CSCI251 Assignment 2 Report

1. The characteristics of the Chrononauts and the impact these have. The description of the impact should be qualitative (descriptive), rather than quantitative (numerical).

Jump Engineer:

* Volatility: affects the likelihood of the Jump Engineer to spontaneously combust (and die)

Doctor:

* Qualifications: reduces the likelihood of a plague
* Intelligence: reduces the damage done by a plague

Historian:

* Qualifications: increases the rate at which artefacts are found
* Wisdom: increases the rate at which clues are found

Security:

* Strength: reduces number of deaths from skirmish
* Diplomacy: reduces chance of skirmish

Chronopet: (superclass that applies to all Chronopet subclasses)

* Endearing: Increases chance for local interaction

1. Describe the 3 different kinds of chrono–pet, and the impact each has. The description of the impact should be qualitative (descriptive), rather than quantitative (numerical).

Chronodog:

* Olfaction: increases the rate at which clues are found
* Excavation: increases the rate at which artefacts are found

Chronocat:

* Hunting: reduces likelihood of plagues (by killing rats)
* Climbing: increases rate at which clues are found

Chronobird:

* Scouting: reduces likelihood of skirmish
* Collecting: increases rate at which artefacts are found

3. Describe the 5 different sizes of population centre, primarily the relevant population ranges, and the additional feature added for each. The relevance of those features should be noted.

Hamlet

* Population: 0 – 1000
* Feature:
  + Shrine: very small plague reduction and revolution reduction

Village

* Population: 1000 – 10 000
* Feature:
  + Monastery: mild plague reduction, large revolution reduction
  + Workshop: very slightly increases likelihood of skirmishes

Town

* Population: 10 000 – 200 000
* Feature:
  + Sick house: medium plague reduction
  + Blacksmith: moderately increases likelihood of skirmishes
  + Motel: slightly increases tourism which leads to higher plague likelihood but reduced skirmishes

City

* Population: 200 000 – 10 000 000
* Feature:
  + Clinic: high plague reduction
  + Factory: increases likelihood of revolutions
  + Hotel: moderately increases tourism which leads to higher plague likelihood but reduced skirmishes
  + Airport: the tourism boost leads to higher plague likelihood but reduced skirmishes, also the business increase leads to reduced revolutions

Metropolis:

* Population: 10 000 000+
* Feature:
  + Hospital: very high plague reduction
  + Laboratory: decreases likelihood of plagues
  + Resort: highly increases tourism which leads to higher plague likelihood but reduced skirmishes
  + Spaceport: increases tech breakthroughs
  + Hydroponicum: keeps the population well fed, reducing revolutions

4. Describe the impact of the 5 different technological eras.

Classical Era

* More likely to discover artefacts from this era are counterfeit

Medieval Period

* Plagues are significantly more common

Renaissance

* Technological breakthroughs happen more often

Industrial Revolution

* Revolutions are more common

Information Age

* Plagues are non-existent

5. Briefly describe how each of the event mechanisms work. This may be tied to the population and/or technology eras.

Find Artefact Info

* Probability is determined each turn by 1/(50\*historian qualifications\*chronodog excavation\*chronobird collecting)
* When triggered sets a variable stored inside of population centre to true. When both this variable and another for the clue are true the simulation stops moving forward year by year and considers a jump.

Discover Jump Clue

* Probability is determined each turn by 1/(50\*historian wisdom\*chronodog olfaction\*chronocat climbing)
* When triggered sets a variable stored inside of population centre to true. When both this variable and another for the artefact are true the simulation stops moving forward year by year and considers a jump.

Realise Counterfeit

* Probability is determined each turn by 1/100 chance for all eras except classical, where it is instead a 1/50 chance
* When triggered sets a variable inside of artefact to true, which stops the simulation from moving forward year by year and cancels any future jumps for this artefact.

Plague

* Probability is determined each turn based on 1/(20\*doctor qualifications\*chronocat hunting\*aspects of the population centre)
* Is twice as likely if in medieval period
* Severity is determined by doctor intelligence
* When triggered a random percentage of the population is killed (never more than 25%). There is also a chance for a chrononaut to die from the plague (1/100 for each chrononaut).

Skirmish

* Probability determined by 1/(20\*security strength\*chronobird scouting\*aspects of the population centre)
* Severity is determined by security strength
* When triggered a random percentage of the population is killed (never more than 12.5%). There is also a guaranteed tech boost between 1 and 5% tech increase. There is also a chance for a chrononaut to die in the skirmish (1/100 for each chrononaut)

Tech Breakthrough

* Probability determined by 1/(10\*aspects of population centre)
* Twice as likely in a renaissance
* When triggered there is a random tech boost between 1 and 10% tech increase.

Revolution

* Probability determined by (1/20\*aspects of population centre)
* Twice as likely in an industrial revolution
* When triggered a random outcome is generated out of 4 possibilities.
  + The first, the revolution successfully overthrows the current regime and the outcome is positive. Population increases a random amount but no more than 12.5%.
  + The second, the revolution is successfully put down by the current regime but many die in the attempt. Population decreases a random amount but no more than 12.5%.
  + The third, the revolution successfully overthrows the current regime, but the outcome is negative. Population decreases a random amount but no more than 12.5%.
  + The fourth and final outcome, the current regime and the revolutionaries settle with a compromise. Population increases a random amount but no more than 12.5%.

Local Interaction

* Probability determined by 1/(10\*each chronopet endearing)
* There are 5 possible local interactions
  + A random Chrononaut falls in love with a local and marries. They retire from the mission and can no longer be used.
  + A random Chrononaut studies with the locals. This increases their abilities.
  + A random Chrononaut is decided by the locals to be a witch and is burned at the stake. If Tech Era is information age the Chrononaut is instead arrested by the locals. The first outcome kills the Chrononaut, the second renders the Chrononaut retired.
  + A random Chrononaut is crowned king by the locals. If the Tech Era is information age then the Chrononaut is elected president. Both outcomes retire the chrononaut.
  + Locals make a tech breakthrough by studying Chrononaut tech. A random tech boost is given to the population centre, ranging from 1-10%.

Chrononaut Specific Event

* Probability determined by 1/(10\*chrononaut ability)
* Each Chrononaut has a specific event
  + Jump Engineer: there is a 1/(5\*jump engineer volatility) chance that the jump engineer will spontaneously combust and die, otherwise their volatility increases.
  + Doctor: there is a 50% chance that the doctor will improve their qualifications (reduces chance of plague) and a 50% chance they will improve their intelligence (reduces death toll from plagues).
  + Historian: there is a 50% chance the historian will improve their qualifications (increases rate at which artefacts are found) and a 50% chance they will improve their wisdom (increases rate at which clues are found)
  + Security: there is a 50% chance the security will improve their strength (reduces death toll from skirmishes) and a 50% chance they will improve their diplomacy (reduces chance of skirmishes)
  + Chronodog: there is a 50% chance the chronodog will improve their olfaction (sense of smell) (increases ability to find clues) and a 50% chance they will increase their excavation (digging ability) (increases ability to find artefacts)
  + Chronocat: there is a 50% chance the chronocat will improve their hunting ability (reduces plagues by killing rats) and a 50% chance the chronocat will improve their climbing ability (increases ability to find clues)
  + Chronobird: there is a 50% chance the chronobird will increase their ability to scout (reduces skirmish chance) and a 50% chance the chronobird will increase their collecting ability (increases chance of finding an artefact)