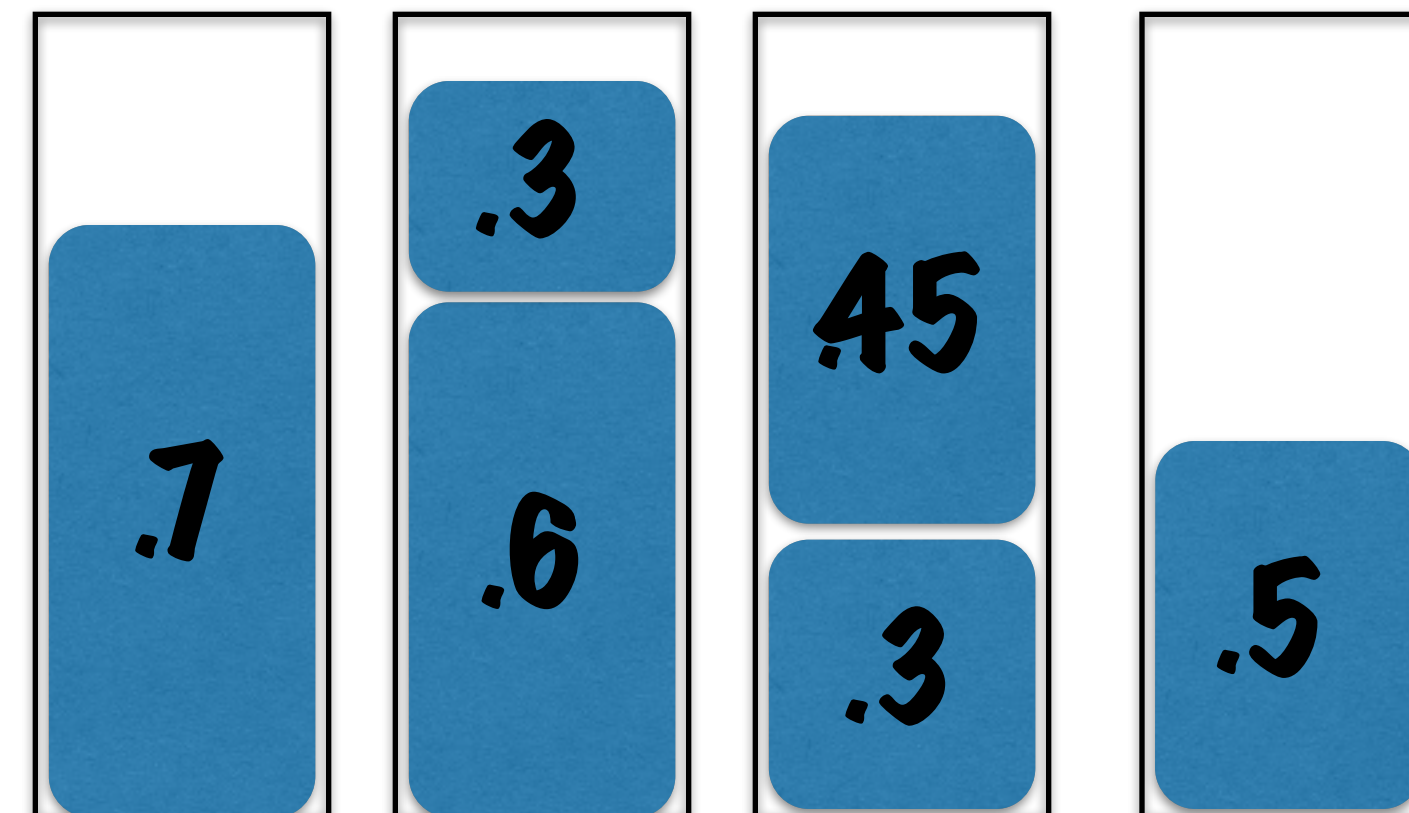
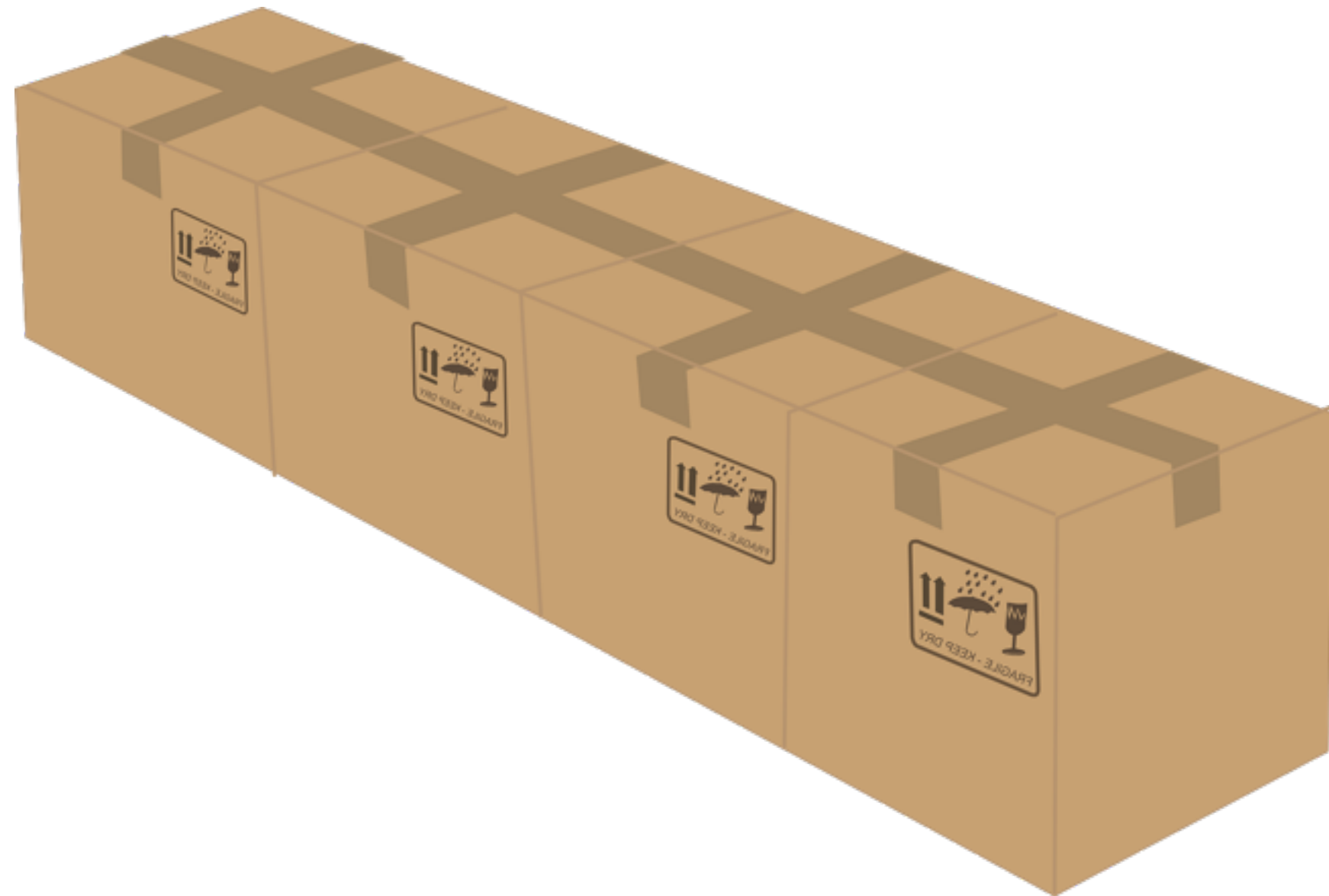


Bin packing, linear programming and rounding



Techniques

**Adaptive
rounding of input**

Bin packing variants

**Two-dimensional,
three-dimensional**

Online



**Karp (1972)
NP-complete**



**David S. Johnson
Constant factor
approximation algorithms
Jeffrey D. Ullman**

The pioneers





Richard Karp



Narendra Karmarkar

Average case analysis



David S. Johnson



L. McGeoch ...



Wenceslas Fernandez de la Vega



George S. Lueker

$$\text{OPT}(1 + O(\epsilon)) + 1$$



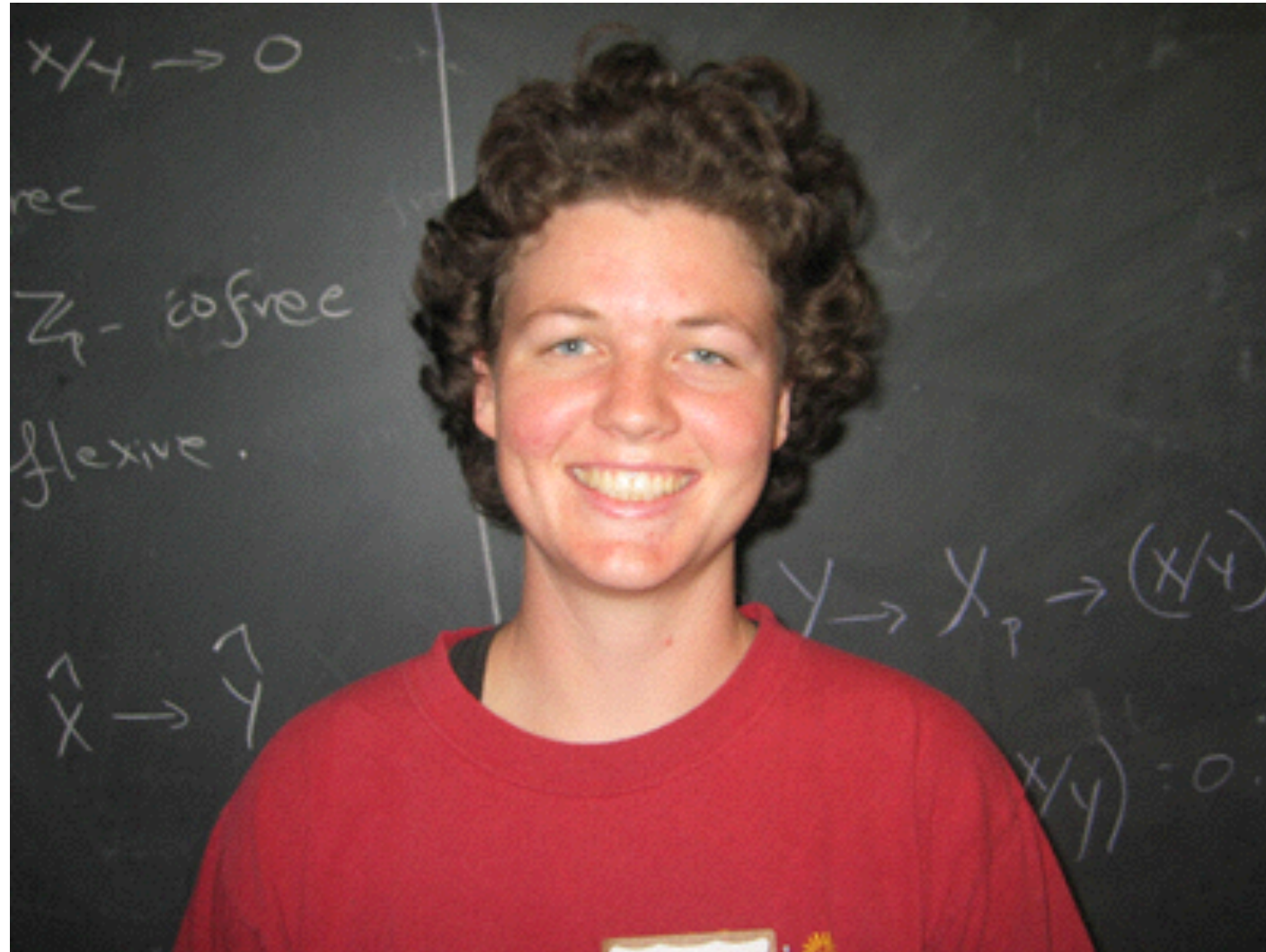
Narendra Karmarkar

Richard Karp

$$\text{OPT} + O(\log^2 \text{OPT})$$



Asymptotic approximation schemes



Rebecca Hoberg
Thomas Rothvoss
 $\text{OPT} + O(\log \text{OPT})$
Asymptotic approximation schemes

Bin packing, linear programming and rounding

