**Agent Appearance** **~~(Agent Screen Characteristics)~~**

**Model Parameters ~~and NetLogo Interface Structure~~**

On each tick:

* + Agents talk to their friends and sexual partner (if any), which might impact their personal likelihood of practicing safe sex
  + The number of people they talk to is based on their certainty, the amount their attitude might changed is based on…
* Agents look for a sexual partner (male-female coupling).
  + If they are NOT coupled, an agent tries to find a mate. Any agent can initiate mating if they are not coupled (and random chance permits)
  + If they are not coupled, they might try to find another single agent of the opposite gender, i.e., someone to mate with (based on their personal coupling tendency).
    - First they look at friends of the opposite sex; if they have none, then they choose a person of the opposite sex within their friend group; and if there isn’t one, then they resort to choosing the closest non-linked opposite sex turtle. The probability of successfully coupling decreases for each of these three (two?) types of potential partners.
    - If both partners are willing to become a couple, they form a sexual‑partner link (if the two turtles were previously friends, this destroys their friendship link).
  + If they are already coupled with a sexual partner, the two agents just increase length of their relationship (agents are monogamous in this simulation).
* Agents make friends.
  + As long as they have not reached their maximum limit of friends, every agent (coupled or not) gets a chance to make a friend on each tick.
    - Otherwise, all the sexual partner links break, then it becomes single-sex clusters (don’t think this actually could happen anymore… possibly reword)
  + If this agent has not reached their maximum limit of friends (and random chance permits), they try to make a friend.
* Agents that (currently) have a sexual partner can potentially uncouple ~~or potentially break up~~. Agents will uncouple if the length of the relationship reaches the commitment threshold for one of the partners.
  + The order in which these functions are called on each tick (uncouple after make-friends and couple) helps restrict/place a restriction on who can couple after uncoupling, simulate that exes would not be immediately friending each other again, and this model doesn't (intend to) simulate instant rebounds
* If agents are coupled (have a sexual partner), still in/part of a couple, ~~each tick,~~ they have sex/ they will have sex on each tick ~~and have the potential of spreading an STI if they have unprotected sex…. and one of them doesn’t know they are infected??~~. The likelihood that the couple will engage in safe sex depends on the **safe-sex-likelihood** of both [check code!!] participants.
  + If they mate, there is a probability they will use a form of protection. This probability will be influenced by attitudes and behaviors towards safe sex that a given turtle has, and these attitudes/behaviors are influenced by the other turtles (“friend group”) that the turtle is linked with.
  + ~~If the turtles are coupled, on each tick, they have sex,~~ and have a chance of using protection based on…. ~~If the couple does choose to use a condom, there is a chance that they will use the condom correctly, based on stats from WHERE???~~ If one of the partners is infected, on each tick with their partner, there is a chance that they will spread the disease to them. This chance is based on whether or not the couple chose to use a condom, ~~whether or not the condom was used correctly (which influences how successful the condom is at preventing infection)~~, and the infectiousness of the disease.
  + If one of the partners is infected and the couple has unprotected sex, there is a chance that the other partner will become infected. An infected agent is distinguished by a dot on their shape.
* Agents check ~~to see~~ if they are infected only after having sex, [verify in code] and talking to friends, because symptoms [of STIs often] take a while [period of time?] to show up [don’t present themselves instantly].
  + ~~,…. In order to best simulate that STIs may not present symptoms immediately, don't check if infected [ check-infected ] (known determined by being symptomatic) until after talking to friends about attitude and having sex~~
  + Only agents of genders that are symptomatic (set by the symptomatic? slider) will know they are infected. If an agent knows s/he is infected, s/he will always want to practice safe sex for the rest of the simulation. (reflect in color?)
  + Additionally… mention shape change / dot color??
  + ~~Depending on the disease and whether an agent is male or female, the agent will feel symptoms. It will be assumed that if the agent detects symptoms, they get checked by a doctor, are diagnosed, and are gradually cured of the infection. (clarify this!!)~~
  + If an agent has unsafe sex and doesn’t notice any consequences (either is not infected, or is not symptomatic, regardless of infection status), that agent’s inclination to practice safe sex will decrease.

The turtles do not move, (which isn’t totally realistic?) but/in order to… allows the user to view spread of attitudes easier…?

**Agent Behavior**

On each tick:

* Agents interact with their peers and update their attitude:
* ~~talk to their friends (indicated with blue links), and update their Attitude about practicing safe sex (and consequently likelihood to practice safe sex).~~
  + Agents talk to their friends and sexual partner (if any), which might impact their personal likelihood of practicing safe sex
  + The number of friends the agents talk to is based on their Certainty at a given tick
  + Agents compare their own Attitude and their friend’s Attitude, which will influence the magnitude and sign of the change of Attitude at each tick
  + Agents check their Certainty and their friend’s Justification, which will also influence the magnitude and sign of the change of Attitude at each tick
  + The change in Attitude is used to update each agent’s Attitude to its new state
  + Certainty and Justification are updated

----------------------------------------------COUPLING ----------------------------------------------

* If agents are coupled (have a sexual partner), they have sex.
  + The likelihood that the couple will engage in safe sex depends on the **safe-sex-likelihood** of both participants.
  + If they mate, there is a probability they will use a form of protection. This probability will be influenced by attitudes and behaviors towards safe sex that a given agent has, and these attitudes/behaviors are influenced by the other agents (“friend group”) that the agent is linked with.
  + If one of the partners is infected, on each tick with their partner, there is a chance that they will spread the disease to them. This chance is based on whether or not the couple chose to use a condom and the infectiousness of the disease.
  + If one of the partners is infected and the couple has unprotected sex, there is a chance that the other partner will become infected. An infected agent is distinguished by a dot on their shape.
  + If they are NOT coupled, an agent tries to find a mate. Any agent can initiate mating if they are not coupled (and random chance permits)
  + If they are not coupled, they might try to find another single agent of the opposite gender, i.e., someone to mate with (based on their personal coupling tendency).
* If agents are coupled (have a sexual partner), they have sex.
  + The likelihood that the couple will engage in safe sex (choose to use a condom) depends on the **safe-sex-likelihood (**reword to not reference variable?) of both participants.
  + If one of the partners is infected and the couple has unprotected sex, there is a chance that they will spread the disease to them/the other partner will become infected (based on the infectiousness/infectivity of the disease). An infected agent is distinguished by a dot on their shape.

----------------------------------------------FRIENDING ----------------------------------------------

* + If an agent is NOT coupled, s/he might try to find another single agent of the opposite gender, i.e., someone to mate with (based on their personal coupling tendency). ~~Any agent can initiate mating if they are not coupled (and random chance permits)~~
  + As long as they have not reached their maximum limit of friends, every agent (coupled or not) gets a chance to make a friend on each tick.
  + If this agent has not reached their maximum limit of friends (and random chance permits), they try to make a friend.
  + If an agent is NOT coupled, s/he might try to find another single agent of the opposite gender to form a sexual partnership with. Any agent can initiate coupling if they are not coupled and random chance permits (based on their personal/individual coupling tendency).
  + If an agent has not reached their maximum limit of friends, s/he might try to make friends with another agent. Friendships are independent of gender, and any agent can initiate friending/making a friend if they have not reached their maximum limit of friends and random chance permits (based on their personal/individual friendship tendency).
  + Friendships are independent of gender, and any agent can initiate friending/making a friend if they have not reached their maximum limit of friends and random chance permits (based on their personal/individual friendship tendency).
  + Any agent can initiate “friending”/making a friend with any other agent (independent of gender) if they have not reached their maximum limit of friends and random chance permits (based on their personal/individual friendship tendency).

--------------------------------------CHECK INFECTED ----------------------------------------------

* Agents check if they are infected.
  + After having sex, agents talk to their friends …only after having sex and talking to friends, because symptoms of STIs often don’t present themselves instantly.
  + Agents talk to their friends
  + Agents may or may not then have sex
  + Agents check themselves to determine whether symptoms have manifested
  + Only agents of genders that are symptomatic will know they are infected.
    - If an agent knows s/he is infected, s/he will always want to practice safe sex for the rest of the simulation.
    - If an agent has unsafe sex and doesn’t notice any consequences (either is not infected, or is not symptomatic, regardless of infection status), that agent’s inclination to practice safe sex will decrease.
  + Agents check if they are infected. Only agents of genders that are symptomatic will know they are infected.
    - If an agent knows s/he is infected, s/he will always want to practice safe sex for the rest of the simulation.
    - If an agent has unsafe sex and does not notice any consequences (either is not infected, or is not symptomatic, regardless of infection status), that agent’s inclination to practice safe sex will decrease.

Simple go:

* + After having sex, agents talk to their friends …only after having sex and talking to friends, because symptoms of STIs often don’t present themselves instantly.
  + Agents talk to their friends
  + Agents may or may not then have sex
  + Agents check themselves to determine whether symptoms have manifested