Applying Automatically Generated Semantic Knowledge: A Case Study in Machine Translation

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- No single correct answer for MT
- Need multiple correct (human) answers to tune MT system
- Expensive to have humans create multiple translations

This Leads To Reference Sparsity!

Artificial “Reference” Translations  
(O: original, P: our paraphrase)

<table>
<thead>
<tr>
<th>Tuning Refs</th>
<th>Newswire</th>
<th>Web</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>BLEU</td>
<td>TER</td>
</tr>
<tr>
<td>IH</td>
<td>37.65</td>
<td>56.39</td>
</tr>
<tr>
<td>IH+IP</td>
<td>39.32</td>
<td>54.69</td>
</tr>
</tbody>
</table>

Significant improvements when using even a single additional artificial reference for tuning

O: We must bear in mind the community as a whole.  
P: We must remember the wider community.

O: France sent its proposal in the form of a “non-official paper”.  
P: French transmits its recommendations to serve as a “non-official document”.

O: They should be better coordinated and more effective.  
P: They should improve the coordination and efficacy.

O: Thirdly, the implications of enlargement for the union’s regional policy cannot be overlooked.  
P: Finally, the impact of enlargement for EU regional policy cannot be ignored.

Automatic Paraphrasing as E-to-E translation