1. Thermodynamics as a theory of decision-making with information-processing costs

Most preferred. Project partner: Nicholas Klein.
Five important facts, words, concepts, etc. from this paper:

1. Bounded rational decision-makers. Important because this is the type of decision maker being studied and represents a slightly more realistic decision maker bounded by information-processing resources.

2. That kT can be interpreted as a conversion from information to energy seems like an important perspective both for this understanding of utility and even for physics.

3. An environment can be characterized as having a rationality, ex. ambiguity is an anti-rational environment, and said environment can then be thought of as being a decision maker itself.

4. Reaction times are related, but not equivalent to, computational resources. This makes sense and explains how irrational choices can be formulated as rational when time to consider is limited.

Five questions that I developed in reading the paper:

1. How do we consider computation costs in every day decisions?

2. Is the idea that we only consider the difference in free energy, and not absolute free energy, related to the fact we consider proportional wealth change not absolute wealth in utility functions?

3. What is an information state?

4. What is a prior distribution?

5. Is there a meaning behind the authors use of square-brackets or are they equivalent to parenthesis?

Single-paragraph summary of the paper:

The physics understanding of thermodynamic statistics provides a framework for modeling decision making. The temperature of a physical system can be thought of as the rationality or deviation from pure rational decision making. This temperature is affected by the environment and limited computational resources. This treatment of decision makers as thermodynamic objects explains some 'paradoxes' in utility theories by reframing irrational decisions as rational in the context of the decision makers resources and rationality.

2. Risk, Ambiguity, and the Savage Axioms

Second most preferred. Same project partner.

My apologies, I only had time to skim this paper a little as I've been sick and trying to recover for most of this week.