* For today’s meeting we went over the overview of the game, reductions from NAE SAT -> NAE 3-SAT, and future implementations

1. The overview of the game is essentially infection
   1. See Josh’s document in the github for a full explanation
   2. Essentially you are trying to breed out your opponent’s genres through strategic placement
   3. The game is kinda hard to grasp at first, so we should all go over it together in person at some point
   4. See the paper in the group-chat to see the mathematical backing of the game
2. Why is the game relevant?
   1. First we will use a chain of reductions to be able to optimize this game: We have the following reductions
   2. (Our game) -> NAE SAT -> NAE 3-SAT -> Max cut Min flow
   3. For those unfamiliar (like myself) of NAE SAT, it is essentially SAT with an XOR for each phrase instead of an OR. For example, a phrase with all TRUE values is a true phrase in SAT but would be False in NAE SAT.
   4. We can reduce our game to the well studied Max flow problem, and this problem has a quantum optimization!
   5. Thus we can use quantum optimization on the reduced max cut problem to make a quantum AI for our game
3. NAE SAT -> NAE 3-SAT reduction
   1. This is something that is not studied but necessary to complete the reduction chain
   2. Josh & I (Bora) manually found the reduction between NAE SAT -> NAE 3-SAT
   3. It is very similar to the reduction from SAT -> 3-SAT
   4. We have pictures of what we did lol
4. Steps going forward
   1. There are some degrees of freedom within the game that we need to decide on
   2. Implementing the reduction chain
   3. Making simple decisions as the AI (approaching the optimized state correctly )
   4. GUI
      1. Hakan you mentioned Unity?
      2. This is probably going to take more effort than the back end development.