

TBTA Tutorial Lesson 10: Styles of Direct Speech Rules and Target Tense/Aspect/Mood Rules

(video: [TBTA-10A Styles of Direct Speech Rules](#))

(video: [TBTA-10B Tense/Aspect/Mood Rules](#))

(video: [TBTA-10C Tense/Aspect/Mood Rules Continued](#))

10.0 Introduction

In this lesson we're going to learn about two more types of rules in TBTA's transfer grammar: Styles of Direct Speech rules and Target Tense/Aspect/Mood rules. Your target language may not require the direct speech rules, but it's helpful for you to know about them. These two types of rules are extremely similar.

10.1 Styles of Direct Speech Rules

Many languages employ a variety of techniques for indicating relative status when two people talk to one another. These techniques include honorific and deferential pronouns, honorific case markers and verbal suffixes, honorific or deferential vocabulary, etc. In order to make the pertinent information available to these languages, five features on every proposition are used to indicate the direct speech situation: 1) Speaker, 2) Listener, 3) Speaker's Attitude, 4) Speaker's Age, and 5) Speaker-Listener Age. These five features are set appropriately for each proposition that is direct speech. For example, go to Community Documents, Infected Eye 1:2. The latter half of that verse produces: *Then Melissa said to Janet, "Please look at my eyes. Is some sand in my eyes?"* Make sure that the direct speech features aren't hidden (refer to the previous tutorial if necessary to see how to do this), and then rest your cursor on the features of an opening clause boundary in that quote. You'll see that Speaker is Girl, Listener is Girl, Speaker's Attitude is Familiar meaning that the speaker and listener know one another, Speaker's Age is Child (0 – 17), and Speaker-Listener Age is 'Essentially the same Age.' So these are two girls (not adults) who know one another and there's no particular emotion or attitude involved (e.g., anger, complimentary, etc.). You'll also notice an embedded proposition at the end of that verse which produces *Melissa said to Janet*. If you rest the cursor on that embedded proposition's features, you'll see that its Type is 'Closing Quotation Frame.' For multi-sentence quotations, some languages require a repetition of who is speaking to whom at the end of the quote, so closing quotation frames are included at the end of each multi-sentence quotation. If your language doesn't need these closing quotation frames, you can click the Setup button at the Lexicon and Grammar Development screen, select the Grammar tab of the Setup dialog, and then check the box labeled 'Delete Closing Quotation Frames.' If you click that checkbox and close the dialog, the semantic representation for

this verse will be reloaded, and the closing quotation frame will no longer be included.

Let's assume that your target language has six different styles of speech¹:

- 1) deferential – used when speaking to an older or respected person,
- 2) polite – used when speaking to strangers or in formal situations,
- 3) blunt – used when talking to a child or when angry at someone,
- 4) familiar – used when talking casually to an acquaintance,
- 5) intimate – used when talking to family members or very close friends, and
- 6) plain – used for all other situations.

Let's begin by defining these six values. Go to the Lexicon and Grammar Development screen, and double click on the 'Styles of Direct Speech' node in the grammar tree. You'll see the dialog that is shown below in Figure 10-1 (make sure that none of the speech features are hidden as was described in the previous tutorial).

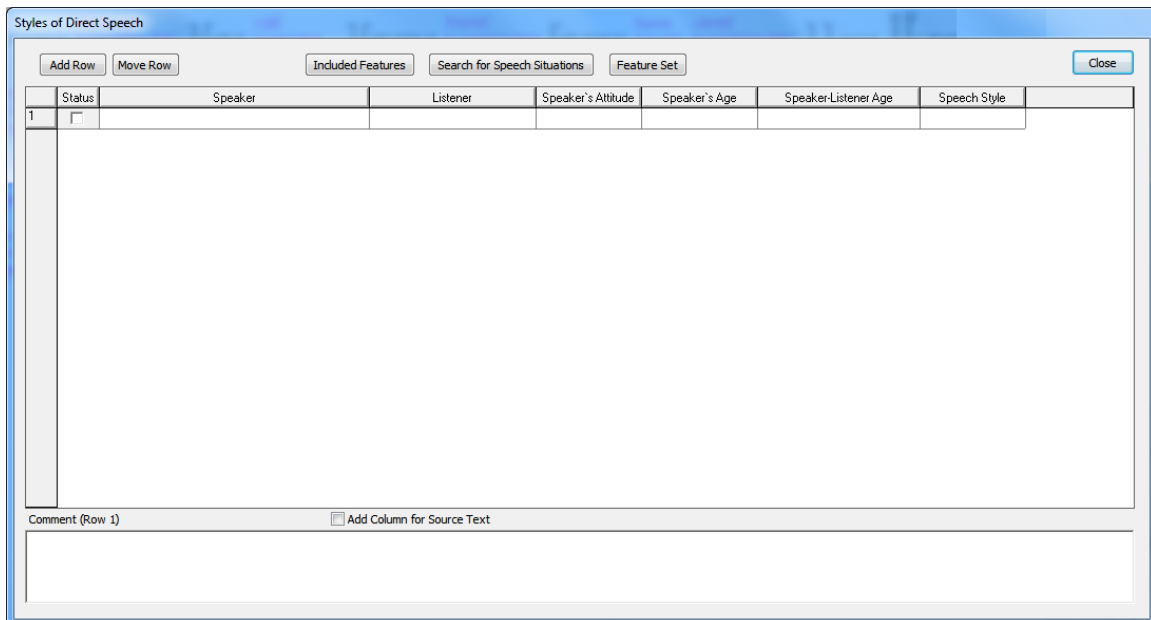


Figure 10-1. Styles of Direct Speech Dialog

To define your target language's styles of speech, click the button labeled 'Feature Set' at the top of this dialog. You'll see a new dialog with a syntactic category dropdown in the upper left corner and a feature name dropdown in the center at the top of the dialog. In the feature name dropdown, select 'Speech Style.' The first row of the table will contain one value: 'Not Applicable.' That value is used for all propositions that aren't direct speech. Click on row 2 in the 'Value Name' column and enter **Deferential**, then push the Enter key. You'll see a "D" appear in the Character column. In the example column, enter "**Used when talking to an older or respected person**" and push the Enter key. Enter the other five speech styles with appropriate comments in a similar way. After you're finished, the dialog should look like that shown in Figure 10-2.

¹ The six styles used here are from Korean.

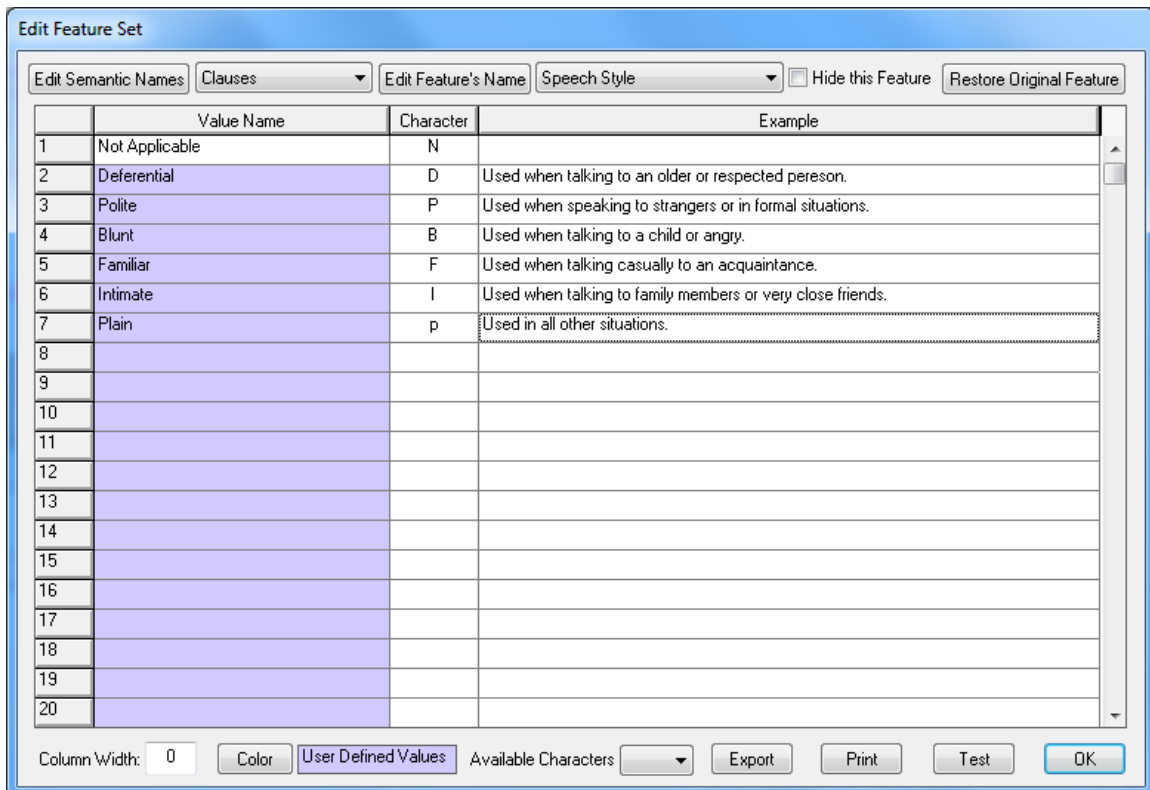


Figure 10-2. Features Dialog with Speech Styles Defined

Close the Feature Set dialog by clicking the OK button in the lower right corner. Then in the table on the Styles of Direct Speech dialog, click on the cell that's in the first row and in the Speech Style column. You'll see a dropdown arrow appear, so click it. Now all of the speech styles that you just defined will be available in that column. Let's set up a row to handle the speech situation in *Infected Eye 1:2*. As was mentioned above, the Speaker and Listener are both Girl, 'Speaker's Attitude' is Familiar, 'Speaker's Age' is Child, and 'Speaker-Listener Age' is 'Essentially the Same Age.' Select each of those values, and in the 'Speech Style' column, select Familiar. Activate that row by clicking the Status cell in the first column. Let's also enter a comment at the bottom of the dialog such as *Infected Eye 1:2 Melissa is talking to Janet*. Your dialog should now look like the one shown in Figure 10-3.

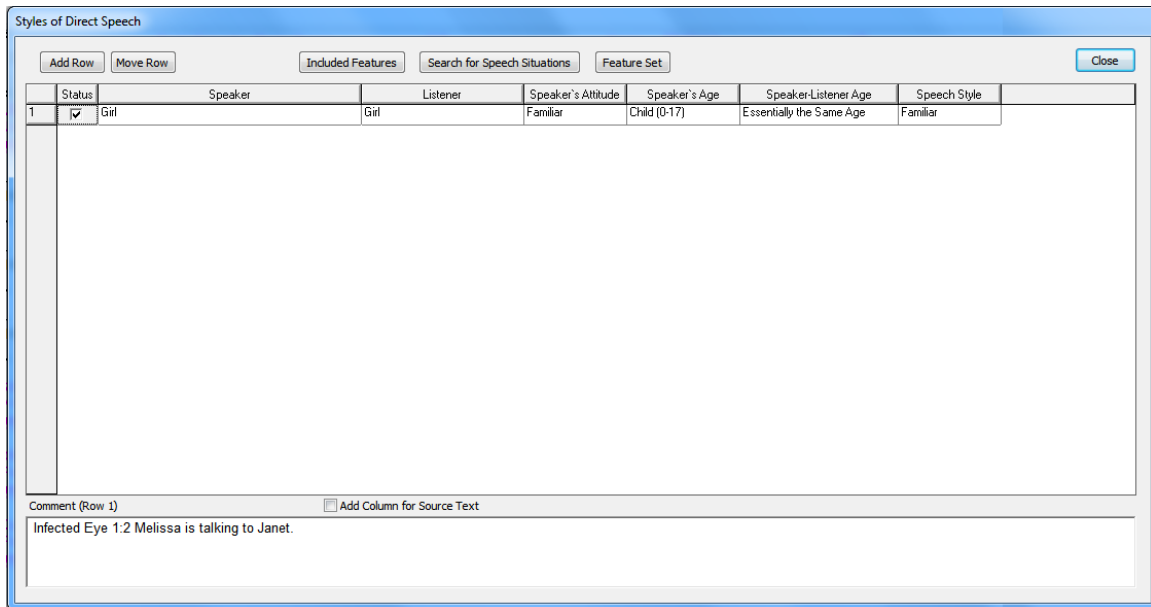


Figure 10-3. Styles of Direct Speech Dialog with Values

Close this dialog by clicking the Close button, and then rest your cursor on one of the opening clause boundaries in the direct quote in *Infected Eye 1:2*. In the popup you'll see that the 'Speech Style' is now set to Familiar. If you rest the cursor near the bottom of the opening clause boundary, you'll see another popup indicating that 'Speech Style' was changed from 'Not Applicable' to Familiar by row 1 of the Speech Style rules.

Now go to *Infected Eye 1:6*. That verse produces *Melissa called Alex loudly. She shouted, "Alex, come into my house. Something is preventing me from opening my eyes! I'm not able to see things!"* If you rest the cursor on an opening clause boundary within the quote, you'll see that the 'Speech Style' is 'Not Applicable.' This is a new speech situation because now Listener is Boy. So open your Styles of Direct Speech dialog again and add another row to handle this speech situation. Set the 'Speech Style' to Familiar, and be sure to enter a comment such as *Infected Eye 1:6 Melissa is talking to Alex*. After you close the speech styles dialog, verify that the 'Speech Style' is Familiar in the semantic representation, and that it was set by row 2.

Needless to say, we don't want to add a new row to this table for each particular speech situation that occurs in the semantic representations. We want to capture generalizations rather than specifying every combination of Speaker, Listener, Speaker's Attitude, Speaker's Age, and Speaker-Listener Age that occurs throughout the semantic representations. At the Lexicon and Grammar Development screen, click the Other Grammars button in the lower right corner. If you have the Korean database installed, select Korean in the dropdown at the top. Then double click on the Styles of Direct Speech node. You'll then see the table of rules that was developed for Korean. When building these rules, you should put very generic situations at the top of the table, and very specific special cases at the bottom of the table. When TBTA is executing these rules, it starts at the top and searches for a row with features that match the speech situation in

the current verse. When it finds a row with features that match, it will set the Speech Style according to that row. But then TBTA will continue working down through the rows looking for other rows that match the current speech situation. If other rows have features that match, they will be executed also. So you should put very generic speech situations at the top of the table, and specific situations down at the bottom of the table. You can see this in the table of Korean rules. The first row doesn't specify any features, and it sets the Speech Style to Plain. Subsequent rows then look for more specific situations.

Some cultures may expect certain speech styles to be used in the Bible, but they expect other styles to be used in other literature. For this reason there's a checkbox labeled 'Add Column for Source Text' near the bottom of the Direct Speech Styles dialog. If you click that checkbox (do this in your Speech Styles dialog, not the Korean dialog), you'll see another column added to the table labeled 'Source Text.' If you click on a cell in that column, you'll see a dropdown with the various source texts that are included with TBTA. By using that column, you can specify a particular speech situation in one set of source documents (e.g., the Bible), and assign a particular speech style. Then you can add another row with the same speech situation, but specify a different source document (e.g., Community Documents). Then that row can assign a different Speech Style.

Your target language may require additional information before determining which style of speech should be used. For example, imperatives may require one style, questions may require another style, and declaratives another style. Or perhaps the discourse genre is relevant when determining the style; narratives may use one style but procedurals may use a different style. You can specify that additional features must be used when setting up your direct speech styles. Click on the button labeled 'Included Features' at the top of the Styles of Direct Speech dialog. You'll then see a dialog listing all of the features associated with verbs, verb phrases, and clauses. If you need to set a particular speech style for imperatives, then you can check the box associated with Clause – Illocutionary Force. Then click the OK button, and you'll see that there's now a column for 'Illocutionary Force' in your Styles of Direct Speech Dialog. You may include as many of the features as are necessary for your target language.

Rather than building these Styles of Direct Speech rules one at a time as you work through a text, it's more convenient to let TBTA scan through the text and search for speech situations that don't match any of the current speech style rules. To do this, open the Styles of Direct Speech dialog and click the button labeled 'Search for Speech Situations.' You'll then be prompted to turn off your default rules, so you should click No on the prompting dialog, and then uncheck the Status checkbox for each of your default Direct Speech rules. Then click the 'Search for Speech Situations' button again. This time click Yes on the prompting dialog, and you'll be prompted to specify a text. You can tell TBTA to search Infected Eye 1:1 to Infected Eye 1:21, and then click OK. TBTA will then scan through the specified text searching for speech situations. When it finds direct speech, it will examine the active rules (i.e., rules that haven't been turned off) to see if any of them match the direct speech situation. If none of the active rules match the current speech situation, you'll be shown a dialog with the

current verse's speech features, and then asked if a default rule should handle that situation, or if you want to add a new rule. If you want one of the default rules to handle this new situation, then you can click OK, and TBTA will search for the next speech situation. If you want to add a new rule to handle this particular situation, click on the Speech Style cell and select a value from the dropdown, and then click OK. TBTA will then add a new rule for you. After TBTA has finished scanning through the specified text, you'll see a warning message telling you to reactivate your default rules. You'll also see all of your new rules added to the Styles of Direct Speech dialog.

Now that the feature called Speech Style is set to the appropriate value for each speech situation, your subsequent rules can use this feature to generate appropriate text. For example, your spellout rules can examine this feature and add the appropriate verbal suffix for each speech situation. Let's write a table spellout rule that will add suffixes for each speech style mentioned above. Build your table spellout rule so that it looks like the one in Figure 10-4. This table is too complex for Grammar Wizard, so you'll need to build it yourself. Begin by entering a new group under Verbs called 'Speech Styles.' Then double click on that group name and build the table shown below.

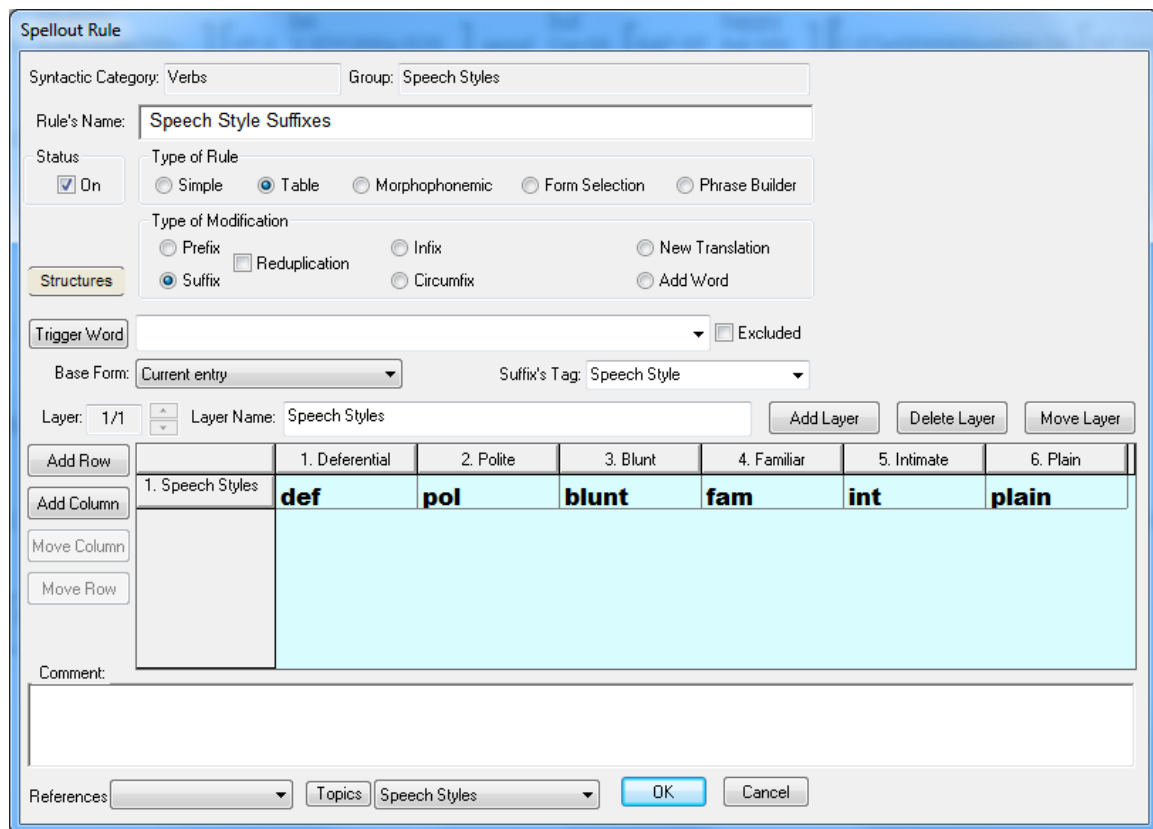


Figure 10-4. Spellout Rule that adds a Suffix for each Speech Style

When specifying the features for a column, double click on the column header, and you'll see the features dialog, but the features associated with verbs will be shown. The feature called 'Speech Style' is associated with clauses, so you

need to click the Clause button in the lower left corner of the Features dialog. You'll then see the features for clauses, and you'll see the 'Speech Style' column near the right edge of the dialog. Be sure to enter a Grammar Topic called Speech Styles, and then select that topic for this rule. After you've built the rule shown above, test it with Infected Eye 1:2, 3, and 6. Even though most of the concepts in these verses are not yet linked to target words, you can click the Generate button and see the results. For each speech situation you should see the correct suffix inserted into the text by the rule shown above.

10.2 Target Tense/Aspect/Mood Rules

The Target Tense/Aspect/Mood rules are designed to map TBTA's tense/aspect/mood (TAM) system into your target language's TAM system as closely as possible. A previous tutorial said that the ontology is the most difficult problem remaining in this NLG system, but handling TAM well is also a major issue that needs attention. Many languages have very different views of TAM than does English, so these rules will help you map TBTA's TAM system into your target language's system. To see these rules, go to the Lexicon and Grammar Development screen, and double click on the node labeled 'Target Tense/Aspect/Mood Rules' in the grammar tree. You'll see the dialog that's shown below in Figure 10-5.

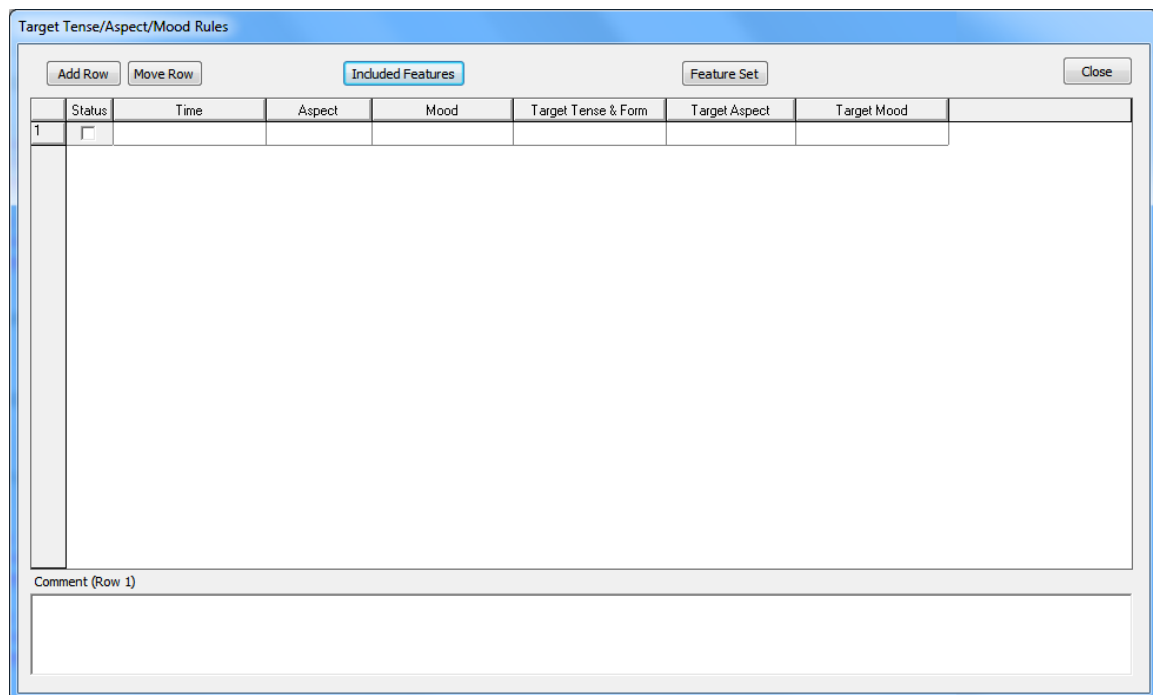


Figure 10-5. The Tense/Aspect/Mood Dialog

This dialog works the same way that the Direct Speech dialog works. You can specify which features should be included in the table by clicking the button labeled 'Included Features.' It's often convenient to include the clause feature called 'Adverbial Clause Type' in this table, so click the 'Included Features'

button, and scroll down until you see the last clause feature which is called 'Adverbial Clause Type.' (This assumes you activated the rule that adds this feature in the Feature Adjustment Rules dialog. If you didn't activate that rule in the previous tutorial, close the TAM dialog, open the Feature Adjustment Rules dialog, click the button labeled 'Add New Features,' activate row 1, and then return to the TAM dialog and specify that the clause feature called 'Adverbial Clause Type' should be included in the list of features.) You'll then see a new column added to the table for 'Adverbial Clause Type.'

Now we need to define the values of Target Tense, Target Aspect, and Target Mood that will be used in your grammar. To do this, click the button labeled 'Feature Set' at the top of the TAM dialog. You'll see the same dialog that enabled you to define Speech Styles earlier in this tutorial. This time let's select Verbs in the upper left dropdown, and then select 'Target Tense & Form' in the Feature Name dropdown. Define the values of tense that are pertinent in your language. For example, let's define these five values: Present, Past, Remote Past (more than one year ago), Immediate Future (later today), and Future. After you've defined these values, your dialog should look like the one shown in Figure 10-6 below.

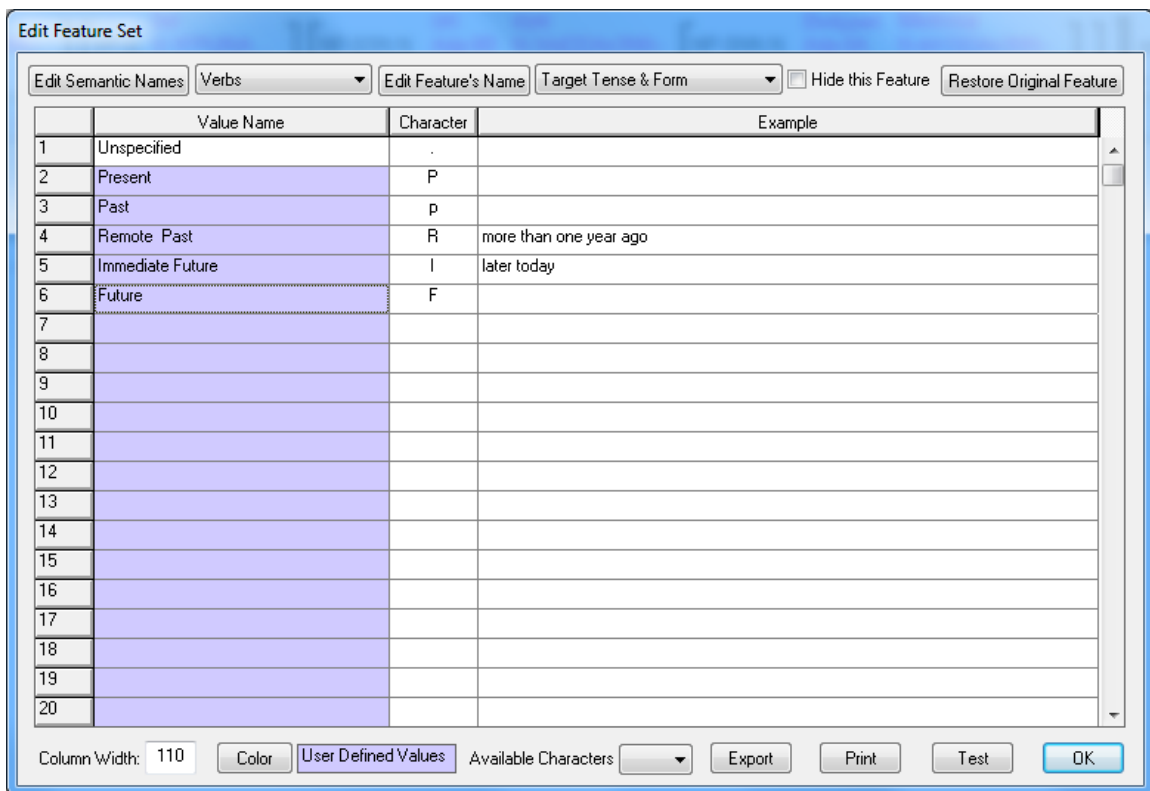


Figure 10-6. Feature Dialog with Target Tense & Form Values Defined

After you've defined the values shown above, close the dialog by clicking the OK button. Then click on the cell in the 'Target Tense & Form' column of the TAM table, and you'll see that the dropdown contains all the values that you just defined. Now let's repeat this process for 'Target Aspect' and 'Target Mood.' For

these two features, default values were entered for you when you created your target language database. These default values match the values that are used for aspect and mood in the semantic representations. In the 'Target Aspect' and 'Target Mood' features, add whatever values you want to include in your target grammar.

In addition to indicating tense, the feature called 'Target Tense & Form' will also be used to indicate which form of a verb should be used. The tutorial about the target lexicon discussed how English has four verb forms in addition to the stem; these four forms are: past, perfect participle, gerund, and third singular present. In certain environments, English uses a bare stem infinitive (e.g., in the complement clause of *to make*: *The teacher made the students read that book.*), a "to" infinitive (e.g., in the complement clause of *to ask*: *The teacher asked the students to read that book.*), a participle (e.g., in the complement clause of *to watch*: *The teacher watched the students reading that book.*), a perfect participle (e.g., in a counterfactual adverbial clause: *If the teacher had eaten that apple, ...*), etc. So you need to think about all the verbal forms that occur in your target language. You may not be able to think of all the forms now, so you can always come back later and define new forms as you need them. But let's add four more values to our list for 'Target Tense & Form': 'Bare Stem Infinitive,' "to" Infinitive, Participle, and 'Perfect Participle.' Add these four values to the dialog shown above in Figure 10-6 so that it looks like the dialog shown below in Figure 10-7.

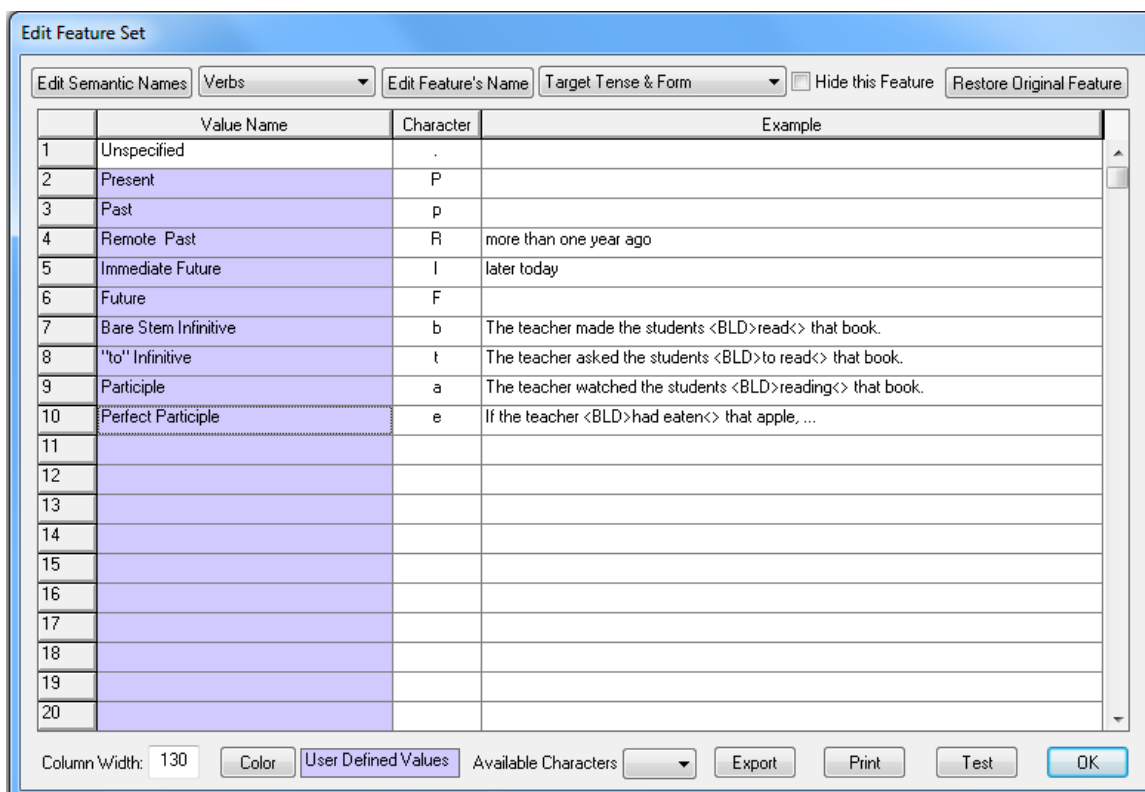


Figure 10-7. Features Dialog with Target Tense and Target Verb Forms Defined

In the figure above, notice that in the Example column, if you put text between markers such as “<BLD>” and “<>,” that text will be shown in a bold font whenever you’re specifying features and rest your cursor on that particular value.

Now that we’ve defined all the target tenses, verbal forms, target aspects, and target moods that we want to use in our grammar, let’s begin writing some TAM rules. Just like in the Speech Style rules, we want to put the most generic rules at the top of the table, and the more specific rules at the bottom. So the first rule should say that if Time is ‘Remote Past,’ ‘Target Tense & Form’ should be set to ‘Remote Past’ (this assumes you entered a Time value of ‘Remote Past’ during the previous tutorial where we discussed Feature Adjustment rules). Then add a row by clicking the ‘Add Row’ button, and that row will set ‘Target Tense & Form’ to Past if Time is Past. Add another row that will set ‘Target Tense & Form’ to Present if Time is Present. Then add two more rows; one will set ‘Target Tense & Form’ to ‘Immediate Future’ if Time is ‘Near Future,’ and the other will set ‘Target Tense & Form’ to Future if Time is Future. Continue adding rows that will set the Target Aspects and Target Moods appropriately. Your dialog should then look like the one shown in Figure 10-8.

	Status	Time	Aspect	Mood	Target Tense & Form	Target Aspect	Target Mood
1	<input checked="" type="checkbox"/>	Remote Past			Remote Past		
2	<input checked="" type="checkbox"/>	Past			Past		
3	<input checked="" type="checkbox"/>	Present			Present		
4	<input checked="" type="checkbox"/>	Near Future			Immediate Future		
5	<input checked="" type="checkbox"/>	Future			Future		
6	<input checked="" type="checkbox"/>		Inceptive			Inceptive	
7	<input checked="" type="checkbox"/>		Completive			Completive	
8	<input checked="" type="checkbox"/>		Cessative			Cessative	
9	<input checked="" type="checkbox"/>		Continuative			Continuative	
10	<input checked="" type="checkbox"/>		Habitual			Habitual	
11	<input checked="" type="checkbox"/>			Indicative			Indicative
12	<input checked="" type="checkbox"/>			Definite Potential			Definite Potential
13	<input checked="" type="checkbox"/>			Probable Potential			Probable Potential
14	<input checked="" type="checkbox"/>			'might' Potential			'might' Potential
15	<input checked="" type="checkbox"/>			'might not' Potential			'might not' Potential
16	<input checked="" type="checkbox"/>			Unlikely Potential			Unlikely Potential
17	<input checked="" type="checkbox"/>			Impossible Potential			Impossible Potential
18	<input checked="" type="checkbox"/>			'must' Obligation			'must' Obligation
19	<input checked="" type="checkbox"/>			'should' Obligation			'should' Obligation

Comment (Row 22)

Figure 10-8. TAM Dialog with Default TAM Rules

After you’ve finished setting up the simple default TAM rules, close this dialog and go to Nouns 1:1. Rest your cursor on the features below WALK-A, and in the popup you’ll see that ‘Target Tense & Form’ is set to Past, Target Aspect is set to Unspecified, and Target Mood is set to Indicative. If you rest your cursor on the target word below WALK-A, the popup will tell you that Time was changed from Discourse to Past by the Feature Collapsing rules, ‘Target Tense & Form’ was changed from Unspecified to Past by row 2 of the TAM rules, and Target Mood was changed from Unspecified to Indicative by row 11 of the TAM rules.

Now let's add some TAM rules that are a little more helpful than the default rules. Go to Clauses 1:80 which produces *John read this book instead of reading that book*. Link INSTEAD-A to *instead of* and click the Generate button. You'll see that the adverbial clause *instead of reading that book* is inserted at the end of the sentence after the period. Correct this problem by editing your clause phrase structure rule, and adding a constituent called Clause – Event Modifier. Position this constituent after Clause – Patient in the rule, and generate the verse again. You should now see the adverbial clause in the proper position, but *instead of* is being inserted at the end of the adverbial clause. Let's modify the clause phrase structure rule again, and insert an Adposition at the beginning of the rule. Your clause phrase structure rule should now look like the one shown in Figure 10-9.

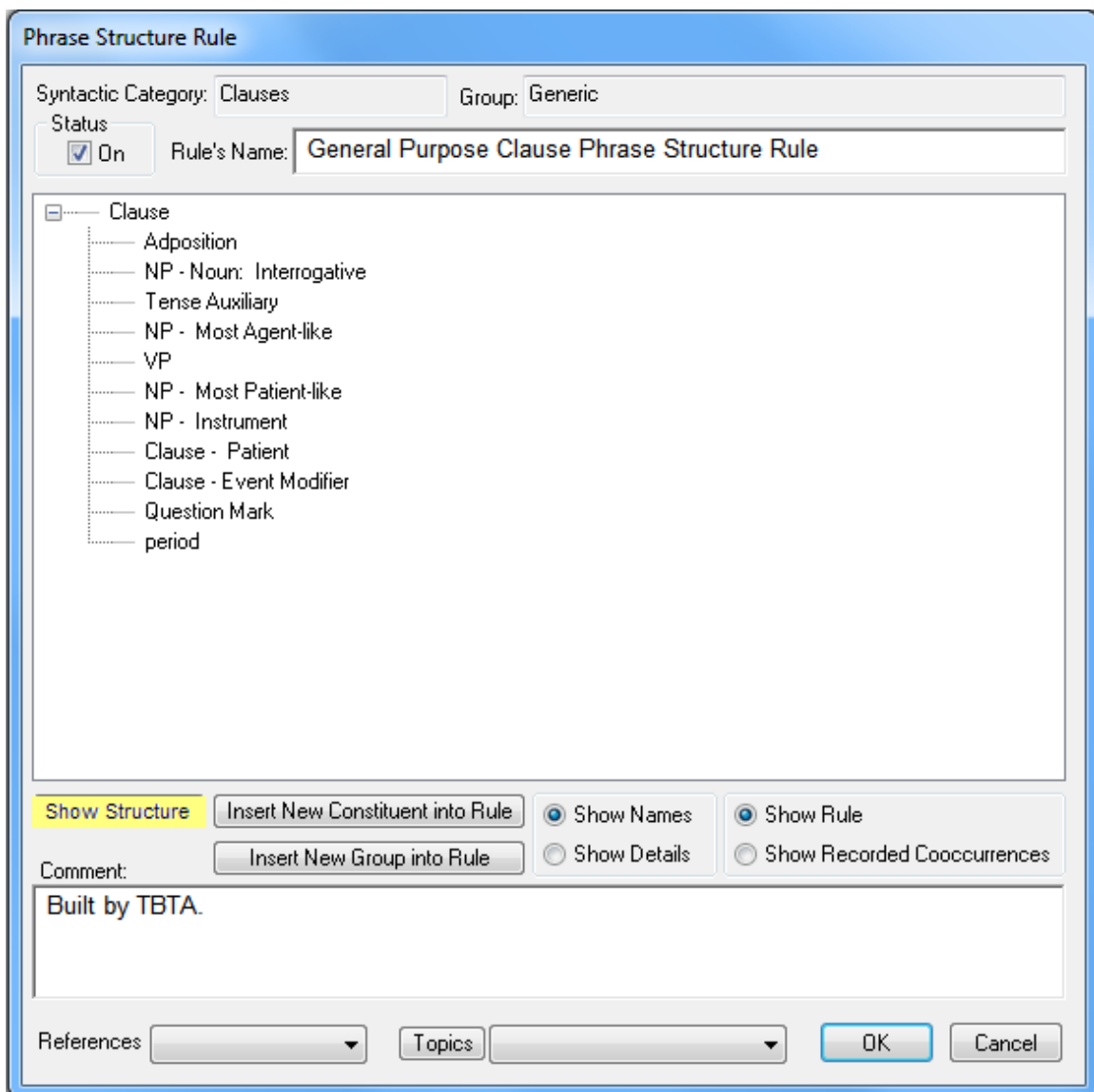


Figure 10-9. Phrase Structure Rule for Clauses

The generated text should now be *John read this book instead of John read the book*. (Note that you may need to turn off the word morphophonemic rule that changes *this* to *thiz* which we wrote in an earlier tutorial.) The Proximity value below BOOK-A in the adverbial clause is 'Remote within Sight,' so modify your noun spellout rule that inserts articles so that it includes 'Remote within Sight' and generates *that*. The verse should now generate *John read this book instead of John read that book*. Now we can write a TAM rule that will set the verb form in *instead of* adverbial clauses to participle. Open your TAM rule and click the button labeled 'Included Features,' and select 'Clause – Adverbial Clause Type.' Then you'll see a column appear in the TAM table called 'Adverbial Clause Type.' Then add a row, and in the 'Adverbial Clause Type' column, select 'Substitution (instead of).' Then in the 'Target Tense & Form' column, select Participle. Enter a comment for that row such as *Clauses 1:80 John read this book instead of reading that book*. Then close the TAM dialog, and rest your cursor on the features below READ-A in the adverbial clause (you may need to initialize the verse by clicking the Initialize button). In the popup you'll see that the 'Target Tense & Form' feature has been set to Participle. We need to add a spellout rule for verbs that will select the gerund form from the lexicon whenever 'Target Tense & Form' is set to Participle. You can use Grammar Wizard to write this rule, or you can write it yourself. The rule should look like the one shown in Figure 10-10.

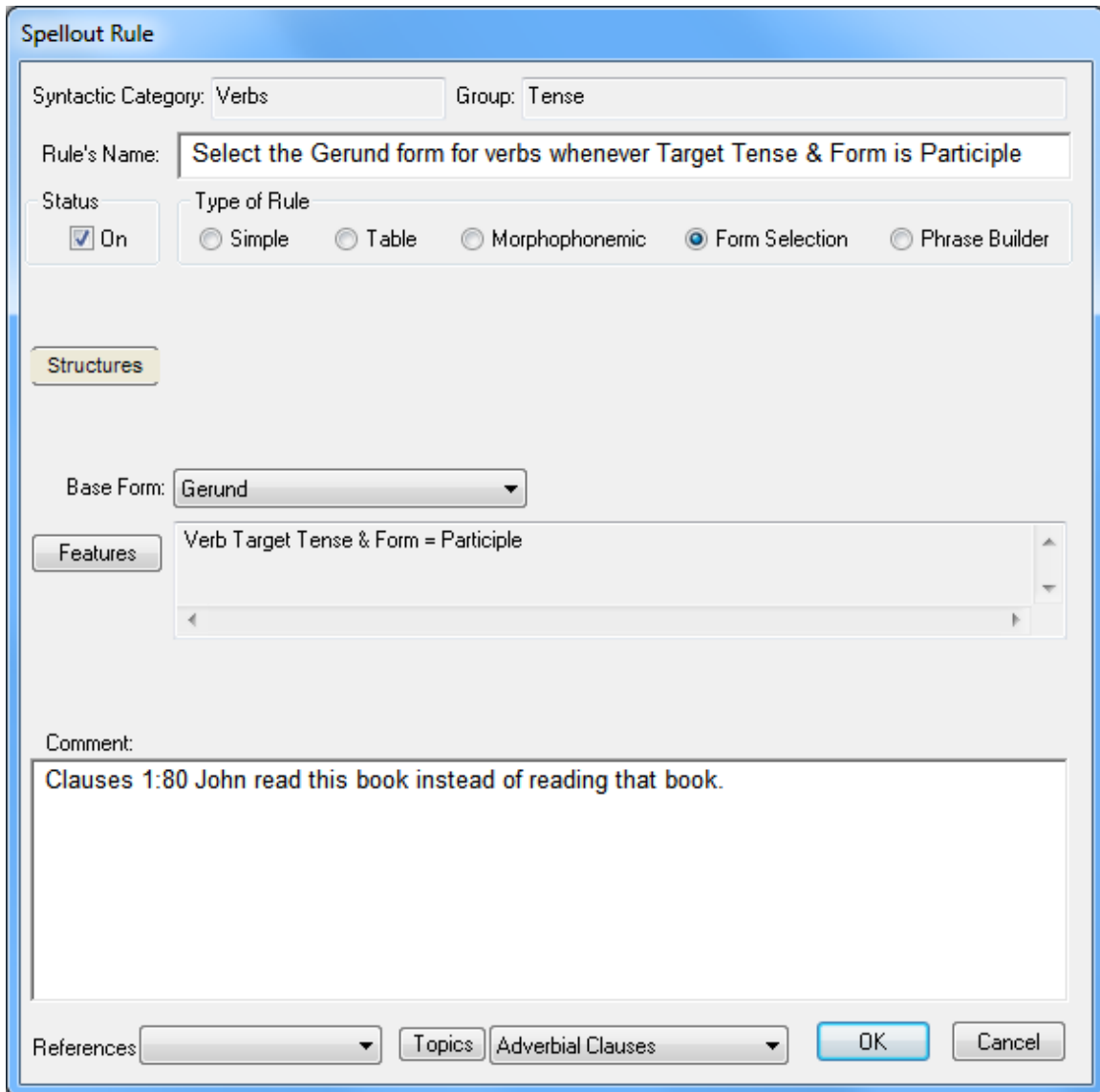


Figure 10-10. Spellout rule that Selects the Gerund Form from Lexicon

Now generate the verse again and you should see *John read this book instead of John reading that book*. So the TAM rule and spellout rule are both working properly. Generally English *instead of* adverbials don't include the subject, but we'll leave that issue for a subsequent tutorial.

Now let's go to Clauses 1:83 which produces *If Mary had read that book, John would have read this book*. The adverbial clause begins with IF-C which always signals a counterfactual. If you rest the cursor on the features associated with that subordinate clause, you'll see that the feature called 'Adverbial Clause Type' is set to Counterfactual. Let's add a TAM rule that will set 'Target Tense & Form' to 'Perfect Participle' if the clause's Adverbial Clause Type is Counterfactual. Go back to the TAM dialog and add a row, and specify that the Adverbial Clause Type is Counterfactual, and that 'Target Tense & Form' is Perfect Participle. Then enter a comment such as Clauses 1:83 *If Mary had read*

that book, John would have read this book. Now close the TAM dialog and rest the cursor on the features below READ-A in Clauses 1:83. The popup will indicate that 'Target Tense & Form' has been set to Perfect Participle by row 24 of the TAM rules. Later a spellout rule will see this value of 'Target Tense & Form,' and select the appropriate lexical form of the verb.

Click on the button labeled 'Other Grammars,' and select English in the dropdown at the top. Then double click on Target Tense/Aspect/Mood Rules, and you'll see the TAM rules necessary for English. If you scroll to the bottom of the table, you'll see that many rules deal with various types of adverbial clauses, and other rules deal with imperatives. As was mentioned earlier, you can always come back to the TAM dialog and include more features in the table, add more rows to handle new situations, and add more values to your list of values for 'Target Tense & Form,' 'Target Aspect,' and 'Target Mood.'

After your TAM rules have set 'Target Tense & Form,' 'Target Aspect,' and 'Target Mood' appropriately, your subsequent rules should use these features rather than the features called Time, Aspect, and Mood. When writing your spellout rules to generate TAM, be sure to use the features called 'Target Tense & Form,' 'Target Aspect,' and 'Target Mood'; don't use the features called Time, Aspect, and Mood.

10.3 Conclusions

In this tutorial you learned about two types of rules in TBTA's transfer grammar: the Styles of Direct Speech rules and the Tense/Aspect/Mood rules. Both of these rule types use the same dialog and are very similar to one other. For both types of rules, you specify which features should be included in the table, and you specify the feature values that are relevant to your language. Both of these rule types are used to set feature values which subsequent rules then examine and produce the proper morphology.

Before proceeding to the next tutorial, spend some time thinking about your target language. Does your language have multiple types of speech? Do children use different forms or lexical items than adults? If so, you'll need to use the Styles of Direct Speech rules; if not, you may not need these rules and you can hide all of the features associated with direct speech. You will certainly need the Tense/Aspect/Mood rules, and you should use them to produce the appropriate values of 'Target Tense & Form,' 'Target Aspect,' and 'Target Mood.' Then all of your subsequent rules should use the values in those features rather than the values in Time, Aspect, and Mood.