Chapter 1 Introduction

- OR ⇒ Operations Research
  - Research on (military) operations

- The beginning of OR has generally been attributed to the military service in WWII.
  - Allocate scarce resources to various military operations/activities in an effective manner.

A Historical Note of Operational Research

The quotation comes from an appreciation of Patrick Blackett (Waddington, 1974), which appeared in the Operational Research Quarterly (now the Journal of Operations Research Society) shortly after his death:

One incident is worth retelling. In 1943, we had gained the upper hand in the U-boat battle when the enemy suddenly discovered how to listen to our 10-cm radar. Therefore, his submarines could be warned and dive to safety in plenty of time. Our aircraft sinkings fell to zero. Blackett and his operational research colleagues (the Blackett’s Circus) calculated that, if we could concentrate sufficient aircraft in certain areas, the submarines would have to dive so frequently that they would exhaust their air and battery supplies and finally have to remain on the surface and face up an attack.

His calculations required the diversion to Coastal Command of several squadrons of aircraft from Bomber Command, a proposal which, needless to say, met with strenuous opposition from the head of that command, Air Chief Marshal Sir Arthur Harris. The importance of the proposal led to the necessity of prime ministerial decision and a meeting was arranged at which each side marshaled strong arguments.

After some intense dispute, Harris burst out with “Are we fighting this war with weapons or slide rule?” to which, after a short than usual pause and puff on his cigar, Winston Churchill said, “That’s a good idea, let’s try the slide rule for a change.”

The operation was carried out and the sinkings resumed as had been expected. What was a surprise was that the actual number of attacks and sinkings came out to be almost exactly as predicted by the calculation.
After WWII, the success of OR spurred interest in applying OR outside military as well.

- The complexity in organizations is increasing significantly.
- (Manufacturing) Procedures are complicated.
- Resources are limited.
- How to allocate resources or improve procedures to generate best benefit.

OR receives great success because

- Good solution techniques.
- Improving computer technology.

The impact of OR is tremendous (see examples in the textbook).

- Try to find some recent issues of “Interfaces”, there are a lot of OR practical applications.

Please take a look at section 1.4, which explains what are included in the attached CD-ROM of the textbook.