Phys 114 **Week 5: Amy's reading advice** **2021**

My observations about reading this week:

1. You can get the homework done with a modest amount of reading, shared between the two books. Or you can confine your reading entirely to G&T.

2. B&B 4.1-4.6 are recommended, with much important information in a few, beautifully-written pages. They show how maximizing accessible microstates constitutes thermodynamic equilibrium; and they define entropy statistically. Examples 4.1 and 4.2 are elegant; both deriving and giving an intuitive feeling for the Boltzmann probability distribution.

Also recommended for being concise and well written are
B&B 14.5, 14.6, 15.1, 15.2 and 15.5.
You probably don't want to miss "Maxwell's Demon" in **14.7.** This creature who attempts to evade the second law of thermodynamics has a long history. The resolution of the demon paradox is clearly explained in 15.1. There have been many experiments recently to create quantum demons. All show that erasing information is where entropy is generated in the universe. See for example:
https://www.nature.com/news/the-unavoidable-cost-of-computation-revealed-1.10186

Optional but fascinating are
B&B 14.8, 15.3, 15.4

3. **G&T** has new material which you need.
But you can skip ...
G&T 3.4.2 if you read B&B 15.5
G&T 4.14.1 if you read B&B C.8
G&T 4.13 gives wonderful insight into entropy, but is optional if you are short on time or interest

I do recommend everyone read these G&T sections which have new information, needed to complete our understanding and our work for seminar.
G&T 4.2*-4.6
G&T 4.14.2
*If you've taken my advice and read the lovely Ch. 4 of B&B, G&T 4.2 will tell you a familiar story, albeit with more details and advice to help you do various calculations with Einstein solids.