Mental Models

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Mental models have evolved considerably since introduced to augment the reader's standard rules for particular story actors. Now it is easy to also have the story read by readers with different sets of rules and concepts from those of the reader and to have those additional readers see some but not necessarily all the story elements.

Occasionally, I augment context by talking of the mental model for acting and the mental model for thinking. That is, the reader may have a mental model of how John acts and a separate mental model of how John thinks, because John may, for example, act viciously but view himself as kind.

Setting the stage

All this is best explained by an example story, which also introduces several idioms of general use. The story, which happens to be in a file named `Mental model sample.txt`, opens with standard lines that clear memory, establish GUI characteristics, and establish classifications for various entities:

```
Start experiment.
Set right panel to mental models.
xx, yy, and zz are persons.
John, Mary, and Peter are persons.
```

Next, would come ordinarily the lines that supply the rules and concepts to the mental model that determines how the reader thinks. The following illustrates what those look like, but note that they are commented out, as not used in the example.

```
// Rules added to reader's thinking mental model
// Insert file General commonsense knowledge.
// Concepts added to reader's thinking mental model
// Insert file General reflective knowledge.
```

There is, however, a locally defined concept:

```
Start description of "Romantic love".
xx's loving yy leads to xx's being romantic.
The end.
```

Identifying the personality traits

Now, various personality traits are defined by idiom.

```
// Personality traits defined.
personality-a is a kind of personality trait.
personality-b is a kind of personality trait.
personality-c is a kind of personality trait.
```

Each such line creates a mental model using a file with a corresponding name, such as `personality-a.txt`.

Defining the personality traits

The mental model files may include typical acts that look like elements in a story. There happen to be no such typical acts for `personality-a`.

Contents of personality-a.txt

```
xx and yy are persons.

// A rule associated with the personality type.
If xx loves yy then yy loves xx.

// A concept associated with the personality type.
Start description of "Reciprocated love".
xx's loving yy leads to yy's loving xx.
The end.

// A story optionally containing typical actions.
Start story titled "Personality A".  The end.
```

The `personality-b` file contains only a rule:

Contents of personality-b.txt

```
xx and yy are persons.

If xx loves yy then xx is romantic.

Start story titled "Personality B". The end.
```

The `personality-c` file does contain a typical action as well as a rule and a concept. Evidently, people with this personality type are associated with crying and laughing.

Contents of personality-c.txt

```
xx and yy are persons.

If xx loves yy, then xx must be crazy.

Start description of "Crazy love".
yy is a person.
xx's being crazy leads to xx's loving yy.
The end.

Start story titled "Personality C".
x cries. x laughs.
The end.
```

Telling the story

Now back to the story. As usual, the story is started with a title-specifying idiom:

```
Start story titled "Mental model testing".
```

Next comes a line that does a lot of work. First, it creates a new thinking mental model that captures how John will read the story elements that John sees. Second, it transfers all the current rules and concepts in the reader's thinking mental model to John's thinking mental model. Third, it initiates the presentation of all story elements to John's thinking mental model as well as to the thinking mental model of the reader.

```
John enters.
```

The mental model of the reader may not fully characterize how John thinks, so the next sentence idiomatically arranges for the rules and concepts in John to be augmented by rules and concepts from the

`personality-a` mental model. Thus, John's thinking mental model has a rule, `If xx loves yy then yy loves xx.` from `personality-a` and two concepts, the original `Romantic love` from the reader's thinking mental model and the new `Reciprocated love` from `personality-a`.

    `John thinks like personality-a.`

The next sentence goes into the reader's mental model, where there is no rule associated with it, and also into John's mental model, where it triggers the `If xx loves yy then yy loves xx.` rule, as shown in figure 1.
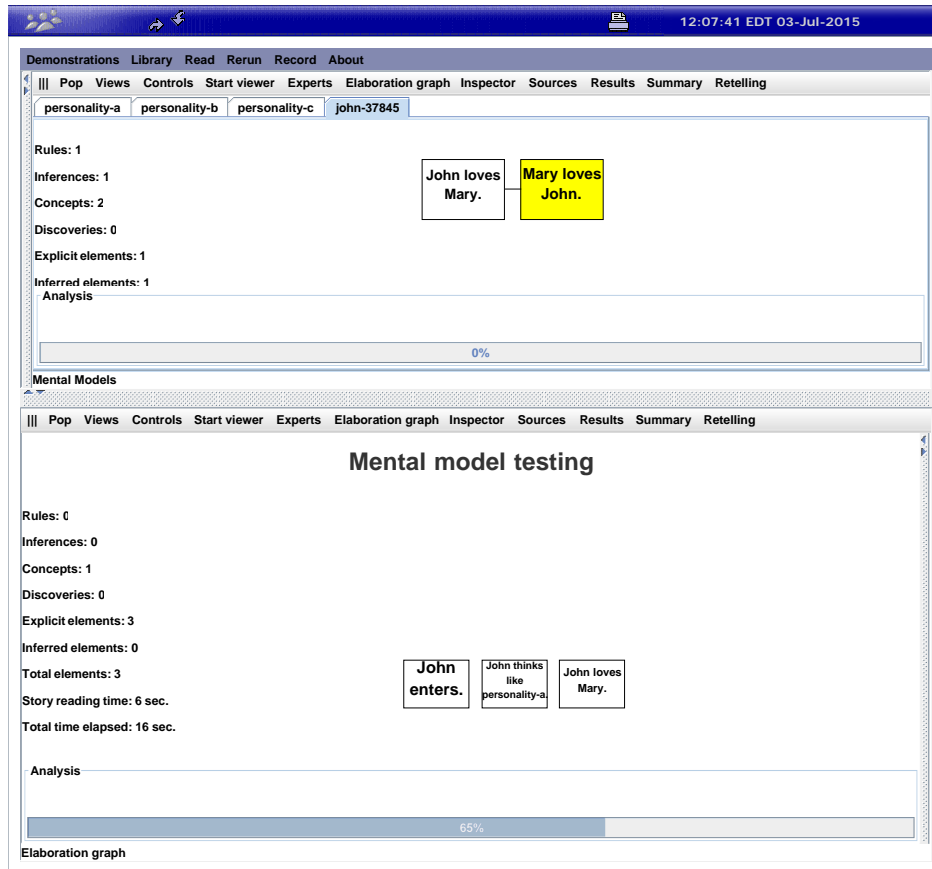

Figure 1: John's thinking mental model has a rule that makes *love* always reciprocated.

    `John loves Mary.`

Now suppose John has seen enough. The next sentence idiomatically prevents John from seeing subsequent stentences. There may be many `enters` and `exits`.

    `John exits.`

The next sentence idiomatically creates a thinking mental model for Mary as if the sentence were `Mary enters`; however, sencences do not begin to flow into Mary's thinking mental model.

    `Construct a mental model for Mary.`

Now, because there is a thinking mental model for Mary, all sentences starting with *Mary believes...* flow into Mary's thinking mental model, but *not* the reader's mental model.

    Thus, the embedded phrase `John is personality-b.`, tells Mary's thinking mental model to consider John to act in accordance with *personality-b*. That is, John's acting mental model in Mary's thinking model includes not only the rules and concepts generally available to Mary but also those associated specifically with John's acting model, which includes the rules and concepts from `personality-b`;

    `Mary believes John is personality-b.`

Now, if John is involved in a loving act, the loving person is considered romantic because John's acting mental model in Mary's thinking mental model includes a `personality-b` rule.

Accordingly, as shown in figure 2. because the next sentence has John in a loving relationship, Mary becomes romantic in Mary's mental model. Note, however, that there is no conclusion that John loves Mary because the governing rule is only in John's thinking mental model, not in Mary's and not in the readers. Also, there is no conclusion that Susan is romantic because the sentence involving Susan does not involve John; hence, there is no use of rules in John's acting mental model.
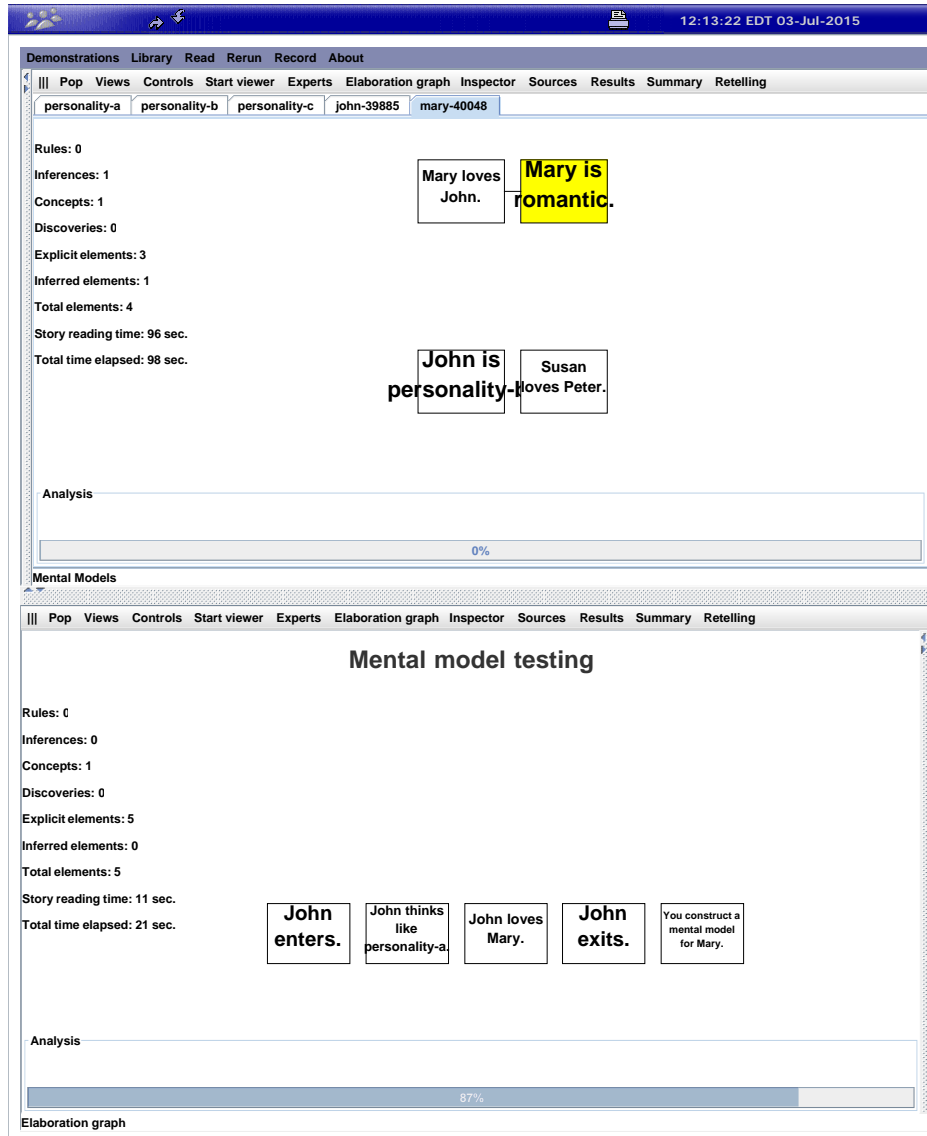

Figure 2: Mary's thinking mental model has an acting mental model for John that supplies the romantic deduction.

```
Mary believes Mary loves John.
Mary believes Susan loves Peter.
```
Next, the reader cries, which suggests that the reader has type `personality-c`. Rules and concepts from that personality type now augment those previously used by the reader. Note that if the sentence were `Mary cries.`, the augmentation would be limited to sentences involving Mary.

```
I cry.
```

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Now the `personality-c` abduction rule is activated by the following sentence, because the reader now has the rule `If xx loves yy, then xx must be crazy.` from `personality-c`.

    Peter loves Mary.

Finally, the story ends, as shown in figure 3.
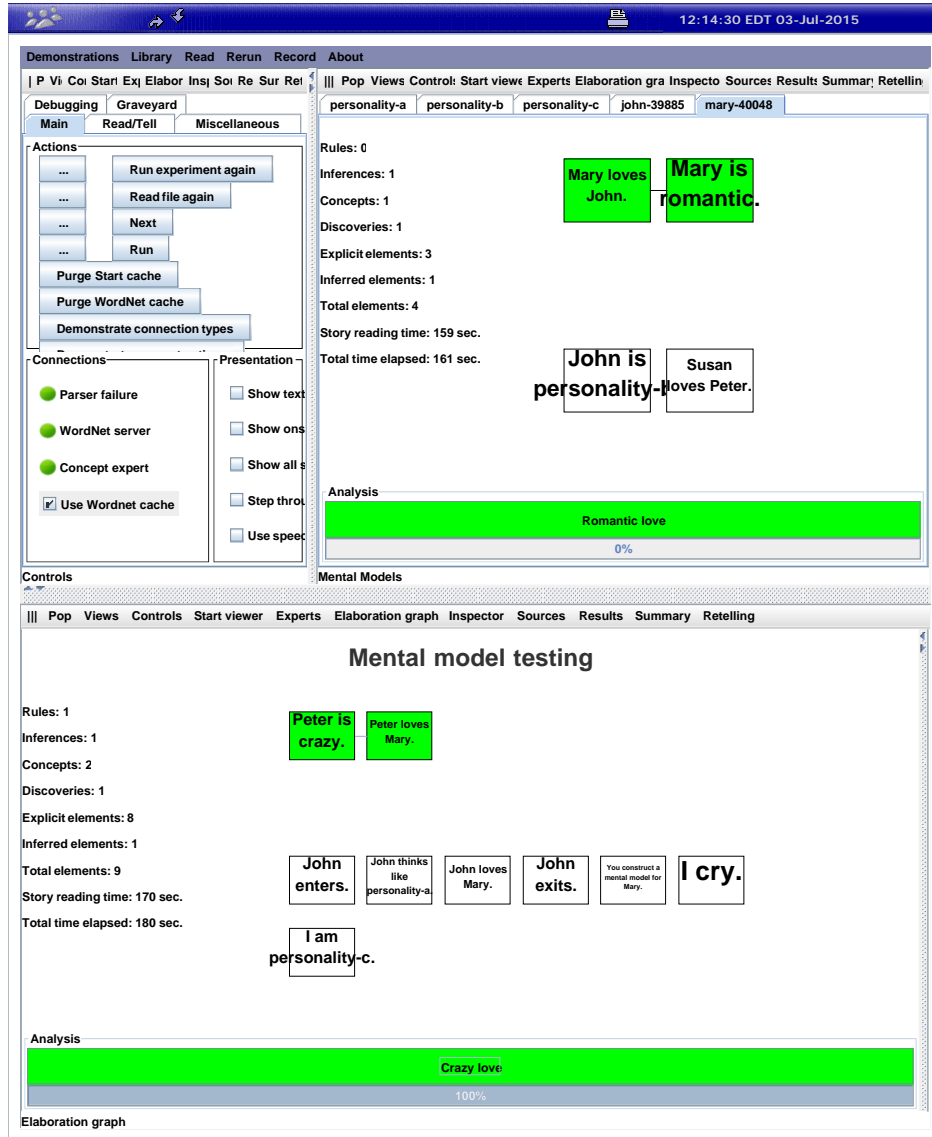
    The end.

Figure 3: The complete story analysis, with rules and concepts involved in acting mental models and thinking mental models.

Each mental model has a different concept. The reader sees `Crazy love`, made available to the reader via `personality-c`; John sees `Reciprocated love`, made available to John via the transfer from `personality-a`; Mary sees `Romantic love`, made available to Mary when Mary's thinking mental model was created by transfer from the reader's thinking mental model.

Nuance

Note that the rules associated with an acting mental model are actuated whenever the corresponding actor appears anywhere in an entity because personality traits are not only about what someone tends to do (vicious) but also about what gets done to them (meek). Accordingly, to be sure a rule works the way you want in the description of a personality trait, you may want to indicate which person has the trait, as in:

```
If xx is vicious and yy harms xx, then xx kills yy.
```

Otherwise, without the `xx is vicious` antecedent, if John is viscious and Paul is meek, then John harms Paul would cause Paul, the meek one, to kill John.