Tarot-Based Narrative Generation

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ABSTRACT

Tarot has been used for centuries as a method to give structure to storytelling, both in game and fortune-telling settings. As such, tarot cards have developed over time, expanding the symbolism and depth of meaning associated with each card. This provides a corpus for a large number of possible stories, making tarot a rich area of exploration for story generation. Therefore, we have created a tarot-based narrative generation system that creates short movie-like story synopses, along with a tagline one might see on a movie poster. This project is in early development; we have created a prototype as a proof of concept. The project exists as a webpage that an interactor can use to draw new tarot cards for the story spread (card layout) and generate new stories from them. In this paper we discuss the details of our system and describe more details about the tarot as a corpus. We also discuss future areas of exploration based on our proof of concept.

CCS CONCEPTS

• Computing methodologies → Artificial intelligence; • Applied computing → Media arts;

KEYWORDS

game narrative, procedural generation, card games, story games, tarot

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1 INTRODUCTION

While the exact origins of tarot cards is not entirely known, their beginnings as a card game are thought to have taken a turn towards storytelling in the 16th-century when Italian poet Teofilo Folengo devised a set of sonnets incorporating all 22 trump cards (now known commonly as the major arcana) from the tarot deck, assigning surface-level meaning to the cards. Based on this, the

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Italian aristocracy at the time devised a game called tarocchi appropriati (Appropriated Tarots) [14] in which one player drew cards and handed them to another player who created poems based on the drawn cards. Most of these sonnets were about the players, other aristocracy, or the ladies of the court. It wasn't until the 18th century in France

that the tarot took a turn towards the occult and fortune-telling, with more in-depth meanings being attributed to the various cards [10]. Finally, in 1910, that the Rider-Waite-Smith tarot deck [35] was published which was the first deck that had illustrations on all the cards, not just the trump cards. This deck remains one of the most popular decks of our time [1].

While tarot was developed heavily during the various occult movements throughout history [14], as the current cultural climate shifts away from fear of the occult, tarot has resurfaced in more popular culture including books and games. Additionally, the rich symbolism and representation of a wide range of human motivations and experiences has been recognized and used as a method for brainstorming and generating stories [17]. Throughout the years, different decks have been created, often with their own set of artwork. While some are re-skinnings of the traditional set of meanings, other cards introduce their own set of symbols and interpretation, modifying and increasing the expressive range of the tarot cards [31].

Today, tarot is still used widely, from fortune-telling to use for touching on personal issues with groups of friends or in therapy [30]. These types of activities are based on creating spontaneous narratives with the cards providing a framework for the narrative [25]. Drawing from this, we approach the tarot cards as a tool-set and corpus for generating narratives according to certain structural patterns derived from narrative tradition; that of Tragedy and Comedy. The properties of the tarot deck lends themselves well to this purpose, covering a wide range of human experience and touching on concepts such as creativity, intuition, wealth, relationships, and knowledge. Additionally, there are strong parallels between the major arcana and Jungian archetypes [24] such as The Magician and Everyman (The Fool). The major arcana cards when examined in order describe The Fool's Journey, which has many ties with The Hero's Journey [5]. This range of possibilities provides breadth to the types of stories our tool can generate, and adding depth is that all the symbolic meanings of the cards can be reversed from a neutral or positive interpretation of a concept to a negative interpretation of the same concept.

Given the breadth of possible stories, we hypothesize that tarot is a rich area of exploration for story generation. Therefore, we have created a tarot-based generative system that creates short movie-like story synopses, along with a tagline one might see on a movie poster. This project is in early development; we have created

a prototype as a proof of concept. The project exists as a webpage that an interactor can use to draw new tarot cards for the story spread (card layout) and generate new stories. In this paper we discuss the details of our system and describe more details about the tarot as a corpus. We also discuss future areas of exploration based on our prototype.

2 RELATED WORK

The history of tarot is long, and as such has shown up numerous times throughout the years in popular culture. For instance, in the book "The Castle of Crossed Destinies" [4], tarot spreads are used as a way to express the stories and experiences of travelers who are unable to speak. In the Persona video game series [19], the 22 major arcana from the tarot are each used to represent the player (represented by The Fool) along with the 21 other important characters that the player will meet and interact with throughout the game.

2.1 Tarot and Story Systems

When looking beyond popular culture and instead focusing on scholarly tarot-based systems we found very few examples. The StorySpinner sculptural reader [13] is a system that uses tarot cards to organize and explore narrative segments. The interactor chooses cards from the major arcana and the order in which they are placed changes the order of the story and how it is retold. However, the tarot cards are not used to generate the story itself, unlike our system.

When looking beyond narrative-based systems, Interaction Tarot [7] is a brainstorming tool used by interaction designers using a custom-designed tarot deck. The cards were created to assist in general purpose design specifically in unknown design spaces. The cards were developed finding connections between the archetypes of the major arcana and interaction design principles. These cards have been proven to be useful for brainstorming activities, which leads us to believe that traditional tarot cards could be useful as a brainstorming tool in their role of storytelling as well.

While tarot-based systems are not as prevalent, story generation systems certainly are. For instance, MEXICA [26] creates stories about the people of Mexicas, an indigenous people who inhabited an area that is now Mexico City. Similar to our system, Mexica creates story frameworks, and has been successfully used to support other systems such as MEXICA-Impro [27] and MABLE [32] . Likewise, Propper [11] and OPIATE [9] both use the Russian fairy tale structure outlined by Propp's [28] seminal work. Turner's MIN-STREL [34] on the other hand uses the Arthurian legends of the Knights of the Round Table as the corpus from which its stories are derived.

All of these systems are much further developed than ours, but they show the success of leveraging of story reuse and following known story structures. Unlike our system, all of these systems generate a specific type of story, either that of the people of Mexicas, Russian fairy tales, or Arthurian legends. With our system we are interested in looking at the broader range of story possibilities that are enabled by tarot cards.

2.2 Narrative Generation in Games

Tarot has been used as a story-telling device since the 18th century [14] and has gone on to inspire a number of story-telling based card games in the modern era. These games, as well as tarot cards, are considered story-crafting games in the narrative games taxonomy proposed by Sullivan and Salter [33], based on their mechanics being about crafting a story throughout play. Story-crafting games, specifically, are those in which the games provide a general narrative structure and evocative elements, almost always in the form of cards or dice, and the player is then tasked with constructing a greater sense of meaning.

Games such as Dixit [29] and Mysterium [23] rely on cards with paintings of dream-like scenes on them, not unlike the imagery used in tarot. Cards contain an assortment of images, things such as a white poppy in a grassy field surrounded by a number of red poppies as in Dixit, or a chimney sweep riding a bicycle held by balloons over a town. However, there is no suit or card name associated with each of the cards to add a foundation of meaning. Instead, the meanings of the cards are interpreted by the players, and in both games the vagueness of the imagery presents part of the challenge.

Gloom [2] and Once Upon A Time [18] have cards that include small snippets of story on them. In these games, it is up to the players to competitively (and sometimes collaboratively) create stories by working the concepts on the cards together into a cohesive narrative. These stories tend to be fairly unstructured in nature, especially in Gloom and less so in Once Upon a Time, as the cards are drawn randomly and played with an eye towards getting to a specific ending. In some ways these games are much more similar to tarot, in that it is up to the players to provide the cohesive nature to the story.

2.3 Creativity Support

Without the game-like mechanics, Gloom and Once Upon A Time could both be seen as a creativity support tool, useful for brain-storming stories. Many people use tools to support their creative work, including inspiring ideas and challenging their ability to find creative solutions within constraints. For example, *Story Cubes* are dice with symbols on that represent actions, settings or themes, which can be rolled to randomly generate the pitch for a story, act or character.

The use of these unpredictable systems to inspire creativity also incorporates fortune-telling systems. Phillip K. Dick used the *I Ching* to govern several character actions in his book *The Man In The High Castle*, for instance [8]. Fortune-telling systems are general, easily applied to specific scenarios, and encourage people to interpret ideas creatively. Similar to these types of systems, our tarot-based narrative generation system could also be used as a creativity support system. We provide a different type of story framework that provided by Story Cubes, and more structure than the *I Ching*, however their use shows that there is room for this type of work.

3 SYSTEM

Our tarot-based narrative generation system is built as an interactive website. The design shows a spread (card layout) of five cards,



Figure 1: A screenshot of the Tarot Narrative system displaying a comedy-based story. Tarot card images are in the public domain.

with each act denoted below each one. Some cards are upright, and others are reversed, and they are displayed in that orientation. Each card is also labeled along with its orientation below the images of the cards. Below that is a section that shows the tagline for the story and the story synopsis, generated from a story framework and integrated with the meanings of the drawn cards. The interactor may draw a new card for any of the five locations, which will draw from the remaining cards in the deck. They may also draw an entirely new spread, which will draw a new set of 5 cards using the entire deck. The background of the webpage will change to a different watercolor painting to match the mood of the story; oranges and yellows are used for comedy 1, and blues and greens are used for tragedy 2.

For the generation, the system uses JavaScript and the data for the cards is stored in a json file. We started with a file contributed by Allison Parrish to the Corpora project [16] which was built from Mark McElroy's A Guide to Tarot Meanings [21]. Each card is represented in the file, and they are broken up into major and minor arcana. The major arcana includes 22 named cards (e.g. The Devil, The Empress), while the minor arcana have a ranking (Ace, 1-9, Page, Knight, Queen, King) and one of four suits: wands, cups, swords, or pentacles/coins (e.g. 9 of Cups, Queen of Wands). Within the file, each card has a set of "light" (upright) meanings and "dark" (reversed) meanings (described below), as well as a set of "fortune-telling" meanings, which are event-focused and future facing.

Unlike standard playing cards, tarot cards often have directionality; the cards can be placed upright (with the image in normal

orientation according to the reader) or reversed (with the image upside-down). In the interpretation of a reversed card, the same narrative element is used, but it is interpreted in a way that is reversed (often negative) for the person who is the center of the reading. For our use, we instead use these orientations to apply to our our main protagonist and support characters within the story. Each card in both the minor and major arcana has a grouping of meanings based on whether the card is upright or reversed.

The images that are on each tarot card are often just as important as the meanings that have been assigned to each card. For our project we used the Rider-Waite-Smith deck [35], in which the images were scanned by Holly Voley and sourced from the Internet Sacred Text Archive[12]. These images are in the public domain.

3.1 Generation

To generate the stories, the system first chooses a story structure from the list. Currently we have two types of stories supported: tragedy and comedy. Both story structures follow McKee's principles through 5 acts - Inciting Incident, Complication, Crisis, Climax, Resolution [22], so five cards are chosen from the deck - one assigned to each act. For each act, the card is placed in either an upright or reversed position. The orientation is based on whether the story structure the system is filling out is supposed to be a tragedy or comedy.

For our purposes, we used Booker's plot frameworks [3] to inform the orientations we are using for each of the story types. While we are currently only supporting two different story structures,

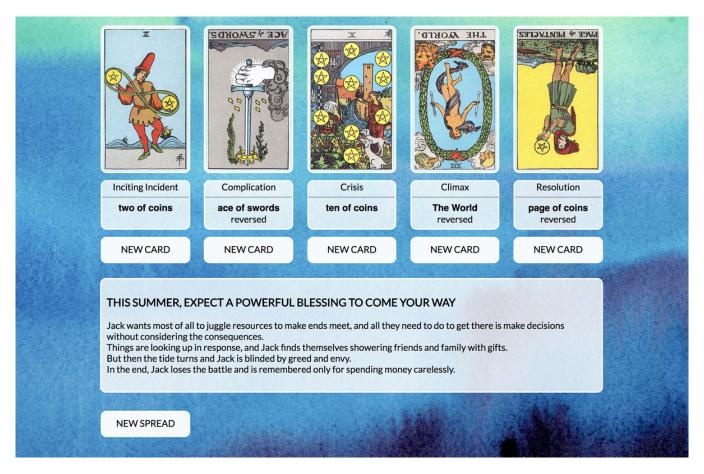


Figure 2: A cropped screenshot of the Tarot Narrative system displaying a tragedy-based story. Tarot card images are in the public domain.

given that each card can have one of two orientations, this method of generation could support up to 32 different plot varieties. This is due to there being five positions, and each position can have an upright or reversed card, leading to 2^5 possible variations. However, it would follow that not all 32 orientation possibilities would lead to engaging or enticing stories. For instance, a layout with all upright (and therefore neutral or positive meanings) or all reversed (and therefore negative meanings) would not necessarily tell a very interesting story, as it is the reversal of fortune that is often used to add interest to a story [20].

3.2 Story Structure

We use templated story frameworks for both comedy and tragedy to supply movie trailer style plot synopses. We currently have one framework for each type of story, although future development would include creating more frameworks within these types of stories to create more variety. These templates take card meanings and use them to create short movie-like story synopses. The frameworks also rely on upright or reversed card meanings for the stories to make sense, which further enforces whether the story is a tragedy or comedy. For the purposes of our prototype, we currently use a single upright and a single reversed interpretation for each

card, and adapt the language using the python-en library to transform the phrases into past, present, infinitive, and present participle tense forms. This allows us to use the interpretations in different contexts within our templates.

For a tragedy story, we follow the five stage tragedy plot framework proposed by Booker [3]. The tragedy starts with the Anticipation Stage, in which the protagonist is attracted to something new. The next stage is the Dream Stage, in which the protagonist commits, and things are working well despite starting towards the darkness. This is the no-turning back stage. This is followed by the Frustration Stage, things start going poorly, but the main character doubles down. The Nightmare Stage is when things start really unraveling, which is followed by the Destruction or Death Wish Stage, in which the protagonist meets their bad ending.

To capture the tragedy story, we use the following template:

[Character] wants most of all to [upright], and all they need to do to get there is [reversed]. Things are looking up in response, and [Character] finds themselves [upright]. But then the tide turns and [Character] is [reversed]. Will they make it through, or will [Character]

be remembered only for [reversed]?

As an example, with the spread - Two of Coins, Ace of Swords (reversed), Ten of Coins, The World (reversed), Page of Cups (reversed) - the following story is generated as shown in Figure 2:

Jack wants most of all to juggle resources to make ends meet, and all they need to do to get there is make decisions without considering the consequences.

Things are looking up in response, and Jack finds themselves showering friends and family with gifts. But then the tide turns and Jack is blinded by greed and envy.

Will they make it through or will **Jack** be remembered only for **spending money carelessly**?

To generate a comedy story, there were fewer pre-existing structures to follow as the genre has so many variations on the theme. For our prototype, we created the setup for a buddy-style comedy in which the protagonist finds themselves struggling and must rely on their friend for help. The template is as follows:

[Character A] is the best in the world at one thing: [upright].

But when [Character A] [reversed], they [reversed]. Now it's up to their best friend [Character B] to [upright], and in doing so help [Character A] [upright].

As an example, with the spread - Nine of Wands, Queen of Cups (reversed), Four of Cups (reversed), Nine of Cups, Death - the following story is generated 1:

Jack is the best in the world at one thing: refusing to quit. But when Jack wallows in self-pity, they take what they have for granted. Now it's up to their best friend Jill to make a sacrifice to achieve a larger goal, and in doing so help Jack let go.

In addition to rendering the spread of cards as a movie-like story synopsis, we also use the interpretations of each card provided by the corpus to construct taglines for the story, as one might see on a movie poster. The taglines can be seen underneath the card spread in Figure 1 and Figure 2. To construct these taglines, we use the template:

This [season], [fortune-telling].

This template was chosen as it mimics the style of a movie poster tagline. A season is chosen at random from spring, summer, fall, or winter. The rest of the tagline is created using one of the fortune-telling meanings from the Inciting Incident (card 1) in our spread. As mentioned above, the fortune-telling set of meanings are written in second-person and are future facing, and therefore work well for the tagline structure. Samples of generated taglines are: "THIS WINTER, WATCH OUT FOR ENVIOUS FRIENDS", "THIS SUMMER, ROMANCE IS IN THE CARDS", and "THIS SPRING, YOU'LL BE PLANNING A TRIP". Because the tagline is filled out using a card from the spread that is also used to generate the story synopsis, it





Figure 3: The Devil and Ten of Cups cards from the major and minor arcana respectively. Both of these illustrations are from the Rider-Waite-Smith tarot deck. Tarot card images are in the public domain.

is more likely that there will be a connection between the tagline and the story that has been generated.

3.3 Meaning

Traditionally, most of the major and minor arcana tarot cards have positive connotations when upright, and negative ones when reversed. For instance, in our system the minor arcana card Ten of Cups means "having more than they ever dreamed" when upright, and "feeling overwhelmed" when reversed. Both meanings are around the concept of abundance, but looking at different aspects of the topic. Similarly the major arcana card The Devil means "appreciating the luxuries that life has to offer" when upright and ""allowing base instincts to govern your life" when reversed. In this way, The Devil deals with both sides of indulgence and impulsiveness. In both cases the concepts are related, but the orientation focuses on the positive and negative aspects. Both cards can be seen in Figure 3.

Having each card around various concepts but with both a "dark" and "light" reading of each gives us a rich corpus for our story generation. Each card covers a different concept with positive and negative nuances to each. Additionally, the cards are broken up into major arcana and four suits, each with their own area of concentration. The major arcana is often linked to Jungian archetypes [15] and moving through the cards from 0 to 21 follows The Fool's Journey, growing from the every man, beating the odds, and finding ultimate success. The minor arcana is broken up into four suits: wands, swords, cups, and pentacles (also sometimes called coins). According to traditional meanings [21] of the Rider-Waite-Smith deck, each suit focuses on a general area of human nature. The wands suit focuses on creativity, inspiration, ambition, and spirituality. Swords deals primarily with intellect, power, thoughts, and

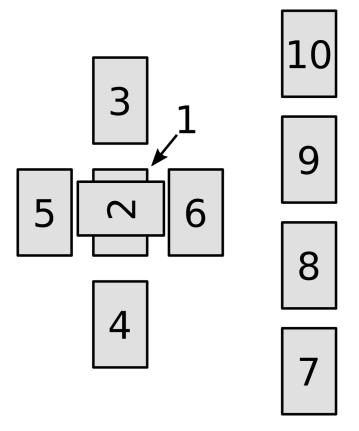


Figure 4: The celtic cross spread is a common layout for tarot cards. Each position within the spread has a meaning, which is combined with the meanings from the specific tarot card at that position for a final reading.

attitudes. The suit of cups focuses on love, feelings, relationships, and connections. Finally, pentacles deal with health, finances, and work.

3.4 Expressive Range

As Short[31] discusses expressive range of different tarot decks, she notes that the pictoral elements of tarot card give players access to different themes and environments, but also that the play experience can vary according to added rules that comes with a deck, or by changing the symbolism of the types cards, and by adding cards. Another aspect of expressive range of tarot is touched upon here, and that is the expressive range of how the cards can be ordered. The most common use of tarot is to "ask the cards a question". Depending on the nature of the question, different spreads are chosen. The spreads provides a pattern for how the tarot cards are supposed to be placed on the table, and in what order, with each placement using the card to provide a different framing for the meaning. For example, a question to the cards which is about a choice could warrant for a "horseshoe" spread. In such a spread, the two legs of the horseshoe each symbolize one of the choices. The most well known tarot spread may be the "Celtic Cross" (see Figure 4), that can be used for general questions as more specific ones. In this

spread the cards are positioned so that each card gives an aspect of the issue that is the subject of the reading. Using Chatman's terms,[6] each of the positions of the cards could be considered a "kernel", that is a story defining event. In tarot, the meaning and details of the event is a co-created narrative of how the players interpret the card in relation to the question at hand along with its position in the spread. In our implementation, we have adopted classic plot structures as our 'spreads', hence harnessing the rich symbols of tarot towards traditional story structures.

4 FUTURE WORK

Given that our project is an early prototype serving as a proof of concept towards the feasibility of creating stories from tarot cards, there are many areas of possible future exploration including deeper story generation for creativity support as well as game design.

4.1 Deeper Story Generation for Creativity Support

The stories that are currently being generated by our system are very high-level, with an entire plot being described in a few sentences. With such a shallow structure, it allows for a large amount of leniency when it comes to coherence in the story. With only one sentence per act, there are large open areas for the interactor to be able to draw connections between the different card meanings. Because of this, it can be useful as a creativity support tool, particularly in helping brainstorm new story ideas for instance as a twitter bot that shares daily writing prompts. The system could also be expanded upon to be a more robust brainstorming tool by adding depth to the story generation system.

To move beyond where the system currently is, it would be possible to use larger and more in-depth spreads to generate stories for each act, or for each beat and drawing more cards. However, the more fine-grained the system becomes, the more the apparent the possible lack of cohesion becomes. This could be addressed in several ways. Currently, our data contains multiple meanings for each card, and which meaning is presented is chosen at random. These meanings are around a central concept, but can range in what they cover. For instance, The Empress card has meanings that range from bearing children to reveling in luxury to getting things done. Adding categorization or a tagging system could allow us to favor meanings that are categorized similarly to previous cards, adding some coherence to the story. Adding a distance metric between our categorizations could also be used to add more control if there are no matching categories between previous and current cards.

Additionally, as the suits have general themes they deal with, some constraints could also be used to generate cards in similar suits as the story progresses. Depending on the use and interactor, this method may be less ideal. While a layout that uses mainly, for instance, cards from the cup suit would likely lead to a more coherent story, it may be considered less satisfying and may overly constrain the space. However, there are possible use cases where this level of coherence would be preferred.

These changes, along with modifying the user interface to accommodate the more complex functionality could be used to create a more robust creativity support tool.

4.2 Game Design

We intend to explore the use of our tarot-based narrative system in the context of game design. Tarot is already a well-known concept in popular culture, which should make it easier for players to understand the role of the system within the game. In addition to this, the nature of Tarot heavily relies on interpretation and reflection, which is a successful common thread in many storytelling, improvisation and creative games, such as *Dixit* or *Once Upon A Time* which we described in section §2.2.

All of the actions available in our prototype have interesting potential as mechanics within a game, either playing alone, or with another player co-operatively or competitively. Reversing a card to shift its tone from positive to negative, redrawing a card to change the meaning of part of a story, or moving a card around in a story to shift its relevance or interpretation. Additionally, modifying spreads or the decks being used can increase or decrease the expressive range of possible stories. Similarly, constraining the player to certain cards for different uses could be added to the game's design. For instance, minor arcana cards often describe events while major arcana often describe characterizations, and these meanings could be integrated into the game mechanics.

Finally, given the increased interest in games that exist in both digital and physical forms, there is an interesting area of exploration of using physical tarot cards in combination with our digital tarot-based narrative generation system to create a hybrid game. Given the availability of a wide range of tarot decks, this could lead to a variety of possibilities. These are all interesting aspects of the system that we're interested in exploring in a playful context.

5 CONCLUSION

In this paper, we present our tarot-based narrative generation system. The system leverages the breadth of pre-existing story possibilities represented within the tarot cards. We have created a proof of concept tool which generates two types of stories, tragedy and comedy. While this work is still early stage, we have found that the range of stories produced is encouraging, and we hope to further develop this work as a creativity support tool and as the basis of future game design.

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