Alternative flying machines (in the sense that they differ from our usual designs) can be invented, or studied. In all cases, it is reasonable to wonder whether a particular design is optimal, or perhaps what it is optimal for. Definitions of optimality quickly become complex: “minimum drag:lift ratio for n passengers that allows our company to outcompete our rival(s)” or “something that can be grown fast, still works when 50% of the aft surfaces are missing, and that fits in a nest”. We will consider two examples of flying devices, one evolved and one invented, and we will look for parallels that exist between them, or perhaps ought to. The talk will also attempt to make specific connections with basic classes we teach/learn from at USC.