



MARY BENETTI • SIMON MEYER • NOAH MILLER



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GDD100, Fall 2017, Professor Kim Loken

OVERVIEW

Genre: Simulation/ Strategy

Demographics: Ages 10+

Target Audience: teenagers and young adults

CONCEPT

The development of an urban community is a cycle: Build improvements, collect resources, increase population, and build improvements again with those collected resources. We can't do this alone, however, we depend on clean natural water to begin this cycle. When we produce more, we pollute more. A polluted water source equates to an unhealthy ecosystem of all living things. To thrive as a city, we must take responsibilities for our actions and maintain the river between us.

OBJECTIVE

Earn five victory points by building improvements and maintaining the health of the river between you and your opponent.



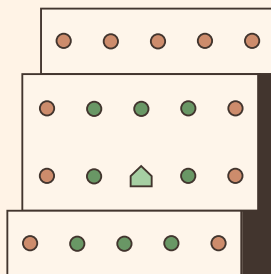
Build your city and help the environment, those are your goals. Create production value from your factories or find harmony with nature by minimizing runoff.

MATERIALS

- 20 Food, 20 Power, 20 People tokens
- 2 Farms, 6 Power Plants, 12 Houses, 4 Recycling Centers, 12 Rain Gardens, 6 Factories
- 20 event cards
- 30 Pollution tiles
- 2 rule reference cards

SETUP

Divide Houses, Rain Gardens, Factories, Power Plants, and Recycling Centers evenly to each player. Each player starts with 1 Farm in the middle of the board, as shown in diagram. Set all sliders to their starting positions. Players play rock-paper-scissors to determine who goes first. The starting player places a House anywhere on the board and collects the appropriate amount of People, as well as adjusting their Pollution slider. The second player also does this.



HOW TO PLAY

MODIFIERS

Each level of the board has different addition multipliers corresponding to the adjacency to the river. Modifiers add +0, +1, or +2 to what the building produces. For example, a Factory built on a +2 row would produce 5 Pollution and 3 Victory Points. (V.P)

TURN PHASES

#1 DRAW CARD

The player's turn starts off by drawing a card and doing what the card says. Some cards affect improvements and others affect resources.

#2 COLLECT FOOD

Collect 3 Food from your farm unless otherwise stated by a card.

#3 BUILD IMPROVEMENTS

In this phase, the player may build up to 2 improvements. Improvements include House, Rain Garden, Power Plant, Recycling Center, and Factory. (See reference card for information on these improvements) Once an improvement is built, the player collects the resources the building produces, plus the modifier. This improvement will also generate a certain amount of Pollution per turn, plus the modifier. Use the Pollution slider to keep track of how much Pollution all of your buildings are creating.

#4 ADD/REMOVE POLLUTION

The Pollution slider is adjusted when improvements are built or moved, as they start to add more continuous Pollution to your city. In this phase, the player must add or remove the number of Pollution tokens equal to the number on their slider to the basin within the river. This basin is shared by both players. If Pollution was removed, the player keeps these tokens. The player may trade in 10 Pollution tokens for 1 Victory Point.

WINNING AND LOSING

First player to reach 5 victory points wins the game. Both players lose if there are more than 15 Pollution counters in the river.

STRATEGY

Players can attempt to win through Pollution removal, building Factories, or a mixture of the two. Be aware that some cards can affect Pollution and it may be dangerous to be close to 15 Pollution counters in the river.

CONCLUSION

MARY

If I were to develop Runoff further, I would really refine the craft of the board and consider more long term storage solutions for all the assets. The mechanics are refined enough to give a good sense of game-feel, however I think they should be altered and backed up with more research to fit our objective of using this game to teach about the environment to the local community. Getting the craft to be at a near professional level was a challenge. I didn't take in account human error as much as I should have with piece sizes, and the staining/ painting has messy areas as it was rushed at times. Overall, I think the art assets and game play have been refined to a strong state, and I had a great time developing it.

NOAH

If I had more time and resources I would firstly improve the board quality. I would find a way to make it more portable and add a drawer to it that holds the pieces. Additionally, I would work on balancing more with the cards and resource production. The biggest challenge I faced during production was figuring out how to make the board, mainly the river portion of the board. Without having certification in the process lab, I had to work with the staff to create the game board we have. I managed to make the river using a chisel, router, and a lot of sand paper. Overall, for the time we had, I am pleased with the result of the board.

SIMON

With the game itself, I would've loved to explore more elements of spatial strategy and incorporating them into the game. Each improvement could have added behavior when near each other, but the amount of affordances created by developing those ideas would have added an enormous workload to the team. Creating the graphic assets for this game was a blast, and while the style created is distinctive, I wish I could've had more time to finesse the impression that the artwork gets across. Incorporating elements like wood texture to work with our wooden board could've been an interesting direction. Overall, I think that our game exceeded my expectations for what we were able to achieve as a group, and our skills complemented each other nicely.

MECHANICS

The images on the right show some initial thought process we had as to what different costs and factors to our base mechanics and improvements. One mechanic we decided on was the aspect of the river. The river plays a huge roll in Runoff. The river brings in the mechanic of pollution that forces players to be wary of potentially ending the game for both players if pollution gets above 15. In Runoff, we have resources that are produced by improvements. This causes a state of progression in the game itself that shows the players world building. Another mechanic is the addition modifier on the rows. The modifiers are the closer you get to the river the bigger bonus you receive. This bonus leads into another mechanic with pollution production and removal from improvements. Every improvement produces their resource and a certain amount of pollution per turn. This simulates the runoff of pollution into the river that a normal city should manage. Additionally, Runoff has random event cards as another mechanic. This mechanic keeps the players on their toes and simulates real world situations. With all these different mechanics comes the game Runoff. Runoff uses all of these to simulate a city building environment with pollution control at the center.

| A | B | C | D | E | F | G | H |
|---------------------------------------|---|-------------|--|------------------------------------|--------------|---------------------|------|
| Trial | 1 | | | | | | |
| Buildings | House | Power Plant | Forest | Recycling Center | Wind Turbine | Factory | Farm |
| Costs | FE | PPF | FFF | FFPP | FEPP | PPF | EP |
| Building production | Ppo | Epo | Lowers pollution by the pollution multiplier | -1 pollution per adjacent building | E | 3 production popopo | F po |
| Winning Condition | Have 9 production | | | | | | |
| Starting Conditions | 1 House, 1 Farm, 1 power plant | | | | | | |
| Multipliers Pollution and Food | Multiply by 1-5 for adjacency to river | | | | | | |
| Pass Fail | Fail: only pollution should be multiplied | | | | | | |
| Board Size | 5x5 | | | | | | |
| Total Allowed Pollution | 20 | | | | | | |

| | | | | | | | |
|---|-------------|--|------------------------------------|--------------|---------------------|------|--|
| 2 | | | | | | | |
| House | Power Plant | Forest | Recycling Center | Wind Turbine | Factory | Farm | |
| FE | PPF | FFF | FFPP | FEPP | PPF | EP | |
| Ppo | Epo | Lowers pollution by the pollution multiplier | -1 pollution per adjacent building | E | 3 production popopo | F po | |
| Have 9 production | | | | | | | |
| 1 House, 1 Farm, 1 power plant | | | | | | | |
| Multiply by 1-5 for adjacency to river: Only pollution | | | | | | | |
| Pass: Used resource per turn and had to build pollution cutters no real incentive to build by river | | | | | | | |
| 5x5 | | | | | | | |
| 20 | | | | | | | |

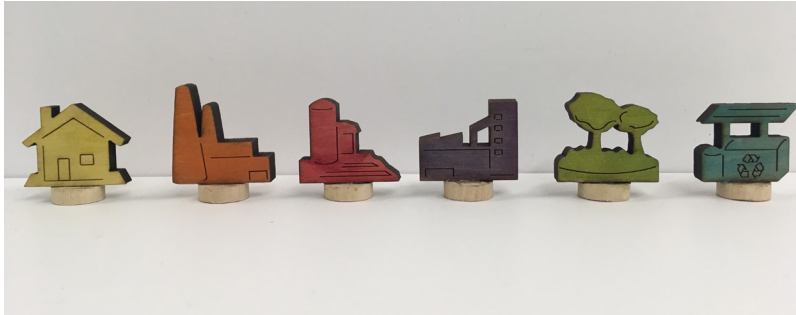
| | | | | | | | |
|---|-------------|--|------------------------------------|--------------|---------------------|------|--|
| 3 | | | | | | | |
| House | Power Plant | Forest | Recycling Center | Wind Turbine | Factory | Farm | |
| FE | PPF | FFF | FFPP | FEPP | PPF | EP | |
| Ppo | Epo | Lowers pollution by the pollution multiplier | -1 pollution per adjacent building | E | 3 production popopo | F po | |
| Have 9 production | | | | | | | |
| 2F,2P,2E | | | | | | | |
| Multiply by 1-5 for adjacency to river: Only pollution | | | | | | | |
| Pass: Noticing Factory may be too cheap and original starting conditions are better and still saw no benefit of building by river | | | | | | | |
| 5x5 | | | | | | | |
| 20 | | | | | | | |

| | | | | | | | |
|-----------------------------------|-------------|--|------------------------------------|--------------|---------------------|------|--|
| 4 | | | | | | | |
| House | Power Plant | Forest | Recycling Center | Wind Turbine | Factory | Farm | |
| FE | PPF | FFF | FFPP | FEPP | PPPPFFFF | EP | |
| Ppo | Epo | Lowers pollution by the pollution multiplier | -1 pollution per adjacent building | E | 3 production popopo | F po | |
| Have 9 production | | | | | | | |
| 1 House, 1 Farm, 1 power plant | | | | | | | |
| Add by 1-5 for adjacency to river | | | | | | | |
| Pass: Most balanced so far. | | | | | | | |
| 5x5 | | | | | | | |
| 20 | | | | | | | |

GAME SPACE

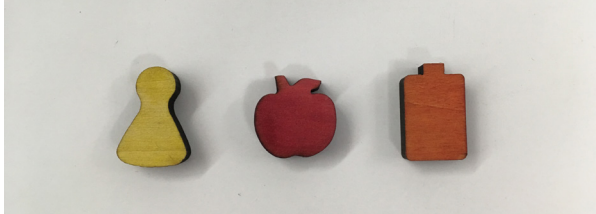


ASSETS



Improvements: house, power plant, farm, factory, rain garden, recycling center

The house to the factory represent sites common and essential to many cities and economies. The resources they produce (below) contribute to the development of more sites. The rain garden and recycling center are proposed additions to the city to aid in pollution cleanup.



Resource tokens: people, food, and power



Pollution tokens

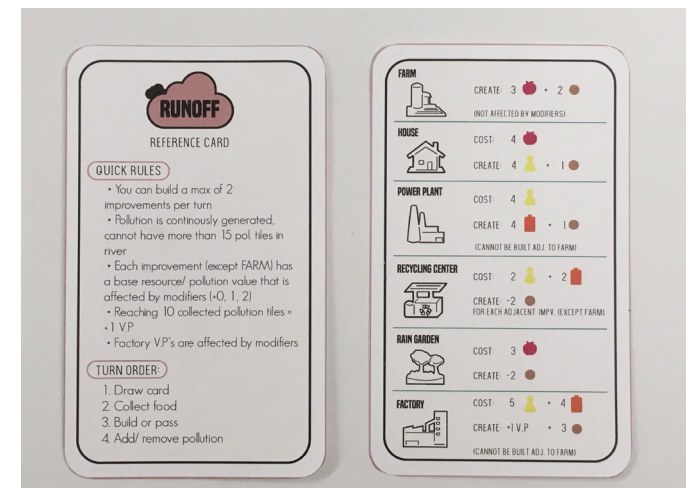
The pollution tokens visually represent how both player's cities are negatively affecting the river

Sliders



Event cards

The Event cards add elements of chance and challenge to the game by affecting certain player resources, buildings, or actions.



Reference card

Shows a summary of the rules and the values of resources during trade

PRESS RELEASE

GDD100 STUDIOS ANNOUNCES RUNOFF

SAT 9 DEC 2017 7:00 PM CST

December 9, 2017 – Menomonie, WI – GDD100 announces its newest analog game, Runoff, to be on display at the 2017 Fall Stout Game Expo.

In GDD100's newest title Runoff, players play as two rival cities working from just a small town to an industry standing factory power, or an ecologically strong environmentally friendly pollution regulator. To obtain these goals players must build up their development area with improvements meanwhile regulating what is being polluted into the river. Beware while players are building up their cities they must also be wary of random events that can plague or boost their cities.

Runoff was inspired by the Menomonie area and we shot for the river to reflect the Red Cedar river. As described above players may shoot for factory production or for cleaning up the river to achieve victory. These goals are achieved by building up your city through building houses, power plants, rain gardens, recycling centers and factories. All these buildings produce their own respective resource. These resources are used to build other improvements. Factories are the final improvement and require the most resources to build. Additionally, factories also give players victory points. On top of the resources these buildings produce they also produce pollution. Pollution can be regulated by rain gardens and recycling centers. Both buildings reduce your pollution output per turn and can remove pollution from the river. By removing enough pollution players can earn victory points towards the total of five needed to win the game. Players must use strategy when building their improvements. Each row is affected by an addition multiplier that adds to the resource output and the pollution output as well. Furthermore, random events that are introduced through event cards give the players a sense of randomness and unexpectedness making every move have a potential risk. All these aspects add up to make the game Runoff.

Runoff, and how it came to be, will be displayed at the 2017 Fall Stout Game Expo. Attendees will be able to play Runoff, and other titles created by other students of GDD100.

SOCIAL MEDIA



Runoff
@NMS Games



Two days until the great reveal. Crunch time!
#SGXFall17 #runoff



11 Dec 2017



Runoff
@NMS Games



Mary's painting pieces and Simon's crafting cards tonight. Go art team!
#workinghard #art



9 Dec 2017



Runoff
@NMS Games



Took a trip to the Red Cedar river today...looks more filthy than ever. Let's hope our game inspires change!
#stoppollution #menomonie



8 Dec 2017



Runoff
@NMS Games



Noah's got the river sanded and looking clean and pretty. Let's try to keep it that way!
#stoppollution #rivers #woodshop



5 Dec 2017



Runoff
@NMS Games



Mary made 20 recycling centers and rain gardens today. And what have you done?
#doyourpart #progress



2 Dec 2017



Brenda Romero
@bRomero



#Runoff is a beautiful, hand crafted sim of the pros and cons of urban dev. Verytruthful concept.
#analoggame #environment #pollution



14 Dec 2017



Katie Salen
@kSalen



All young adults should play #Runoff. It will teach you a lot about your affect as future home owners!
#learninggames #urban #environment



16 Dec 2017



Mary Kolar
@mKolar



Very impressed with these students contribution to water quality awareness. People of Dunn county must play #Runoff!
#dunncounty #UWStout



13 Dec 2017



Raph Koster
@rKoster



#Runoff was fun, engaging, and immersive despite its serious undertones. Great game-feel!
#gamesmatter #fun #gamedesign



18 Dec 2017



Jane McGonigal
@jMcGonigal



Great game to help us challenge the real life problem of runoff from cities. Thank's for inspiring change @NMS GAMES!
#gamesforchange



16 Dec 2017

APPENDIX 1 - CREATIVE PROCESS

GAME PRECEDENTS



We use Terra Mystica as a potential player board idea to give to players.



We used City Skylines as an overall design inspiration. The game uses city building with environment as one of the mechanics you must regulate.

| | | | | | | | |
|---|---|---|--|--|--|--|---|
| CHANCE You have been pardoned by the president. Get out of Billion Prison for free. This card may be kept until needed or sold. | CHANCE Your building and team morale is low. Collect Pop 100k. Pay Pop 100k. | CHANCE Early year and bonus. Advance to GO. Collect Pop 100k. | CHANCE Advance taken to the nearest road and you must wait twice the amount to which you are. If advanced a minimum you may buy 1 from the bank. | COMMUNITY CHEST You have been accused out of all Billion prison has. No card may be kept until needed or sold. | COMMUNITY CHEST Shares of your stock went up by 12 points. Collect Pop 100k from the bank. | COMMUNITY CHEST Life insurance expires. Collect Pop 100k. | COMMUNITY CHEST You decided to run for mayor. Collect Pop 100k from each power as campaign donation. |
| CHANCE You have been elected chairman by the board of business. Go directly to Billion Prison. Pay Pop 100k. | CHANCE You have been arrested for money laundering. Go directly to Billion Prison. Do not pass GO. Do not collect Pop 100k. | CHANCE Take a risk on the left. Advance to GO. Collect Pop 100k. | CHANCE Advance taken to the nearest road and you must wait twice the amount to which you are. If advanced a minimum you may buy 1 from the bank. | COMMUNITY CHEST Traffic jam services. Pay Pop 100k to the bank. | COMMUNITY CHEST Receive Pop 200k for trading on environmental drive. | COMMUNITY CHEST Your money went. But you are in a beauty contest. Collect Pop 100k. | COMMUNITY CHEST You have been arrested for corruption for statements. Go directly to Billion Prison. Do not pass GO. Do not collect Pop 100k. |
| CHANCE Pay the Bureau of Internal Revenue before tax of Pop 100k. | CHANCE You have been invited as the guest of honor. Advance to the University of the Philippines. Do not pass GO. Collect Pop 100k. | CHANCE Celebrate New Year in Ayala Avenue. Advance taken to Ayala Avenue. | CHANCE Advance taken to the nearest utility. If advanced a minimum you may buy 1 from the bank. If advanced a minimum you may buy 1 from the bank. | COMMUNITY CHEST Traffic jam services. Pay Pop 100k to the bank. | COMMUNITY CHEST Income tax refund. Collect Pop 100k. | COMMUNITY CHEST Your old man died. And on his will he wrote that you inherit Pop 100k. | COMMUNITY CHEST Advance to GO. Collect Pop 100k. |
| CHANCE Deal in dividend corporation. Manage control up. Advance. Pay Pop 100k. | CHANCE Presidential courtesy call. Advance to mansion. Pay Pop 100k. | CHANCE You received a death threat. Go back 3 spaces. | CHANCE Mafia gained seats on all your property. Pay Pop 100k. | COMMUNITY CHEST You have shown concern for the education of the youth and have donated a building under your name. Pay Pop 100k to the bank. | COMMUNITY CHEST Christmas fund expires. Collect Pop 100k. | COMMUNITY CHEST Bank goes in your favor. Collect Pop 100k. | COMMUNITY CHEST You are charged for unsafe building regulations. Pay Pop 100k per house as bribe. |

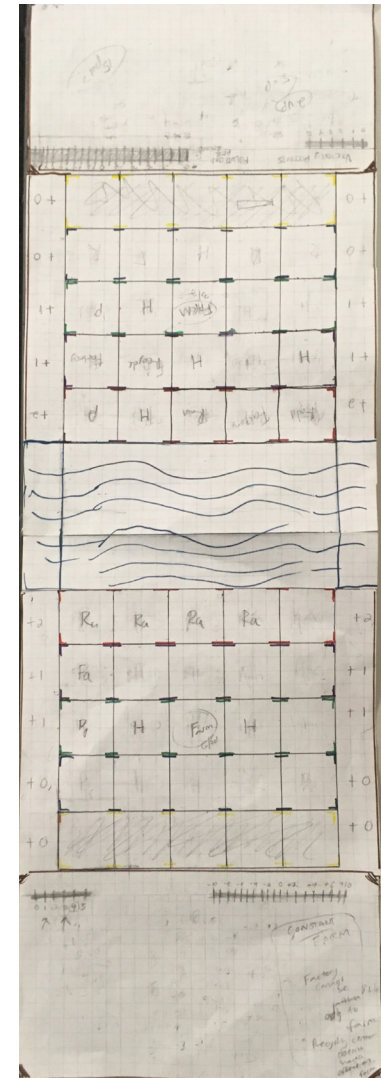
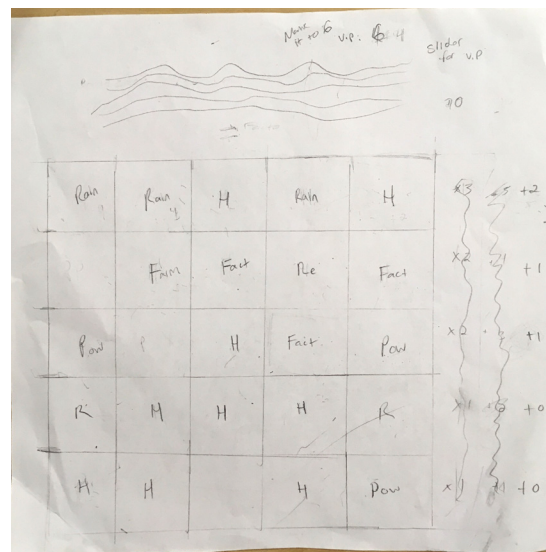
We used the Monopoly Community Chest and Chance cards to help give us an idea on how to form our own random event cards.



We used Armello's king and prestige leader events to help our idea of random event cards.

GAME PROTOTYPE AND PLAYTESTING- PAPER/ TILES

For each in-class playtesting session we reused a paper prototype to play the game. We altered the amount of rows on the board the values on the modifiers and sliders often with pencil.

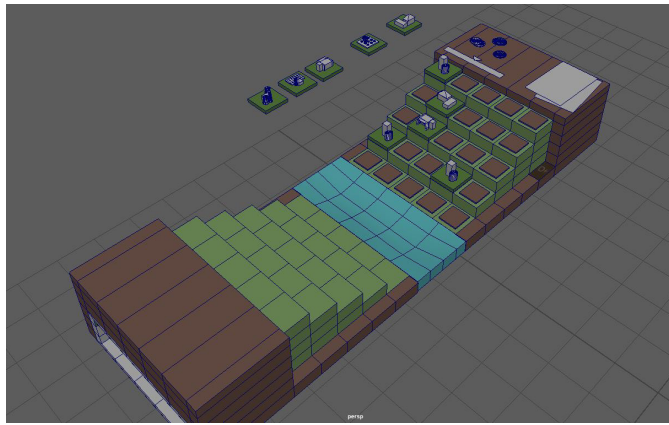


GAME BOARD PROTOTYPES- 3D

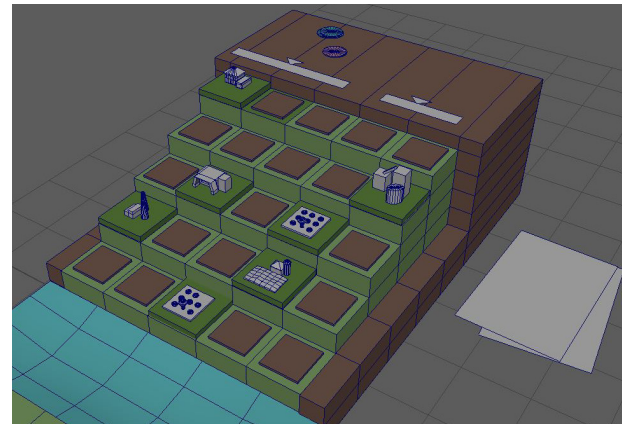
Originally we wanted to have 3-D printed pieces so the game would look and feel more interactive and dimensional. Each piece would act as a mini diorama of a place or building that would bring visual and touch appeal to the game. Due to cost and time, however we switched to laser cut wood pieces.



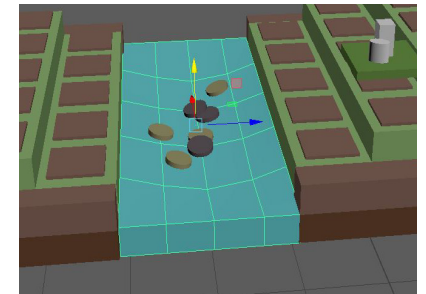
First prototype of board with sand concept: using more haptic centered play



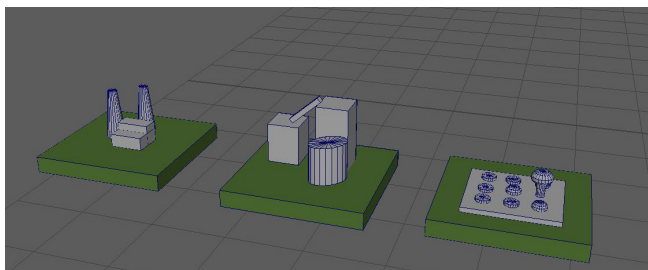
Full model of board with drawer cut out



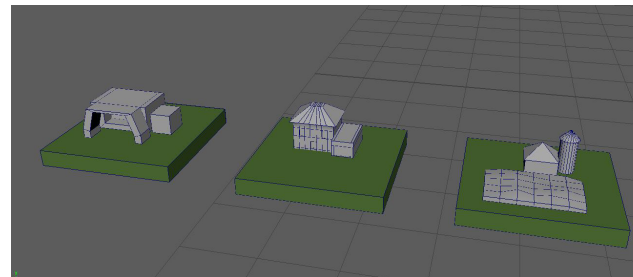
Showing pieces on board with sliders on top shelf and cards to scale



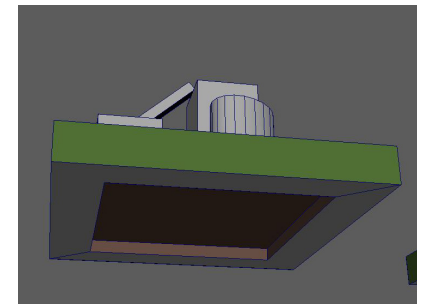
Pollution pieces in the river



Powerplant, Factory, Rain garden



Recycling garden, House, Farm



Underside of piece to fit on top of board

MANAGEMENT

For the first half of the project, we managed our individual progress by filling out the chart that was given in class. At the end of each class period we would briefly describe what was to be done by each person for next period. During the later half of the project, we communicated primarily digitally through email and on Google Docs. We contributed notes, art and ideas over the Docs to discuss in-person at a later date.

SCHEDULE FOR FINISHING PROJECT:

Due start of class Monday:

- Poster (Simon)
- Reference card (Mary)
- PRESS RELEASE (Noah)
- SOCIAL MEDIA (Mary)
- RULES (Noah)
- MECHANICS (Noah)
- All notes/ process in a folder or inDesign doc
- Inspiration pages/ research (all)
- Bibliography from research (all)

Due at 9pm Tuesday:

- Print out/ pamphlet of rule book (Simon)
- Print out of reference card (Mary)
- CONCLUSION (all)
- ASSETS: Pictures/ explanations of cards (Simon)
- Fully painted/engraved/ and stained pieces and board
- ASSETS: Pictures/explanations of board and physical pieces (Mary)
- Final process book to print (Mary)

Due on Friday:

- Money to split costs of materials

Final schedule

| | | | | | |
|------------------------------------|--|---|-------------------------------------|----------------------------------|--|
| Equilibrium Theme | Enlightenment | | | | |
| Platform | Board game / Station | | | | |
| Genre | Strategy | | | | |
| Player Interaction | | | | | |
| How does mechanic support message? | | | | | |
| Generally what's due: | Name: Mary | Name: Simon | Name: Noah | Name: | |
| 6-Nov | Kickoff & FAB LAB training Homework: 3 pitches | | | | |
| 8-Nov | 3 pitches Homework: Games For Change Homework: analysis matrix | | | | |
| 10-Nov | Review pitches/matrix Homework: Topic Research Homework: Partial Prototypes Photo/scan matrix for process | Pitch deck, Rules & Reference the board | Game conditions / rules / play test | Economics & cost model assets | |
| 13-Nov | Prototypes Topic research / Precedents Loosely format for process... | more iteration on resources the board | espionage strategy component | Events and concepts | |
| 15-Nov | Prototypes Topic research / Precedents Self-directed tutorials as needed | | | | |
| 17-Nov | Prototypes Self-directed tutorials as needed | | | | |
| MPR Day Class NOT cancelled | Did you photograph week's process? | make 3D rules design | card design | card mechanics/values | |
| 20-Nov | Prototypes Self-directed tutorials as needed Order any physical materials? | work on refining physical pieces design/val | branding identity | gather wood materials/ | |
| 22-Nov | NO CLASS - THANKSGIVING Playtest with friends and family! Develop content, templates, etc | | | | |
| 24-Nov | NO CLASS - THANKSGIVING Playtest with friends and family! Develop content, templates, etc | | | | |
| 27-Nov | Early art integration Order any physical materials? Deadline for Game Title | Playtest | Playtest | Design board mechanics | |
| 29-Nov | Playtesting | | | | |

Early management sheet

Things to consider for cards and branding:

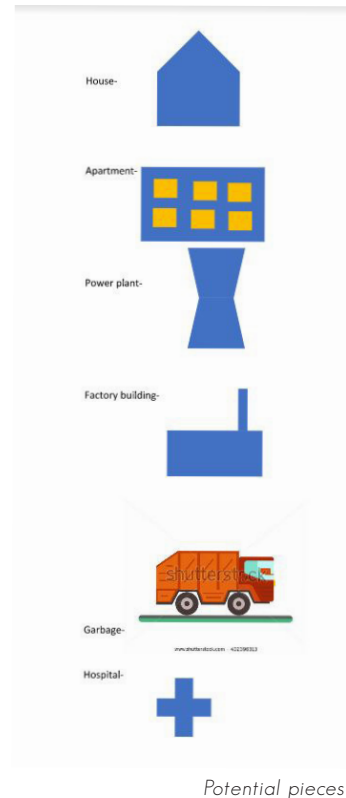
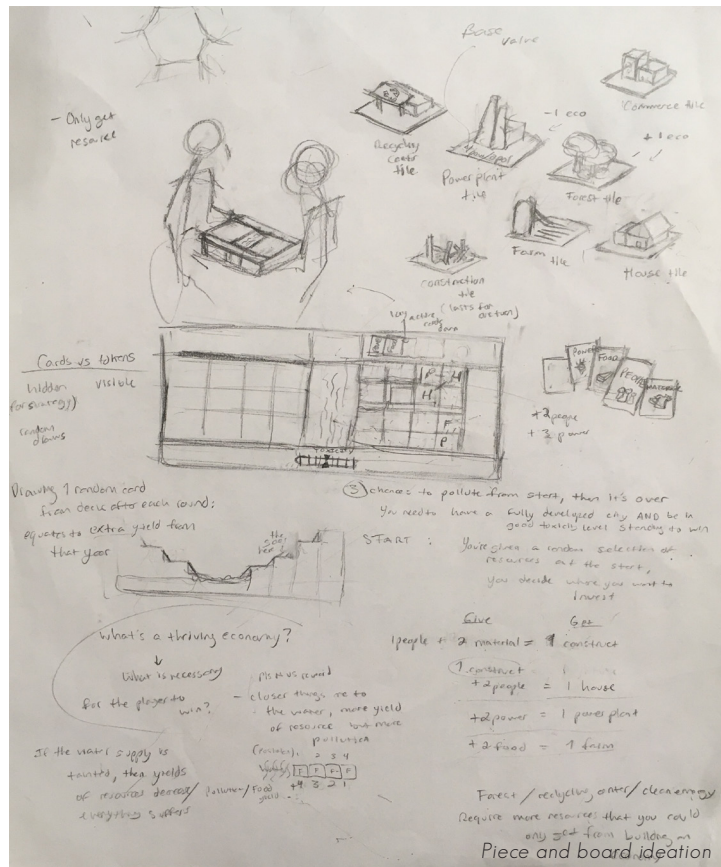
- Is the color scheme appropriate?
- Do the fonts match our identity and art style?
- Does the card display enough information?
- Is the visual hierarchy strong enough?
- What should our card back be?

The sample art I created is not final, it's just something that takes up space for now. Art production would take place after this design is completed. Ideally, the art would mimic the engraving that we're doing for the pieces. Simple, but more detail than what is shown here.

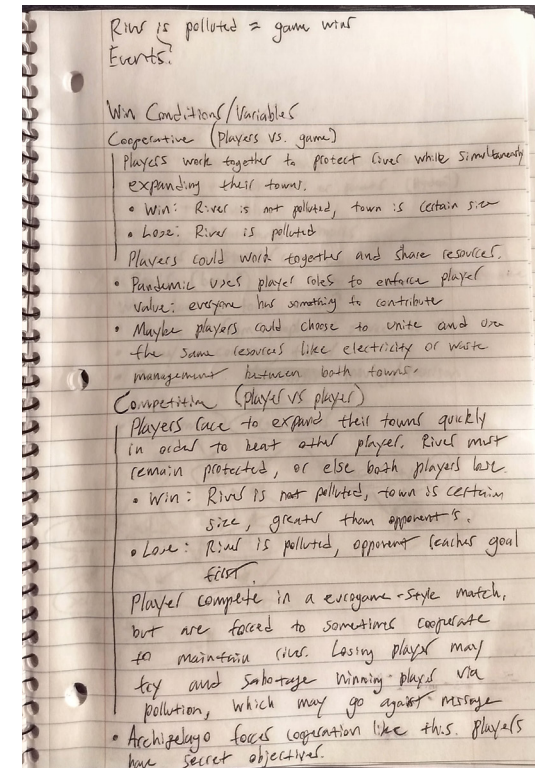
Mary thoughts: I think the contrast is working great between the colors, the visual hierarchy seems appropriate however I think all text should increase in size by a few points for increased legibility (if not all, then just the "EVENT" text). The text is both assertive and welcoming, and I think it fits our identity well. It also seems to correspond well to my pieces.

Conversation between Simon and Mary on Docs

NOTES AND RESEARCH



Potential pieces



Cooperative vs. competitive play

MORE NOTES AND RESEARCH

shared resources?

Coop/Competitive

Win conditions

Flooding? Events? Rising river

Setting Mississippi River?

preparing for disaster?

Erosion

Twin Cities

Game board changes while playing

• Playtest Forbidden Island

• Research Miss. River

• Study Coop vs competitive vs game win conditions

Mississippi River

- 2,300+ miles long
- Tallgrass prairie, Oak Swamps, Floodplain forest
- 16th century use as burial & transportation
- Silt deposits, fertile
- Agricultural runoff - Gulf of Mexico dead zone
 - Dead zone is size of New Jersey
 - Fertilizer + Pesticides + Animal waste + car exhaust
 - N-Trogen/Phosphorous runoff depletes oxygen in ocean
 - Drainage tiles in MN, IA, OH

Local river research

Town Development:

Residential Area: Houses
Apartments

Small Business: Shopping Mall
Food Market
Gas station
Bank

Public Works: Library
Court House
Hospital
School
Post Office
Garbage disposal
Electricity/Power Plant

Industrial Area: Factory Building - large employment

St. Louis River: National Scenic Riverway

Location
Stillwater first city on it
14 towns on the river
All small towns
Biggest town is Hudson
One of the cleanest rivers in Midwest
Zebra mussels
Harm runoff caused since blue-green algae

Building ideation

A Tale of Two cities

Cities in the River Valley

* Runoff

Save our 12 towns

Pollution Prevention

Double threat

Everyone contributes

The City River

The River Inbetween

* The Source

Essential Water

Eco-balance

Protect our essentials

The Source of Growth

Eco-protect Eco-struct

Blight in the Bronx

River prospering

Buildup

Eco-buildup

Expand and Protect

Green vs. Cultivate

* Protect to Prosper

city covers

creation

Shared land

Build and protect

Title ideation

Resources

What does a town need?

- Food - farms or transported (imported)
- Electricity - Generators or plants (hydro?)
- Water - Plumbing
- Housing - Apartments or houses
- Services - Stores/commence
- Roads (boats?)

What does a town create?

- Waste - from people or services or plants
- Money - commerce, taxes
- People - ~~moving~~ moving/tourism

Diagram illustrating the flow of resources and services:

```

    graph TD
        Farm --> Food
        Generators --> Electricity
        Food --> Waste
        Waste --> Plumbing
        Plumbing --> Electricity
        Electricity --> Housing
        Housing --> People
        People --> Roads
        Roads --> Services
        Services --> Money
        Money --> Farm
        Money --> Generators
        Money --> Housing
        Money --> Roads
        Money --> Services
    
```

How do these elements relate to each other?

Resource ideation and mind map

MORE NOTES

Maybe consider only using two resources?
Lower trade amounts
Time cards: think about hours in a day [1-6]
Circulate time cards more

Starting Conditions:

1. Roll dice to determine starting player, move clockwise thereafter
2. ~~Everyone receives 2 of each card (2 social, 2 study, 2 self care)~~
3. ~~Each player has five roles to choose from:~~
 - a. ~~Role 1: "Jock" - 3 social, 1 self care, 1 study~~
 - b. ~~Role 2: "Nerd" - 3 study, 1 self care, 1 social~~
 - c. ~~Role 4: "Health nut" - 3 self care, 1 study, 1 social~~
4. **ROLES:**
 - a. ~~Affect what benefits and penalties you receive~~

Play:

1. Each step forward introduces another 3 time cards to each player
2. On the space, player roles dice for chance of landing 1-4
 - a. If 1... [Pick a card from perk deck]
 - b. If 2... [Battle between players]
 - i. One player manually chooses another to battle
 - ii. Battle: lay down 2 cards each, based on suit, that players wins them
 - c. If 3... [Lose 2 time card]
 - d. If 4... [Get a social/friend resource]

//Think: what pathways can open up new ones and make strategy count

Collect : Friends- food- books (permanent property like settlements and cities)
Time cards (lots in circulation 1st year than less each year)

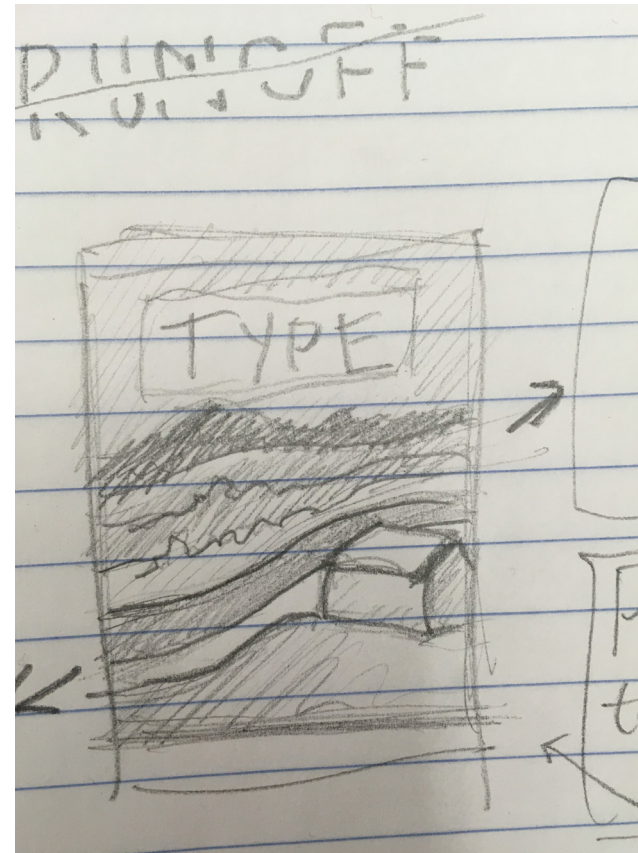
All start with 8

Bonuses: collect 1 token (specified on card), collect 3 time <<< (raritys)
collect 2 time (if you have 3 self care OR 2 social, OR 4 study) (specified on card), collect 1 perk
(if you have 3 friends + 1 self care), collect 4 time and a token (if you have study upgrade)
Trade largest card for 3 time cards, trade one token for another

Penalties: lose 2 time, lose 1 time, lose perk card (of choosing), the person on your right trades
a token with you, lose perk if you have 7 or more time in hand

Trade values:

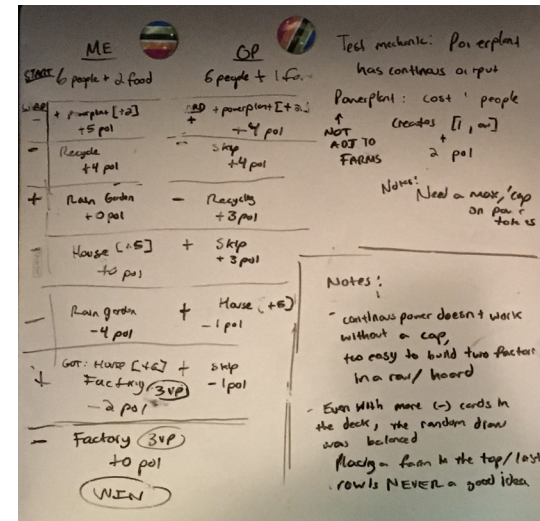
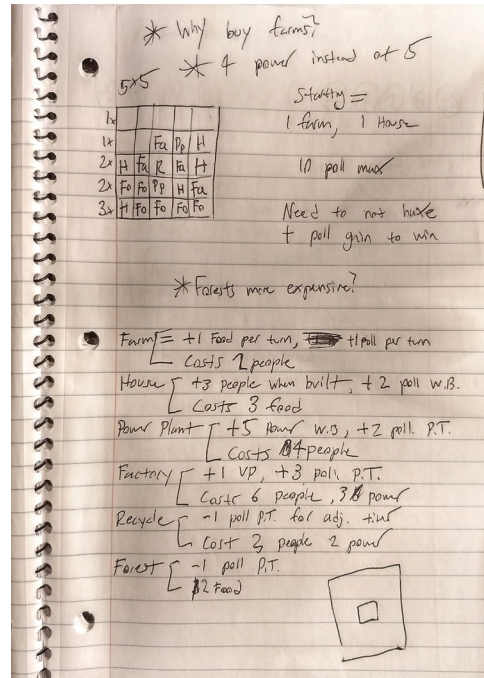
Study: 1 = 8 time



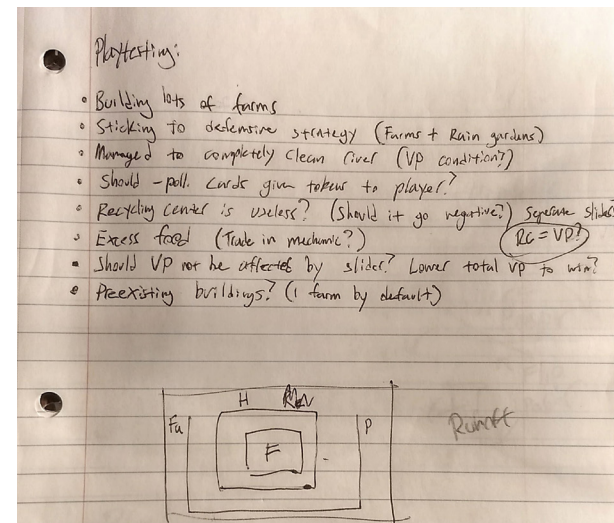
Poster design concept

PLAYTESTING AND MORE NOTES

SOLO PLAYTESTING



GROUP PLAYTESTING



BOARD CREATION

The board was created with three cuts sections of pine wood glued together. The middle section was then chipped and sanded to create the river, and each level was drilled into to create a holder for each piece.

The final board is made of pine wood, stained with English Chestnut 233 wood stain and painted with blue watercolor.

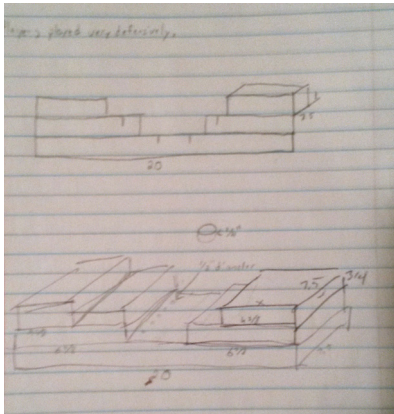
PLANNING

Board Size:

22.5 x 7.5 x 3 in

1.875 x .625 x .25 ft

Each piece must fit within a 1.25 x 1.25

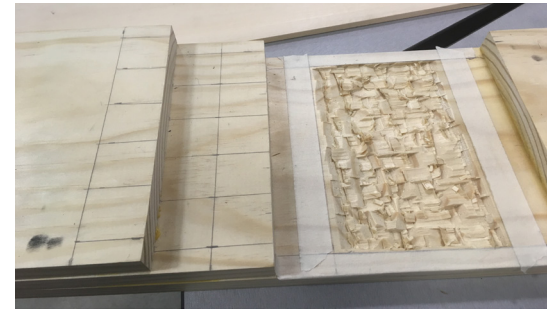


Visualizing board size



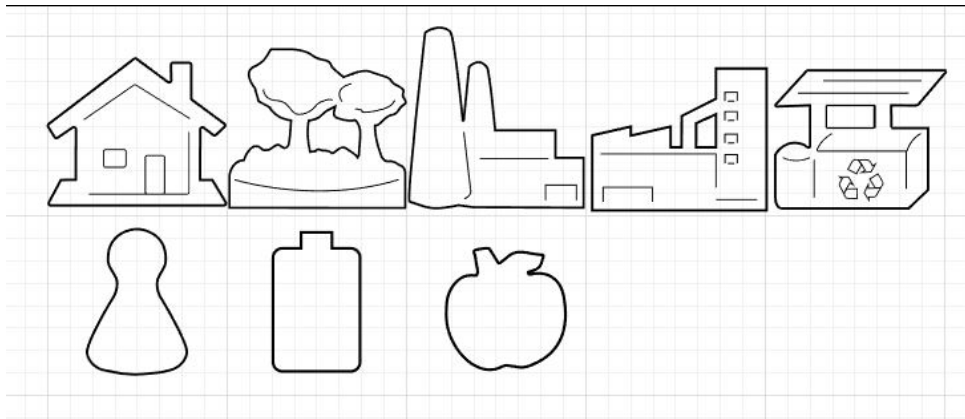
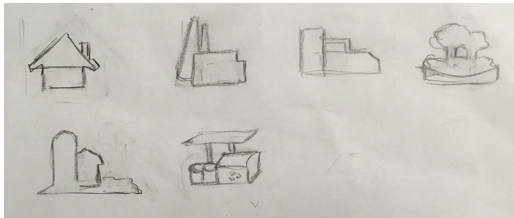
Stain tests

PRODUCTION

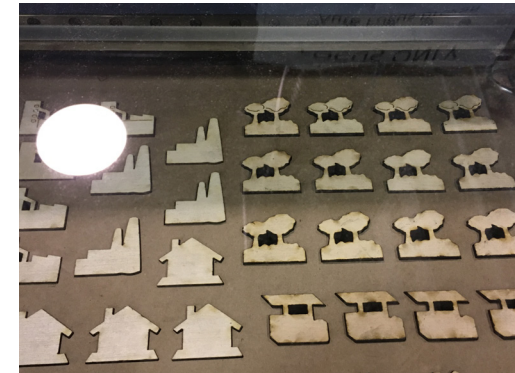


PIECE CREATION

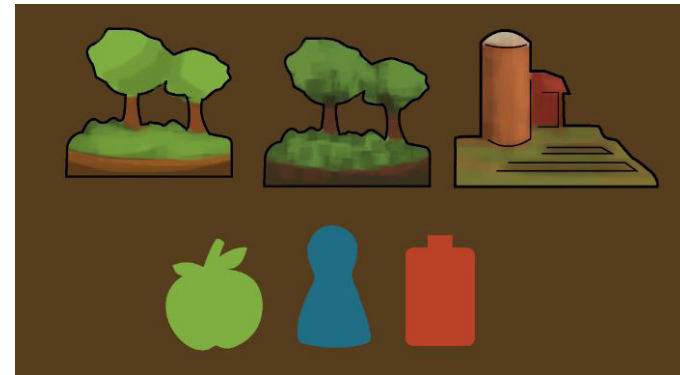
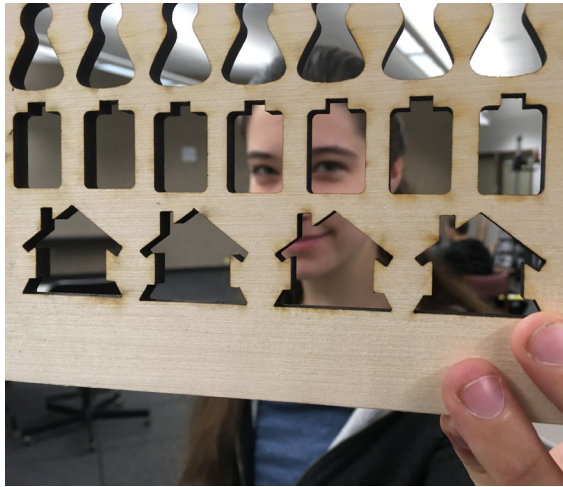
The pieces are made out of 1/4inch thick basswood and were cut and engraved with a laser cutter. They were then painted with watercolors. The pieces show simple and iconic representations of the sites the player works with. This corresponds to Simon's vector card designs. It took quite a few tests in the lab to get the pieces the just the right size, design, and have dual sided engraving.



*Adobe illustrator design of
pieces*



PIECE CREATION CON.



Initial detailed color design

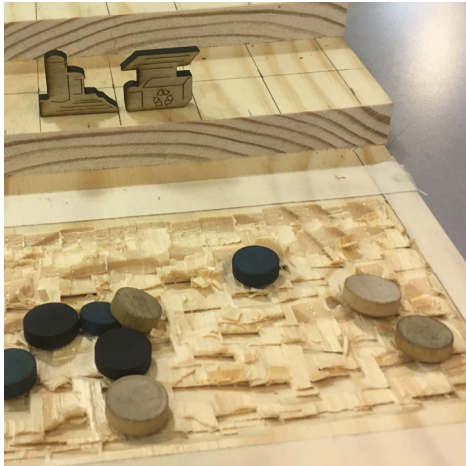


Glueing the piece to their holder



The finals colors of the resources correspond to their source

PUTTING IT ALL TOGETHER

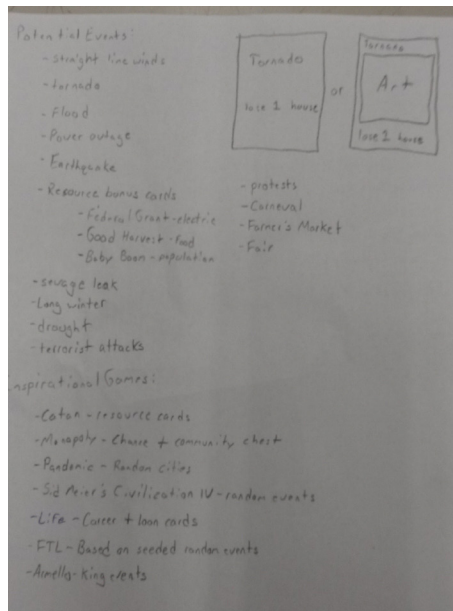


EVENT CARD CREATION- STAGE I

During the design of the cards, choices had to be made about how we were to approach their creation. Various other layouts were studied, especially ones that included a vector-based approach. The amount of information needed on each card is fairly small: a sentence or two and a card type indicator. This leaned towards a fairly simple design that focused on typography and graphics to stand out. This led to decisions on more intricate details, such as whether to have a border or not, how big the art would be, where the card title should go, brand colors to use etc. In the end, we settled on grouping the title with the card text at the bottom, borderless, and earth tones for our starting brand colors. This idea eventually developed into the final cards you see today.



Cards used in playtesting



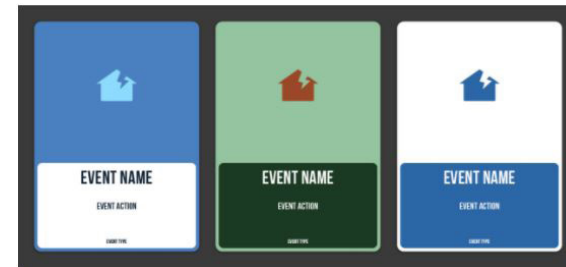
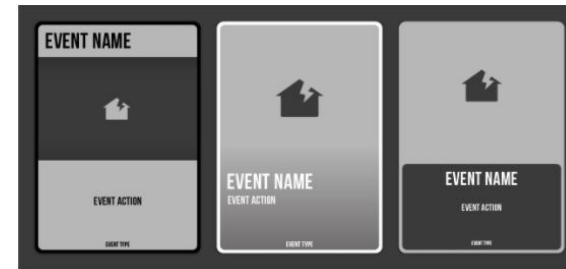
Card ideas



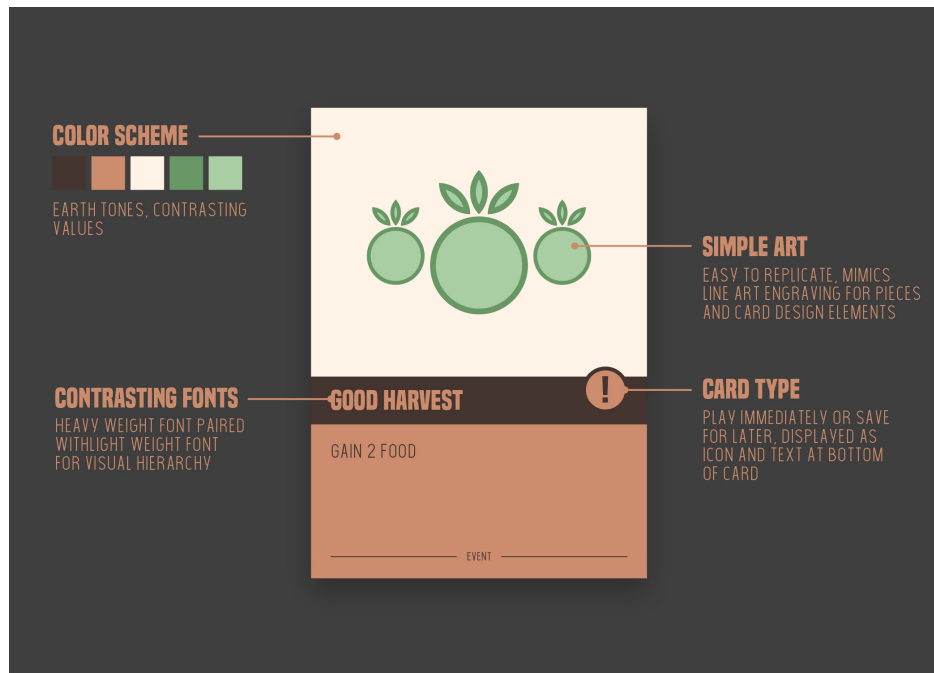
EVENT CARD CREATION- STAGE 2



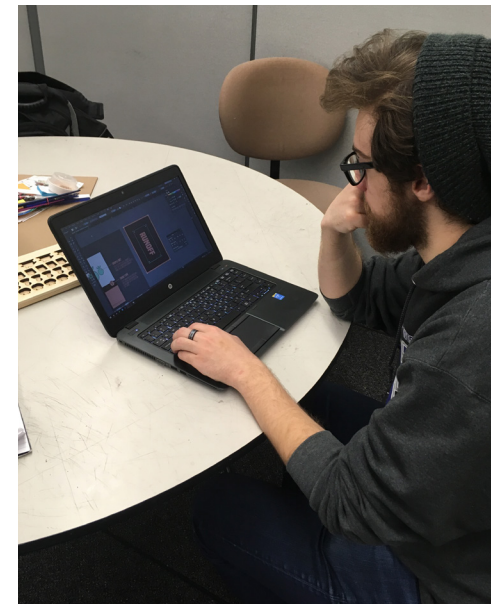
Back of card design



Front design concepts



Final card design



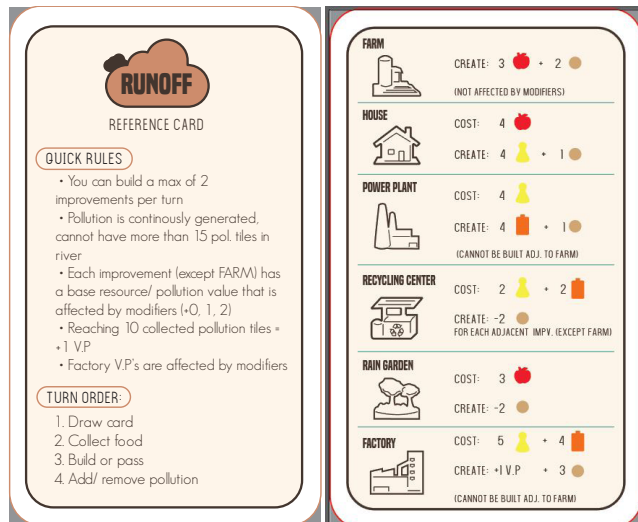
APPENDIX 2 – RESEARCH

REFERENCE CARD

Mary researched how different board games visually presented their reference cards. Attributes that were put into the final card design include:

- Clear icons representative of pieces
- Descriptive text
- Text hierarchy
- Few colors

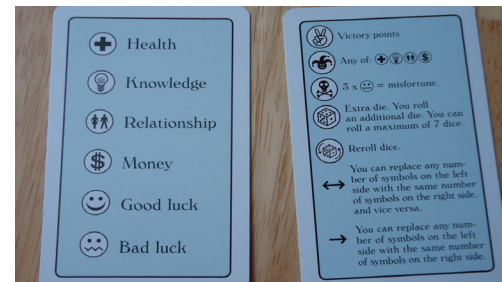
FINAL CARD



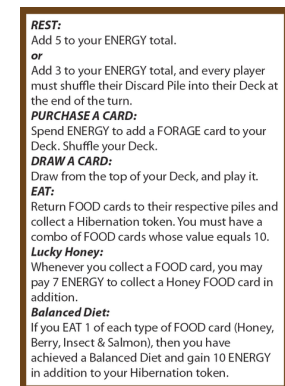
Karmaka



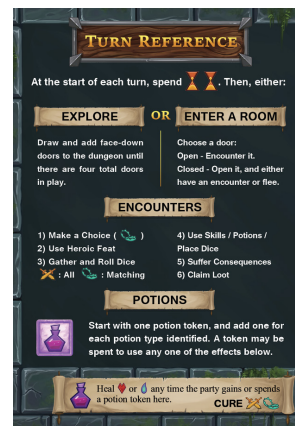
Catan



CV



Hibernation



One Deck Dungeon



Ashes

RIVER RESEARCH

Rivers have great economic and environmental value:

- Provide clean water supply for agriculture, cities, and organisms
- Provide a habitat for wildlife and food growth
- Provide flood protection

What factors affect the river:

- Rainfall patterns: flooding and drought
- Pollution: our actions on land affect water quality and quantity far downstream
- River basin: land that water flows across or under on its way to a river
- Watershed: area of land that catches rain and snow, and drains/ seeps into a marsh, stream, river, lake or groundwater

Red Cedar River and Lake Menomin:

- River attributes:
 - Medium sized warmwater river in Mississippi River drainage basin
 - Flow is heavily regulated by dams including hydroelectric dam at Lake Menomin
 - Used for fishing and recreational activities
 - Flows through 7 lakes, spans 85 miles
- Pollution threat:
 - Measuring lake quality: algal bloom frequency and toxins, rooted aquatic plant density, water clarity, dissolved oxygen, pH, chlorophyll A
- **High phosphorus levels**
 - One pound of phosphorus can grow up to 500 pounds of algae
 - Cause algal blooms, excessive plant growth in area lakes, and contribute to **low oxygen levels** in streams.
- Main sources
 - Rural residential sources of runoff: from and during construction, failing septic systems, lawn fertilizers
 - Agricultural sources of runoff: barnyard, feedlot, cropland, streambank
 - Urban sources of runoff: impervious areas (parking lots, roads, roofs), urban turf areas, construction site erosion, human and animal waste
 - Background sources: natural landscapes, groundwater, precipitation
- Toxins released by blue-green algae can cause severe skin irritation after exposure, respiratory problems, and toxic fish
- The smell and water clarity lower recreation and property values, which has negative effects on local economies

Info and images from <http://roughfish.com/content/red-cedar-river-wisconsin>
<https://fyi.uwex.edu/redcedar/>
<https://milwaukeekeeperkeeper.org/blog/whats-a-river-basin-whats-a-watershed/>



Application to the Final Project:

- Objective: build a complete economy before opponent, while maintaining a clear, healthy river
- Pieces: farm field/ house clusters/ commercial cluster/ forest/ roads, power plant, waste management (Requires construction that produces pollutants)
- Land permanents: streams
- River changes color/ add subtracts pieces based on toxicity level (no rise/ fall of water)



Polluted water of Red Cedar joining with the clearwater of the Chippewa river

COLOR PALLETE RESEARCH

Mary researched Adobe Color Themes with key phrases related to our game to find a suitable color palette. We had to decide between natural, subdued colors versus more poppy, expressive ones. We decided to use all primary and secondary colors for the physical pieces, and use light green and orange for our cover and card design.



BIBLIOGRAPHY

<https://boardgamegeek.com/thread/977989/quick-and-dirty-race-balance-rankanalysis>
<https://news.xbox.com/en-us/2017/04/21/cities-skylines-xbox-one-edition-available-now/>
<https://lykwys.deviantart.com/art/Pinoypoly-chance-chest-cards-52626479>
<http://www.psnation.com/2015/09/15/review-armello-ps4/>
<http://www.uwstout.edu/profed/redcedar/upload/water-quality-principles.pdf>
<http://www.bgdf.com/node/4915>
<https://coolchoices.com/sustainability-programs/>
<https://www.behance.net/gallery/13587201/Card-Game-Design>
<https://www.hemispheregames.com/2015/08/28/quick-reference-cards/>
<https://boardgamegeek.com/2015/12/18/catan-dice-game/>
<https://i.pinimg.com/236x/7b/7d/79/7b7d79e6a1af1539ca8a01d0b5d763df--card-games-decks.jpg>
<https://boardgamegeek.com/boardgame/143986/cv>
<https://www.plaidhatgames.com/news/491>
<https://boardgamegeek.com/boardgame/179275/one-deck-dungeon>
<http://roughfish.com/content/red-cedar-river-wisconsin>
<https://fyi.uwex.edu/redcedar/>
<https://milwaukeekeeper.org/blog/whats-a-river-basin-whats-a-watershed/>

THIS WAR OF MINE

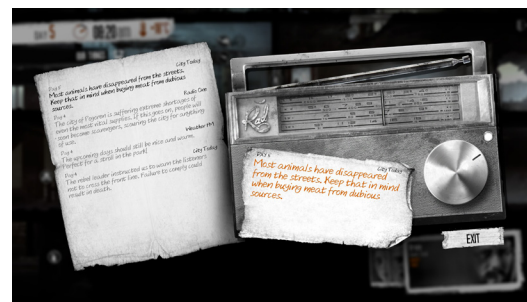
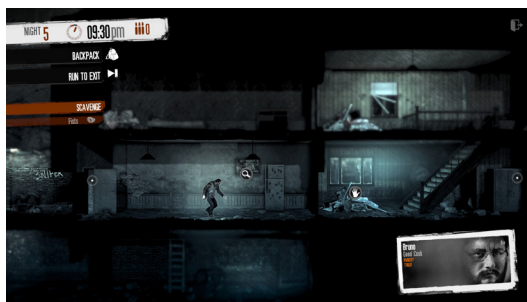
Genre: Survival

Summary

This War of Mine is a game where you must survive in a besieged city. You are not a soldier or superhero, but instead guide a small group of civilians. Each group member requires food and sleep, but also has their own personal desires, such as coffee or cigarettes. Resources are gathered by sending a group member to scavenge different sites throughout the city. This can be a risky task, as other hostile civilians could be trying to find materials there as well. As the player, you must gather resources to help your group survive while also managing their needs.

Analysis

The narrative presented in this game is bleak and depressing. You slowly learn about each group member and become attached to them, only to later see them die from disease, lack of food, or raiders. The game shows an ugly side of war that isn't portrayed enough. Mechanically, the game is a combination of risk vs reward and resource management, and is an excellent example of integrating the message into the mechanics.



PERSUASIVE GAME: CATCHMENT DETOX

Catchment Detox is a turn-based strategy game about managing a virtual river catchment and creating a thriving economy. The catchment is affected by the development or “activities” of the land around it. This includes agriculture, industry and tourism, irrigation and dams, and ecological development. These activities affect the environment, water and economy, which all are all updatable statistics within each activity. Each development affects each other as well as the water quality or levels. The water status must be good or better in order for the continuous development on the land. Other features of this game is a money system to regulate rate of activities developed and general catchment management, a score system affected by certain statistics, and a limit of 100 turns.

How we could apply this to The River game concept:

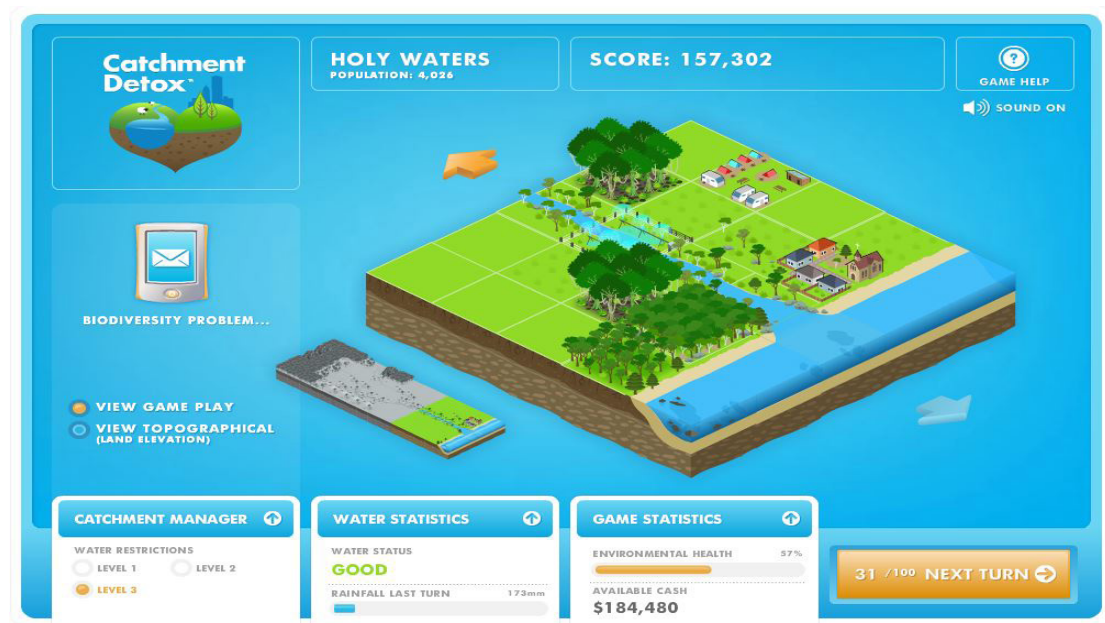
Catchment Detox in its entirety is very similar to the direction to the The River game concept. We would be referencing the existing mechanics and dynamics of the economy and ecosystem the game has developed, and then iterating or altering them to make our game more unique and suitable for physical play. This game is entirely player vs. system, but we would develop a multilayer game which would alter the chance variable and strategies a player takes in game to reach the objective. This simulation effectively conveys its goal and objective through a clean design with an additional pop-up that guides the player in their decision-making. We could implement hint cards or blurbs on the back of existing cards to demonstrate the purpose of an action.

A Few Possible Borrowed Mechanics:

- Sloped playing area: visualizes effect of land on river by gravity and possibly pushing physical pieces into river to further the simulation
- Logging forests for money: Using one constant method for money retrieval, but with slight consequences to the overall environment
- Water availability being affected by rainfall and usage: Having a rainfall variable that raises or lowers water independent of player action, helps create balance



Notes: All land on the planet is part of a catchment. Water flows down streams and soil, eventually feeding into the river

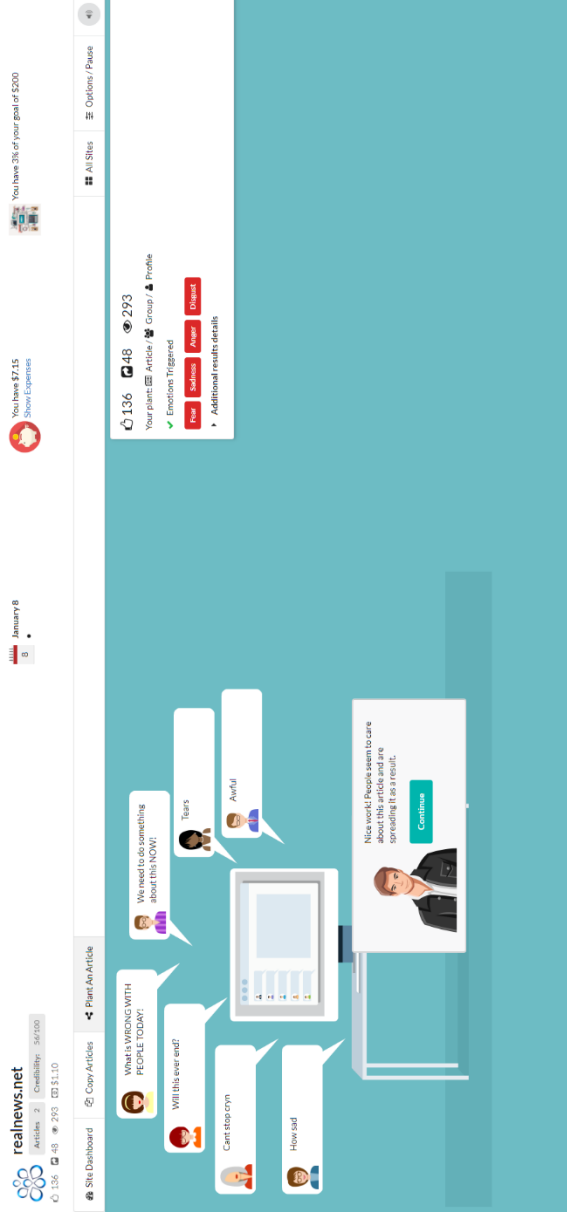


Title: Fake it To Make it

Platform: PC

Objective: Raise money by managing a fake website and meet your goal.

Summary: You start off by copying articles from websites, and buying a random social network account to spread your website and articles. Eventually you make your own fake articles to get people's attention in a specific demographic. This game gave me some insight into our potential money management game. It showed how to use monthly cost and initial charges to get the player a sense of profit and loss. Additionally, it showed risk with purchasing assets that allow the player to potentially earn money.



IDEA 1: WORKING UP AND TOGETHER

Platform/ Genre: 3-D board, puzzle game

Number of Players: 4, each player has a unique shape, but works towards the same objective. Cooperative play.

Objective: get to the top (or center) of the board and make a complete shape with the other players. Reaching the top requires working together with the other players to move your piece around the board.

Summary/ Game Features:

This is a game about balance of difference entities, you need to work with others different from you in order solve problems effectively. 4 players start with their own group of people, segregated from the rest. The player finds out immediately they can't solve the problem on their own, they have to collaborate with the others. Some pieces have to assist the others in getting a job done, based on their specific shape's capabilities. The game ends when the puzzle is solved with all players piece(s) are put together to achieve equilibrium.

Example Pieces (would have magnets attached):



Possible applied concepts:

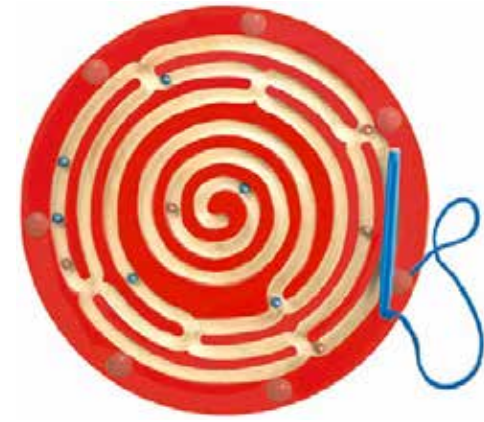
- Working against segregation
- Specializations coming together to complete a project
- Learning to overcome differences

This is a physical spatial game that plays with gravity. It requires some physical movement around the cylindrical playing field in order to interact properly with others

It is a quick social fun game



Cylindrical playing field to allow collaboration with other players and a clear end goal (top)



Each piece is attached with a small magnet for moving around



Visualization of pieces fitting together



Shows clear view of pieces and multi-level play space

IDEA 2: THE RIVER

Genre: Strategy, 3-D objects and board

Number of Players: 2 (possibly 4 with teams)

Player vs player, and player vs system

Objective: Build your city up to completion before your rival with the aid and micromanagement of the river that sits between you two.

Summary/ Game features: With cards or another form of trade, the player can acquire building materials and food sources. Factors that may affect the river are wildlife, nature/ weather, and humanity. If one player makes a move that affects the river, the other player is affected as well.

Extra mechanic: moving a boat (1 per player) back and forth across the river to yield certain resources, meet up for trade, and affect the river. The boat never leaves the river.

Notes: Ecosystem disturbance of a river: interactions between plants, animals, micro-organisms, and non-living physical/ chemical interactions

Factors that disrupt river ecosystem: floods and droughts



Features the strategy and land development of Carcassonne



Working on opposite sides of the river to achieve same goal the quickest



Visualization of opposing cities



Kinetic sand/ blue sand can be used to fill the river. This can help visualize a drought (removing sand) and make the game board more interactive

IDEA 3: PINBALL RAIN GARDEN

Platform: table-top pinball machine

Players: 1, Player vs System

Objective: The player must return the state of the lake back to its former, unpolluted self by potting plants in the garden before time runs out.

They are playing against the force of gravity, which carries the storm runoff from above into the lake (the marble falls into a hole).

Game features: The game takes place on a sloped box, with interactive pieces (the 9 plants) that are placed during gameplay. A placeholder piece takes the spot of where a potted plant could reside, and acts as a minor deflector. The plants could be placed based on the pinball point system or by specific areas where the launched ball lands. The plants are cupped in the front to catch the ball. There are 3 overlays to the lake section, clean, mild pollution, and dangerous pollution. These overlays are shifted back when the ball gets past the player and falls into a hole. The overlays would be shifted forward manually when the player catches a ball in their potted plant. This would be behind the garden, or behind players control.

This is a fast-paced game to demonstrate the importance of developing a rain garden to help protect the lake from polluted runoff.



Purely mechanical/ analog, no electronic components (besides timer)



If not adding pieces to block the holes, then adding rubber bands to



UW-Stout Rain Garden



The launching of the ball back into the playfield represents human society's constant role in contributing to the pollution.

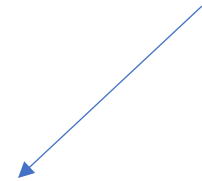
Bottom Up

Platform: Board game

Number of Players: 4

Objective: To be the first person to have their company be on a steady profit line.

Summary: Players start with a new company that isn't doing so good. Players must maintain their company through sales and purchases. Random life events will happen to offset the players companies creating a random environment for playability. Additionally, risk reward options will be available to players to try to advance their company quickly.



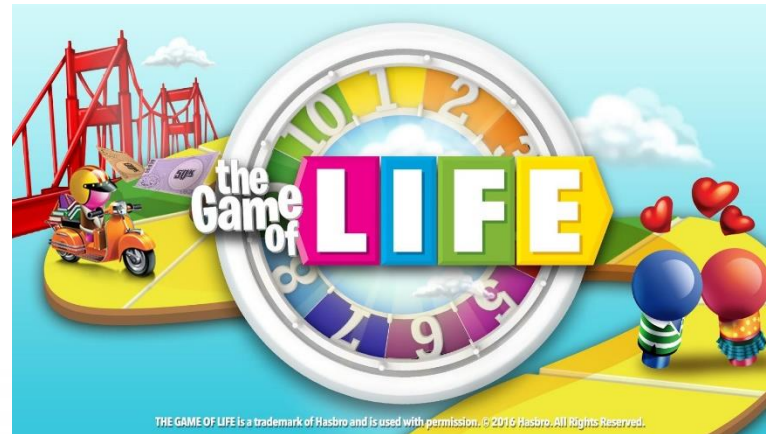
Happiness and Sorrow

Platform: Board game

Number of Players: 2-8

Objective: Manage your good and bad through life then get assessed at end of life.

Summary: Players play through a simulated life where they are presented choices. The players may either choose a good or bad outcome as a team. Each choice has different benefits. The more you choose one brings you to an early “death”. Manage your good and bad to make it to the end.



The World is Drowning

Platform: Board game

Number of Players: 2-4

Objective: Don't cause war.

Summary: The game starts off with some player tension. Players do negotiations with each other to prevent war. Random events happen that increase tension potentially leading to war. Players win if they go 20 years without causing war.



AGRICULTURE

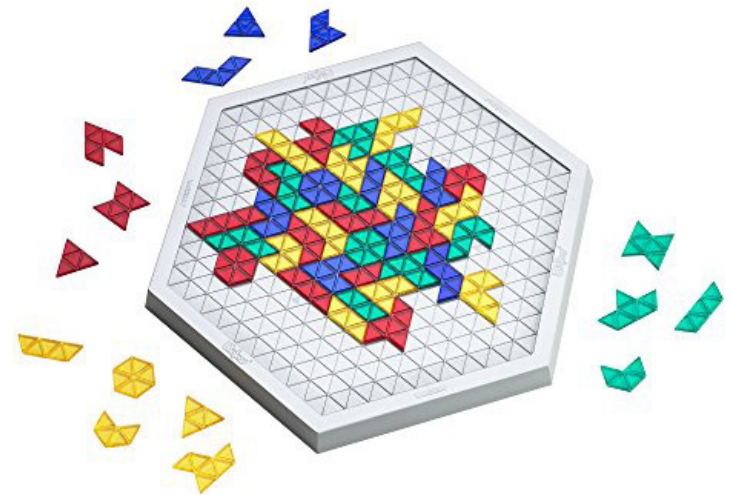
Genre: Strategy

Summary

Agriculture is a board and card game where players must grow and sell crops to expand their farm. Players all share one board, and start at opposing corners. Each player grows crops within their space by buying different types of seed cards. They may then sell their crops and expand their space or buy more seeds. Different seeds grow different crops that have different requirements and bonuses. Some may benefit from being arranged in a straight line, others may require special cards. Players must compete with each other for the space to grow their crops. The game is won by earning a certain amount of points from meeting specific goals, such as growing high quality crops or making a large profit.

Features

3-6 player support, multilateral competition. Hexagonal tile-based board, miniature crop pieces, and deck of resource cards.



PRESTIGE

Genre: Social

Summary

Prestige places players into the shoes of an extremely wealthy Victorian noble. Players must manage their public reputation between two very different groups of people: the nobles and the peasants. During the player's turn, they may either throw a party for the nobles or a festival for the peasants. They must then choose a card from their hand to present as a gift. This card could be a vase, a hammer, a necklace, or any type of object. The rest of the players will then assess the gift and determine whether or not they find it acceptable by awarding or removing approval cards. The goal of the game is to obtain a balanced level of approval from each group.

Features

4-8 player support, multilateral competition. One deck of gift cards, one deck of peasant approval cards, and one deck of noble approval cards.



HABITAT

Genre: Strategy

Summary

Habitat requires players to team up and become the caretakers of a forest's ecological system. They must manage threats towards animals such as overpopulation and disease, determine the correct balance of predators and hunting allowed, and protect plant life. Each player takes on a specific role, such as biologist or hunter, that provides benefits to their team. Every turn, pieces representing animals and plants on the board would follow their own behavior, resulting in animals dying or being born. Events would periodically occur from cards drawn that would create unique situations. Players must work together on balancing these effects to create a perfect ecosystem.

Features

2-4 player support, cooperative, players vs game. Map-inspired board, animal tokens, event cards, player role sheets.

