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Daniel J Kleitman*, djk@math.mit.edu. *Favorite Graph Conjectures.*

This talk will contain descriptions and some ideas on four problems in graph theory and related areas that I have enjoyed thinking about from time to time. One of them is as follows. We consider complete tripartite graphs in which two parts each have cardinality $2n$ on which each edge is directed in exactly one direction, that have diameter two. The question is: how large can the third part be, given these conditions? And a proof of the claimed answer is required. I learned of this problem many years ago from two mathematicians from what was then Yugoslavia, who conjectured what I believe is the right answer. Unfortunately I have lost their names. I am pretty sure that this is a doable problem. (Received September 14, 2011)