Exercise 1:

a)

The weirdness arises when we try to define the state of the entangled particle. Since the color of the sock is perfectly well defined before a measurement is made, this is not analogous to quantum correlation.

b)

EPR's argument is non trivial because they deduce that, if quantum uncertainty exists, then the value of a measurement of the sock color is fundamentally ill-defined before a measurement is made. otherwise, QM is incomplete.

Exercise 2)

a)

Bob's local state should be an "I know nothing" state because he's gained no information about Alice's state

b) When Bob receives the information about what Alice measured he knows what state he has and can manipulate his state into the state Alice wanted to send initially.

c) Once Alice measures her state, it becomes a pure state which fixes the state that Bob should have. In contrast, Bob still

has no information about what state Alice sent him so he should have an I-know-nothing state.