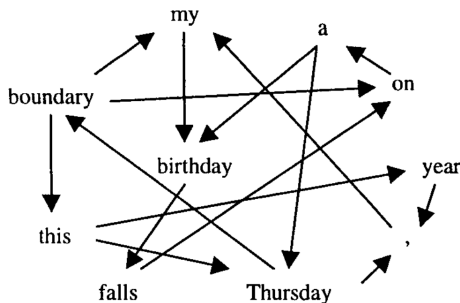


Interlude: MT is NP-Hard (1/2)

- Translation options lead to exponentially many hypotheses.
- Indeed, MT is NP-hard for at least two reasons:
 - Finding the best word ordering.
 - Covering with multi-word units.
- Remember the NP-hardness proof strategy:
 - Use MT as a black box to solve an NP-complete task.



With a 2-gram language model, finding the best word ordering solves the Hamilton Circuit or Travelling Salesman Problem. (Knight, 1999)