

## Case Study: The S.S. Kuniang

In the early 1980s, the New England Electric System (NEES) in the U.S. was deciding how much to bid for the salvage rights to a grounded ship, the S.S. *Kuniang*. If the bid were successful, the ship could be repaired and fitted out to haul coal for the company's power stations. But the value of doing so depended on the outcome of a court judgement about the salvage value of the ship.

The court's judgement involved an obscure law regarding domestic shipping in coastal waters. If the judgement indicated a low salvage value, then NEES would be able to use the ship for its shipping needs. If the judgement were high, the ship would be considered ineligible for use in domestic shipping unless a considerable amount of money was spent on fitting her with fancy equipment.

The court's judgement would not be known until after the winning bid was chosen, and so there was considerable risk associated with actually buying the ship by submission of the winning bid. If the bid failed, NEES's alternatives included buying a new ship or a tug-and-barge combination, both of which were relatively expensive alternatives. One of the major issues was that the higher the bid, the more likely NEES to win. NEES reckoned that a bid of \$3 million would definitely not win, whereas a bid of \$10 million definitely would win. Any bid in between was possible.

- a. Draw a decision tree and an influence diagram for NEES's decision.
- b. Which representation do you think is more appropriate?
- c. How would you go about finding the optimal amount to bid?

(Bell D.E., Bidding for the S.S. Kuniang, *Interfaces*, 14: 17–23, 1984.)