

### **The cuckoo clock**

A few years ago, my wife and I purchased a cuckoo clock from an antiques place on Church Street in Westport. Each hour, a little door beneath its face opens and a bird emerges to sound from one up to twelve calls depending on the time. It also emits one call on the half hour.

This clock is useful at night if you wake up, because you can often know the time without having to turn on a light. Suppose that you wake up and hear the cuckoo call. What is the maximum amount of time that you might have to wait until you can be sure of the time?

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If the cuckoo calls more than once, you can note the time and roll over. If you hear the cuckoo call once, and if it makes more than one call a half hour later, you will know the time. However, the cuckoo also make a single sound at 1:00 A.M. If you hear it at 12:30 or 1:00, it will sound once a half hour later, and you will still not know what time it is. After a further half hour, it will either sound once (and it will be 1:30) or twice (and it will be 2:00), and you will know the time. Thus, you might have to wait an hour to determine the exact time. With any kind of luck, you will have gone back to sleep.