As of today, I haven't started coding anything yet, mostly because I'm trying to refine, or change, my project. Arthur gave me some feedback during the review session that I thought was helpful, and I've included his, Professor Wilensky's, and David's notes in my updated project design, as well as two other ideas that I've come up with.

NetLogo Sims

General Idea: a life simulator loosely based on the game The Sims. Turtles are governed by activities (going to school, the park, the gym) and needs (food, entertainment, exercise). The observer views the layout of a city, either a default setup or one mapped out by the user, containing buildings, homes, and roads for people to visit and traverse. Each turtle leaves a path behind them that, over time, will show how patterns (routines) form, and what might cause them to change.

Learning Potential: I believe this project has the potential to illustrate how we can change our routines, if those changes are necessarily conscious, and how quickly a routine can change when affected. For instance, if a person lives close to a cheap supermarket and far from an expensive one, they may have enough money for other things, but their satisfaction will be lower from a poor food selection. If that same person works or goes to the gym near the expensive supermarket, they may decide to go there on their way home, but if the market is more crowded at that time, it could make shopping take a lot longer. If young adults live near a park, they might be less likely to venture over to the museum unless they really feel the need for some culture, because they can get their entertainment needs fulfilled at the park. If a new building is build, or an old one knocked down or changed, people's routine may change according to their personal needs and desires.

Implementation: Before setup, the observer chooses the layout of the town, either from predetermined slates, or building one themselves. Every town will have the same layout of black blocks of patches laced with a gray patch pattern of streets, and the buildings, colored and labeled, go on the edge of the black boxes. Only so many buildings can fit on each block, including houses. If the user sets up the layout, they can click on areas where they want different buildings to appear, and the program will determine whether it's possible for that building to

appear there or not. The user also chooses the population size, and average level of each need in the population. When the model starts running, turtles will have an agenda of things they want to do based on needs and desires. The desires will be in the list as they are added, but needs will have a priority number attached. As certain needs become more important, they move up the list. The turtles can only travel on streets, but they can enter buildings. Buildings have capacities, so if a restaurant is too busy, the desire to eat there will be pushed to the end of the list, or cancelled. Turtles will keep track of stats, such as place most visited, place last visited, place least visited, street most traversed, etc. The user can select buildings to add or remove while the model is running to simulate business opening and closing. When a person's satisfaction level drops too low, they move away, and the frequency of this occurrence is measured.

Rationale; I'm choosing this idea because I'm fascinated by how patterns in our lives develop and change. Sometimes, I have the same routine every day or week for months, and sometimes I go through periods where every day feels completely different. People tend to enjoy having a routine, but when things change that they can't plan for, they have to adapt to get their needs fulfilled. It can be hard at first, but after a while, it's as if it's been their routine all along.

Resistance

General Idea: Resistance is a card game, similar to Mafia. It's played with 5-10 players, where two thirds of the players (rounded down) are the Resistance, and the rest are spies. The spies know who the other spies are, but the resistance has no idea. The Resistance's goal is trying to have successful missions, and the spies are trying to ruin the Resistance by making missions fail. Each round, there is a mission leader who chooses people to go on a mission, they can include decide to include themselves or not). Then everyone votes on whether or not they like this current team. If a majority likes it, the mission takes place, if not, the next person in the circle is the mission leader. The group has four chances to vote, if they veto missions all four times, then the fifth group HAS to go on the mission. On the mission, just the members of the mission anonymously put in cards on whether they want to mission to succeed or not. Resistance always wants the mission to succeed, spies can pass the mission to be sneaky, or fail it to win. If a mission with four members fails, there is at least one spy in the group. The game is best of five,

if three missions pass, the Resistance wins, if three fail, the spies win. The number of people on each mission increases in certain rounds depending on the number of players. The table shows the players needed per mission. Numbers with an asterisk indicate a mission where two spies are needed for the mission to fail, all other mission require only one.

Number of players:	5	6	7	8	9	10
Mission 1	2	2	2	3	3	3
Mission 2	3	3	3	4	4	4
Mission 3	2	4	3	4	4	4
Mission 4	3	3	4*	5*	5*	5*
Mission 5	3	4	4	5	5	5

Learning Potential: This game in real life requires quite a bit of convincing and argumentation, which isn't entirely possible in a NetLogo model. But each Resistance turtle could have stats such as believability, gullibility, loyalty in an alliance, and level of suspicion of each player, and each spy turtle could have stats such as ability to convince, ability to deceive, confidence in their abilities, and extent to which they believe they are under suspicion. At each stage of the game, turtles are asked to evaluate themselves and any potential allies or enemies (denoted by links). If a turtles votes for a mission to go that is believed to have a spy on it, other turtle's level of suspicion for them may increases, and if the mission succeeds, the suspicion of that turtle may go down to lower than it was before. The ultimate goal would be to see what kind of stats lead to good players, for both spies and resistance, and how many players makes for the best game for either spies or resistance. Other stats could be kept track of in different scenarios, such as it's not so important who goes on the first mission usually, because the group is smaller and they don't to draw suspicion to themselves early on, but this scenario might not be the case for spies with a lot of confidence or very little skill. There is also a variation of the game with a wizard, who knows who the spies are, so he can try to steer the Resistance away from choosing spies for the mission, but if the spies lose, they can take a guess as to who the wizard is, and if they're correct, they win. This can be an added gameplay scenario chosen at the outset of the game.

Implementation: Turtles are arranged in a circle facing inwards. Blue turtles are Resistance, red turtles are spies, green is the wizard, when applicable. The mission leader is indicated by the patch underneath that turtle being yellow, and the patches of turtles they choose for the mission

turn gray. The votes on whether the group is satisfactory appear directly in front of each turtle, and the votes on whether the mission succeeds or not get mixed up and appear in the middle of the circle. Alliances or divisions can be made and remade at the beginning of each turn depending on decisions made by each turtle in accordance with the stats of the other turtles, these are indicated by blue and red links respectively. The score is kept in a table, and there's a table for average suspicion level of each turtle as seen by the turtles in the Resistance. Spies are indicated in a monitor. After a game is over, the observer can choose to play a new game with the same players, or play with new players.

Rationale; This game is addicting to play in real life, and much more fun than games such as Mafia, where players can be outed early in the game and therefore not be able to participate anymore. It also requires a lot more strategy than Mafia, and the rules are more clearly defined. Certain players make very good spies because they are either very deceitful, very trustworthy, or both. Some players are very good Resistance members because they can read liars or good at keeping track of the actions of other players in the game. Some of these qualities are difficult to illustrate using turtles, but I believe it's possible to build a close to real life model of this game, using probabilities and stat tracking to induce player choices. In an actual game, the action is heated, but the game itself can take a long time, so patterns are difficult to follow. Any patterns that exist may emerge in a program such as this one.

Music Motion

General Idea: Music is an auditory art, and there are many examples of ways that music has been paired with art or used in conjunction with art, such as Fantasia or artbymusic.com. There aren't very many examples of music being used to create art directly, as in a full project created using just music. My idea involves using a series of sound frequencies, a song, or an instrument played by the user, including voice, to create art in NetLogo. This variety, along with the randomness potential of NetLogo, could lead to an original work of art every time the program is run.

Learning Potential: A model such as this one doesn't necessarily teach something specific, it simply gives the user the opportunity to create something unique, however they want to. They can use predefined tones or play specific notes on an instrument that are known to create specific behaviors in order to draw something specific using the power of sound, or play a song and see what it produces. This kind of project doesn't rely on just my creativity, but also the creativity of whoever decides to explore it.

Implementation: User chooses number of turtles they want for each project, and how in sync they want the turtles to be. If they want it full sync, the turtles will move as one a create consistent patterns across the map, if they want no sync, they won't rely on each other at all, and be reliant only on the input they receive. User's can choose specific color palates at the beginning, or the full spectrum. Different attributes of each turtle will be modified by the sounds, or can be locked by the user, such as color, size of the pen line, speed, and max turn angle. Each other these attributes, if unlocked will rely on a certain aspect of the sound to determine their level. One possibility for an extension is for drum beats to be recreated as stamps in different shapes.

Rationale; Music is fun to listen to, and art is fun to look at, especially when it's something you create. A model like this would be usable and understandable to anyone who was interested in exploring it, and could potentially create incredible patterns or abstract drawings. Allowing users to create their own phenomena is sometimes more interesting than trying to prove a theory or simulate a pattern in a controlled environment.