ISyE 4111
Advanced Supply Chain Logistics
Fall 2010

Reading Assignment 6
Due Date: October 26, 2010

Read the materials below in preparation for discussion in class. The questions are intended to guide your reading and thoughts, but are not the only aspects that will be discussed in class.

1. Gribkovskaia, I., Halskau, Ø, and Laporte, G., "The Bridges of Königsberg — A Historical Perspective", *Networks*, vol. 49, nr. 3, pp. 199–203, 2007.

   (a) Was there ever a date at which an Eulerian walk over the steel bridges of Königsberg were possible, without using any wooden bridges? If so, when? If not, show that it was never possible.

   (b) Consider the current situation in Kaliningrad (with the Estacada connecting Altstadt and Vorstadt, but not Kant Island, and with bridge 10 not connected yet). What bridge(s) would you construct to make an Eulerian walk possible?

2. Campbell, J.F. and Langevin, A., "Roadway Snow and Ice Control", *Arc Routing: Theory, Solutions and Applications*, Dror, M. (ed.), Kluwer Academic Publishers, Dordrecht, Netherlands, chapter 10, pp. 389–418, 2000.

   (a) What factors contribute to the complexity of roadway snow and ice control problems?

   (b) What idealized arc routing problems have been used for roadway snow and ice control?

   (c) What reasons are given for the problems encountered when attempting to implement routing software for roadway snow and ice control?

   (d) What benefits were contributed by early roadway snow and ice control software?

   (e) Explain the relationship between the duration of a route and the service level provided to the road segments on the route.

   (f) What objectives were taken into account in the CASPER system?

   (g) What are the two major phases in the heuristic used in the CASPER system?

   (h) Discuss the case studies described in the chapter.

   (i) What technological advances are identified that will affect roadway snow and ice control in the future?