Below are a a bunch of randomly selected topics for discussion. Several of these I didn't get to in the lectures; so I hope discussing them will be a learning experience. They also include some issues that still confuse me; so this learning experience should be multidirectional.

- Space is not a crystal, why go to the lattice?

- Give some examples of things you can't calculate via perturbation theory.

- What boundary conditions should we use?

- How much of a 10^4 lattice with open boundaries is "on the surface."

- Why be antiperiodic for fermions?

- What is the "area law."

- Do fundamental or adjoint loops fall faster with area?

- Is the Wilson loop itself a physical observable? How about ratios of loops?

- What are the parameters of the strong interactions?

- How large can the imaginary part of the trace of an SU(3) matrix be?

- Mean field theory for the Ising model. What is $\langle s \rangle$ if the neighbors are all approximated by $\langle s \rangle$?

- What happens with the 3 state Potts model where $s \in \{1, e^{2\pi i/3}, e^{-2\pi i/3}\}$?

- For Z_2 lattice gauge theory? What about gauge invariance and Elitzur's theorem?

- What happens to the action when all timelike links on one slice are multiplied by a group center element?

- Are any Wilson loops affected by this?

- How can the "Polyakov loop" which winds around the timelike direction get an expectation value.

- Lace a "dirac string" through a series of plaquettes: replace each pierced $U_p \to e^{i\phi} U_p$ with the flux ϕ constant along the string. Is the string observable to gauge fields? Fermion fields? Show how the string can be moved around.

- If the string ends we have a monopole. Is it observable when $\phi = 2\pi n$. What screened it?

- For $SU(3)$, make a string with $U_p \to e^{i2\pi/3} U_p$. Is this observable. What happens to the strong magnetic flux at a string end.

- A chiral gauge theory is sometimes defined as one with only complex representations of the gauge group. But the fundamental representation of $SU(3)$ involves complex matrices. Why aren't the strong interactions chiral under this definition? What makes the standard model different.

- $SU(2)$ representations are all equivalent to their conjugate, i.e. $1/2$ and $\overline{1/2}$ representations are the same. How can the weak interactions be chiral?