

Love Triangle

by Ted Avtar

Introduction

Concept:

It has been empirically proven that all women desire three attributes in men: intellect, aesthetic appeal, and confidence. Particularly, the sum of these factors constitute any man's standing. Your one true crush is a woman and thus these standings dictate her preference. But she has other suitors. Increase your standing, decrease theirs by any (stereotypical) way necessary, and outcompete them to win her affections!

Details:

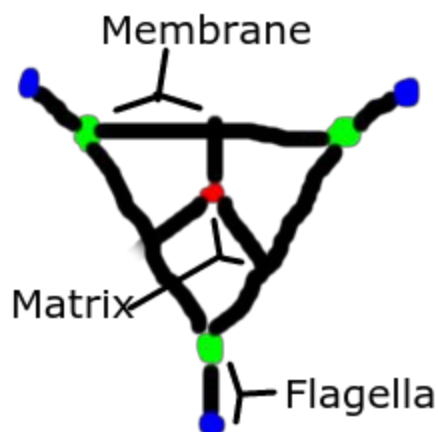
This is a turn-based, multiplayer game with three players played on a triangular board. There is just one piece on this board, the piece that represents the girl. Consider this game a generalized tug of war. But instead of players trying to bring a knot on a rope to their ends, their goal is to bring a piece that is the girl from the center of the board to their corners. And the way they do is by playing cards against each other.

Game Play

Components:

One board, three decks of cards, and one piece. I treat players themselves as components, in that they have their own associated bundle of information.

Board:



Here is a conceptual sketch of the board. The colored dots are special tiles and the black line segments consist of tiles. The red tile is the middle tile of the board. It is where the piece starts at. The blue tiles are "home" tiles. Each player wants to bring the piece to their home tile. The green tiles are "portal" tiles. Certain cards allow the piece to automatically teleport to these tiles.

A board can be described by three numbers: sizes--in tiles--for the matrix, membrane, and flagella.

Players:

Each player has three attributes: confidence, hotness, and intelligence--henceforth referred to as CF, HT, and IT both here and in the game. These values are clamped from 0 to 10 inclusive and are currently initialized at 7. Their sum is that player's standing. Thus initially all players have a standing of $7 + 7 + 7$ or 21. Players are also assigned a home and portal tile. Finally every player has a deck of cards and a hand, which is capped at a certain card value. Currently, the hand is capped at 6 cards.

Cards:

There are three classes of cards: Special, Portal, and Attack

Specials

Specials can be considered divided into two subclasses: Positive and Negative specials. Positive specials increase their owner's attributes and thus that player's standing. For example a card called "Adderall" increases its owner's IT by 5. Negative specials allow the owner to select a target--another player--and decrease that player's attributes. For example, "Intimidate" decreases a target player's CF by 5. However, attributes will not dip below 0 or rise above 10.

I am currently thinking about reinstating another type of negative special which would result in a player placing an "obstacle" on a tile. This obstacle would serve to subdivide the tile into multiple tiles, effectively altering the board and increasing the distance the piece has to travel to cross that tile. My initial prototype had these obstacle cards, but this was deprecated in subsequent electronic prototypes. In the final electronic game(s), this would likely be a paid feature--more on prototypes and goals later.

Portals

Portal cards have but one effect: move the piece wherever it is to its owner's portal.

Attacks

Attack cards contain a recipe to determine their attack value. Formally, this recipe is encoded by an attack vector with four entries and the attack value is the dot product of this vector and the vector $\{1, IT, HT, CF\}$. This really is not complicated. For example, the attack card "CurveSet" has an attack recipe of 30. Its underlying attack vector is $\{1, 0, 0, 0\}$. "Flowers" has attack value of $20 + HT + CF$, or an underlying attack vector of $\{20, 0, 1, 1\}$. Say a player who plays "Flowers" has their HT and CF both at 7 at the time of playing the card, then its attack value is $20 + 7 + 7$ or 34.

So far all the cards behave like they do in most card games, when you play them, they get discarded, either into a discard pile or they just disappear. There is one pseudo-card in the game--it does not have to be implemented as a card--called Virtual Attack. This "card" has an attack value of your standing: $IT + HT + CF$. (so it's attack vector is $\{0,1,1,1\}$) and it never leaves your hand. This means that even if a player is out of other attack cards, he or she can always mount an attack or counterattack using his or her standing.

Terminal Conditions:

There are two terminal conditions, and I am contemplating adding a third. The first is when the piece reaches the any players home. Then that player instantly wins. The second is a guarantee: that the turn all three players have ran out of cards in their decks will be the last turn. After that things get murkier: depending on where the piece is located, the game results in a player's victory or a draw. If the piece is in a player's flagella, that player wins, else it's a draw.

A third terminal condition that I'm contemplating adding is a blitz mode where after a fixed number of rounds the game ends. A round would be defined as all three players' turns. After the rounds are over, just like when everyone runs out of cards, a victor or a draw would be proclaimed.

Turn:

A turn consists of three consecutive phases. Players take turns until a terminal condition is met.

Phase 1: Draw.

Provided their hand is not full and their deck is not empty, players may draw a card

Phase 2: Specials or Draw

This phase consists of two events. Players may use an event to either draw or play a special. There are some details to be worked out, such as whether a player may "pass" an event or not.

Phase 3: Portal or Attack

Players may either play a portal card--and have the piece teleport to their portals--or starts an attack by means of playing an attack card (or a virtual attack)

Attack process:

The process consists of three events: an attack, a counter attack, and a result.

Recall that all attack cards—including virtual attack cards—have a formula that determines that card's attack value. A player mounts an attack by choosing a target and playing an attack card or announcing a virtual attack against them—which again, may be implemented by means of a card that never leaves the hand. That player gets to see the card and knows the attacking value that they are being attacked with. Then they respond similarly with a counterattack: either playing an attack card or doing a virtual attack.

The winner of this exchange is the player who posited forth the higher attack value. Now take the difference of the attack and counterattack card values and the difference is how many spaces the winner of the exchange gets to move the piece by.

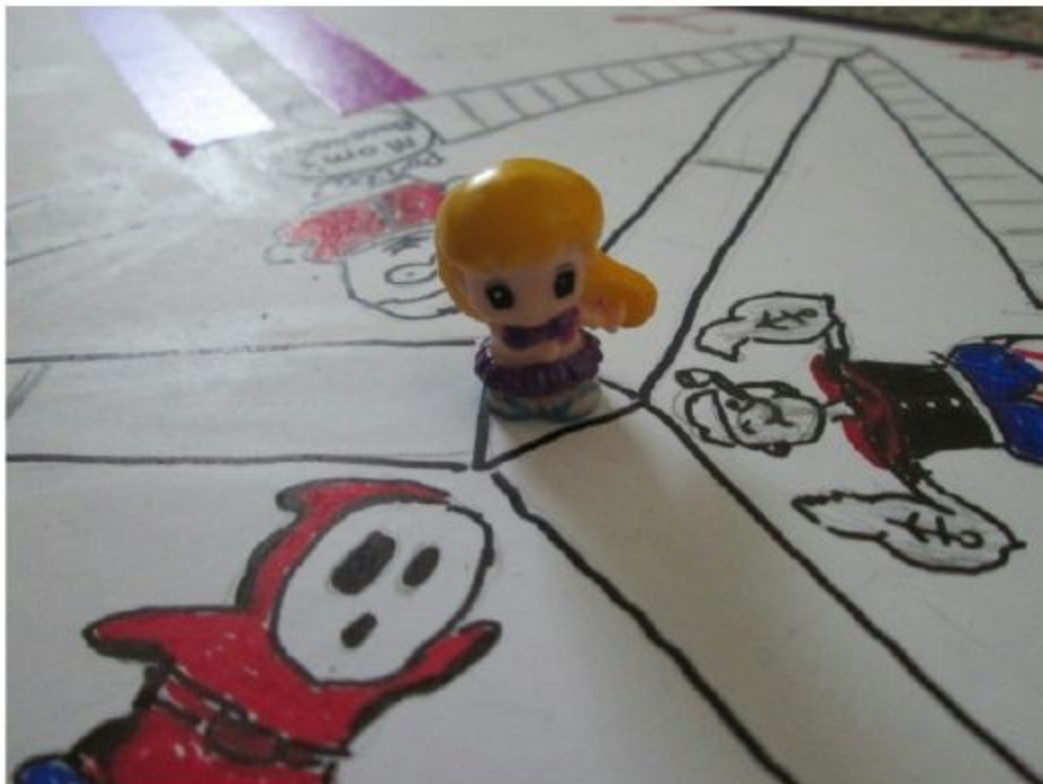
Prototypes

Since all the rules have been mentioned, If you have the Unity Web Player plugin, or don't mind acquiring it, and you want to play the game for yourself, head on over to <https://dl.dropboxusercontent.com/u/105935968/LoveTriangle/SinglePlayer/Itspweb.html> to play a single player game against two AI players.

Below are some prototypes that I have already created.

Physical:

I started with a physical prototype.





Playing many games on this board with others led me to conclude that this game is very much playable. For most cases it has a learning curve of one game where players play each other without concealing their hands to demonstrate what is happening. Test plays informed my choice of the ranges of certain parameters such as board dimensions--the board above has a matrix size of 3, a membrane size of 11, and a flagella size of 4.

I then made electronic prototypes, for ease of simulations among other benefits.

Virtual Prototypes and projects:

I have used the Unity3D game engine to create the following prototypes. They are very flexible and allow for custom game logic, cards, and board dimensions to be easily added.

Multiplayer game:

I used Unity3D's asset store to acquire Photon Networking and Parse scripts and used those assets to handle the multiplayer networking and user account management, respectively. I also used Illustrator to create the card and button sprites. Here is a demo video:

<https://www.youtube.com/watch?v=1EqjvJJzDA>

The actual game is right here:

<https://dl.dropboxusercontent.com/u/105935968/LoveTriangle/roombuild.html>

The game is fully playable and supports multiple rooms with three players each.

Single player game:

Made with Unity3d and Illustrator, this game allows a player to be “Player1” and play against two other AI players.

Here is a video <https://www.youtube.com/watch?v=YVAdo2oA-kc> and here is the game <https://dl.dropboxusercontent.com/u/105935968/LoveTriangle/SinglePlayer/ItsPweb.html>

AI Tester:

I only used Unity for this. This project allows me to run simulations where I can create custom computer opponents and have them battle it out. Even better, I can export these scripts to the single player game, change a few variables, drag these scripts onto Player2 or 3--the AI opponents--and I will have successfully given that AI player a new brain. This is made possible by the fact that I used the brain *interface* which these decision-scripts implement across both projects.

Flexibility is key. Like the playable prototypes above, I can alter the board dimensions. I can also control pauses and turn turn times, console log output, how many back-to-back games to play, and can drag-and-drop different scripts on players. I have a “fast” simulation option that speeds up the game by halting pauses and not logging out information.

Here is an example of it in action: <https://www.youtube.com/watch?v=sdXquhZQU1c>

Future Plans

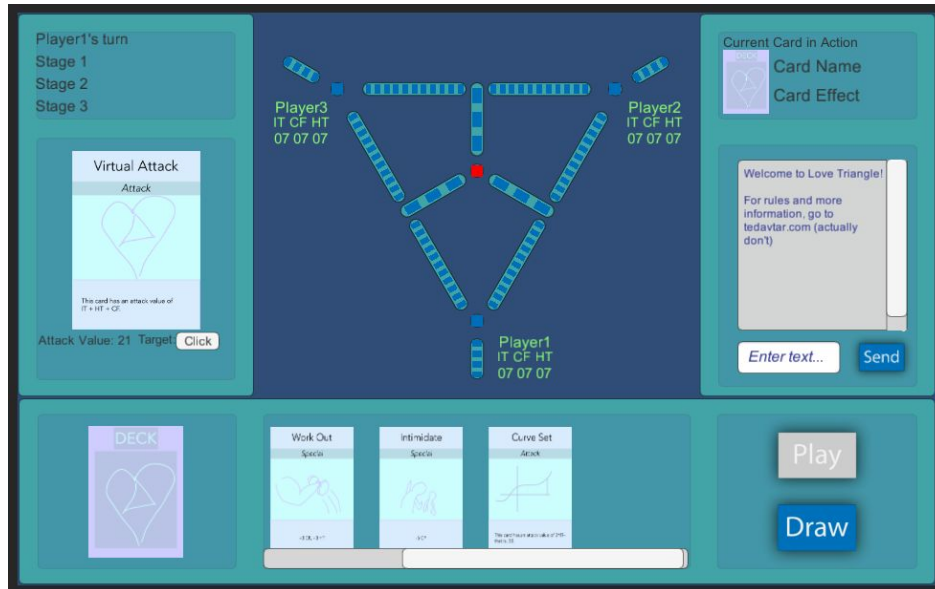
My future plans consist of long term and short term goals. The long term goals include monetization and branching out. The short term goals branch into two separate paths. The first is improving user experience. The second is working on creating smarter AI opponents.

When I deem the progress satisfactory, I will combine all my projects and the result will be one cross-platform multiplayer game complete with single player modes and a lot of freedom for the player to customize game elements, and the game will steadily acquire additional features till completion.

Game Art:

I will first survey the current--dismal--state of the art in my prototypes and arrive at the inevitable conclusion that I need external help.

UI:



While I am pleased with how functional my UI is particularly the card selection mechanism allows for the player to easily target other players, it is ugly. I simply used the new UI tools released in Unity3D 4.6 to quickly recreate what was in my notebook and I think I stayed fairly faithful.



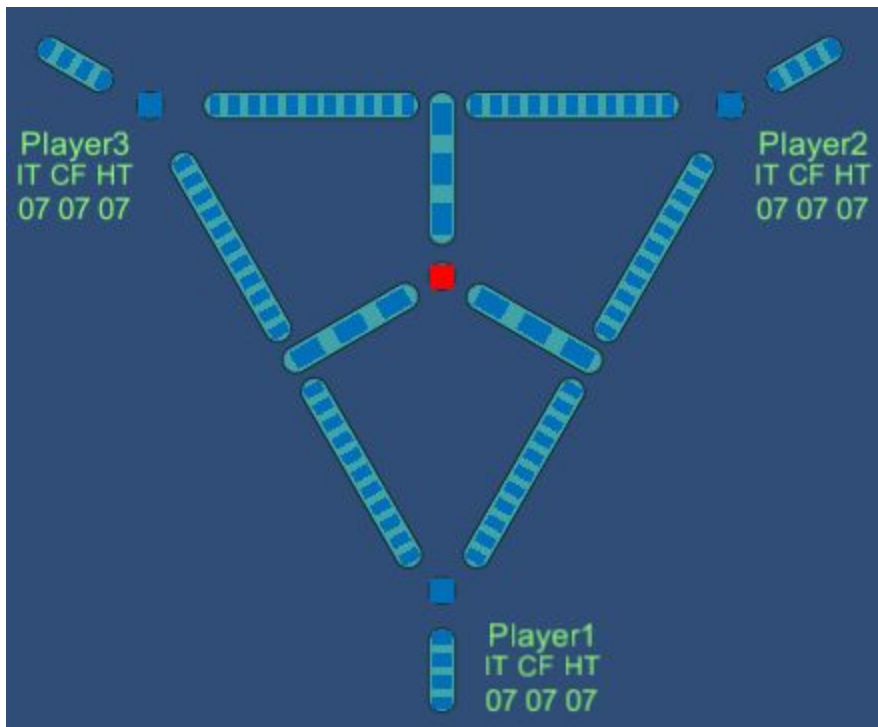
Card art:

My cards are horrible. Take “TrashTalk” for instance:



The card description text is not very visible in the game. I hastily drew the images and as can be seen above, some are not very faithful to the actual name of the card. Perhaps I could go with this offhand style, but drastic changes are necessary.

Board:



As can be seen, this is 2D. Flat. It's simply a set of rectangles utilizing Unity3D's new layout group feature to have children tiles evenly spread out. I am contemplating actually constructing

a 3D board and using a camera to view it at a pleasing angle. However, for a mobile build, I believe it would be best to stick to the current flat design.

Overall, the prototypes really lack proper game art. The game needs a theme that unites everything--the board, cards, and UI. Given a themes of love, manipulation, and the playful, exploratory, nature of the game, I think there is a lot of artistic potential to create a concept.

I believe I would have to collaborate with an artist to brainstorm and capture a theme and then create and use assets to realize this. Luckily most of the game code is complete, so cosmetic changes should not break anything. Though if a 3D board is created with an external software (ex. Blender), then this would restrict players from being able to customise board dimensions.

Audio:

I am currently unsure about sound effects, and this is not a priority

AI:

Currently, my AIs use random card selection and “reflexive” logic to decide on game actions. For instance, when moving the piece a certain number of spaces on the board, the AI will always move to the tile closest to it’s home, arbitrarily breaking a tie. Thus it is reflexive as there is no look-ahead.

The second set of future plans are to use fork the AI testing project and work on designing stronger AI players. My plan is to created relaxed variants of the game and build AI opponents for them, and eventually let the insights inform my creation of strong AIs for the game.

For instance, I think I will start with a perfect information game where there is no deck, just hands with numbered cards which are not hidden but visible to all AIs. Then an AI could perhaps use some expectimax calculation--perhaps at a certain depth--along with an estimated utility function (ex. based on how close the piece is to your portal, or some combination of that along with negative weights for features that take into account how close the piece is other opponent’s portals)

Long term: Monetization

I envision two classes of accounts--free and member. First, the game needs extra features, some of which will be members only. Below are some possible features to add. As I do not believe in temporary features, so once anyone buys anything, they will always retain it. Finally, I would like to take the game back to its origins and make this into a physical card and board game.

Build-your-own-deck:

Let players access a database of cards and buy cards or trade cards with fellow players. Perhaps even stake cards in games. Trades might happen in the lobby and shopping, in a shop. Parse, my current backend, could be used to store player information.

New card functionality:

Currently there are Attack, Special, and Portal cards. Special cards either serve to increase your standing or decrease your opponents'. As mentioned, I could add obstacles to the board and create special cards that allow players to place these obstacles on tiles of their choice.

In the very first paper prototype, I had an extra class of cards called "Special Attacks" which is simply a card that first carries out the special effect and then the attack. I could reinstate this class and possibly have more "hybrid" cards.

Visual customizability:

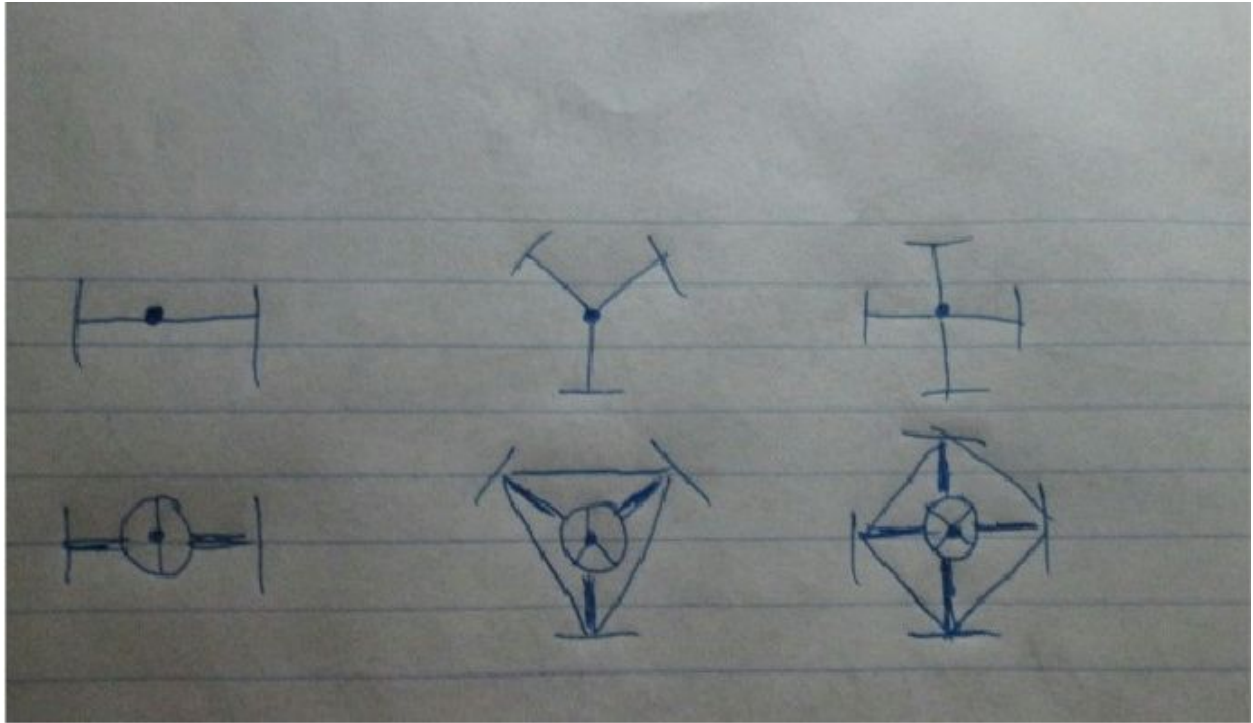
Allow players to toggle certain aspects of how they appear to others. Their name on the chat room may be graced with an insignia of their choosing. They may be able to create rooms with different colored tiles, lighting, sounds, and save these themes.

Friends:

Allow players to have "friends" in the game. The Facebook API could come in handy and if I port the game to facebook; it would be super easy as Facebook and Unity integrate nicely, and I also have a dropbox public folder for hosting. My current networking solution--Photon--also has friends functionality.

An actual board game(!):

Finally, and hopefully, if all goes well and this game gets many plays, I would get some idea of what numbers work: how many tiles to have, how many max cards in a hand, what frequencies of card classes and what effects create interesting gameplay. At last, I could look into talking with manufacturers to mass produce the final game!



Who knows, maybe a two player and four player version may be next?