the sentence with the rest of the text, since in our narratives the sentences that followed did not explicitly refer to the implicit path room. However, the information is needed to map the sentence onto the building layout when updating the situation model. It enables a smooth transition of the Here/Now point along the path so that a model of the complete event can be created. Previous research shows that readers infer transitive spatial relations from a spatial description in order to construct a complete spatial model, even though these inferences are not needed to construct a referentially coherent text base (e.g., Bransford, et al., 1972; Mani & Johnson-Laird, 1981).

As noted, our research uses on-line measures to examine situation-based inferences. Other research has used on-line measures as well, but those studies only examined inferences necessary for referential coherence (Carpenter & Just, 1977; Dell, Ratcliff, & McKoon, 1983). Our Experiment 1 suggests that the Here/Now point guides inferencing by indicating the relevance of implicit information. Experiments 2 and 3 provide further evidence that this inferencing depends on the relevance of the unmentioned information to the described situations and not on other properties of the text or the probe task.

The present study also broadens the notion of the Here/Now point. Previous research has identified this reference point with the protagonist’s spatial location and what is relevant to the character’s perceptual experience (Black, Turner, & Bower, 1979; Morrow et al., 1987). Experiment 2 suggests that the Here/Now point can be associated with the character’s “mental location,” therefore accessibility can depend on what the protagonist is thinking about as well as what he or she is seeing. Thus, our study emphasizes a conceptual as well as a perceptual notion of the Here/Now point that broadens the notion of situation model beyond visual–spatial models previously studied (Glenberg, Meyer, & Lindem, 1987; Johnson-Laird, 1983; Morrow, 1985b; Perrig & Kintsch, 1985).

**Experiment 1**

Experiment 1 investigates inferencing during narrative comprehension by exam-
ining the accessibility of knowledge associated either with explicitly mentioned or with implied information. Using the same procedure as in Morrow et al. (1987), accessibility was probed after sentences describing a situation in which the protagonist moved from a source room into a goal room by way of an intervening path room. Although the path room was not mentioned, readers would realize that the path was part of the actual event. In the example from the introduction, the source (conference room) and goal (laboratory) are mentioned, but the motion event also includes the library since the reader knows that the character is likely to pass through this room to reach the laboratory (see Fig. 1). While readers do not need to infer the path room to construct a referentially coherent text, they may draw the inference as part of the process of combining the information from the sentence and from the memorized layout into a model of the event, representing the protagonist moving along the implicit path into the goal. Because they know that the narratives take place in the building, readers may reason that the writer intended them to interpret the narratives in terms of the building layout. As a salient part of the common ground between reader and writer, knowledge of the layout is likely to be exploited on-line as the reader draws inferences.

The accessibility of objects from four kinds of locations (rooms) were probed after critical motion sentences: the Goal, or current location of the protagonist (the laboratory in the example above), the unmentioned Path room (library), the Source room (conference room), and some Other room in the building, which was not mentioned in the narrative before the probe (e.g., lounge; see Fig. 1). The Path and

![Building layout diagram]

**Fig. 1.** Building layout.
Other room were usually adjacent to, and equidistant from, the Goal.

Accessibility of information about objects in these rooms depends on the influence of explicit mention of these rooms compared to their relevance to the situation. Explicit mention of a room may be important for activating knowledge about the objects in that room. Readers may focus on explicit information simply because it must be processed in reading the text. Equivalently, readers may not focus on unmentioned information if they assume that the writer, by not mentioning it, is signaling that it is not important. Although Morrow et al. (1987) have already shown that recency of mention cannot completely explain accessibility (since the Goal room is more accessible than the Source room, even though both were mentioned in the sentence before the probe), mention may determine the accessibility of rooms other than the Goal room. On these grounds, objects in the Source room should be more accessible in memory than those in the unmentioned Path or Other rooms.

However, relevance of the rooms to the protagonist’s actions may be more important than mere mention. If so, the Path and Source rooms will be next most accessible after the Goal room since they are part of the motion event, and both will be more accessible than the Other room. Moreover, the Path may be more accessible than the Source since the protagonist has more recently passed through this room. This prediction of activation of the Path room assumes that recency of activation of a room in the situation model will be more important for its accessibility than its distance from the goal within the mental map of the building. If distance within the mental map of the building determined accessibility, the Path and Other room should be equally accessible since they are equidistant from the Goal. This “equal accessibility” hypothesis assumes a representation of the building as an associative network of nodes representing rooms and objects in the rooms, with links representing spatial relations between the rooms and objects (e.g., McNama, 1986; Stevens & Coupe, 1978). Such a theory would assume that activation spreads automatically through the spatial network from the point of attention (the node representing the Goal room) to neighboring nodes as a function of distance of the other rooms from the Goal (McNama, 1986). In contrast, our approach predicts that activation is constrained by the relevance of the rooms to the current state of the situation model. Thus, the Path room will be more accessible than the Other room because it is more relevant to the protagonist’s actions (note that the situation model could also be represented by an associative network, but activation in the network would be determined by situational relevance).

Method

Layout. Subjects memorized a diagram of a research center. The diagram of the layout was 27.5 × 23.0 cm in size and contained ten rooms, with four objects in each room (see Fig. 1). To avoid preexperimental associations between rooms and objects (e.g., kitchen—toaster), most objects had weak associations to the rooms in which they were located.

Narratives and probes. Eighteen narratives were used. Each narrative was approximately twenty sentences long and described the actions of workers in the building (see Table 1). The first six sentences introduced a character and established him or her as protagonist by frequently referring to the character with pronouns in grammatical subject position (e.g., Francik, 1985). The protagonist’s goal was also described (e.g., cleaning the building, searching for a thief).

In the second part of the narrative, the character moved through the building in order to accomplish the goal. Each of three critical sentences described a completed motion event in which the protagonist moved from one room (Source) into an-
TABLE 1
EXAMPLE OF NARRATIVES FROM EXPERIMENT 1

Wilbur wasn’t so sure he wanted to be head of the center anymore.
He had just been informed that the board of directors would be making a surprise inspection tomorrow.
He immediately called all the center’s employees together in the library and told them they had less than twenty-four hours to clean up the center.
He explained about the visit and said that all of their jobs were at stake.
He told everyone to spread out and clean and organize every room.
He went into the laboratory and made sure it was being cleaned, and then headed off to supervise the rest of the workers.

[Critical sentence]
He walked from the laboratory into the wash room.

[Probe of two objects]
He was pleased to see the sparkling tile floor since he knew the directors were more impressed by cleanliness than good research.
He hurried into the repair shop and yelled at the foreman for not getting those greasy machine parts out of sight.
Next he thought he’d better check to see that the researchers were getting things organized.

[Critical sentence]
He walked from the repair shop into the experiment room.

[Probe of two objects]
He made sure the experimenters would be busy conducting studies tomorrow so the directors would see how industrious they were.
As he went into the reception room, he thought about the presentation he was planning to make to the directors.
Then he remembered the television in the lounge, it had better not be on tomorrow.

[Critical sentence]
Next he walked from the reception room into the conference room.

[Probe of two objects]
Sitting down at the table, he started to write down notes for his presentation.
He imagined himself giving a high-powered talk and began to feel the visit might go well after all.

other (Goal) by passing through a third, unmentioned room (Path). Each of the first two critical sentences was followed by three sentences. In the first of these following sentences, the protagonist did something in the Goal room, and in the next two sentences, the character continued through the Goal room on into the next room on the route and did something there. This room served in turn as the Source room for the next critical sentence. The third critical sentence was followed by two or three concluding sentences. One sentence in each narrative mentioned something that the protagonist had previously done in an unmentioned Path room in order to discourage readers from interpreting the consistent lack of mention of Path rooms as a signal that the rooms had no relevance to the narrative. The room was only mentioned after it had already been probed in a given narrative.

A probe naming two objects from the building occurred after each critical sentence. Table 2 presents an example of each kind of probe. In the Same room probes, the objects were either from the room in which the protagonist was located (Goal room probe), the unmentioned room that the protagonist passed through (Path room), the room from which the character started the motion event (Source room), or another room that was not mentioned in the critical sentence (Other room). The different room probes contained objects either from the Goal room and another room in the building (Goal–Other probe), the Path room and another room (Path–Other probe), or the Source and another room (Source–Other probe). Finally, a few probes tested the reader’s updating of the protagonist’s current location; the protagonist’s name was paired with an object from the building (e.g., Wilbur, Lockers). The object was either from the room the protagonist was in at that point in the narrative, or from a different room.

Procedure and design. In the first part of Experiment 1, subjects memorized the building diagram. After studying the diagram for one minute, they were given a blank diagram with only the room walls shown and they wrote down room and object names in their correct locations. They
TABLE 2

PROBE TYPES IN EXPERIMENT I

<table>
<thead>
<tr>
<th>Probe type</th>
<th>Probed room (objects)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Same room probes</td>
<td>Wash room (lockers, mirror)</td>
</tr>
<tr>
<td>Goal room</td>
<td>Storage area (closet, crates)</td>
</tr>
<tr>
<td>Path room</td>
<td>Laboratory (scales, microscope)</td>
</tr>
<tr>
<td>Source room</td>
<td>Repair shop (furnace, cart)</td>
</tr>
<tr>
<td>Other room</td>
<td></td>
</tr>
<tr>
<td>Different room probes</td>
<td>Wash room and Experiment room (sink, clock)</td>
</tr>
<tr>
<td>Goal-Other room</td>
<td>Storage area and Office (lifter, desk)</td>
</tr>
<tr>
<td>Path-Other room</td>
<td>Laboratory and Lounge (counter, television)</td>
</tr>
<tr>
<td>Source-Other room</td>
<td></td>
</tr>
</tbody>
</table>

did not have to fill in the rooms on the blank diagram in any particular order. After writing all they could remember, they had two minutes to compare their version with the original and study the original again if they had not correctly reproduced the diagram. Then they were given another blank diagram to fill in. They repeated these study-test cycles until they had correctly reproduced the diagram. After memorizing the building, they answered five questions about the location of objects in the building. Subjects required from 30–45 min to learn the layout and answer the questions.

In the second part of the experiment, subjects read narratives presented one sentence at a time on a CRT screen of a microcomputer. Presentation was self-paced. The experiment began with the word READY presented in the middle of the screen. Subjects pressed the space bar of the keyboard to begin the narrative and to advance from one sentence to the next. When a probe appeared, they responded Same room or Different room by pressing one of two labeled keys. Probes appeared 500 ms after the subject pressed the space bar removing the previous sentence. Subjects were told to read the narratives carefully and to answer the probes as quickly and accurately as possible. If they made an error, a message to answer more carefully appeared at the end of that narrative. Reaction time (RT) and errors were recorded by the computer. A practice narrative was presented before the 18 experimental narratives. It took subjects about 45 min to read the narratives and answer the probes.

Two presentation sets of 18 narratives were created differing only in terms of the probe types that appeared in the narrative. In one set, half of the narratives contained a Goal room probe, a Path room probe, and a Different room probe. The other half of the narratives contained a Source room, Other room, and Different room probe. Assignment of probe types to specific narratives was reversed in the other presentation set. Assignment of probe types to probe position within the narrative was rotated across subjects so that each probe type occurred after each critical motion sentence position equally often. Order of narrative presentation was counterbalanced across subjects. Across the eighteen narratives, each subject saw nine instances of each Same room probe type and six instances of each Different room probe type. Furthermore, in each narrative a Protagonist-object probe and an additional Different room probe occurred after noncritical sentences. Half of the Protagonist-object probes were Same room and half were Different room. These probes helped break the pattern of probes occurring only after the Critical sentences, and also increased the ratio of Same to Different room probes across the narratives. The data for these
probes were not analyzed. Including all object–object and character–object probes, each subject saw 45 Same and 45 Different probes. Objects were randomly assigned to probe conditions, except objects were not probed if they had been previously mentioned in the narrative, and they were not repeated as a probe within a narrative.

Thirty-six Stanford University undergraduates served in the experiment to fulfill a requirement for an Introductory Psychology course.

**Results**

Subjects required 4.61 trials to correctly reproduce the layout, and they answered 4.58 of the five post-criterion questions correctly.

Only the data for correct responses were analyzed. Reaction times greater than three standard deviations above the mean for each subject (3.5% of the responses) were eliminated. Each subject’s mean RT for each condition was calculated, and these scores were analyzed by a repeated measures ANOVA with probe type as a factor. The data for Same and Different room probes were analyzed separately.

Table 3 presents the mean RT for the Same room and Different room probes. The Same room probe RTs show that accessibility of information about the rooms depended on the role of the room in the motion event ($F(3,105) = 7.75$, $p < .001$). Errors did not vary systematically with RT, so speed/accuracy trade-offs do not complicate the interpretation of the RT data. Responses to the Goal probes tended to be faster than Path probes ($F(1,35) = 3.71$, $p = .07$) and were significantly faster than Source probes ($F(1,35) = 13.73$, $p < .01$). Thus, objects from the Goal room were more accessible than objects from the other rooms. Moreover, as predicted, accessibility decreased with distance from the Goal (RT increased across Goal, Path, and Source room probes; linear trend: $F(1,70) = 16.07$, $p < .001$). Responses to the Path room probe tended to be faster than the Source ($F(1,35) = 3.12$, $p = .08$), and were significantly faster than responses to the Other room probe ($F(1,35) = 6.09$, $p < .025$). Responses to the Source room probe were not significantly different from the Other room probe ($F(1,35) < 1.00$). Accessibility depended on distance within the described event rather than within the building itself, since the Path room was more accessible than the Other room even though both rooms were equidistant from the Goal. Thus, the Path was more activated than the Other room because it was part of the protagonist’s movement through the situation model.

The results for the Different room probes presented in Table 3 provide further evi-

| TABLE 3 |
|------------------|------------------|
| **MEAN REACTION TIME (SECONDS) AND PERCENT ERRORS FOR SAME ROOM AND DIFFERENT ROOM PROBES IN EXPERIMENT 1** |
|------------------|------------------|
| **Same room probes** |
| Goal | Path | Source | Other |
| RT | 2.53 | 2.71 | 2.88 | 2.94 |
| S.D. | .62 | .61 | .78 | .93 |
| Errors | 4.6 | 5.2 | 5.2 | 4.0 |
| **Different room probes** |
| Goal–Other | Path–Other | Source–Other |
| RT | 2.46 | 2.63 | 2.77 |
| S.D. | .56 | .77 | .72 |
| Errors | 1.9 | 5.6 | 6.5 |

Copyright (c) 2000 Bell & Howell Information and Learning Company
Copyright (c) Academic Press
dence that accessibility was governed by relevance within the situation rather than by mention in the text. Once again, accessibility dropped off with distance from the Goal: RT increased across Goal–Other, Path–Other, and Source–Other probes (linear trend: $F(1,70) = 12.94, p < .001$). We expected this trend since the time to decide that two objects are from different as well as same rooms should be faster the more rapidly the objects are retrieved from the situation model.

Discussion

Experiment 1 shows that after reading the critical sentence, readers focused on the Goal room since it was the protagonist’s current location, and thus most relevant to the narrative Here/Now point (also see Morrow et al., 1987). The Path room was the next most accessible part of the model, even though it was not mentioned in the narrative. It was more accessible than the Source or Other room because of its relevance to the protagonist’s actions, who had just passed through it to reach the Goal room. Thus, the accessibility of objects from the situation model mirrored their relevance to the actions of the protagonist more than their mention in the text.

The intermediate accessibility of the Path room shows that readers combined sentence and layout information to update their model by advancing the Here/Now point: they mentally completed the path. This suggests that readers inferred the Path room in order to update the situation model. Of course, readers will only mentally complete paths if the inference is relevant to the situation model. For example, when understanding We flew from Paris to New York last week, readers are unlikely to focus on the Atlantic ocean. However, when understanding We flew from Paris to New York last week and the flight took forever, readers may focus on the implicit path because its length is emphasized.

Although we believe the readers drew the path inference while reading the critical sentence, it is possible that they only drew the inference when answering the probe question. However, this is unlikely since the inference would not help readers answer the probe. In fact, readers could ignore the narrative completely and just use their mental map in order to answer all but the infrequent Protagonist probes.

Let us consider some alternative interpretations of the accessibility of the implicit Path room. First, readers may have focused on the path simply because it was repeatedly probed throughout the narratives. Thus, the probe task may have clued them into the importance of the Path room. But this argument fails: while our location probe task may increase the accessibility of all object locations, it would not produce the specific pattern of accessibility found in the present experiment. Thus, the Source, Path, Goal, and Other rooms were all probed equally often; yet the Path tended to be more accessible than the Source, and the Goal was most accessible of all. A second alternative explanation is that readers focused on the path because it was a part of every critical motion event in the narratives. Thus, the design of the experiment may have made the path unnaturally predictable from the text, so that it was functionally the same as a mentioned room. However, this alternative does not explain the fact that the Path room tended to be more accessible than the equally predictable Source room. Nonetheless, to rule out these factors, Experiment 2 further tests both the narrative predictability and probe task explanations. It also further investigates the relationship between the protagonist’s perspective and information accessibility.

A third alternative explanation is that the Path room may have been accessible because of spreading activation through the associative network representing the building layout. While the finding that the Other room was less accessible than the Path room shows that activation did not automatically spread from the Goal room (the
main focus of attention), activation may have spread and summed from the Source as well as Goal room, since both were mentioned in the Critical sentence. Activation from the Source would be less since it was less recent in the narrative at the time of the probe. Thus, the Path room’s accessibility may reflect activation summed from both Source and Goal rooms. However, this explanation would have trouble explaining earlier findings from Morrow et al. (1987), which examined progressive motion sentences such as the following: While Joe was walking from the library toward the laboratory, he waved at a friend. The spreading activation position suggests that the library should be more accessible than the laboratory since it is the protagonist’s location, and both rooms should be more accessible than unmentioned rooms. However, Morrow et al. (1987) found that both rooms were equally accessible, and more accessible than unmentioned rooms. This result suggested that activation reflected relevance to the situation model more than spreading activation within the mental map, since both rooms were relevant to the protagonist: the library as the current location and the laboratory as the intended goal.

Experiment 2

Experiment 1 of the present study and Morrow et al. (1987) showed that readers focus on information associated with the protagonist’s explicitly stated or implied physical location because it is most relevant to that character’s goals and actions and thus important to the narrative topic. Experiment 2 further examines the role of the protagonist’s thoughts and actions in determining information accessibility during comprehension. It examines whether information becomes more accessible when it is part of the protagonist’s mental location, and thus associated with the Here/Now point, even though it is distant from the protagonist’s physical location. In the situation investigated by Experiment 2, the protagonist is in a Location room but is thinking about a different room (the Thought room). For example, the sentence James (in the laboratory) wondered if the experiment room was large enough for running all his studies expresses a thought or imagined situation that is embedded in the narrative plot. The Thought room is the topic of the embedded situation since the protagonist is thinking about it (van Dijk, 1977). It is also the location of the narrative Here in that the protagonist “projects” him or herself into the room. Therefore, while the Location room (mentioned one or two sentences earlier in the narrative) is more relevant to the interrupted situation, the Thought room is most relevant to the embedded situation.

Experiment 2 also examines whether the pattern of information accessibility found in Experiment 1 depends on the information’s relevance to the situation, or on its predictability from the narrative and the probe task. It does this by investigating accessibility in a situation different from the one in Experiment 1. In Experiment 2, both the Location and the Thought rooms are mentioned in the narrative and play a clear role in the situation, so they are equally predictable from the narrative. They were also probed equally often in the present experiment. Thus, if accessibility is determined by frequency of probing or predictability from the narrative, the two rooms should be equally accessible and more accessible than an unmentioned room that is irrelevant to the narrative (Other room). However, if accessibility is determined by relevance to the protagonist’s thoughts and plans, the Thought room should be more accessible than the Location room.

The Location room may be more accessible than the Other room because it is relevant to the interrupted situation and may become relevant again if the interrupted topic is resumed (Grosz & Sidner, 1986; Reichman, 1987). This prediction is already supported by previous research showing that information about a situation remains accessible even after several sentences.
have introduced a new topic (Sharkey & Mitchell, 1985).

**Method**

*Narratives and probes.* The building layout was the same as in Experiment 1. The narratives were adapted from Experiment 1 (see Table 4 for an example narrative). The first two or three sentences of each narrative introduced the protagonist and described his or her goal. The next several sentences formed the first of four critical narrative segments. The segment began with a location sentence that described the protagonist inside, or just entering, a room as part of a plan to accomplish a goal. The location sentence was followed by two or three sentences that described the protagonist’s actions in the Location room. The actions frequently involved objects in the room (e.g., using the copier in the library). The last of the action sentences was the critical sentence that was followed by a probe. It contained a main clause that mentioned the protagonist as the subject of a simple past tense thought verb (e.g., *He thought the library should be rearranged to make room for a display of current*).

**TABLE 4**

<table>
<thead>
<tr>
<th>Example of Narratives from Experiment 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wilbur regretted the day he had ever become director of the research center.</td>
</tr>
<tr>
<td>He had just found out that the board of directors was coming for a surprise visit the next day.</td>
</tr>
<tr>
<td>He stood in the reception room to collect his thoughts.</td>
</tr>
<tr>
<td>He would have to clean up the center and give a presentation of the center’s current research.</td>
</tr>
<tr>
<td>He turned off the blaring radio and considered all that he had to do.</td>
</tr>
<tr>
<td><em>[Critical sentence]</em></td>
</tr>
<tr>
<td>He thought the library should be rearranged to make room for a display of current research.</td>
</tr>
<tr>
<td><em>[Probe of two objects]</em></td>
</tr>
<tr>
<td>Then he called all of the employees together in the office and told them the center was a complete mess.</td>
</tr>
<tr>
<td>He ordered them to start cleaning it up immediately and said he wanted the directors to see a spotless, organized center.</td>
</tr>
<tr>
<td>He told everybody their jobs might depend on this assignment.</td>
</tr>
<tr>
<td>He stood up from the desk and dismissed the crew.</td>
</tr>
<tr>
<td><em>[Critical sentence]</em></td>
</tr>
<tr>
<td>He figured that the storage area was the worst mess because the crates were scattered all over the room.</td>
</tr>
<tr>
<td><em>[Probe of two objects]</em></td>
</tr>
<tr>
<td>He made sure the office was being cleaned and then went to supervise the rest of the workers.</td>
</tr>
<tr>
<td>He walked from the office into the laboratory.</td>
</tr>
<tr>
<td>Everything had to be as neat as possible so that the board wouldn’t be distracted from concentrating on the progress the center had made.</td>
</tr>
<tr>
<td>He noticed some laboratory technicians sorting papers into piles and told them to be neat.</td>
</tr>
<tr>
<td><em>[Critical sentence]</em></td>
</tr>
<tr>
<td>He wondered if the experiment room was also being cleaned up.</td>
</tr>
<tr>
<td><em>[Probe of two objects]</em></td>
</tr>
<tr>
<td>He strode to the storage area and told the workers to stack the crates neatly.</td>
</tr>
<tr>
<td>Then he continued into the wash room and was pleased to see the sparkling tile floor.</td>
</tr>
<tr>
<td><em>[Probe of two objects]</em></td>
</tr>
<tr>
<td>Next he entered the repair shop and looked with dismay at the greasy machine parts laying everywhere.</td>
</tr>
<tr>
<td>He yelled at the shop foreman for not being more cooperative.</td>
</tr>
<tr>
<td><em>[Critical sentence]</em></td>
</tr>
<tr>
<td>He hoped the conference room was being taken care by his secretary.</td>
</tr>
<tr>
<td><em>[Probe of two objects]</em></td>
</tr>
<tr>
<td>Then he walked from the repair shop into the lounge.</td>
</tr>
<tr>
<td>When he ordered the ping pong table removed, he began to feel that he was overreacting to the visit.</td>
</tr>
<tr>
<td>He tried to calm down as he headed toward the reception room.</td>
</tr>
<tr>
<td>He began to think of finding a less stressful job.</td>
</tr>
</tbody>
</table>
research). The simple past tense indicated that the act of thinking about the embedded situation was part of the plot and advanced the narrative Now point. The critical sentence also contained a subordinate clause that mentioned the Thought room as subject, which marked this room as the topic of the embedded situation. This clause also described a possible action by the protagonist in that room. To summarize, each narrative contained four segments composed of a location sentence followed by two or three action sentences, and the last of these sentences was the critical sentence that was followed by a probe. The final segment was followed by two sentences that concluded the narrative.

Probes were presented after each of the four narrative segments. Three Same room probe types were used: the Location room (the room the protagonist was currently in), the Thought room the character was thinking about, and the Other room, which had not been previously mentioned and was irrelevant to the preceding situations. Usually, one room intervened in the map between the Location and Other room. Four Different room probe types were used. The first named a Location room and a Thought room object; the second named a Location room object and an object from another room in the building; the third named a Thought room object and an object from another room; and the fourth named objects from two rooms other than the Location or Thought room.

One instance of each Same room probe type and one Different room probe occurred after the critical sentences of each narrative. Across the twelve narratives, each subject saw twelve instances of each Same room probe and three instances of each Different room probe. In addition, each narrative contained an extra Different room probe, which was randomly placed at positions other than the four experimental probe positions. Six narratives also contained a same Protagonist–Object probe, and six contained a different Protagonist–Object probe. Thus, each subject answered 36 Same room probes, 24 Different room probes, and six Same and six Different Protagonist–Object probes.

Procedure and design. The procedure and design were the same as in Experiment 1, except subjects read two rather than one practice narratives. Objects were assigned to probe types as in Experiment 1. Two lists of objects serving as probes were constructed, and half of the subjects saw each list. Probe types were assigned to the four experimental probe positions within each narrative so that, across subjects, each probe type occurred at each position. Thirty-two Stanford undergraduate students served as subjects to fulfill a requirement for an Introductory Psychology course.

Results

Subjects required 5.09 trials to reproduce the layout and they answered 4.78 of the 5 questions correctly.

Probe RTs greater than three standard deviations above the mean for each subject (2.3% of the responses) were eliminated. Table 5 presents the mean RTs for the Same and Different room probes. The Same room probe RTs were analyzed by a repeated measures ANOVA with probe type as a factor. Table 5 shows that RT depended on the type of probe ($F(2,62) = 5.75, p < .01$). The Thought room probe was answered more quickly than either the Location or Other room probe ($F(1,31) = 8.05, p < .01$), but no difference in RT was found between the latter probe types.

The Different room probe responses were also analyzed by a repeated measures ANOVA with probe type as a factor, but no effect of probe type was found ($F(3,93) = 1.90, n.s.$).

Discussion

Experiment 2 investigated accessibility from a situation model where the protagonist is in one room, but is thinking about another room. Because the Thought room
was the topic of the embedded thought situation and most important to the protagonist’s thoughts, it was more relevant than the Location room at that point in the narrative. However, both rooms were mentioned in the narrative and played a well-defined role in the situation, so they should have been equally predictable from the narrative. In addition, both were probed equally often. The Same room probes in Experiment 2 showed that the Thought room was more accessible than the Location room, suggesting that accessibility of information about the rooms was governed by relevance to the situation.

This finding suggests that situation models are organized around the thoughts as well as actions of the narrative protagonist. Morrow et al. (1987) also provided evidence for this position. When subjects in that study read a sentence about a protagonist passing through one room to reach another (e.g., While Joe was walking through the library toward the laboratory, he waved at a friend), they focused on the intended goal room as well as on the path room. In other words, the protagonist’s current and intended locations were activated because the character was probably thinking about both rooms. Both studies suggest that in constructing the situation model, readers often view the situations “through the eyes” of the protagonist (also see Bower, 1978; MacWhinney, 1977).

Experiment 2 did not find evidence that the Location room was more accessible than the Other (unmentioned) room. This is somewhat surprising since readers probably realized that the Thought situation was a temporary detour from the plot, which would return to the Location room. Thus, the Location room should have been more accessible than the irrelevant Other room since it was part of an interrupted topic (Grosz & Sidner, 1986; Reichman, 1978). Although this result suggests an all-or-none pattern of accessibility with readers only focusing on the most relevant room, Experiment 1 showed that accessibility was graded according to degree of relevance within the described situation (also see Morrow et al., 1987). Also, Sharkey and Mitchell (1985) showed that information from a previous situation remains accessible although readers move their current focus to a new situation.

To reconcile these various findings, it should be noted that these three experiments described different kinds of situations. In Experiment 1 of the present study, the narratives described a single situation organized around the protagonist’s physical location. The narratives in Experiment 2 described a more complicated set of cir-
circumstances, with the Thought situation embedded in another. In this case, the protagonist's physical and mental locations competed for the reader’s attention. Finally, in Sharkey and Mitchell (1985), the narratives described a progression from one situation to the next rather than the sudden switch that occurred in our Experiment 2. Clearly, further research is needed to clarify the influence of different kinds of situations on accessibility.

The present experiment suggests that the Thought room was more accessible than the Location room because it was most relevant to the protagonist in the embedded situation. However, mention of information in the narrative may still account for the results since the Thought room but not the Location room was mentioned in the critical sentence just before the probe. Thus, readers may have focused on the Thought room at least in part because it was more recently mentioned. Experiment 3 was performed to rule out this possibility.

**Experiment 3**

Experiment 3 tests whether the Location room in Experiment 2 was less accessible than the Thought room because it was less relevant to the protagonist or because it was not mentioned in the critical sentence. The experiment tested this issue in two ways. First, the critical situations were changed so that the protagonist performed an action relevant to the Location room (e.g., fixing equipment in the repair shop) rather than thinking about another room. As in Experiment 2, this Location room was not mentioned in the critical sentence. If relevance is more important than recency of mention for determining accessibility, the Location room will be more accessible than the unmentioned and irrelevant Other room. The second way that Experiment 3 pitted relevance against mention was to examine a situation where the protagonist performed an action relevant to the Location room, but was also incidentally aware of another room that was mentioned just before the probe. We will refer to this as the Incidentally mentioned room. The sentence *James (working in the laboratory) wrote in a tablet from the storage area* shows that this Incidental room (the storage area) was less relevant than the Location room to the protagonist's actions. The Location room was usually not mentioned in this sentence (see Method section). Again, if relevance determines accessibility, the Location room will be more accessible than the Incidental room since it is more central to the protagonist's actions and experiences.

Experiment 3 also further investigates how relevance of information to the protagonist in the unfolding narrative governs the dynamics of accessibility. We already know from Experiment 1 that readers focus on a room when the protagonist enters it, so that the *Here/Now* point is established at that location. Experiment 3 examines whether the Location room remains accessible if it is not mentioned in the critical sentence but continues to be relevant since the *Here/Now* point remains in this room.

This is to be expected since previous research has shown that a relevant concept is accessible not only when first mentioned, but so long as it continues to be relevant to the current topic, even if it has not been explicitly mentioned for several sentences (Foss, 1982; Glenberg et al., 1987; Lesgold, Roth, & Curtis, 1979).

**Method**

*Narratives and probes.* The layout was the same as in the first two experiments. The narratives were the same as those in Experiment 2, except for two changes (see Table 6). First, the critical sentence now described the protagonist performing an action relevant to the Location room rather than thinking about another room. Second, a noncritical sentence in each narrative was changed so that it incidentally mentioned a room that was less relevant than the Location room (Incidental room). In the follow-
TABLE 6  
EXAMPLE OF NARRATIVES FROM EXPERIMENT 3

Jennifer was one of the most important researchers at the center. She had been working for over a year on isolating a virus, and she was sure that if she succeeded, she would be well on her way to a Nobel Prize. Now she was stood in the experiment room, about to begin a critical series of experiments.

[Incidental room sentence]
She thought about her study and her future glory as her assistant was hurrying into the room from the office.

[Probe of two objects]
She checked the equipment to make sure it was properly arranged.

[Critical sentence]
All she needed was the burner and she could start the experiments.

[Probe of two objects]
Later, she would go to the repair shop to check that it was being fixed.
Next she thought about the officials from the government grant agency who were coming tomorrow to review her project.

She had to make sure they went back to Washington with glowing recommendations, so she went to the reception room and told the receptionist to give the visitors the red carpet treatment.

As she looked out the front door, she thought about the presentation she would give to the visitors.

[Critical sentence]
She would stress the vital importance of the experiments in the project.

[Probe of two objects]
She was confident that the presentation would go well.
She went to the conference room to make sure the projector was working.
Next she strode into the library and talked with one of her assistants.

Then she checked out the latest books and told the librarian to be on the lookout for the visitors tomorrow.

[Critical sentence]
She told him to play up the research resources.

[Probe of two objects]
She went back to the office to talk to the director before he went to lunch.
She had to make sure he would be at tomorrow’s presentation to support her wholeheartedly.
Sometimes the old boy forgot the most important things.
She sat down by the desk across from the director and reminded him about the meeting.

[Critical sentence]
She was reassured by his promises.

[Probe of two objects]
The director protested when she also pressed for complete use of the laboratory, but she silenced him by showing him a memo he had written in which he promised her the laboratory for a week.
As she left to make more arrangements, she imagined herself giving the acceptance speech for the Nobel Prize.

ing sentence from Table 6. *She (Jennifer, in the experiment room) thought about her study and her future glory as her assistant was hurrying into the room from the office, the experiment room is the Location room and the office is the Incidental room. While the Location room was not mentioned in this sentence in 10 of the 12 narratives, it occurred in the Incidental room sentence of two narratives in order to make these narratives more plausible. In both cases, it occurred before the Incidental room. The Incidental room sentences occurred at different positions across the narratives.*

Probes were presented after the four critical segments of each narrative, as well as after the Incidental room sentence. There were four Same room and two Different room probe types. Two Same room probe types occurred after the critical segments.
The first is the Location room probe from Experiment 2, but we refer to it as the Location1 room probe in the present experiment in order to distinguish it from a similar probe described below. The second Same room probe is the Other room probe from Experiment 2.

The other two Same room probes occurred after the Incidental room sentence. The Location2 room probe named two objects from the room in which the protagonist was located at the time of the Incidental room sentence. The Incidental room probe named two objects from the Incidental room mentioned in the sentence. In the example above, the experiment room is the Location2 room and the office is the Incidental room. Thus, unlike the Location1 probe, another room was mentioned after the Location2 room but before the probe.

The Location1–Other Different room probe named one object from the Location1 room and one from another room in the building. The Other–Other probe named objects from two rooms other than the Location1 room. Note that both the Location1 and Location2 probes refer to the protagonist’s physical location, but they are presented after different sentences (the critical and Incidental room sentences, respectively).

One instance of the Location1 and Other room probe and each Different room probe occurred in each narrative. In addition, one Same room probe occurred after the Incidental room sentence. This was the Location2 room probe in half of the narratives, and the Incidental room probe in the other half. Therefore, across the twelve narratives, each subject saw twelve instances of the Location1 room, Other room, Location–Other, and Other–Other probes, and six instances of the Location2 and Incidental room probes. Finally, one additional probe occurred in each narrative. It was a Same Protagonist–Object probe in three narratives, a different Protagonist–Object probe in three narratives, and an additional Different room Object–Object probe in the remaining six narratives. The additional probes occurred at positions other than the experimental probe positions. To summarize, across the twelve narratives, each subject saw 36 Same room Object–Object probes, 30 Different room Object–Object probes, 3 Same and 3 different Protagonist–Object probes.

Procedure and design. The procedure was the same as in the first two experiments. Thirty-two Stanford University undergraduate students participated in the experiment to fulfill a requirement for an Introductory Psychology course.

Results

Subjects required 4.41 trials to correctly reproduce the building diagram, and they answered 4.91 of the 5 questions correctly.

The RT data were analyzed as in Experiment 1. Probe RTs greater than three standard deviations above the mean for each subject (2.6% of the responses) were eliminated. Table 7 presents the mean RTs for the Same room and Different room probes. For Same room probes, Location1 room probes were answered more quickly than Other room probes ($F(1,31) = 14.87, p < .001$). Error rates were in the same direction as RTs. This suggests that objects in the Location1 room were more accessible than objects from the Other room. After the Incidental room sentence, the Location2 room probe was answered more quickly than the Incidental room probe ($F(1,31) = 5.90, p < .02$).\(^1\)\(^2\) Once again, error rates

\(^{1}\) The Location2 probes are answered more quickly than the Incidental room probes even when the two narratives that mentioned the Location room are eliminated from the analysis (one subject was eliminated from the comparison due to insufficient data; $F(1,30) = 3.88, p = .058$).

\(^{2}\) Absolute RTs for probes after Incidental room sentences cannot be directly compared to RTs for the other experimental probes in Experiment 2 because the former probes occurred less often and at different positions in the narratives. However, both kinds of probes produced the same pattern of RTs: the Location room probes were faster than Other probes.
TABLE 7
MEAN REACTION TIME AND PERCENT ERRORS FOR SAME ROOM AND DIFFERENT ROOM PROBES IN EXPERIMENT 3

<table>
<thead>
<tr>
<th></th>
<th>Location1(^a)</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>RT</em></td>
<td>2.26</td>
<td>2.46</td>
</tr>
<tr>
<td><em>S.D.</em></td>
<td>.48</td>
<td>.55</td>
</tr>
<tr>
<td><em>Errors</em></td>
<td>4.0</td>
<td>6.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Location2(^b)</th>
<th>Incidental</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>RT</em></td>
<td>2.45</td>
<td>2.75</td>
</tr>
<tr>
<td><em>S.D.</em></td>
<td>.64</td>
<td>1.02</td>
</tr>
<tr>
<td><em>Errors</em></td>
<td>3.0</td>
<td>4.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Location–Other</th>
<th>Other–Other</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>RT</em></td>
<td>2.32</td>
<td>2.52</td>
</tr>
<tr>
<td><em>S.D.</em></td>
<td>.50</td>
<td>.60</td>
</tr>
<tr>
<td><em>Errors</em></td>
<td>3.0</td>
<td>3.0</td>
</tr>
</tbody>
</table>

\(^a\) The Location1 probe occurred after each experimental segment of the narrative. It presented two objects from the protagonist’s location. No other room was mentioned after the Location room and before the probe.

\(^b\) The Location2 probe occurred after Incidental room sentences. It presented two objects from the protagonist’s location, but another room was mentioned after the Location room and before the probe.

were in the same direction as RTs. Thus, the protagonist’s physical location was more accessible even if another room was incidentally mentioned just before the probe.

The results from the Different room probes provide further evidence that the Location room was more accessible than other rooms in the building: Location–Other probes were answered more quickly than Other–Other probes (\(F(1,31) = 20.74, p < .001\)).

**Discussion**

Experiment 3 shows that relevance is more important than mention for determining accessibility, at least for these narratives. This result argues that the readers in Experiment 2 focused on the Thought room more than the Location room because this room was more relevant to the protagonist, not because it was mentioned just before the probe. However, when the Location room was more relevant to the protagonist’s actions than a more recently mentioned room, readers focused on the Location room (Experiment 3). Both Experiments 2 and 3 show that the accessibility of the probed rooms cannot be explained by how predictable the rooms were from the narrative, or by how often they were probed. Thus, readers in Experiment 1 focused on the path because it was relevant to the protagonist even though it was not mentioned. They completed the protagonist’s route through the Path in order to update their situation model.

Experiment 3 also converges with our Experiment 1 and Morrow et al. (1987) in showing that the protagonist’s location, the narrative Here/new point specified by the verb phrase and prepositions of the critical sentence, helps determine accessibility.

This location serves as a reference point for integrating new information into the situation model (Morrow, 1985b). Experiment 3 also shows that readers continue to focus on this room if it continues to be relevant to the protagonist’s actions. This focus was sustained for at least two to three sentences after the last explicit mention of the room. This finding supports previous research showing that once mentioned, information remains accessible if it continues to be relevant to the current situation (e.g., Foss, 1982; Glenberg et al., 1987; Lesgold et al., 1979). Most important, it further specifies which aspects of the protagonist’s experience govern accessibility: information about objects remain highly accessible so long as the objects remain relevant to the character’s thoughts and actions.

**General Discussion**

The present study contributes to a growing body of research showing that the dynamics of information accessibility during narrative comprehension reflects the relevance of information to the current situation model (Anderson et al., 1983; Foss,
1982; Morrow et al., 1987; Sharkey & Mitchell, 1985). Much of this research has concentrated on the relationship between accessibility and relevance defined in terms of general knowledge structures such as scripts. Readers focus on concepts central to scripts when these structures serve as the topic of the text. These highly accessible concepts facilitate the processing of subsequent information in the text (Sharkey & Mitchell, 1985; Sharkey & Sharkey, 1987; Walker & Yekovich, 1987).

The present study as well as our previous findings show that readers also focus on parts of specific as well as script-based situations. In particular, readers focus on parts of situations that are relevant to the protagonist’s changing perspective (also see Anderson et al., 1983; Glengberg et al., 1987). This perspective is often anchored at the protagonist’s location, or the narrative HereNow point (Morrow et al., 1987; Morrow, 1985b). Experiment 2 of the present study shows that this HereNow point can be associated with a mental as well as physical location. Readers focus on the protagonist’s location so long as it remains relevant to the protagonist’s thoughts and actions. When the protagonist moves through a Path room toward a Goal room (While Joe was walking through the library toward the laboratory, he waved at a friend), readers focus on both rooms because they are relevant to the character’s current experience: the path is the current location, and the goal is the intended location (Morrow et al., 1987). When the protagonist enters the goal so that this room becomes more relevant to the character, readers now focus primarily on this room whether or not it is last mentioned in the sentence. The accessibility of other rooms tends to decrease with their distance from the current focus (Morrow et al., 1987). However, nearby rooms remain more accessible for a while after the protagonist leaves them. As shown in Experiment 1, this was the case even if a recently traversed room was not mentioned in the narrative. The Path room was more accessible than the Source room that the protagonist went through earlier in the motion event, even though only the Source room was mentioned. The protagonist’s physical location remains accessible so long as it is relevant to the protagonist’s current actions (Experiment 3). However, readers shift attention to another room when the protagonist thinks about this room, thereby “mentally projecting” him- or herself into the room (Experiment 2).

In short, our findings show that information accessibility during narrative comprehension reflects relevance from the protagonist’s perspective. Presumably this is because readers either adopt the protagonist’s perspective or focus on the protagonist from the narrator’s perspective. However, the present paper simplifies the role of perspective in narrative comprehension by investigating only the protagonist’s perspective. Further research should take into account the narrator’s perspective and how it interacts with the character’s perspective to influence relevance and accessibility. For example, readers may focus on information that the narrator presents as relevant to the protagonist, even if that character is not aware of the information (e.g., a time bomb close to the protagonist). Similarly, we have not directly examined how the reader’s goals influence relevance. For example, a person might read our narratives in order to judge how well written they are. This goal could change the relevance of information about characters and setting compared to the goal of reading the narrative in order to construct an accurate situation model.

The relationship of accessibility to situation relevance helps organize several processes involved in narrative comprehension. The present paper concentrated on how this relationship guides the inferencing required to construct the situation model. Readers in Experiment 1 focused on and elaborated the implicit Path room. Experiments 2 and 3 showed that readers did not focus on this room because of some bias.
built into the probe task or because the room was unnaturally predictable from the narrative. Notably, the inference about the Path room was drawn even though it was not necessary for referential coherence. Readers did not need to infer that the protagonist passed through the room in order to understand the proposition conveyed by the critical sentence, nor to connect the sentence with the next sentences to form a coherent text base, nor to answer the probe questions. However, the inference was required for elaborating the sentence with layout information when updating the situation model. In addition, readers apparently drew the inference at the time of reading the sentence that invited the inference, rather than when answering the probe question.

Previous studies often find evidence only for those inferences required for connecting sentences into a referentially coherent text base (McKoon & Ratcliff, 1986; Potts et al., 1988; Singer & Ferreira, 1983). However, readers had less reason to make situation-based inferences in those studies than in ours. First, subjects in the previous studies read many short texts covering a variety of topics, so they had to continually access new knowledge domains as they read the texts. Further, they may have had little prior knowledge about some of the topics. In our experiments, by contrast, all narratives referred to the same referent situation, which subjects had memorized before reading the texts. Therefore, they had a rich, readily accessible knowledge base that enabled them to elaborate the text into a situation model; the fact that they could use this knowledge to understand all of the narratives may have encouraged them to do so. Thus, the present research is similar to research that examines narratives organized around scripts. Readers of these texts also have a rich set of knowledge structures readily available. Like the readers in our experiments, these readers infer implied information in order to elaborate the text into a situation model (Sanford & Garrod, 1981; Sharkey & Mitchell, 1985; Walker & Yekovich, 1987). In a similar manner, experts also use their knowledge to make inferences in order to construct a situation model when reading texts about their domain of expertise (Fincher-Kiefer, 1987).

A second difference between our study and those of McKoon and Ratcliff (1986), Potts et al. (1988), and Singer and Ferreira (1983) also relates to the experimental texts. The texts in these studies tend to be shorter than the narratives used in the present study, often only two to four lines long. Thus, compared to our subjects, those in the earlier studies had less text information as well as less prior knowledge about the referent situation for constructing a situation model.

Finally, the tasks in previous studies did not encourage elaborative understanding of the texts. For example, McKoon and Ratcliff (1986) used a probe recognition task, where readers decided as quickly as possible whether a word or phrase occurred in the text. In such a task, readers must focus on the verbatim text more than the described situations in order to answer the probes accurately.

Thus, limited availability of information about the referent domain, the brevity of the texts, and the surface memory tasks in previous studies encouraged readers to construct a propositional text base rather than an accurate situation model. Perhaps, then, readers in these studies were more likely to make inferences that facilitated this kind of surface representation. By contrast, readers in our experiments were encouraged to construct a situation model, so they were likely to make inferences that facilitated the process of updating this representation. In short, readers are likely to make those inferences that best serve their goals (also see Harris & Monaco, 1978).

In summary, the present study shows that when understanding the narratives used in the present study, readers updated their situation model from the perspective of the protagonist. The research suggests
that the narrative Here/Now point is associated with the protagonist's thoughts and not merely his or her physical location. It also suggests that readers typically infer implicit information that is relevant to this Here/Now point, whether or not the inference is required for constructing a coherent propositional text base.

REFERENCES


Marslen-Wilson, W., Levy, E., & Tyler, L. K. (1982). Producing interpretable discourse: The es-


(Received April 28, 1988)
(Revision received January 9, 1989)